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Oregon PERS Financial Modeling Economic Projections

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Agenda

- Overview of financial modeling
- Key findings
- Overview of employer rate setting
- Baseline projections for the system
- Scenario #1 – De facto limit to employer contribution rates
- Scenario #2 – Temporarily extend amortization period
- Scenario #3 – Reduce interest assumption to 7.5%
- Conclusions and observations

Overview of Financial Modeling

- Basis for modeling
 - 12/31/2007 Tier 1/Tier 2 and OPSRP actuarial valuations
 - Contribution rates and funded status are modeled on a system-wide basis
 - Does not include retiree healthcare or IAP contributions
 - Published investment returns through March 31, 2009
 - OIC investment policy
 - Mercer capital market assumptions
 - 1,000 trials

- Scenarios studied
 - Baseline – Tier 1/Tier 2 & OPSRP using current methods & assumptions
 - Scenario #1 – Assumes there is a limit to how much employers can or will pay for PERS. We modeled limits of 25% and 30% of payroll.
 - Scenario #2 – Extends amortization period to 30 years for UAL as of 12/31/2009, but uses future gains to reduce the amortization period.
 - Scenario #3 – Reduces the assumed earnings rate to 7.5%.

Key Findings

Baseline

- With the rate collar in place, employer contribution rates will increase in a very predictable manner from now until mid-2015
- Reflecting recent investment losses, median projected contribution rates rise to 25%-35% of payroll, excluding the IAP contribution
- Plan funded status will likely take years to return to December 2008 levels and even longer to return to pre-2008 levels
- The Tier 1 Rate Guarantee Reserve is currently in a deficit situation, and that deficit is projected to increase (sometimes significantly) in most economic scenarios
- There is less than a 1 in 10 probability that the Tier 1 Rate Guarantee Reserve will achieve a positive balance through earnings alone

Key Findings

Scenarios

- The effect of artificially capping employer contribution rates at 25% or 30% of payroll is to extend the amortization of the unfunded liability and to risk the funded status and sustainability of the system in negative economic scenarios
- Extending the amortization period to 30 years and then using any future gains to shorten the amortization back to a 20-year period does not have a significant effect on contribution rate or funded status projections
- Reducing the assumed earnings rate:
 - Reduces projected benefit payments by changing Money Match conversion factors and reducing the Tier 1 Rate Guarantee
 - Has no impact on contribution rates in the short-term, but increases contribution rates 100 to 200 basis points over the long-term
 - Reduces the funded status in the short-term, but improves the funded status in the long-term
 - Produces a smaller deficit and a slightly greater probability of achieving a positive balance in the Tier 1 Rate Guarantee Reserve over time

Overview of Employer Rate Setting

- Actuarial valuations are conducted annually each year-end
 - Rates are set biennially based on “odd year” actuarial valuations
 - “Even year” valuations are strictly advisory
- The rates determined by the actuarial valuation are adopted by the Board and go into effect 18 months subsequent to the valuation date

Valuation Date	Employer Contribution Rates
12/31/2007	7/1/2009 – 6/30/2011
12/31/2009	7/1/2011 – 6/30/2013

- The effect of the market downturn will first be reflected in employer rates for the 7/1/2011 – 6/30/2013 biennium

Overview of Employer Rate Setting

Structure of Employer Pension Contribution Rates

Employer Pension Contribution Rates 7/1/2009 – 6/30/2011				
Payroll	Tier 1/Tier 2	OPSRP GS	OPSRP P&F	Combined
Normal Cost	6.1%	5.8%	8.5%	6.1%
T1/T2 UAL	6.1%	6.1%	6.1%	6.1%
OPSRP UAL	(0.1%)	(0.1%)	(0.1%)	(0.1%)
Total	12.1%	11.8%	14.5%	12.1%
Average Adjustment	(7.7%)	(7.7%)	(7.7%)	(7.7%)
Net Rate	4.4%	4.1%	6.8%	4.4%

- Employer pension contribution rates have two key components: Normal Cost and UAL
- Rates shown here and throughout the rest of this presentation are calculated on a systemwide basis
 - Rates for any single employer will vary from the systemwide rate
- IAP and retiree healthcare rates are charged in addition to the pension rate

Overview of Employer Rate Setting

The Rate Collar

- From one biennium to the next, employer rate changes for Tier 1/Tier 2 and OPSRP are restricted to stay inside of a “rate collar”
 - The rate collar is defined as the greater of:
 - 20% of the rate in effect, or
 - 3% of payroll
- If the plan’s funded status goes above 120% or below 80%, the width of the rate collar doubles
 - Our modeling indicates that a doubled rate collar will apply for the 12/31/2009 valuation, which will be used to set 2011-2013 rates
 - Given the Tier 1/Tier 2 rate is 12% of payroll for the 2009-2011 biennium, the doubled rate collar restricts rates to a maximum rate of 18% for 2011-13
 - Without the rate collar, we estimate the contribution rate would be between 21% and 29% for 2011-13

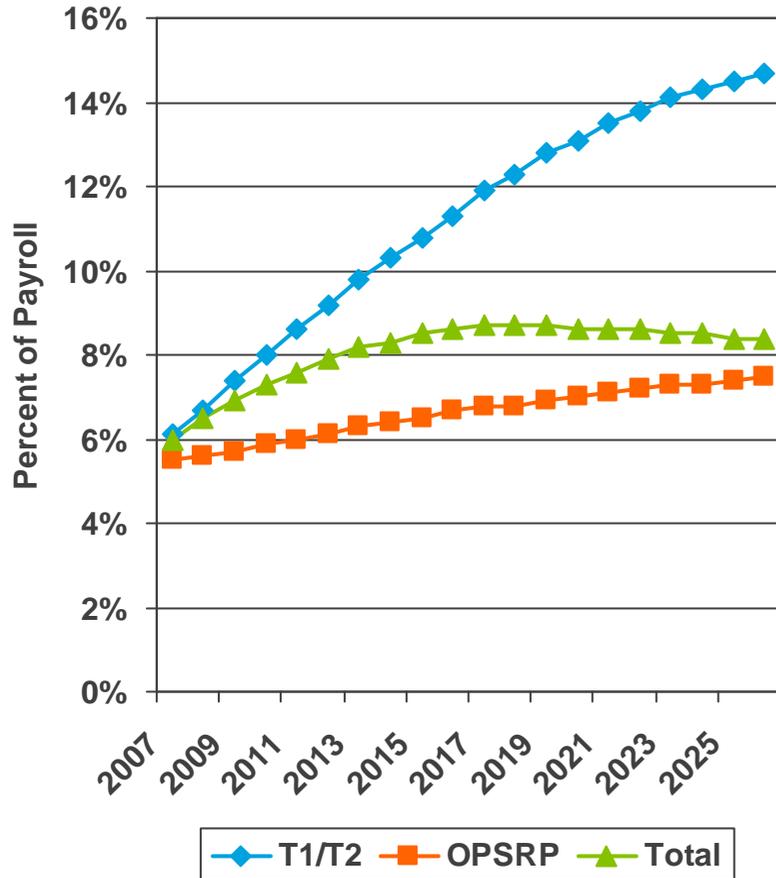


Baseline Projections No Side Accounts

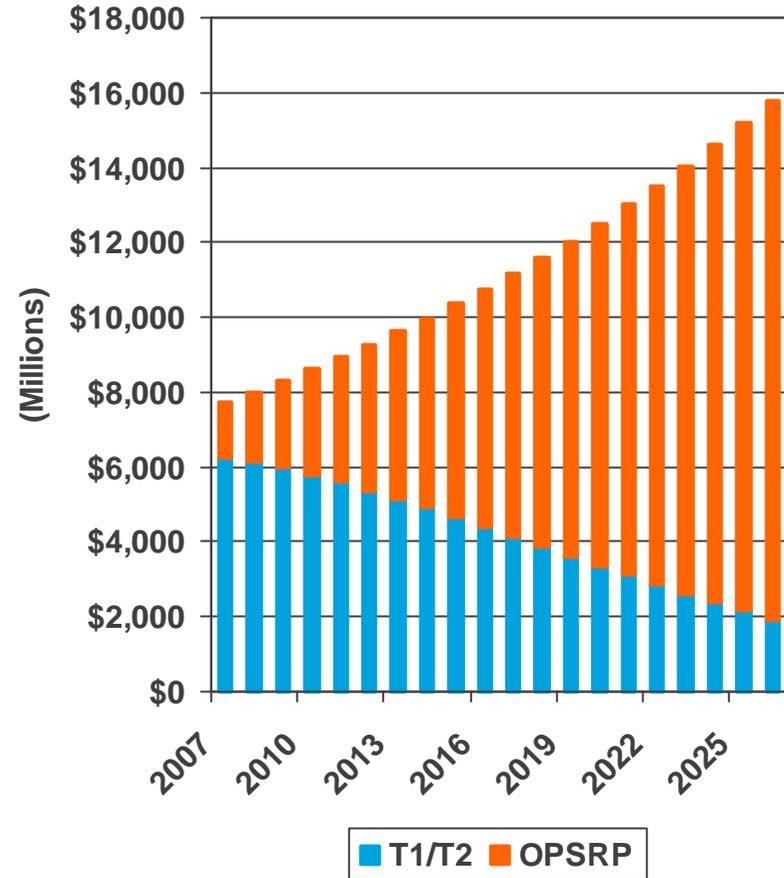
Baseline Projections – No Side Accounts

Tier 1/Tier 2 vs. OPSRP

Projected Normal Cost Rate



Projected Payroll

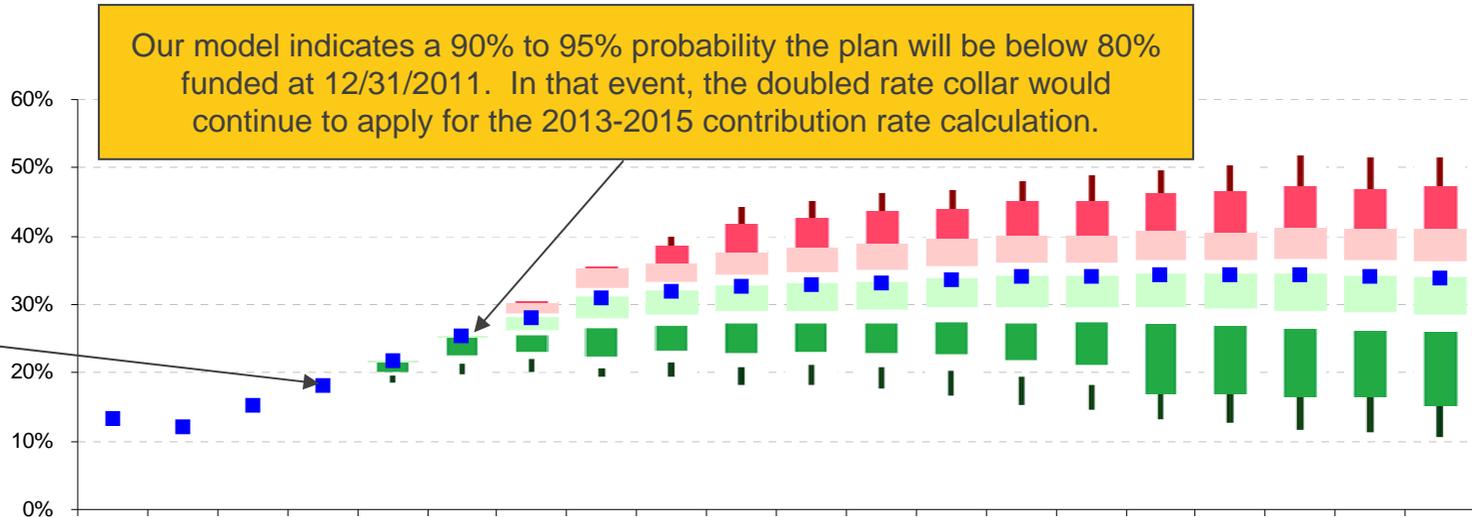


Baseline Projections – No Side Accounts

Tier 1/Tier 2 Contribution Rate
Rate Collar Applied

The rate collar is the greater of 3% of payroll or 20% of the current rate in effect. When funded status falls below 80%, the rate collar's width is doubled.

Tier 1 / Tier 2 Contribution Rate (prior to side account rate relief)



For PY Ending 12/31	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
5th	13%	12%	15%	18%	22%	25%	30%	36%	40%	44%	45%	46%	47%	48%	49%	50%	50%	52%	52%	51%
10th	13%	12%	15%	18%	22%	25%	30%	36%	39%	42%	43%	44%	44%	45%	45%	46%	47%	47%	47%	47%
25th	13%	12%	15%	18%	22%	25%	30%	35%	36%	38%	39%	39%	40%	40%	40%	41%	41%	41%	41%	41%
50th	13%	12%	15%	18%	22%	25%	28%	31%	32%	33%	33%	33%	34%	34%	34%	34%	34%	34%	34%	34%
75th	13%	12%	15%	18%	22%	25%	25%	26%	27%	27%	27%	27%	27%	27%	27%	27%	27%	26%	26%	26%
90th	13%	12%	15%	18%	20%	21%	22%	21%	22%	21%	21%	21%	20%	19%	18%	17%	17%	16%	17%	15%
95th	13%	12%	15%	18%	18%	19%	19%	19%	18%	17%	17%	16%	15%	13%	13%	11%	11%	9%	9%	8%

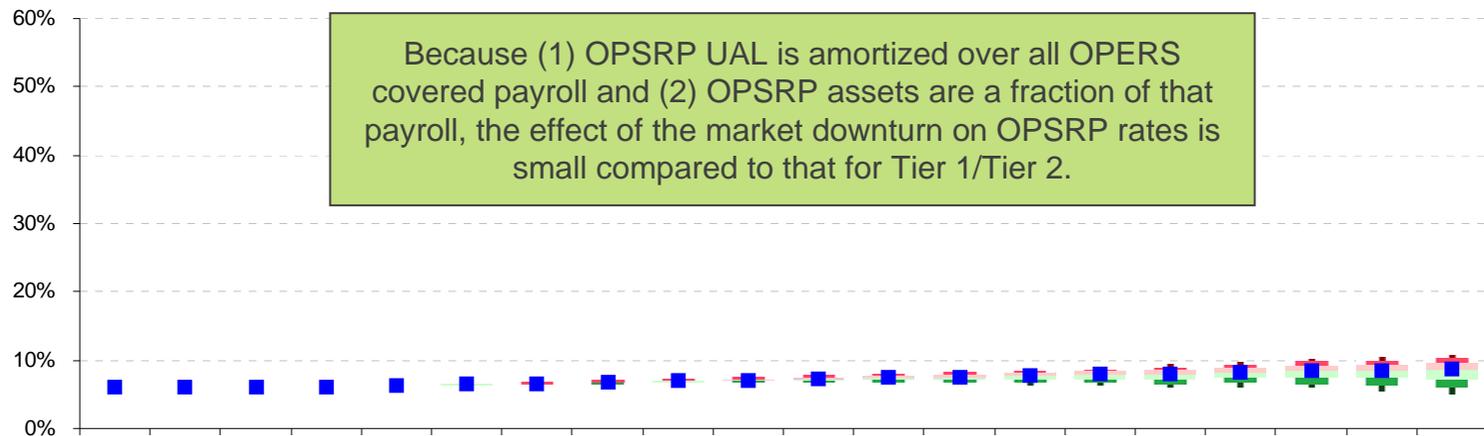
Baseline Projections – No Side Accounts

OPSRP Contribution Rate

Rate Collar Applied

The rates shown in this exhibit do not include the Tier 1/Tier 2 Unfunded Accrued Liability (UAL) amortization, which is also charged on OPSRP payroll.

