ACTUARIAL SHORTFALL AND CONTRIBUTION RATES

OREGON PUBLIC EMPLOYEES RETIREMENT SYSTEM

November 30, 2012

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The Shortfall

- In the last pre-downturn actuarial valuation (12/31/07), OPERS had a $1 billion shortfall*
- In the first post-downturn valuation (12/31/08), shortfall* increased to $16 billion
- In the three years subsequent to that valuation, annual investment returns averaged 11%, exceeding assumption
- At the end of that three year period, the most recent valuation (12/31/11) indicated a shortfall* of $16 billion
- Why is the shortfall unchanged despite strong investment results?

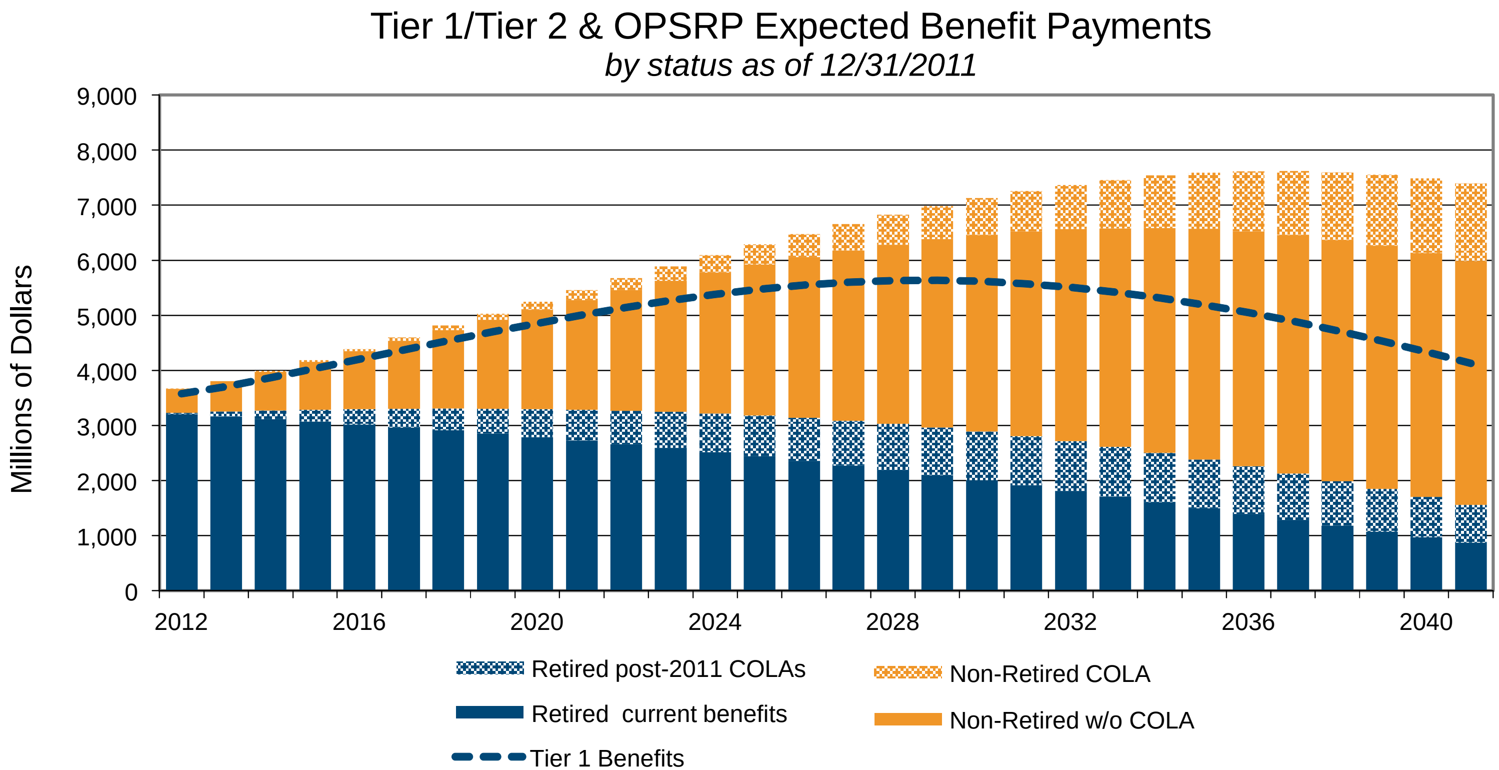
** Excluding side account assets*

Contributions To Address Shortfall

- The shortfall is unchanged due to two offsetting factors
  - Investment results above expectation from 2009 to 2011
  - Contribution rates through June 2011 were based on the pre-downturn valuation and the $1 billion shortfall level
- At July 2011 payroll rates increased (3.9% base rate; 5.6% net rate)
  - This was a first step toward resetting rates so that the shortfall can be addressed over twenty years if all assumptions, including the 8% investment return assumption, are met
- A second step increase effective July 2013 (5.1% base rate; 4.9% net rate) was approved at the last Board meeting
- The rate collar methodology spreads needed changes in rates over multiple periods

Determination of Liabilities

- Liabilities are calculated from projected benefit payments
- Projected benefit payments are well defined in the near-term
- 68% of system liability is for retired and inactive members



Effect of Investment Assumption on Shortfall

- The methodology for the $16 billion shortfall and July 2013 rates uses an 8% annual future investment return assumption
- A lower assumption would produce a higher calculated shortfall
  – Current system assets, plus assumed future investment returns, would be expected to fund a smaller portion of projected benefits