OPSRP Contribution Rate (prior to side account rate relief)



For PY Ending 12/31	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
5th	6%	6%	6%	6%	6%	7%	7%	7%	7%	8%	8%	8%	8%	9%	9%	9%	10%	10%	10%	11%
10th	6%	6%	6%	6%	6%	7%	7%	7%	7%	7%	8%	8%	8%	8%	9%	9%	9%	10%	10%	10%
25th	6%	6%	6%	6%	6%	6%	7%	7%	7%	7%	7%	8%	8%	8%	8%	9%	9%	9%	9%	10%
50th	6%	6%	6%	6%	6%	6%	7%	7%	7%	7%	7%	7%	8%	8%	8%	8%	8%	8%	8%	9%
75th	6%	6%	6%	6%	6%	6%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
90th	6%	6%	6%	6%	6%	6%	6%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	6%	6%	6%
95th	6%	6%	6%	6%	6%	6%	6%	6%	7%	7%	7%	7%	7%	6%	6%	6%	6%	6%	6%	5%

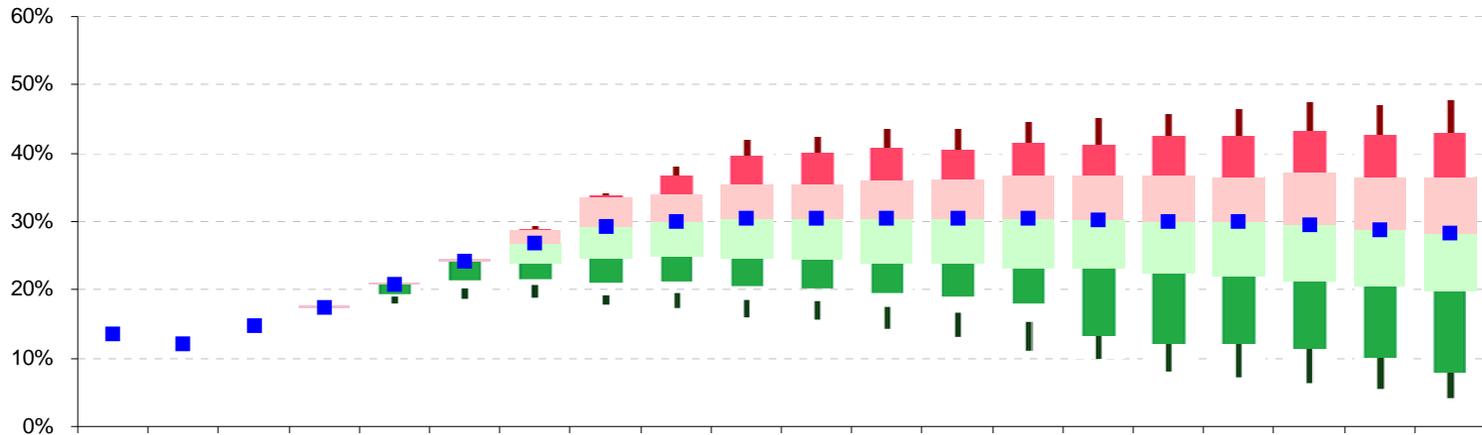
Baseline Projections – No Side Accounts

Combined Payroll Weighted Contribution Rate

Rate Collar Applied

While the rate collar moderates the level of near-term increases, the Tier 1/Tier 2 UAL rate from current investment losses causes combined contribution rates to be above 30% in many of the post-2014 scenarios.

Combined Contribution Rate (prior to side account rate relief)



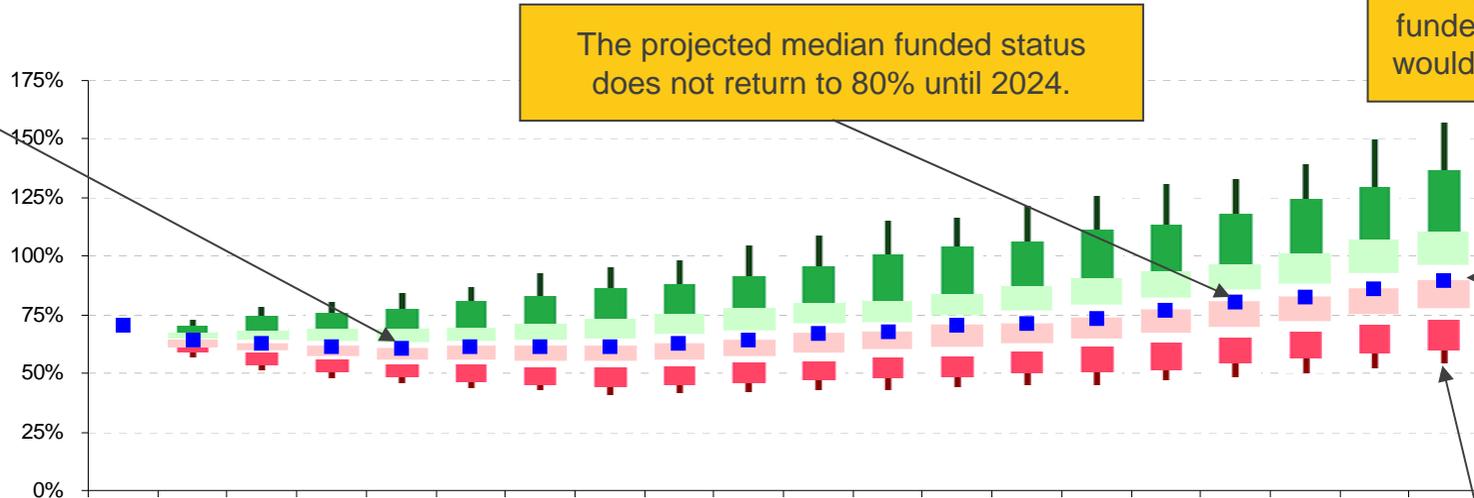
For PY Ending 12/31	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
5th	13%	12%	15%	18%	21%	24%	29%	34%	38%	42%	42%	44%	44%	45%	45%	46%	46%	47%	47%	48%
10th	13%	12%	15%	18%	21%	24%	29%	34%	37%	40%	40%	41%	41%	42%	41%	43%	43%	43%	43%	43%
25th	13%	12%	15%	18%	21%	24%	29%	34%	34%	36%	36%	36%	36%	37%	37%	37%	36%	37%	37%	37%
50th	13%	12%	15%	18%	21%	24%	27%	29%	30%	31%	30%	30%	30%	30%	30%	30%	30%	29%	29%	28%
75th	13%	12%	15%	18%	21%	24%	24%	25%	25%	25%	24%	24%	24%	23%	23%	22%	22%	21%	21%	20%
90th	13%	12%	15%	18%	19%	20%	21%	19%	19%	18%	18%	17%	16%	15%	13%	12%	12%	11%	10%	8%
95th	13%	12%	15%	17%	18%	18%	18%	17%	16%	15%	14%	13%	11%	9%	8%	6%	5%	4%	3%	2%

Baseline Projections – No Side Accounts

Funded Status

The median funded status is projected to decrease to 61% in 2012. This is due to net cash outflows while contribution rates “ramp up” over time.

Combined Funded Status (excluding side accounts)



At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	71%	72%	78%	81%	84%	87%	93%	95%	98%	104%	109%	115%	116%	122%	126%	130%	133%	139%	150%	156%
90th	71%	71%	75%	77%	78%	81%	84%	87%	88%	92%	96%	101%	104%	106%	111%	114%	119%	125%	130%	137%
75th	71%	68%	69%	69%	69%	70%	71%	73%	76%	78%	81%	81%	84%	88%	91%	94%	97%	102%	107%	111%
50th	71%	64%	63%	62%	61%	62%	61%	62%	63%	65%	67%	67%	70%	72%	73%	77%	80%	83%	86%	90%
25th	71%	62%	58%	56%	54%	53%	53%	53%	53%	54%	55%	56%	57%	59%	61%	63%	65%	68%	70%	73%
10th	71%	59%	54%	51%	49%	47%	45%	45%	45%	46%	47%	48%	49%	50%	50%	51%	54%	57%	59%	60%
5th	71%	57%	52%	48%	46%	43%	43%	41%	41%	42%	43%	43%	44%	45%	45%	47%	48%	50%	52%	55%

There is a less than 5% chance the funded status is below 50% at 2027.

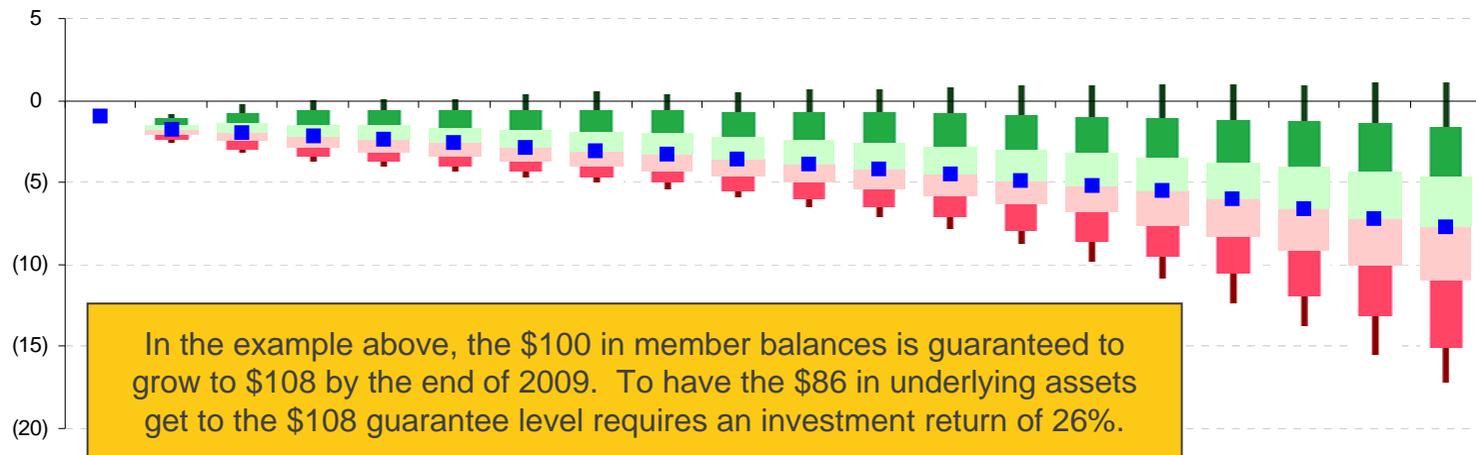
Baseline Projections – No Side Accounts

Tier 1 Rate Guarantee Reserve

At end of 2008, the Reserve is currently in a deficit situation. For every \$100 of Tier 1 Member Regular Account Balances there are \$86 in assets. Recovery from a Reserve deficit requires returns well in excess of 8%, with the needed return increasing each year that the deficit grows.

Tier 1 Rate Guarantee Reserve

Because it is unclear how the 5-year call provision on deficits in the Rate Guarantee Reserve works, the call provision has not been modeled



(\$billions)

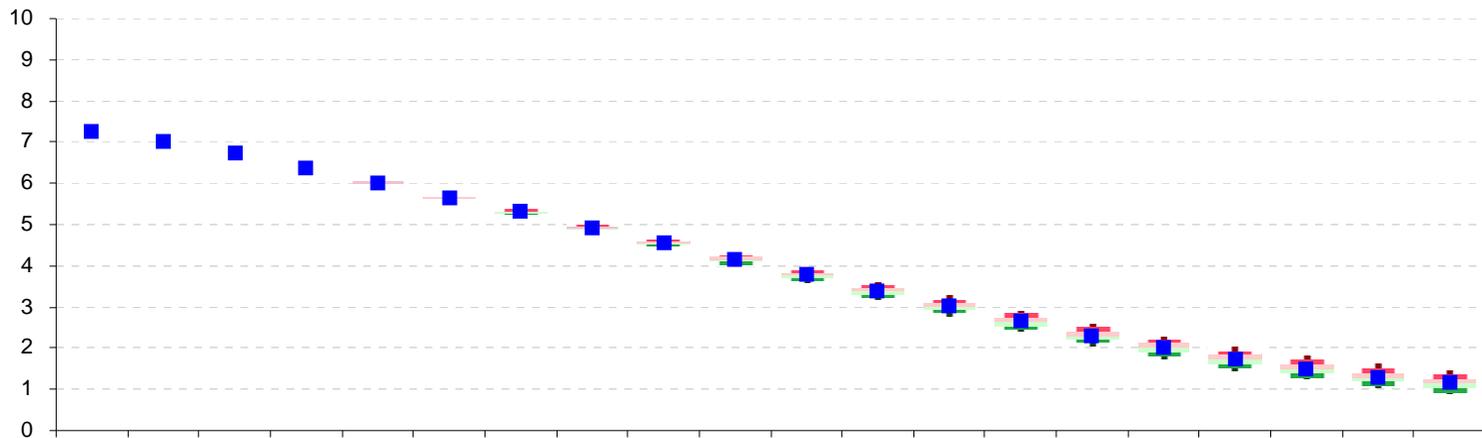
At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	(1)	(1)	(0)	(0)	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1
90th	(1)	(1)	(1)	(1)	(1)	(1)	(0)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(2)
75th	(1)	(1)	(1)	(1)	(1)	(2)	(2)	(2)	(2)	(2)	(2)	(3)	(3)	(3)	(3)	(3)	(4)	(4)	(4)	(5)
50th	(1)	(2)	(2)	(2)	(2)	(3)	(3)	(3)	(3)	(4)	(4)	(4)	(4)	(5)	(5)	(6)	(6)	(7)	(7)	(8)
25th	(1)	(2)	(2)	(3)	(3)	(3)	(4)	(4)	(4)	(5)	(5)	(5)	(6)	(6)	(7)	(8)	(8)	(9)	(10)	(11)
10th	(1)	(2)	(3)	(3)	(4)	(4)	(4)	(5)	(5)	(5)	(6)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(15)
5th	(1)	(3)	(3)	(4)	(4)	(4)	(5)	(5)	(5)	(6)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(14)	(15)	(17)

Baseline Projections – No Side Accounts

Tier 1 Member Account Regular Balances

The value of Tier 1 Member Regular Accounts is quite predictable. The total account balance increases with the interest crediting guarantee and decreases with Tier 1 member retirements.

Tier 1 Member Regular Accounts



(\$billions)

At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
5th	7.3	7.0	6.7	6.4	6.0	5.7	5.4	5.0	4.7	4.3	3.9	3.6	3.2	2.9	2.6	2.3	2.0	1.8	1.6	1.4
10th	7.3	7.0	6.7	6.4	6.0	5.7	5.4	5.0	4.6	4.3	3.9	3.6	3.2	2.9	2.5	2.2	2.0	1.7	1.5	1.4
25th	7.3	7.0	6.7	6.4	6.0	5.7	5.3	5.0	4.6	4.2	3.9	3.5	3.1	2.8	2.4	2.1	1.9	1.6	1.4	1.3
50th	7.3	7.0	6.7	6.4	6.0	5.7	5.3	4.9	4.6	4.2	3.8	3.4	3.0	2.7	2.3	2.0	1.7	1.5	1.3	1.2
75th	7.3	7.0	6.7	6.4	6.0	5.6	5.3	4.9	4.5	4.1	3.7	3.3	2.9	2.6	2.2	1.9	1.6	1.4	1.2	1.0
90th	7.3	7.0	6.7	6.4	6.0	5.6	5.3	4.9	4.5	4.0	3.6	3.2	2.9	2.5	2.1	1.8	1.5	1.3	1.1	0.9
95th	7.3	7.0	6.7	6.4	6.0	5.6	5.2	4.8	4.4	4.0	3.6	3.2	2.8	2.4	2.1	1.7	1.5	1.2	1.0	0.9

Baseline Projections – No Side Accounts

Net Tier 1 Regular Accounts

Tier 1 Member Regular Accounts + Rate Guarantee Reserve

By 2018, the projected median net asset level has dropped to zero. The 20-year net asset level is positive in less than 10% of the scenarios.

Net Tier 1 Regular Accounts



(\$billions)

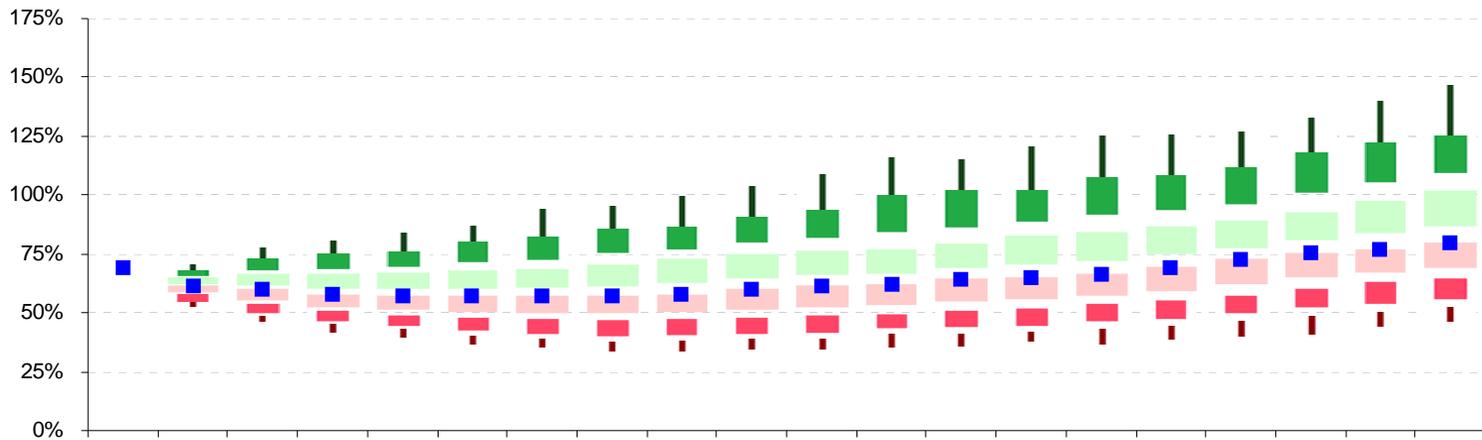
At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	6	6	6	6	6	6	6	5	5	5	4	4	4	4	3	3	3	2	2	2
90th	6	6	6	6	5	5	5	4	4	3	3	3	2	2	1	1	1	0	(0)	(0)
75th	6	6	5	5	5	4	4	3	3	2	1	1	0	(0)	(1)	(1)	(2)	(2)	(3)	(3)
50th	6	5	5	4	4	3	2	2	1	1	(0)	(1)	(1)	(2)	(3)	(4)	(4)	(5)	(6)	(7)
25th	6	5	4	4	3	2	2	1	0	(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
10th	6	5	4	3	2	2	1	0	(0)	(1)	(2)	(3)	(4)	(5)	(6)	(8)	(9)	(10)	(12)	(14)
5th	6	4	4	3	2	1	1	(0)	(1)	(2)	(3)	(4)	(5)	(6)	(8)	(9)	(11)	(12)	(14)	(16)

Baseline Projections – No Side Accounts

Net Combined Funded Status

If the Rate Guarantee Reserve is not restored through contributions, accounting for the projected deficit reduces the system-wide funded status 8% to 10%.

Net Combined Funded Status (including rate guarantee reserve, excluding side accounts)



At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	69%	71%	78%	80%	84%	87%	94%	96%	99%	104%	108%	116%	115%	121%	125%	125%	127%	132%	140%	147%
90th	69%	69%	73%	76%	76%	80%	83%	86%	87%	91%	94%	100%	102%	102%	108%	109%	112%	119%	123%	126%
75th	69%	65%	66%	66%	67%	68%	69%	70%	73%	75%	77%	77%	79%	82%	84%	87%	89%	93%	97%	101%
50th	69%	61%	60%	58%	57%	57%	57%	57%	58%	60%	62%	62%	64%	65%	67%	69%	72%	75%	77%	80%
25th	69%	58%	54%	51%	48%	48%	47%	47%	47%	48%	49%	50%	51%	52%	54%	55%	57%	60%	63%	64%
10th	69%	55%	49%	45%	43%	40%	39%	38%	38%	38%	39%	41%	41%	42%	43%	44%	47%	48%	50%	52%
5th	69%	53%	46%	42%	39%	37%	36%	34%	34%	34%	35%	35%	36%	38%	37%	39%	40%	41%	44%	47%

Baseline Projections – No Side Accounts

Observations

- It is very likely that a “doubled” rate collar will apply at the next two rate setting valuations
 - Given that, employer rates from now through June 30, 2015 are highly predictable
- The orderly rate increase caused by the collar causes rates later in the projection period to be slightly higher than those in a non-collared environment
- Plan funded status is estimated to be 71% as of December 31, 2008
 - The median funded status is expected to drop further, and not recover to the 71% level until 2021
- The Tier 1 Rate Guarantee Reserve (RGR) is running a deficit of approximately \$1 billion as of December 31, 2008; compared to \$7.3 billion of Tier 1 Regular Member Accounts
 - There is a negative leverage exerted by the RGR, and the RGR is projected to remain negative in over 90% of the projection scenarios



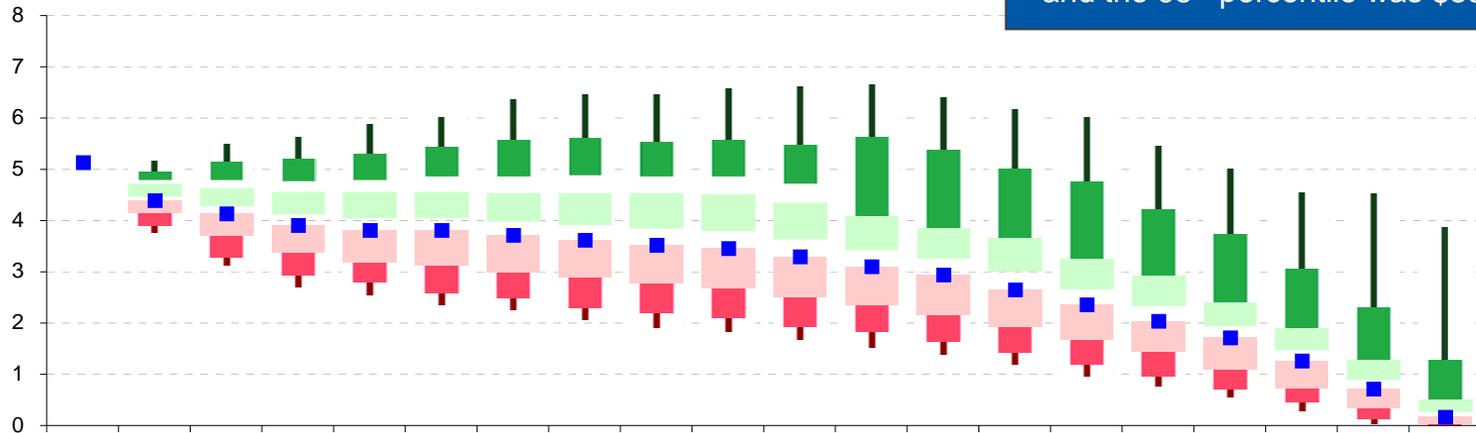
Baseline Projections Current Side Accounts

Baseline Projections – With Side Accounts

Projected Side Account Balance

Side accounts are amortized over the period ending 12/31/2027. The market downturn has changed the projection for side accounts significantly reducing the probability and size of any surplus remaining at the end of the amortization period. Before the market downturn, the median expected surplus was \$5 billion and the 95th percentile was \$39 billion.

Side Account Balance



(\$billions)

At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	5	5	5	6	6	6	6	6	6	7	7	7	6	6	6	5	5	5	5	4
90th	5	5	5	5	5	5	6	6	6	6	5	6	5	5	5	4	4	3	2	1
75th	5	5	5	5	5	5	5	5	5	4	4	4	4	4	3	3	2	2	1	1
50th	5	4	4	4	4	4	4	4	4	3	3	3	3	3	2	2	2	1	1	0
25th	5	4	4	3	3	3	3	3	3	3	3	2	2	2	2	1	1	1	0	0
10th	5	4	3	3	3	3	2	2	2	2	2	2	2	1	1	1	1	0	0	0
5th	5	4	3	3	3	2	2	2	2	2	2	2	1	1	1	1	1	0	0	0

Baseline Projections – With Side Accounts

Average Net Contribution Rates

The recent investment downturn will cause side account relief rates to decrease significantly effective July 1, 2011. Changes in side account relief rates are not subject to a rate collar.

On a systemwide basis, the average side account relief is projected to be 2% - 4% of payroll for the majority of the projection period, compared to a projection of 5% - 8% of payroll before the market downturn.

Net Combined Contribution Rate (after side account rate relief)



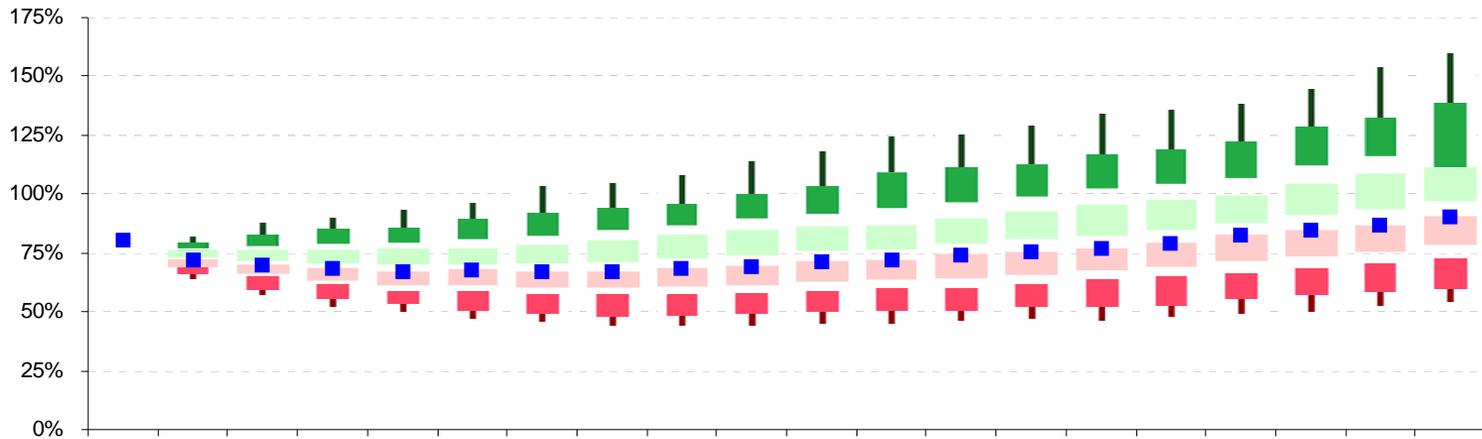
For PY Ending 12/31	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
5th	6%	4%	9%	13%	17%	21%	26%	31%	35%	39%	40%	41%	41%	42%	42%	43%	44%	45%	45%	47%
10th	6%	4%	9%	13%	17%	21%	26%	31%	34%	37%	37%	38%	38%	39%	39%	40%	40%	41%	41%	42%
25th	6%	4%	9%	13%	17%	21%	25%	30%	31%	32%	32%	33%	33%	33%	33%	34%	33%	34%	34%	35%
50th	6%	4%	9%	13%	16%	20%	23%	25%	26%	26%	26%	26%	26%	26%	26%	26%	26%	25%	25%	26%
75th	6%	4%	9%	13%	16%	19%	19%	20%	20%	19%	19%	18%	19%	18%	18%	17%	16%	15%	15%	17%
90th	6%	4%	8%	12%	14%	15%	15%	13%	13%	12%	12%	11%	10%	8%	6%	4%	4%	3%	2%	0%
95th	6%	4%	8%	12%	12%	12%	12%	11%	10%	8%	7%	5%	3%	0%	0%	0%	0%	0%	0%	0%

Baseline Projections – With Side Accounts

Combined Funded Status

The current funded status with side accounts is near 80%. But, as side accounts are used to reduce contribution rates, the funded status with side accounts approaches the funded status without side accounts.

Combined Funded Status (including side accounts)



At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	80%	82%	87%	90%	93%	96%	103%	105%	108%	113%	118%	124%	125%	129%	134%	136%	138%	145%	154%	160%
90th	80%	79%	83%	85%	86%	90%	92%	95%	96%	100%	104%	109%	111%	113%	117%	119%	123%	129%	132%	139%
75th	80%	76%	77%	76%	77%	77%	78%	80%	82%	85%	86%	87%	89%	92%	95%	97%	100%	105%	109%	112%
50th	80%	72%	70%	68%	67%	68%	67%	67%	68%	69%	71%	72%	74%	75%	77%	79%	82%	85%	87%	91%
25th	80%	69%	65%	61%	59%	58%	57%	57%	57%	58%	59%	60%	60%	62%	63%	65%	66%	69%	71%	73%
10th	80%	66%	60%	55%	54%	51%	49%	48%	48%	49%	50%	51%	51%	52%	52%	53%	55%	57%	59%	60%
5th	80%	64%	57%	53%	50%	47%	46%	44%	44%	45%	45%	45%	46%	47%	47%	48%	49%	50%	53%	55%

Baseline Projections – With Side Accounts

Observations

- In the latter half of the projection period, side account rate relief averages 2% to 4% of payroll on a systemwide basis compared to 8% of payroll in 2010
 - Actual rate relief will vary from employer to employer
- With the market downturn, under most scenarios the side account is fully amortized or close to fully amortized by 2027. The chance of a system-wide surplus at the end of the amortization period in excess of \$5 billion has virtually been eliminated.



Impact of Limit on Contribution Rates Scenario 1

Impact of Limit on Contribution Rates

Overview

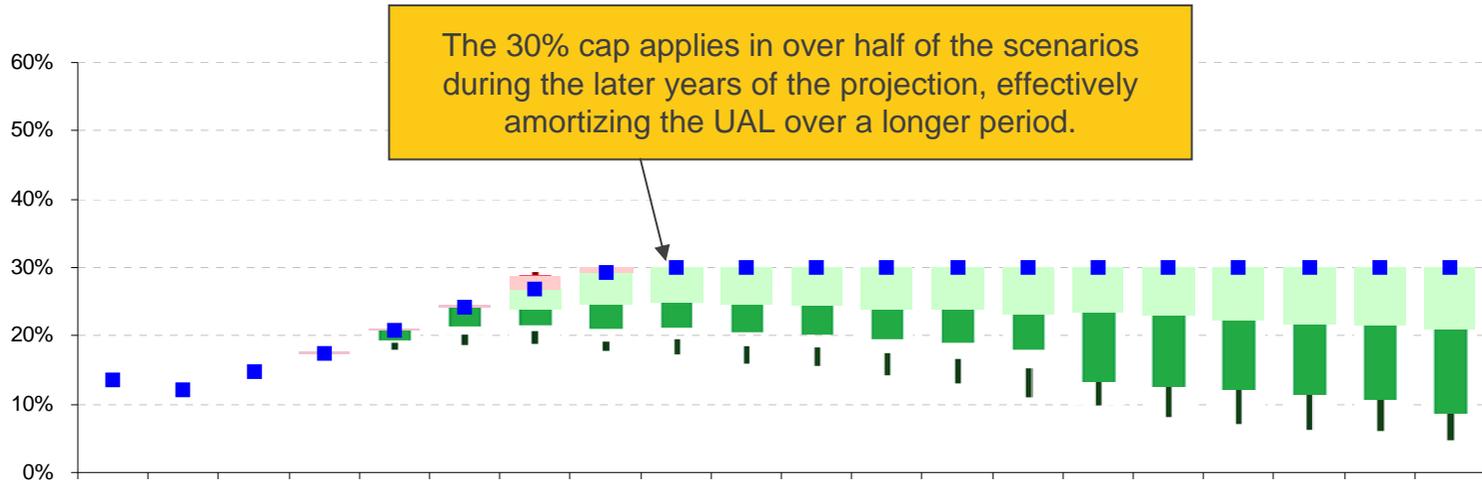
- The baseline projections assume that employer contribution rates can increase to whatever level is needed to fund the plan.
- It seems probable, however, that there is a limit at which point some sort of action would take place either limiting the contributions and/or changing the benefits through Legislative action.
- To help assess expectations on the level of employer contributions required to fund the System and the potential impact on the sustainability of the System if employer contribution rates were limited, we artificially imposed limits of 25% and 30% of payroll on employer contribution rates.
- These limits are imposed prior to any adjustment for side accounts and do not include IAP contributions.
- Please note that we are not recommending adoption of these limits. This exercise is intended to illuminate issues related to the management and sustainability of the System.

30% Limit on Contribution Rates

Combined Payroll Weighted Contribution Rate

30% Contribution Rate Cap & Rate Collar Applied

Combined Contribution Rate (prior to side account rate relief)



For PY Ending 12/31	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
5th	13%	12%	15%	18%	21%	24%	29%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
10th	13%	12%	15%	18%	21%	24%	29%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
25th	13%	12%	15%	18%	21%	24%	29%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
50th	13%	12%	15%	18%	21%	24%	27%	29%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
75th	13%	12%	15%	18%	21%	24%	24%	25%	25%	25%	24%	24%	24%	23%	23%	23%	22%	22%	21%	21%
90th	13%	12%	15%	18%	19%	20%	21%	19%	19%	18%	18%	17%	16%	15%	13%	13%	12%	11%	11%	9%
95th	13%	12%	15%	17%	18%	18%	18%	17%	16%	15%	14%	13%	11%	9%	8%	6%	5%	4%	4%	3%

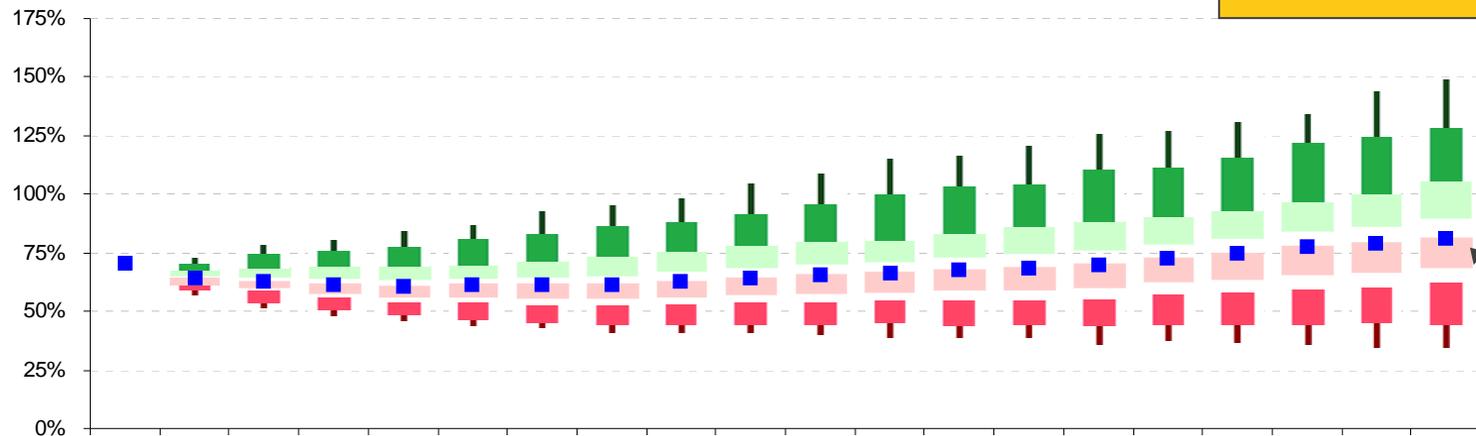
30% Limit on Contribution Rates

Funded Status

30% Contribution Rate Cap & Rate Collar Applied

In the 50th and 25th percentile, the 30% rate cap has the effect of reducing the funded status at the end of the projection period by about 10%. However, in the 5th percentile, it reduces the funded status by more than 20%.

Combined Funded Status (excluding side accounts)



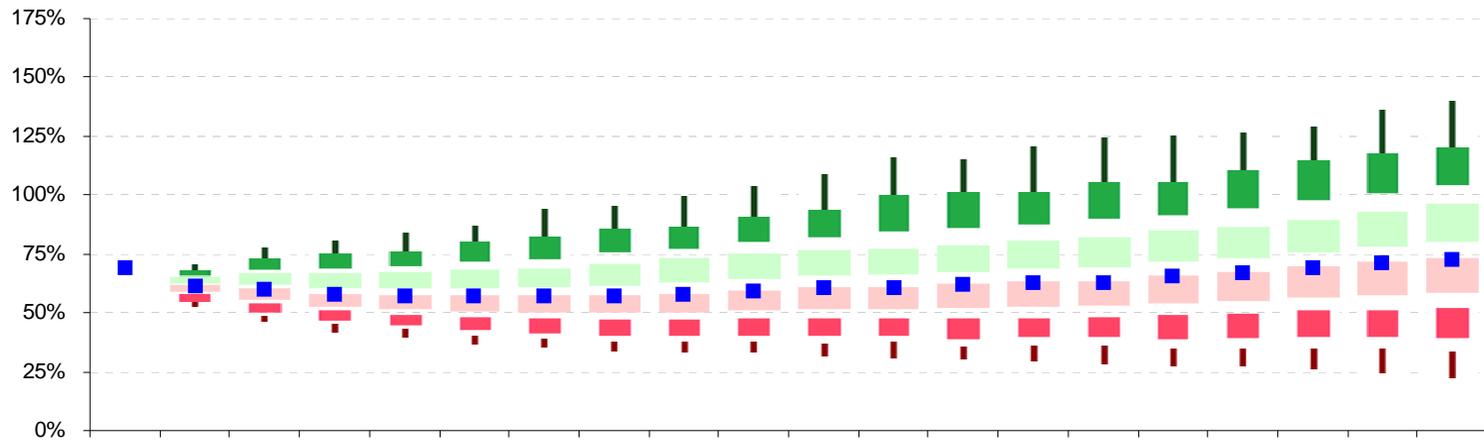
At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	71%	72%	78%	81%	84%	87%	93%	95%	98%	104%	108%	115%	116%	121%	126%	127%	131%	134%	144%	149%
90th	71%	71%	75%	77%	78%	81%	84%	87%	88%	92%	96%	100%	104%	105%	111%	112%	116%	122%	125%	128%
75th	71%	68%	69%	69%	69%	70%	71%	73%	76%	78%	80%	80%	83%	86%	88%	91%	93%	97%	100%	106%
50th	71%	64%	63%	62%	61%	62%	61%	62%	63%	64%	66%	66%	68%	69%	70%	72%	75%	78%	79%	81%
25th	71%	62%	58%	56%	54%	53%	53%	53%	53%	54%	54%	54%	54%	54%	55%	57%	58%	59%	60%	62%
10th	71%	59%	54%	51%	49%	47%	45%	45%	45%	45%	44%	45%	44%	44%	44%	44%	44%	45%	45%	45%
5th	71%	57%	52%	48%	46%	43%	43%	41%	41%	41%	40%	39%	39%	39%	36%	37%	36%	36%	34%	34%

30% Limit on Contribution Rates

Net Combined Funded Status

If the Rate Guarantee Reserve is not restored through contributions, accounting for the projected deficit reduces the system-wide funded status 9% to 11%.

Net Combined Funded Status (including rate guarantee reserve, excluding side accounts)



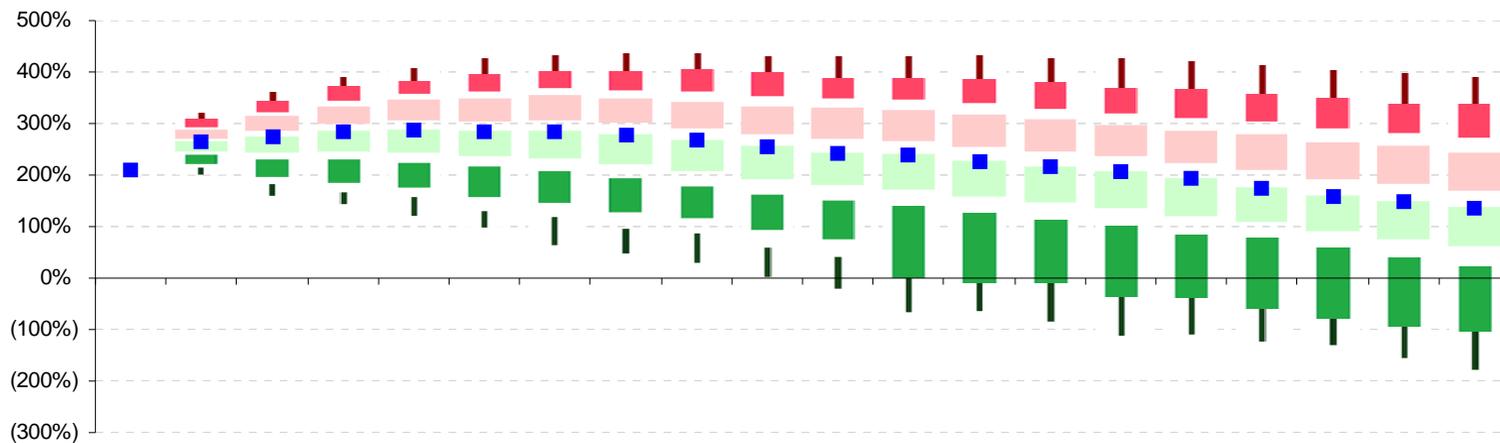
At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	69%	71%	78%	80%	84%	87%	94%	96%	99%	104%	108%	116%	115%	121%	125%	125%	126%	129%	136%	140%
90th	69%	69%	73%	76%	76%	80%	83%	86%	87%	91%	94%	100%	102%	102%	106%	106%	111%	115%	118%	121%
75th	69%	65%	66%	66%	67%	68%	69%	70%	73%	75%	76%	77%	78%	81%	82%	85%	86%	89%	93%	96%
50th	69%	61%	60%	58%	57%	57%	57%	57%	58%	59%	61%	61%	62%	62%	63%	66%	67%	69%	71%	73%
25th	69%	58%	54%	51%	48%	48%	47%	47%	47%	47%	47%	47%	47%	48%	48%	48%	49%	51%	51%	52%
10th	69%	55%	49%	45%	43%	40%	39%	38%	37%	37%	37%	37%	36%	36%	36%	35%	35%	34%	34%	33%
5th	69%	53%	46%	42%	39%	37%	36%	34%	33%	33%	32%	31%	30%	30%	28%	27%	28%	26%	25%	23%

30% Limit on Contribution Rates

Net UAL as a Percentage of Payroll

While a 30% cap on contributions increases the risk of significantly poorer funded status, the ultimate downward slope of UAL as a Percentage of Payroll indicates that the system is likely to be sustainable even with this cap on contribution rates.

Combined Unfunded Accrued Liability plus Rate Guarantee Reserve as % of Payroll

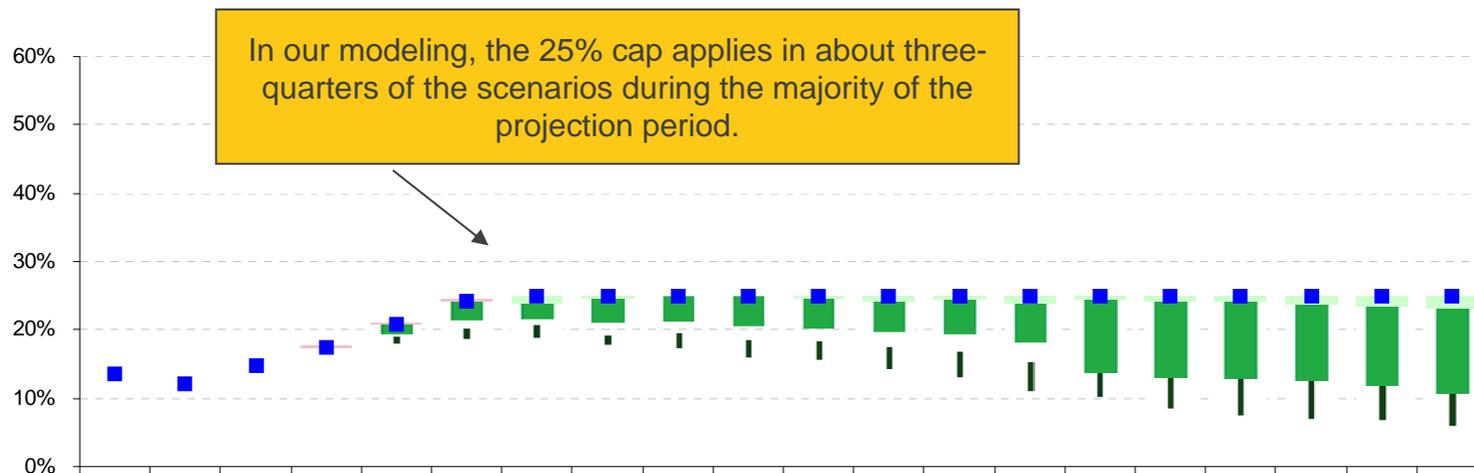


For PY Ending 12/31	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
5th	211%	318%	362%	391%	408%	426%	433%	436%	434%	431%	430%	429%	432%	427%	424%	420%	412%	405%	396%	390%
10th	211%	308%	346%	374%	384%	398%	403%	405%	405%	399%	392%	390%	387%	382%	371%	369%	358%	350%	339%	337%
25th	211%	286%	312%	333%	346%	347%	354%	347%	343%	333%	328%	326%	315%	305%	298%	284%	277%	262%	254%	241%
50th	211%	264%	273%	285%	288%	283%	284%	279%	268%	256%	243%	239%	225%	215%	206%	192%	174%	160%	150%	137%
75th	211%	237%	230%	228%	221%	217%	206%	195%	176%	160%	147%	140%	126%	113%	100%	84%	76%	57%	40%	23%
90th	211%	213%	181%	165%	155%	131%	116%	93%	85%	58%	38%	(1%)	(10%)	(11%)	(35%)	(38%)	(57%)	(79%)	(94%)	(104%)
95th	211%	197%	153%	136%	105%	85%	40%	26%	4%	(25%)	(51%)	(99%)	(90%)	(124%)	(153%)	(145%)	(155%)	(159%)	(186%)	(216%)

25% Limit on Contribution Rates

Combined Payroll Weighted Contribution Rate 25% Contribution Rate Cap & Rate Collar Applied

Combined Contribution Rate (prior to side account rate relief)



For PY Ending 12/31	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
5th	13%	12%	15%	18%	21%	24%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
10th	13%	12%	15%	18%	21%	24%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
25th	13%	12%	15%	18%	21%	24%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
50th	13%	12%	15%	18%	21%	24%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
75th	13%	12%	15%	18%	21%	24%	24%	25%	25%	25%	25%	24%	24%	24%	24%	24%	24%	24%	24%	23%
90th	13%	12%	15%	18%	19%	20%	21%	19%	19%	18%	18%	17%	17%	15%	14%	13%	13%	12%	12%	11%
95th	13%	12%	15%	17%	18%	18%	18%	17%	16%	15%	14%	13%	11%	9%	8%	6%	5%	4%	4%	4%

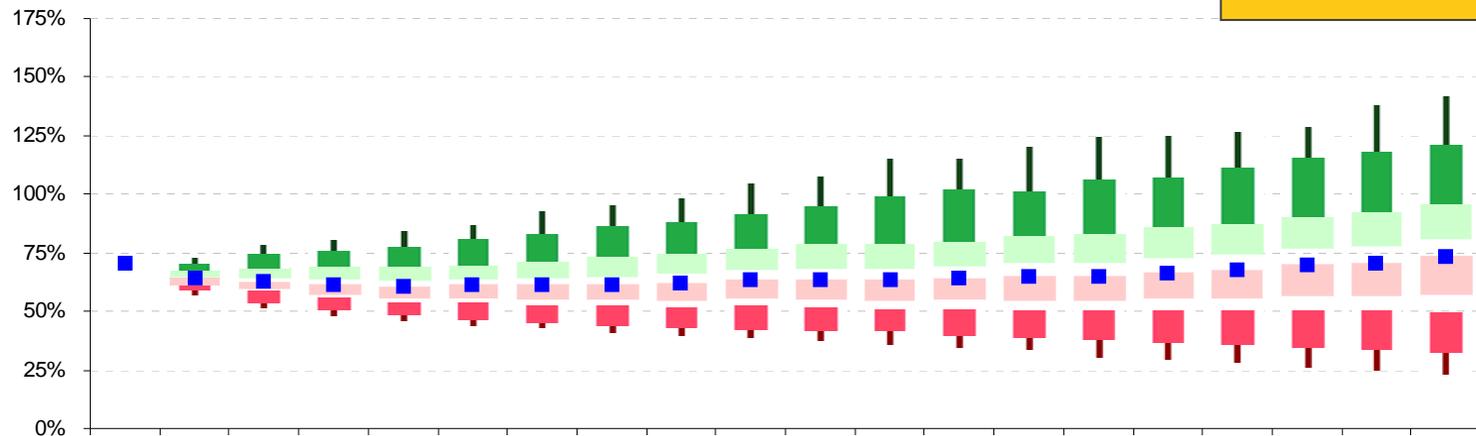
25% Limit on Contribution Rates

Funded Status

25% Contribution Rate Cap & Rate Collar Applied

The 25% rate cap has the effect of reducing the 2027 funded status by an additional 8-12% compared to the 30% cap. Further, there is a more than 10% chance the funded status is below 33% at the end of 2027.

Combined Funded Status (excluding side accounts)



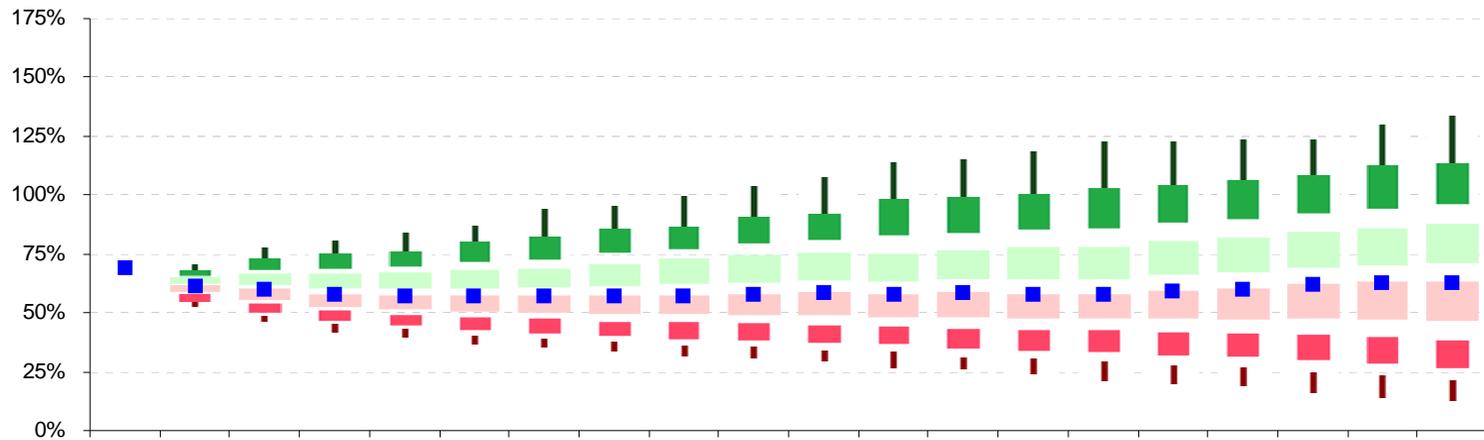
At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	71%	72%	78%	81%	84%	87%	93%	95%	98%	104%	107%	115%	115%	120%	124%	125%	126%	129%	137%	142%
90th	71%	71%	75%	77%	78%	81%	84%	87%	88%	92%	95%	100%	102%	102%	106%	107%	111%	115%	118%	122%
75th	71%	68%	69%	69%	69%	70%	71%	73%	75%	77%	79%	79%	80%	83%	83%	86%	87%	90%	93%	96%
50th	71%	64%	63%	62%	61%	62%	61%	61%	62%	63%	64%	64%	64%	65%	65%	66%	68%	70%	70%	73%
25th	71%	62%	58%	56%	54%	53%	53%	52%	52%	52%	51%	51%	50%	50%	50%	50%	50%	50%	50%	50%
10th	71%	59%	54%	51%	49%	47%	45%	44%	43%	43%	41%	42%	40%	39%	38%	36%	36%	35%	34%	32%
5th	71%	57%	52%	48%	46%	43%	43%	41%	39%	39%	37%	36%	35%	34%	31%	30%	28%	26%	25%	23%

25% Limit on Contribution Rates

Net Combined Funded Status

If the Rate Guarantee Reserve is not restored through contributions, accounting for the projected deficit reduces the system-wide funded status 9% to 11%.

Net Combined Funded Status (including rate guarantee reserve, excluding side accounts)



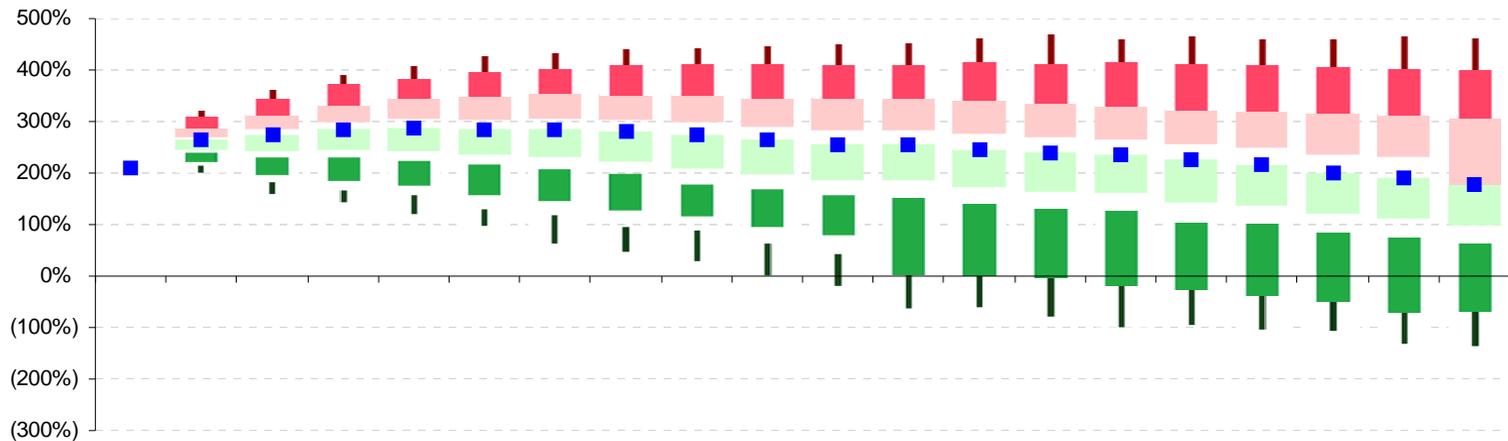
At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	69%	71%	78%	80%	84%	87%	94%	96%	99%	103%	108%	114%	115%	118%	123%	123%	124%	123%	130%	133%
90th	69%	69%	73%	76%	76%	80%	83%	86%	86%	91%	93%	99%	100%	101%	103%	104%	106%	108%	113%	114%
75th	69%	65%	66%	66%	67%	68%	69%	70%	72%	74%	75%	75%	76%	78%	78%	80%	82%	84%	85%	88%
50th	69%	61%	60%	58%	57%	57%	57%	57%	57%	58%	59%	58%	58%	58%	58%	60%	60%	62%	63%	63%
25th	69%	58%	54%	51%	48%	48%	47%	46%	46%	46%	45%	44%	43%	42%	42%	41%	41%	40%	40%	38%
10th	69%	55%	49%	45%	43%	40%	39%	37%	36%	35%	34%	33%	31%	30%	29%	27%	26%	25%	23%	21%
5th	69%	53%	46%	42%	39%	37%	36%	34%	32%	31%	29%	27%	26%	24%	21%	20%	19%	16%	14%	12%

25% Limit on Contribution Rates

Net UAL as a Percentage of Payroll

A 25% cap on contributions increases the risk of significantly poorer funded status, and in the worst investment environments, may threaten the sustainability of the system.

Combined Unfunded Accrued Liability plus Rate Guarantee Reserve as % of Payroll



For PY Ending 12/31	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
5th	211%	318%	362%	391%	408%	426%	433%	440%	442%	444%	447%	452%	460%	467%	458%	464%	457%	458%	465%	461%
10th	211%	308%	346%	374%	384%	398%	403%	409%	413%	412%	410%	411%	415%	414%	415%	412%	409%	407%	402%	401%
25th	211%	286%	312%	333%	346%	347%	354%	350%	351%	345%	345%	346%	341%	335%	328%	324%	321%	316%	314%	306%
50th	211%	264%	273%	285%	288%	283%	284%	281%	275%	263%	254%	255%	246%	240%	236%	226%	215%	201%	190%	178%
75th	211%	237%	230%	228%	221%	217%	206%	196%	179%	167%	156%	150%	140%	129%	125%	105%	100%	84%	75%	60%
90th	211%	213%	181%	165%	155%	131%	116%	93%	87%	60%	43%	4%	1%	(4%)	(20%)	(26%)	(38%)	(48%)	(70%)	(67%)
95th	211%	197%	153%	136%	105%	85%	40%	26%	4%	(25%)	(49%)	(93%)	(90%)	(115%)	(139%)	(130%)	(135%)	(132%)	(159%)	(172%)

Impact of Limit on Contribution Rates

Observations

- Imposing a contribution rate limit will affect the funded status of the plan in the average to below-average investment return scenarios
- Effectively, a contribution rate cap amortizes the unfunded liability over a longer period. As long as the UAL ultimately declines to zero in all scenarios, the system is sustainable. The 30% cap appears likely to result in a sustainable pattern, but the 25% cap risks sustainability in the worst investment environments based on our model. Both caps may risk sustainability if the tails of the distribution of investment returns are actually thicker than those modeled.
- Even though a cap may be sustainable, it is likely to shift costs to future generations.



Impact of Extending Amortization Period Scenario 2

Impact of Extending Amortization Period

Overview

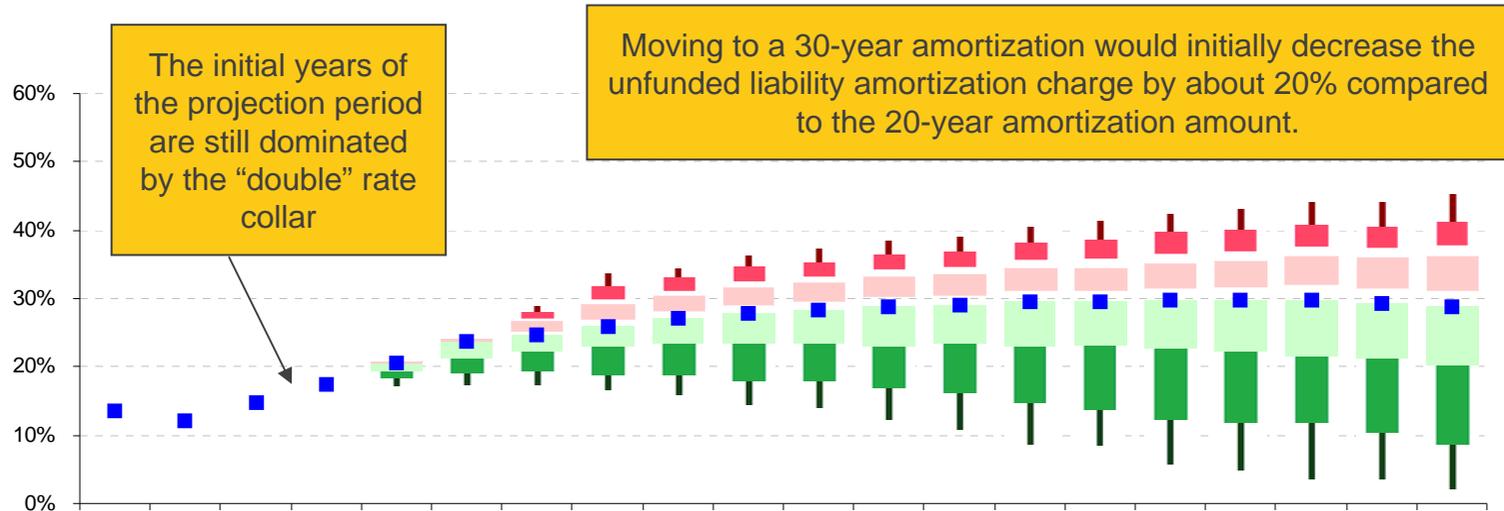
- Due to the extreme market downturn, many systems are considering lengthening their amortization period.
- The baseline projections use a 20-year layered amortization method combined with a rate collar.
- Our policy of trying to preserve generational equity promotes shorter amortization periods.
- Taking into account our objectives, we modeled a modified version of extending the amortization period.
 - Entire UAL as of 12/31/2009 is re-amortized over a 30-year period.
 - Future gains reduce the amortization period (not the contribution rate) until the UAL would be fully paid off by 12/31/2029. Then, additional future gains would be amortized over 20 years.
 - Future losses would continue to be amortized over 20 years.

Impact of Extending Amortization Period

Combined Payroll Weighted Contribution Rate

Rate Collar Applied

Combined Contribution Rate (prior to side account rate relief)

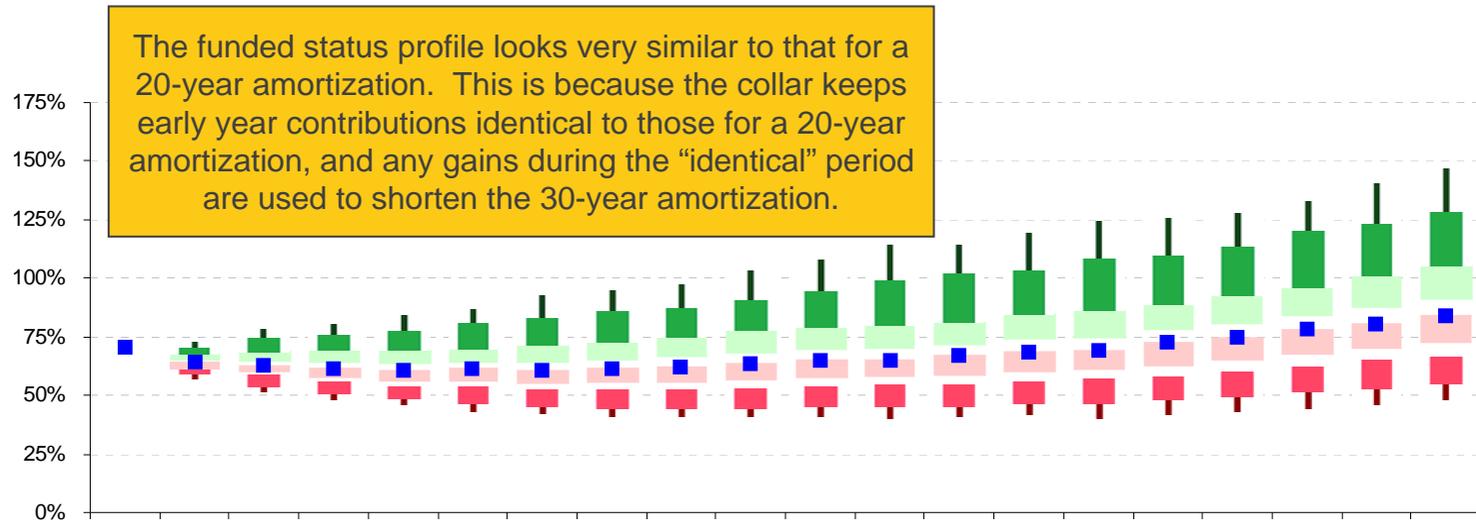


For PY Ending 12/31	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
5th	13%	12%	15%	18%	21%	24%	29%	34%	34%	36%	37%	39%	39%	40%	41%	42%	43%	44%	44%	45%
10th	13%	12%	15%	18%	21%	24%	28%	32%	33%	35%	35%	36%	37%	38%	39%	40%	40%	41%	41%	41%
25th	13%	12%	15%	18%	21%	24%	27%	29%	30%	31%	32%	33%	33%	34%	34%	35%	35%	36%	36%	36%
50th	13%	12%	15%	18%	21%	24%	25%	26%	27%	28%	28%	29%	29%	29%	30%	30%	30%	30%	29%	29%
75th	13%	12%	15%	17%	19%	21%	22%	23%	23%	23%	24%	23%	24%	23%	23%	23%	22%	21%	21%	20%
90th	13%	12%	15%	17%	18%	19%	19%	19%	19%	18%	18%	17%	16%	15%	14%	12%	12%	12%	10%	9%
95th	13%	12%	15%	17%	17%	17%	18%	17%	16%	15%	14%	12%	11%	9%	9%	6%	5%	4%	4%	2%

Impact of Extending Amortization Period

Funded Status

Combined Funded Status (excluding side accounts)



At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	71%	72%	78%	81%	84%	87%	93%	95%	97%	103%	108%	114%	114%	119%	124%	125%	128%	133%	140%	147%
90th	71%	71%	75%	76%	78%	81%	83%	86%	87%	91%	94%	100%	103%	103%	108%	110%	113%	120%	124%	128%
75th	71%	68%	69%	69%	69%	70%	71%	73%	75%	77%	79%	80%	81%	85%	86%	89%	92%	96%	101%	105%
50th	71%	64%	63%	62%	61%	61%	61%	61%	62%	63%	65%	65%	67%	69%	69%	73%	75%	78%	80%	84%
25th	71%	62%	58%	56%	54%	53%	52%	52%	52%	53%	53%	54%	54%	56%	57%	58%	60%	62%	65%	66%
10th	71%	59%	54%	51%	49%	47%	45%	44%	45%	45%	45%	45%	45%	46%	47%	48%	49%	51%	53%	55%
5th	71%	57%	52%	48%	46%	43%	43%	41%	41%	41%	41%	40%	41%	41%	40%	42%	43%	44%	46%	48%

Impact of Extending Amortization Period

Summary

- Without a collar in place, extending the amortization period to 30 years would lower the amortization charge by about one-fifth
 - A 30-year amortization results in an initial payment less than interest on the unfunded, so the unfunded is expected to grow for about 10 years.
 - A 20-year amortization results in an initial payment about equal to interest on the unfunded.
- Using a 30-year amortization, the rate collar would still limit contribution rates in the near-term, so a migration to 30 years would not affect rates over the next few years
- By the time the rate collar stops limiting rate changes, any gains during the intervening period would have been used to shorten the 30-year amortization to the extent possible.



Impact of Reducing Assumed Earnings Rate Scenario 3

Impact of Reducing Assumed Earnings Rate

Overview

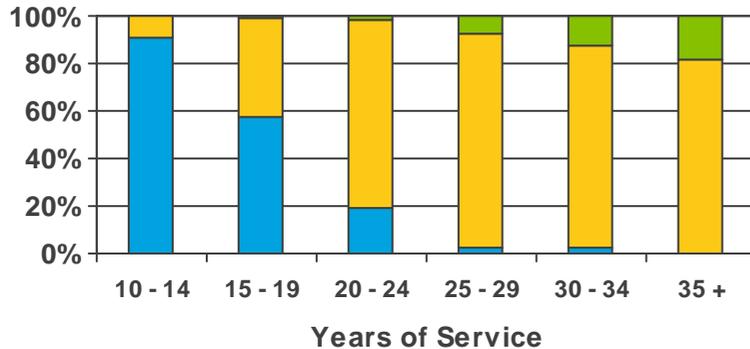
- Actuarial methods divide the cost of future benefit payments between contributions to the System and expected investment earnings of the System by using an assumed earnings rate assumption.
 - A higher assumed earnings rate generally reduces contribution rates by assuming investment earnings will pay for a greater proportion of the benefits.
 - However, if the higher assumed earnings rate is not achieved, the effect is to defer costs to the future possibly impacting generational equity.
- Oregon PERS is unique in that the assumed earnings rate also affects:
 - Conversion of account balances to Money Match (and Pension plus Annuity) benefits
 - Guaranteed rate of return on Tier 1 member regular accounts
- We modeled the impact of changing the assumed earnings rate from 8.0% to 7.5%. Please note that the assumption change does not reflect any change in the OIC's investment policy or the investment returns generated by our financial projection model.

Impact of Reducing Assumed Earnings Rate

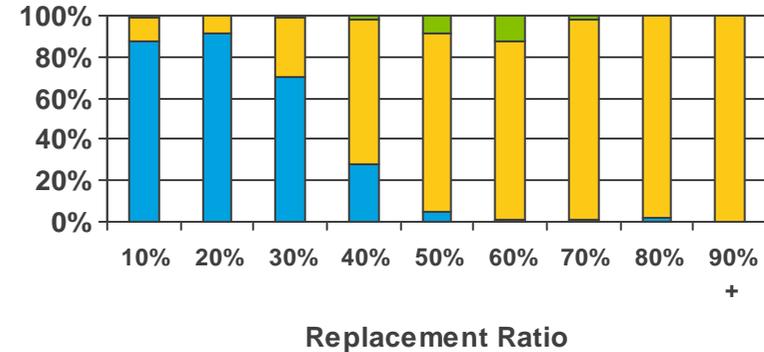
Impact on Benefits



Tier 1 General Service



Tier 1 General Service



- Reducing the assumed earnings rate would affect Money Match and Pension Plus Annuity benefits
- Based on our prior analyses, Tier 1 General Service members with more than 20 years of service are likely to receive Money Match benefits
- To illustrate the impact of reducing the assumed earnings rate, we estimated the average account balance and salary for members age 50, 55, and 60 with more than 20 years of service

Impact of Reducing Assumed Earnings Rate

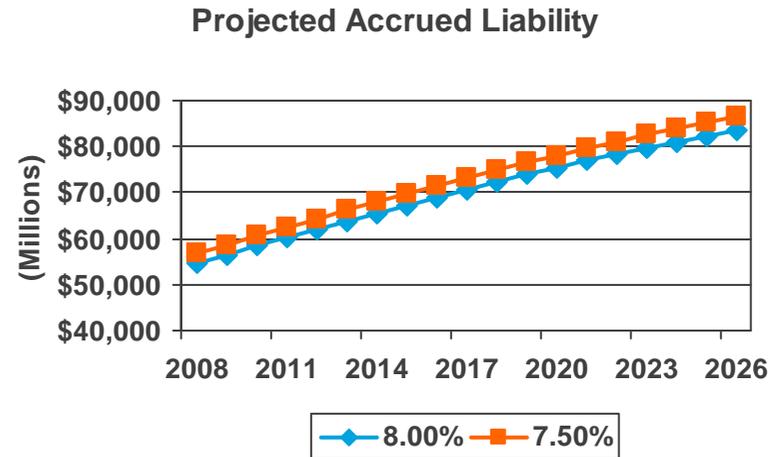
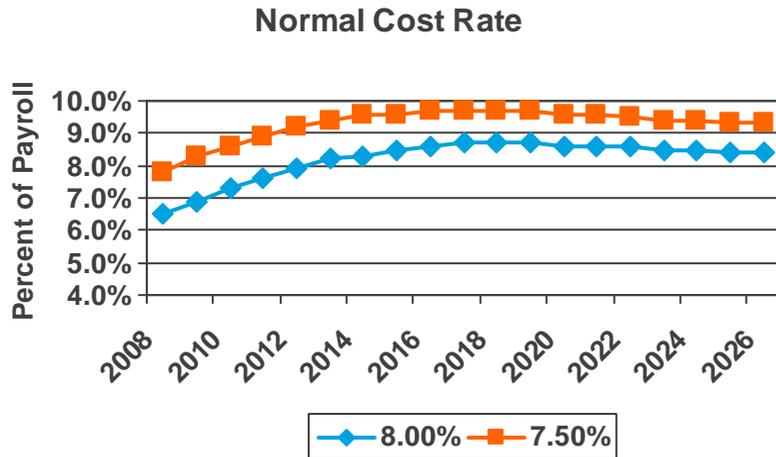
Impact on Money Match Benefits

Current Age	Current Pay	Current Account Balance	Age 60 Rep Ratio @ 8%	Age 60 Rep Ratio @ 7.5%	Percent Benefit Change	Months Delay to Restore
60	\$61,000	\$236,000	74%	71%	-4.0%	7
55	\$60,000	\$195,000	76%	72%	-6.2%	11
50	\$61,000	\$150,000	71%	65%	-8.3%	15

- Reducing the assumed earnings rate from 8.0% to 7.5% would reduce the Money Match benefit of a member retiring immediately by about 4%, requiring the member to retire 7 months later to receive the same starting benefit amount
- Over time, the difference between an 8.0% rate guarantee and a 7.5% rate guarantee would further erode the Money Match benefit
- Full Formula benefits would not be affected by the change and Pension Plus Annuity benefits would be affected approximately half as much as Money Match benefits

Impact of Reducing Assumed Earnings Rate

Impact on Projected Normal Cost and Accrued Liability



- Reducing the assumed earnings rate would increase the normal cost significantly and the accrued liability slightly
- Because the system is heavily weighted toward retirees and Money Match benefits, the impact on accrued liability is much smaller than it would be for many other retirement systems

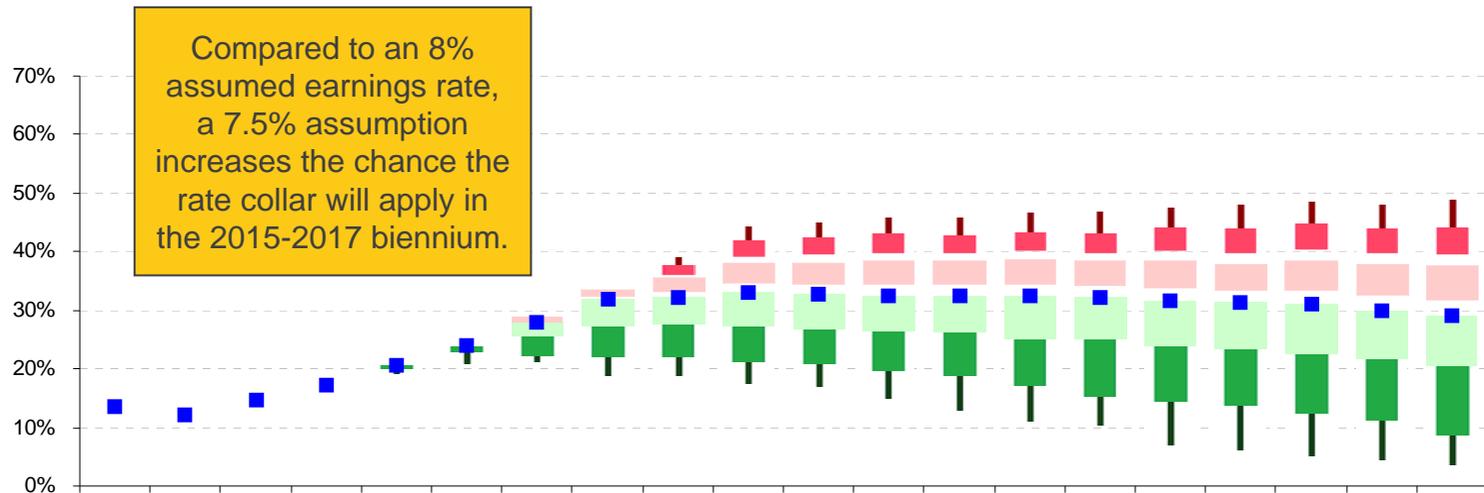
Impact of Reducing Assumed Earnings Rate

Combined Payroll Weighted Contribution Rate

Rate Collar Applied – No Side Accounts

After the short-term impact of the rate collar, contribution rates are about 100 to 200 basis points higher than those for an 8.0% assumed earnings rate.

Combined Contribution Rate (prior to side account rate relief)



For PY Ending 12/31	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
5th	13%	12%	15%	17%	21%	24%	29%	34%	39%	44%	45%	46%	46%	46%	47%	47%	48%	48%	48%	49%
10th	13%	12%	15%	17%	21%	24%	29%	34%	38%	42%	43%	43%	43%	43%	43%	44%	44%	45%	44%	44%
25th	13%	12%	15%	17%	21%	24%	29%	33%	36%	38%	38%	38%	39%	39%	38%	38%	38%	38%	38%	38%
50th	13%	12%	15%	17%	21%	24%	28%	32%	32%	33%	33%	32%	32%	32%	32%	32%	31%	31%	30%	29%
75th	13%	12%	15%	17%	21%	24%	26%	27%	28%	27%	27%	26%	26%	25%	25%	24%	23%	23%	22%	21%
90th	13%	12%	15%	17%	20%	23%	22%	22%	22%	21%	21%	20%	19%	17%	15%	14%	14%	12%	11%	9%
95th	13%	12%	15%	17%	19%	21%	21%	19%	19%	18%	17%	15%	13%	11%	10%	7%	6%	5%	5%	4%

Impact of Reducing Assumed Earnings Rate Funded Status

Compared to an 8% assumed earnings rate, a 7.5% assumption reduces the funded status in the first half of the projection, but increases the funded status in the latter part of the projection even though the measured liability is greater.

Combined Funded Status (excluding side accounts)



At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	71%	70%	75%	78%	81%	84%	90%	92%	96%	102%	106%	114%	115%	121%	127%	129%	135%	142%	151%	160%
90th	71%	68%	72%	74%	75%	78%	81%	84%	86%	90%	94%	99%	103%	106%	112%	114%	120%	128%	134%	141%
75th	71%	65%	66%	66%	67%	67%	69%	71%	74%	76%	79%	80%	84%	88%	91%	94%	98%	104%	110%	115%
50th	71%	62%	61%	59%	58%	59%	59%	60%	61%	63%	66%	67%	70%	72%	74%	78%	82%	85%	89%	93%
25th	71%	59%	56%	54%	52%	51%	50%	51%	51%	53%	54%	56%	57%	60%	62%	64%	67%	70%	73%	76%
10th	71%	57%	52%	49%	47%	45%	44%	43%	43%	44%	46%	48%	48%	50%	51%	53%	56%	59%	62%	63%
5th	71%	55%	50%	46%	44%	42%	41%	40%	40%	41%	42%	43%	44%	46%	46%	48%	50%	52%	55%	58%

Impact of Reducing Assumed Earnings Rate

Tier 1 Rate Guarantee Reserve

Under a 7.5% assumed earnings rate, the Tier 1 Rate Guarantee Reserve is still unlikely to recover from its current deficit. However, the amount of the deficit is about \$1 billion less at the end of the projection.

Tier 1 Rate Guarantee Reserve



(\$billions)

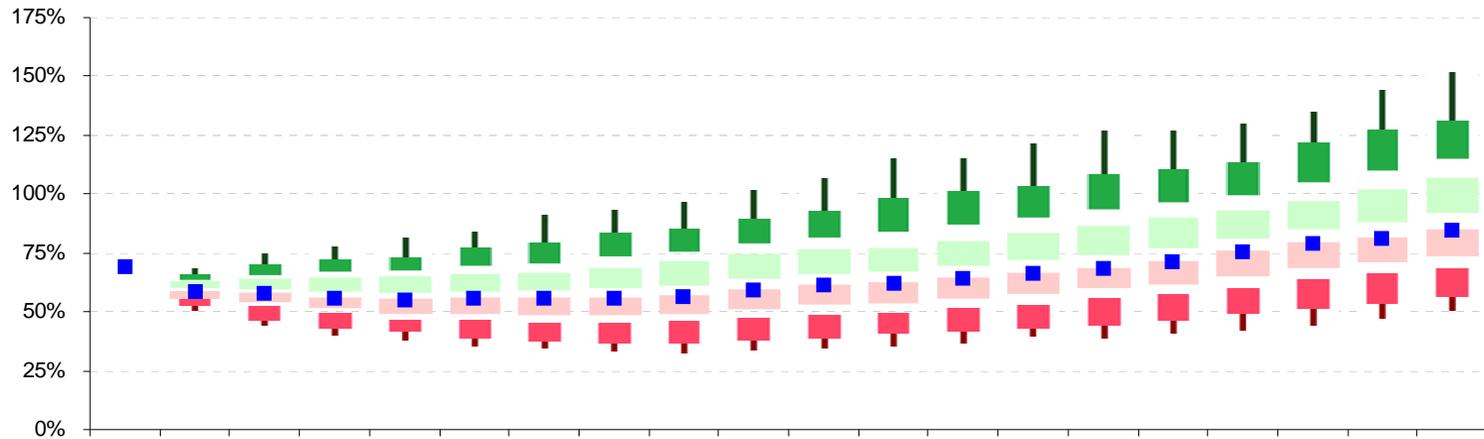
At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	(1)	(1)	(0)	0	0	0	1	1	1	1	1	1	1	1	1	2	2	2	2	2
90th	(1)	(1)	(1)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(1)	(1)
75th	(1)	(1)	(1)	(1)	(1)	(1)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(3)	(3)	(3)	(3)	(4)	(4)
50th	(1)	(2)	(2)	(2)	(2)	(2)	(3)	(3)	(3)	(3)	(3)	(4)	(4)	(4)	(5)	(5)	(5)	(6)	(6)	(7)
25th	(1)	(2)	(2)	(3)	(3)	(3)	(3)	(4)	(4)	(4)	(5)	(5)	(5)	(6)	(6)	(7)	(8)	(8)	(9)	(10)
10th	(1)	(2)	(3)	(3)	(4)	(4)	(4)	(4)	(5)	(5)	(6)	(6)	(7)	(7)	(8)	(9)	(10)	(11)	(12)	(14)
5th	(1)	(3)	(3)	(4)	(4)	(4)	(4)	(5)	(5)	(6)	(6)	(7)	(7)	(8)	(9)	(10)	(11)	(13)	(14)	(16)

Impact of Reducing Assumed Earnings Rate

Net Combined Funded Status

If the Rate Guarantee Reserve is not restored through contributions, accounting for the projected deficit reduces the system-wide funded status 7% to 8% compared to 8% to 10% using an 8% assumed earnings rate.

Net Combined Funded Status (including rate guarantee reserve, excluding side accounts)



At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	69%	68%	75%	78%	81%	84%	91%	93%	97%	101%	106%	115%	115%	121%	127%	127%	130%	135%	144%	152%
90th	69%	66%	71%	73%	74%	78%	80%	84%	85%	89%	93%	99%	101%	104%	109%	111%	114%	122%	128%	131%
75th	69%	63%	64%	64%	65%	65%	66%	68%	71%	74%	76%	77%	80%	83%	86%	89%	93%	97%	101%	107%
50th	69%	59%	58%	56%	55%	55%	55%	56%	57%	59%	61%	62%	64%	66%	68%	72%	75%	79%	81%	85%
25th	69%	56%	52%	49%	47%	46%	45%	45%	46%	47%	48%	50%	51%	53%	56%	57%	60%	63%	67%	69%
10th	69%	53%	47%	43%	42%	39%	38%	37%	37%	38%	39%	41%	42%	43%	45%	46%	49%	51%	53%	56%
5th	69%	51%	45%	40%	38%	35%	34%	33%	33%	34%	35%	35%	37%	39%	39%	41%	42%	44%	48%	51%

Impact of Reducing Assumed Earnings Rate

Observations

- Projected benefit payments are reduced by changing Money Match conversion factors and reducing the Tier 1 Rate Guarantee. The benefit reductions narrow the spread between Money Match and Full Formula benefits.
- Has no impact on contribution rates in the short-term (due to the rate collar), but increases contribution rates 100 to 200 basis points over the long-term
- Reduces the funded status in the short-term due to the higher measure of the liability
- Improves the funded status in the long-term as a result of the higher contributions and the reductions to certain benefits
- Produces a smaller deficit and a slightly greater probability of achieving a positive balance in the Tier 1 Rate Guarantee Reserve over time



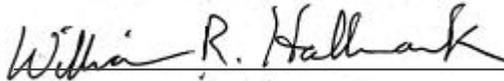
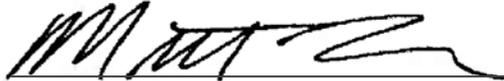
Appendix

Appendix

Projection Certification

The projections in this report are based on the data, methods, assumptions and plan provisions described in the Oregon Public Employees Retirement System actuarial valuation report as of December 31, 2007. The liabilities, costs and other information projected in this report were determined in accordance with generally accepted actuarial principles and procedures. Actual experience, however, could differ from these assumptions and may produce results that differ materially and significantly from this report.

We are available to answer any questions on the material contained in the report, or to provide explanations or further details as may be appropriate.

 May 29, 2009 Date	 May 29, 2009 Date
William R. Hallmark, ASA, MAAA Enrolled Actuary No. 08-5656	Matthew R. Larrabee, FSA, EA, MAAA Enrolled Actuary No. 08-6154
Mercer 111 SW Columbia Street, Suite 500 Portland, OR 97201-5839 503 273 5900	

Appendix

Actuarial Basis

Data

We have based our projection of the liabilities on the data, methods, assumptions and plan provisions described in the December 31, 2007, Actuarial Valuation ("Valuation Report") for the Oregon Public Employees Retirement System.

Assets as of December 31, 2008, were based on values provided by Oregon PERS reflecting the Board's earnings crediting decisions for 2008.

We have assumed that the active participant data reflected in the valuation of the Plan remains stable over the projection period (i.e. – participants leaving employment are replaced by new hires in such a way that the total counts, average age, and average service remain stable from year to year). No new members are assumed to be eligible for Tier 1 and Tier 2 benefits; all new entrants are assumed to become members under the OPSRP benefit formula.

Methods / Policies

Liabilities are based on the Projected Unit Credit method and are rolled forward according to the following rules:

Normal cost: Normal cost increases with assumed wage growth adjusted for wage experience, demographic experience and asset return experience (if applicable). Demographic experience follows assumptions described in the Valuation Report.

Accrued liability: Liabilities increase with normal cost and decrease with benefit payments. Results are adjusted for wage, demographic and asset experience (if applicable).

Contribution Rates: The projected contribution rates are calculated on each odd valuation date in accordance with methodologies described in the Valuation Report. Rates are applied 18 months after the determination date.

Expenses: Administration expenses were assumed to be equal to \$8.5M plus .05% of Market Value of Assets.

Actuarial Value of Assets: Equal to Market Value of Assets excluding Contingency, Capital Preservation and Tier 1 Rate Guarantee Reserves

Appendix

Actuarial Basis

Investment Policy

General Accounts were assumed to be invested as follows: 46% Global Equity; 11% Real Estate; 16% Private Equity; 27% Fixed Income. Variable Accounts were assumed to be invested in 100% Global Equity.

Assumptions

In general, all assumptions are as described in the Valuation Report.

The major assumptions used in our projections are shown below. They are aggregate average assumptions that apply to the whole population and were held constant throughout the projection period. The economic experience adjustments were allowed to vary in future years given the conditions defined in each economic scenario.

- Valuation interest rate — 8.00%
- General Accounts Growth — 8.00%
- Variable Account Growth — 8.50%
- Wage growth assumption — 3.75%
- Wage growth experience — inflation + 1.25%
- Demographic experience — reflects decrement assumptions as described in the Valuation Report.
- Actual Investment earnings are based on Mercer's Capital Market Outlook reflecting actual market experience through 3/31/2009.

Reserve Projections

Contingency Reserve as of 12/31/2008 was estimated to be \$663.2M. No future increases or decreases from this reserve were assumed.

Capital Preservation Reserve was assumed to be \$0 throughout the projection period.

Tier 1 Rate Guarantee Reserve ("T1RGR") was estimated to be a deficit of \$M as of 12/31/2008. The reserve was assumed to grow with returns in excess of 8% on Tier 1 Member Accounts plus T1RGR. When aggregate returns were below 8%, applicable amounts from the T1RGR were transferred to the Tier 1 Member Accounts to maintain the 8% target growth on the member accounts. No contributions were allocated to the T1RGR and the 5-year call on a deficit was not modeled.

Appendix

Stochastic Modeling

- Stochastic (Monte Carlo) Modeling
 - In order to understand the range of outcomes, we employ an economic model of capital markets in which we focus on the three fundamental factors – growth, inflation, and interest rates – that drive capital markets.
 - Thus, if interest rates rise due to inflation, we utilize the same rise in inflation and interest rates in order to calculate returns on bonds and to determine if the discount rate is reasonable.
 - Stochastic modeling is used to help assign probabilities to the various market environments.
 - Our capital market assumptions represent general future expectations and significant volatility around those expectations.
 - We believe this approach accurately addresses “two standard deviation events,” such as the 1973-74 equity market.

Appendix

Capital Market Simulator

Step 1. Generate

- Inflation
- Economic growth

Step 2. Generate

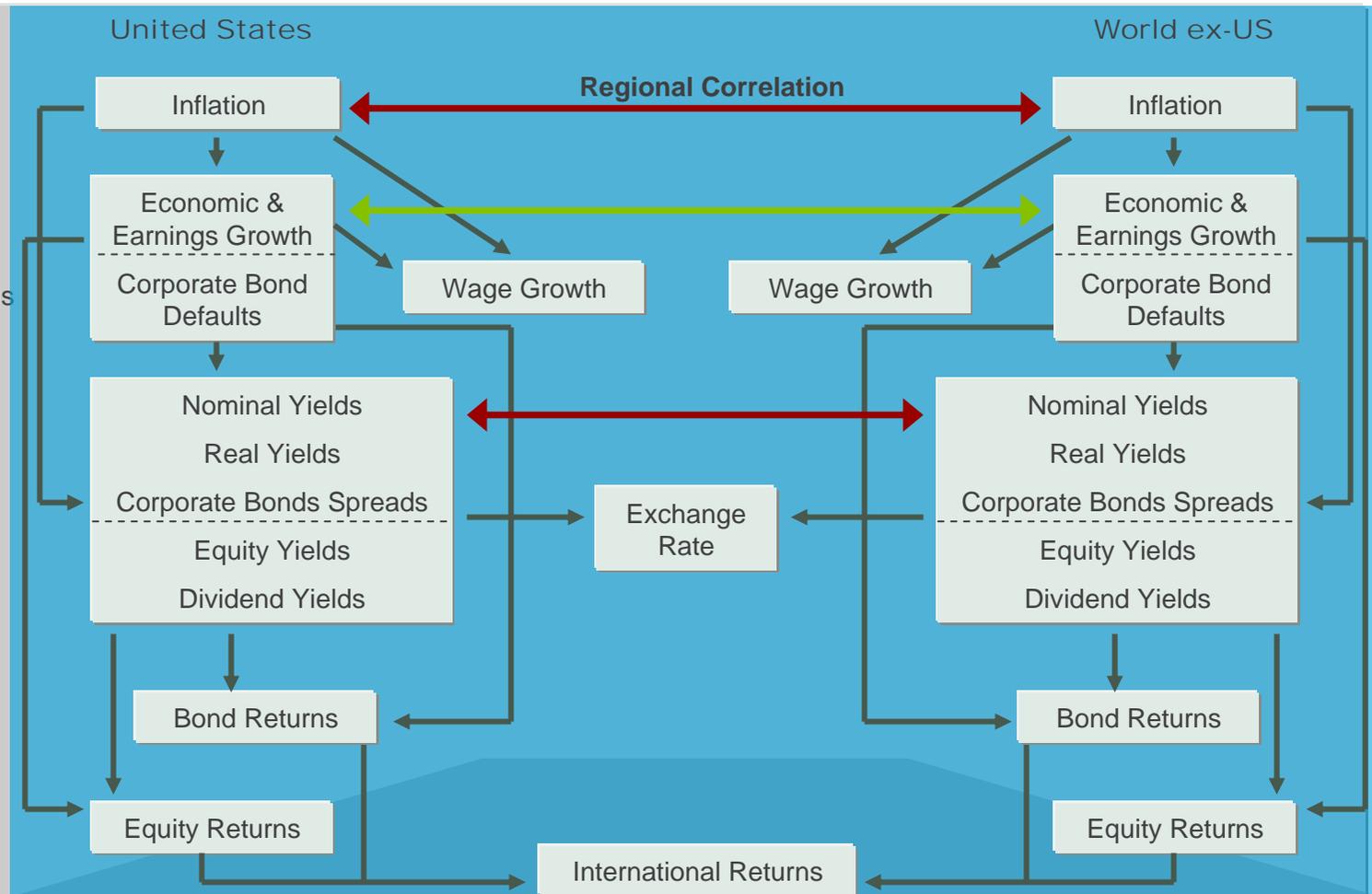
- Nominal yield curve
- Real yield curve
- Equity yields, dividend yields
- Corporate bond spreads

Step 3. Determine change in exchange rates

Step 4. Compute

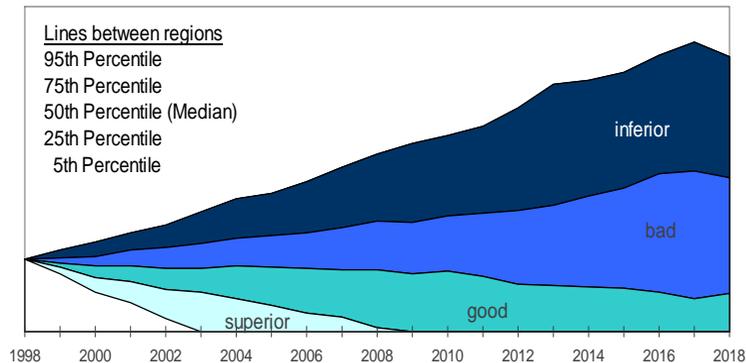
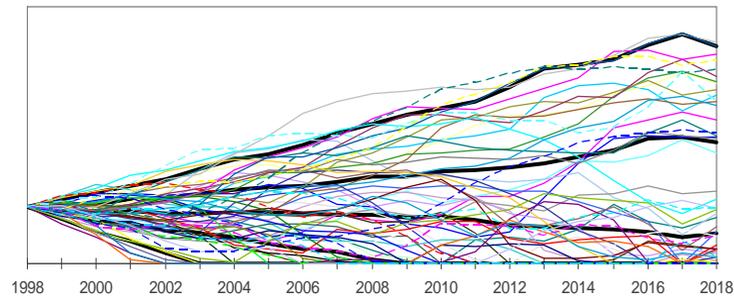
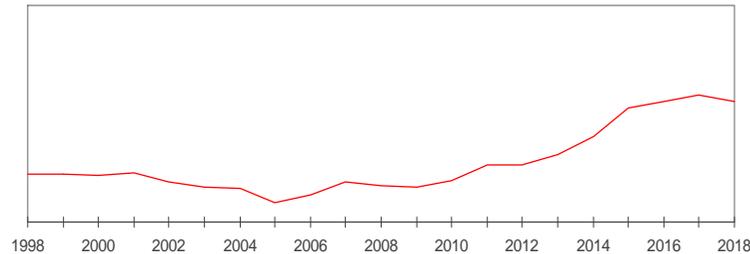
- Bond returns
- Equity returns

Step 5. Determine Int'l returns



Appendix

Simulation Framework – Unfunded Liabilities Illustrated



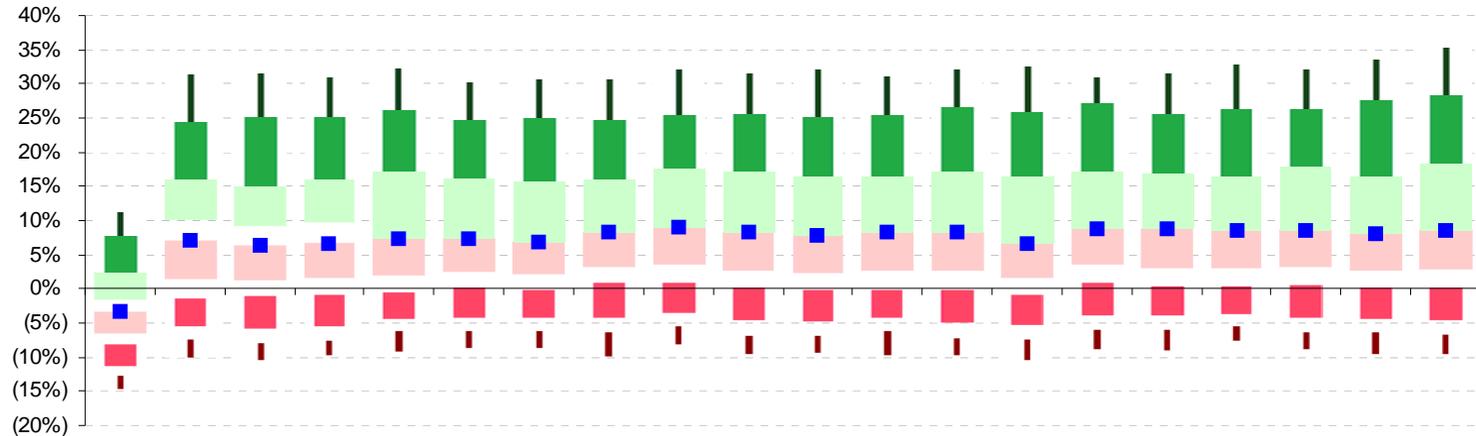
- Results are calculated for one path of the stochastic model
- This is repeated 1000 times
- Each year is percentiled
- The percentiles group each years' results into regions
- The good and bad regions represent 25% variance from median results, or together what would be expected half of the time
- The superior and inferior regions add another 20% of upside and downside variance
- All the regions combined show 90% of simulated results

Appendix

Annual Asset Return (General Accounts)

Asset Return (General Accounts)

Investment returns for 2009 reflect actual returns through March.



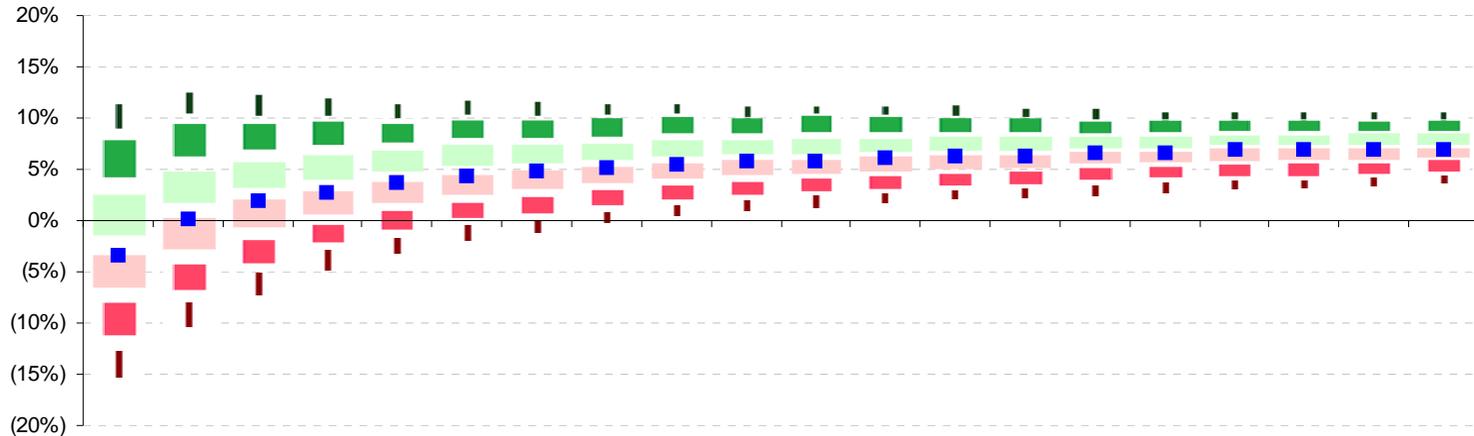
For PY Ending 12/31	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
95th	11%	31%	32%	31%	32%	30%	31%	31%	32%	32%	32%	31%	32%	33%	31%	31%	33%	32%	33%	35%
90th	8%	25%	25%	25%	26%	25%	25%	25%	26%	26%	25%	25%	27%	26%	27%	26%	26%	27%	28%	28%
75th	2%	16%	15%	16%	17%	16%	16%	16%	18%	17%	16%	17%	17%	17%	17%	17%	17%	18%	16%	18%
50th	(3%)	7%	6%	7%	7%	7%	7%	8%	9%	8%	8%	8%	8%	7%	9%	9%	9%	9%	8%	9%
25th	(8%)	(1%)	(1%)	(1%)	(1%)	0%	(0%)	1%	1%	0%	(0%)	(0%)	(0%)	(1%)	1%	0%	0%	1%	0%	0%
10th	(13%)	(8%)	(8%)	(8%)	(6%)	(6%)	(6%)	(6%)	(6%)	(7%)	(7%)	(6%)	(7%)	(7%)	(6%)	(6%)	(5%)	(6%)	(6%)	(7%)
5th	(15%)	(11%)	(11%)	(11%)	(11%)	(10%)	(9%)	(11%)	(9%)	(11%)	(10%)	(11%)	(11%)	(11%)	(10%)	(10%)	(8%)	(10%)	(11%)	(11%)

Appendix

Cumulative Asset Return (General Accounts)

Geometric Asset Return (General Accounts)

Investment returns for 2009 reflect actual returns through March.



For PY Ending 12/31	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
95th	11%	12%	12%	12%	11%	12%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	10%	10%	10%	10%
90th	8%	9%	9%	10%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
75th	2%	5%	6%	6%	7%	7%	7%	7%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
50th	(3%)	0%	2%	3%	4%	4%	5%	5%	5%	6%	6%	6%	6%	6%	7%	7%	7%	7%	7%	7%
25th	(8%)	(4%)	(2%)	(0%)	1%	2%	2%	3%	3%	4%	4%	4%	5%	5%	5%	5%	5%	5%	6%	6%
10th	(13%)	(8%)	(5%)	(3%)	(2%)	(1%)	(0%)	1%	1%	2%	2%	3%	3%	3%	3%	4%	4%	4%	4%	4%
5th	(15%)	(10%)	(7%)	(5%)	(3%)	(2%)	(1%)	(0%)	0%	1%	1%	2%	2%	2%	2%	3%	3%	3%	3%	4%

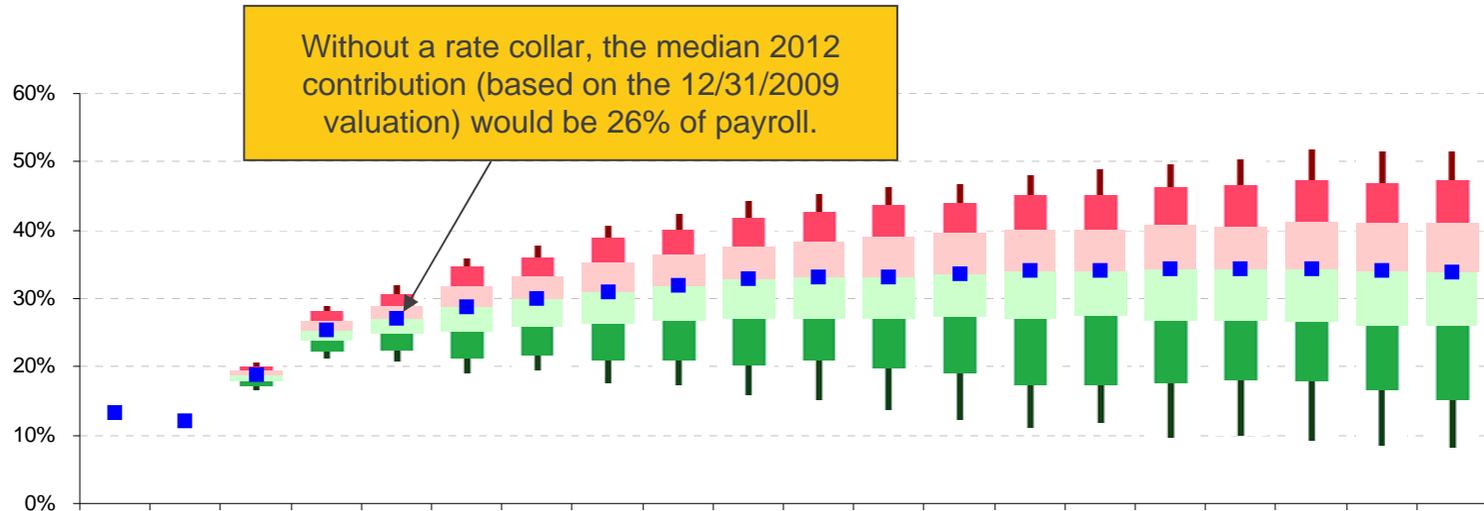
Appendix

Baseline Projections – No Side Accounts

Tier 1/Tier 2 Contribution Rate - No Rate Collar

The decrease in asset levels since 2007 substantially increases the Tier 1/Tier 2 Unfunded Accrued Liability (UAL). The higher UAL triggers increased contributions for 20 years starting in mid-2011.

Tier 1 / Tier 2 Contribution Rate (prior to application of collar and side account rate relief)



For PY Ending 12/31	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
5th	13%	12%	20%	29%	32%	36%	38%	41%	42%	44%	45%	46%	47%	48%	49%	50%	50%	52%	52%	51%
10th	13%	12%	20%	28%	31%	35%	36%	39%	40%	42%	43%	44%	44%	45%	45%	46%	47%	47%	47%	47%
25th	13%	12%	20%	27%	29%	32%	33%	35%	36%	38%	39%	39%	40%	40%	40%	41%	41%	41%	41%	41%
50th	13%	12%	19%	26%	27%	29%	30%	31%	32%	33%	33%	33%	34%	34%	34%	34%	34%	34%	34%	34%
75th	13%	12%	18%	24%	25%	25%	26%	26%	27%	27%	27%	27%	27%	27%	28%	27%	27%	27%	26%	26%
90th	13%	12%	17%	22%	23%	21%	22%	21%	21%	20%	21%	20%	19%	17%	17%	18%	18%	18%	17%	15%
95th	13%	12%	17%	21%	21%	19%	20%	18%	17%	16%	15%	14%	12%	11%	12%	10%	10%	9%	8%	8%

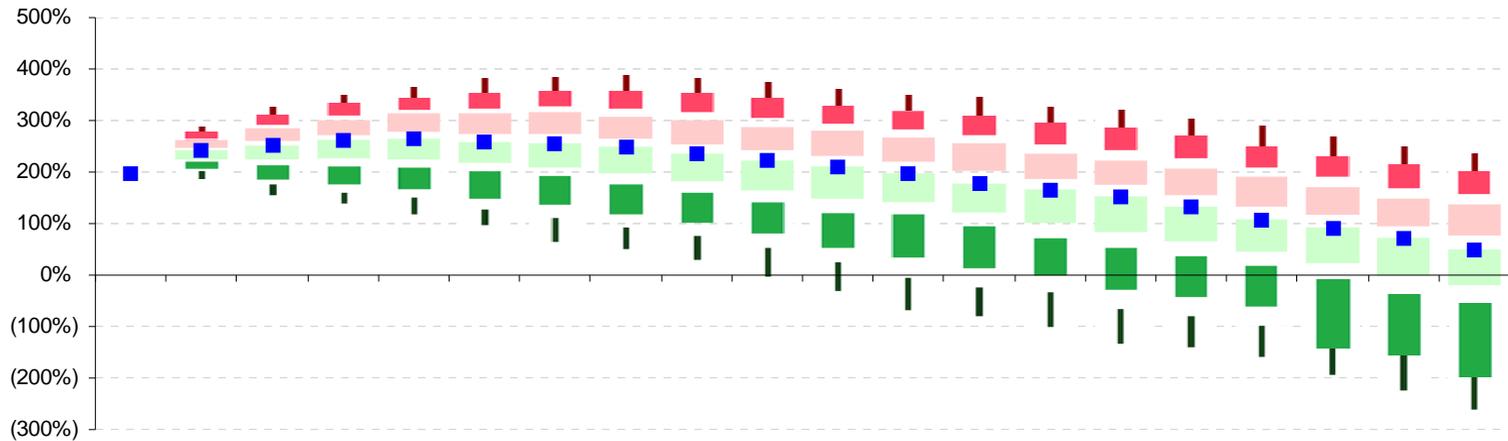
Appendix

Baseline Projections – No Side Accounts

Total UAL as Percent of Payroll

The Unfunded Actuarial Liability (UAL) as a percentage of payroll is projected to grow in most cases for the next several years before declining. The ultimate downward trend illustrates the sustainability of the system assuming the contribution rates are affordable.

Combined Unfunded Accrued Liability as % of Payroll



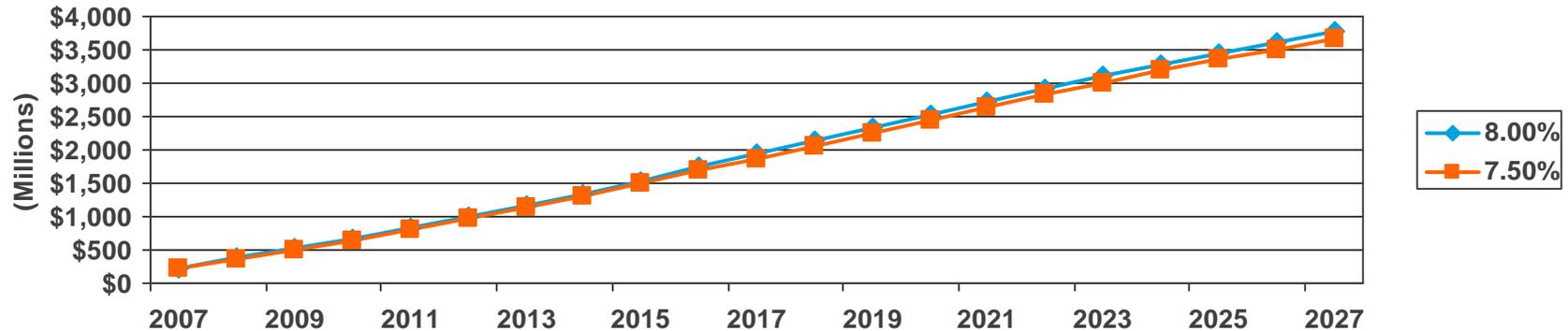
For PY Ending 12/31	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
5th	198%	287%	326%	350%	364%	380%	384%	387%	381%	373%	363%	349%	344%	326%	321%	302%	290%	269%	250%	234%
10th	198%	279%	312%	335%	344%	356%	358%	359%	356%	345%	331%	319%	311%	296%	287%	270%	251%	231%	217%	202%
25th	198%	261%	283%	301%	311%	312%	316%	307%	301%	288%	279%	268%	256%	235%	221%	206%	191%	171%	150%	135%
50th	198%	243%	250%	260%	264%	257%	255%	249%	236%	222%	209%	196%	177%	163%	152%	132%	106%	89%	71%	50%
75th	198%	221%	214%	210%	207%	200%	189%	175%	158%	139%	120%	115%	94%	70%	51%	35%	17%	(10%)	(39%)	(56%)
90th	198%	200%	173%	159%	149%	127%	108%	89%	75%	51%	23%	(6%)	(26%)	(37%)	(69%)	(81%)	(101%)	(141%)	(156%)	(198%)
95th	198%	187%	150%	133%	107%	85%	45%	31%	9%	(31%)	(57%)	(97%)	(105%)	(132%)	(165%)	(168%)	(186%)	(216%)	(258%)	(295%)

Appendix

Impact of Reducing Assumed Earnings Rate

Impact on Projected Benefit Payments

Projected Benefit Payments Tier 1/Tier 2 Active Members



- Projected benefit payments from current Tier 1/Tier 2 active employees are a mix of all three benefit formulas and lump sums
- Based on our valuation assumptions, the net effect of reducing the assumed earnings rate would be to reduce projected benefit payments from current active Tier 1/Tier 2 members by approximately 3 percent
- Benefit payments to current dormant members would also be affected

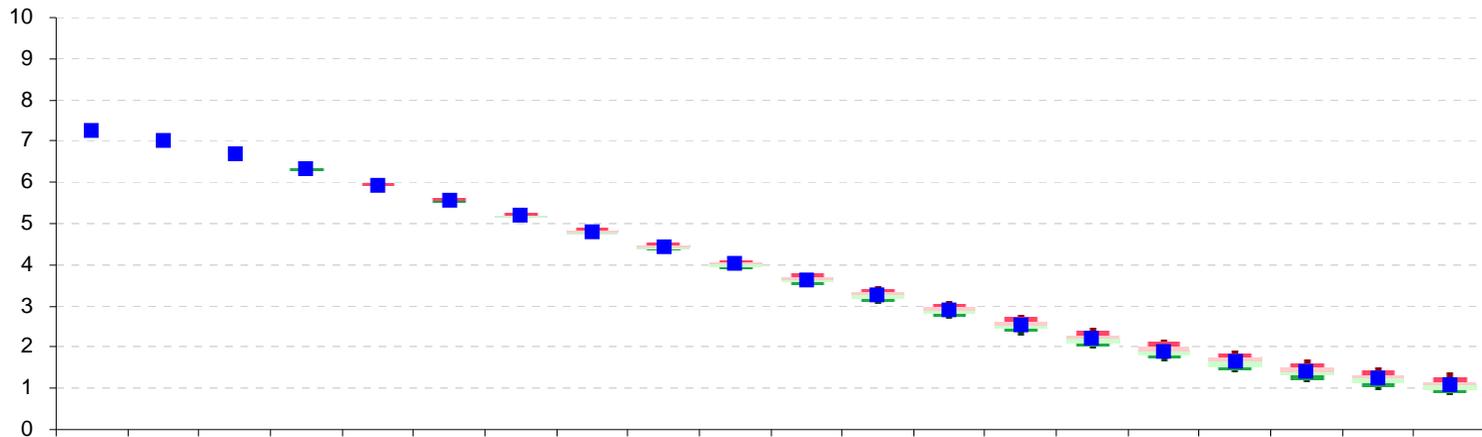
Appendix

Impact of Reducing Assumed Earnings Rate

Tier 1 Member Account Regular Balances

Under a 7.5% assumed earnings rate, the value of Tier 1 Member Regular Accounts is about \$100 million lower for most of the projection period.

Tier 1 Member Regular Accounts



(\$billions)

At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
5th	7.3	7.0	6.7	6.3	6.0	5.6	5.3	4.9	4.5	4.2	3.8	3.5	3.1	2.8	2.5	2.2	1.9	1.7	1.5	1.4
10th	7.3	7.0	6.7	6.3	6.0	5.6	5.2	4.9	4.5	4.1	3.8	3.4	3.1	2.7	2.4	2.1	1.9	1.6	1.4	1.3
25th	7.3	7.0	6.7	6.3	5.9	5.6	5.2	4.9	4.5	4.1	3.7	3.3	3.0	2.6	2.3	2.0	1.8	1.5	1.3	1.2
50th	7.3	7.0	6.7	6.3	5.9	5.6	5.2	4.8	4.4	4.0	3.6	3.3	2.9	2.5	2.2	1.9	1.6	1.4	1.2	1.1
75th	7.3	7.0	6.7	6.3	5.9	5.5	5.2	4.8	4.4	4.0	3.6	3.2	2.8	2.4	2.1	1.8	1.5	1.3	1.1	1.0
90th	7.3	7.0	6.7	6.3	5.9	5.5	5.1	4.7	4.3	3.9	3.5	3.1	2.7	2.4	2.0	1.7	1.5	1.2	1.0	0.9
95th	7.3	7.0	6.7	6.3	5.9	5.5	5.1	4.7	4.3	3.9	3.5	3.1	2.7	2.3	2.0	1.7	1.4	1.2	1.0	0.8

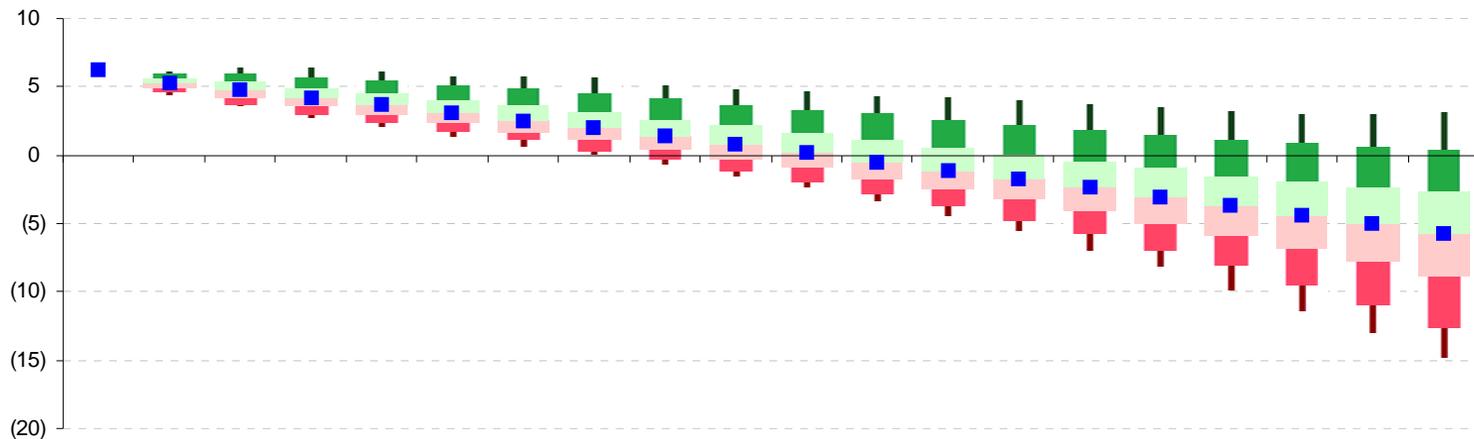
Appendix

Impact of Reducing Assumed Earnings Rate

Net Tier 1 Regular Accounts

Tier 1 Member Regular Accounts + Rate Guarantee Reserve
 Net Tier 1 Regular Accounts

Under a 7.5% assumed earnings rate, the point at which the net Tier 1 member accounts reaches \$0 is about 1 year later than at 8.0%.



(\$billions)

At PY Ending 12/31	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
95th	6	6	6	6	6	6	6	6	5	5	5	4	4	4	4	4	3	3	3	3
90th	6	6	6	6	6	5	5	5	4	4	3	3	3	2	2	2	1	1	1	0
75th	6	6	5	5	5	4	4	3	3	2	2	1	1	0	(0)	(1)	(1)	(2)	(2)	(3)
50th	6	5	5	4	4	3	3	2	1	1	0	(0)	(1)	(2)	(2)	(3)	(4)	(4)	(5)	(6)
25th	6	5	4	4	3	2	2	1	0	(0)	(1)	(2)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
10th	6	5	4	3	2	2	1	0	(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(11)	(13)
5th	6	4	4	3	2	1	1	0	(1)	(2)	(2)	(3)	(4)	(6)	(7)	(8)	(10)	(11)	(13)	(15)

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