BENEFITS + EXPENSES = EARNINGS + CONTRIBUTIONS

- Actual investment earnings and "full formula" pension benefits are <u>not</u> affected by the investment return assumption

Contribution Rate Components

- "Base" pension contribution rates have two funding sources:
  - Employer contributions
  - Transfers from employer side accounts
- Those rates have two major components:
  - Normal Cost Rate – Economic value of benefits for current year service
  - UAL Rate – Amortization of shortfalls related to past service
- The 2013 rate increase is to address the past service shortfalls

Base Pension Rate Component	2011-2013	2013-2015
Normal Cost Rate	7.96% of payroll	8.16% of payroll
UAL Rate	7.80% of payroll	12.62% of payroll

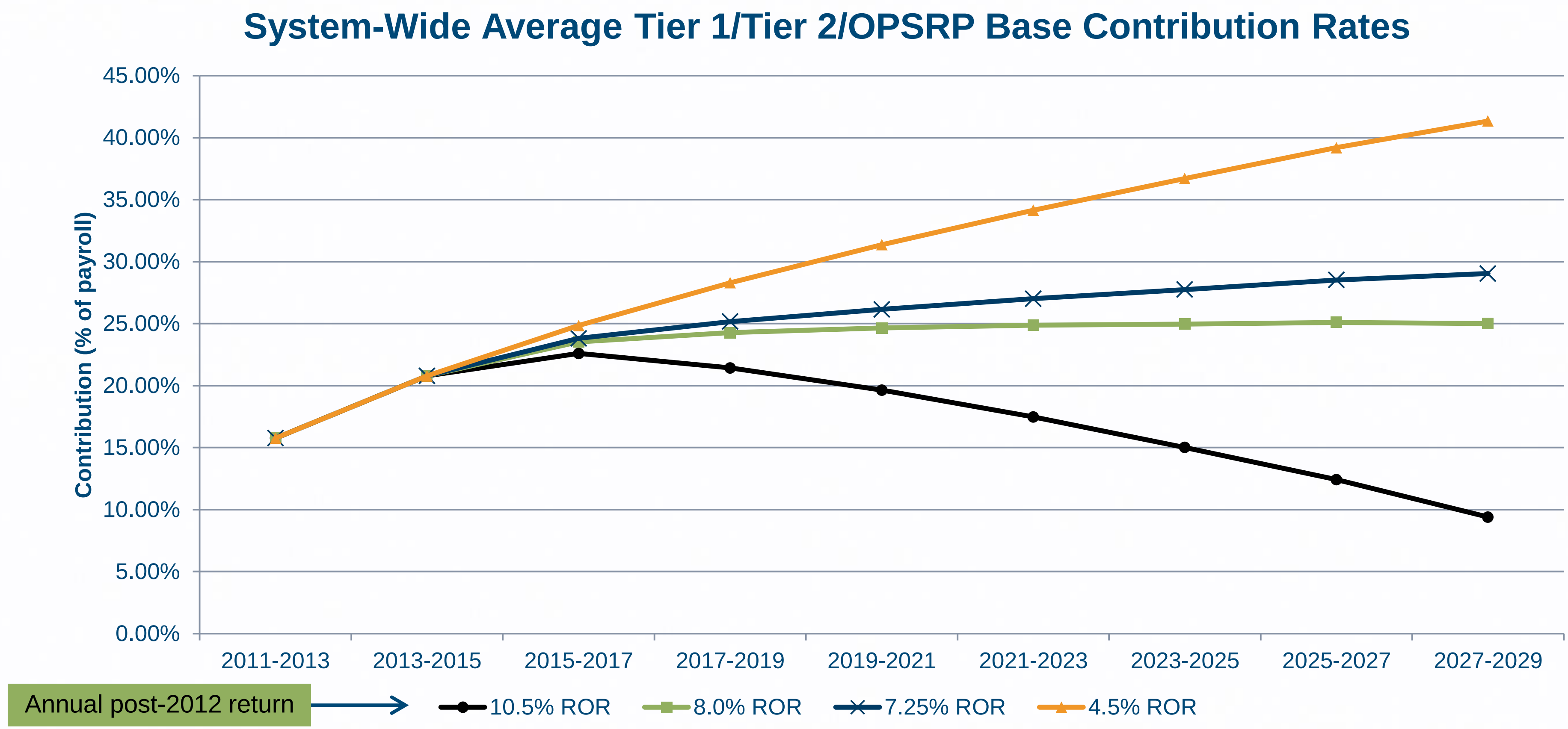
Likelihood of Future Rate Decreases

- Are 2013 increases likely permanent or temporary?
- Are 2013 rates likely long-term or short-term budget items?

> *Barring future investment performance above assumption, rates are more likely than not to be at 2013-2015 levels (or higher) for the foreseeable future*

- The following slides show system average base employer contribution rates and funded status under a variety of annual investment return scenarios
  - Year-to-date investment performance through October 31 is reflected
  - Shortfall and employer rates are based on the 8% annual investment return assumption and the current rate-setting methodology

Contribution Rate Projections



Base contribution rates do not reflect the effects of side account rate offsets and Pre-SLGRP liabilities, and do not include contribution rates for the IAP, retiree healthcare programs or payments for debt servicing on Pension Obligation Bonds.

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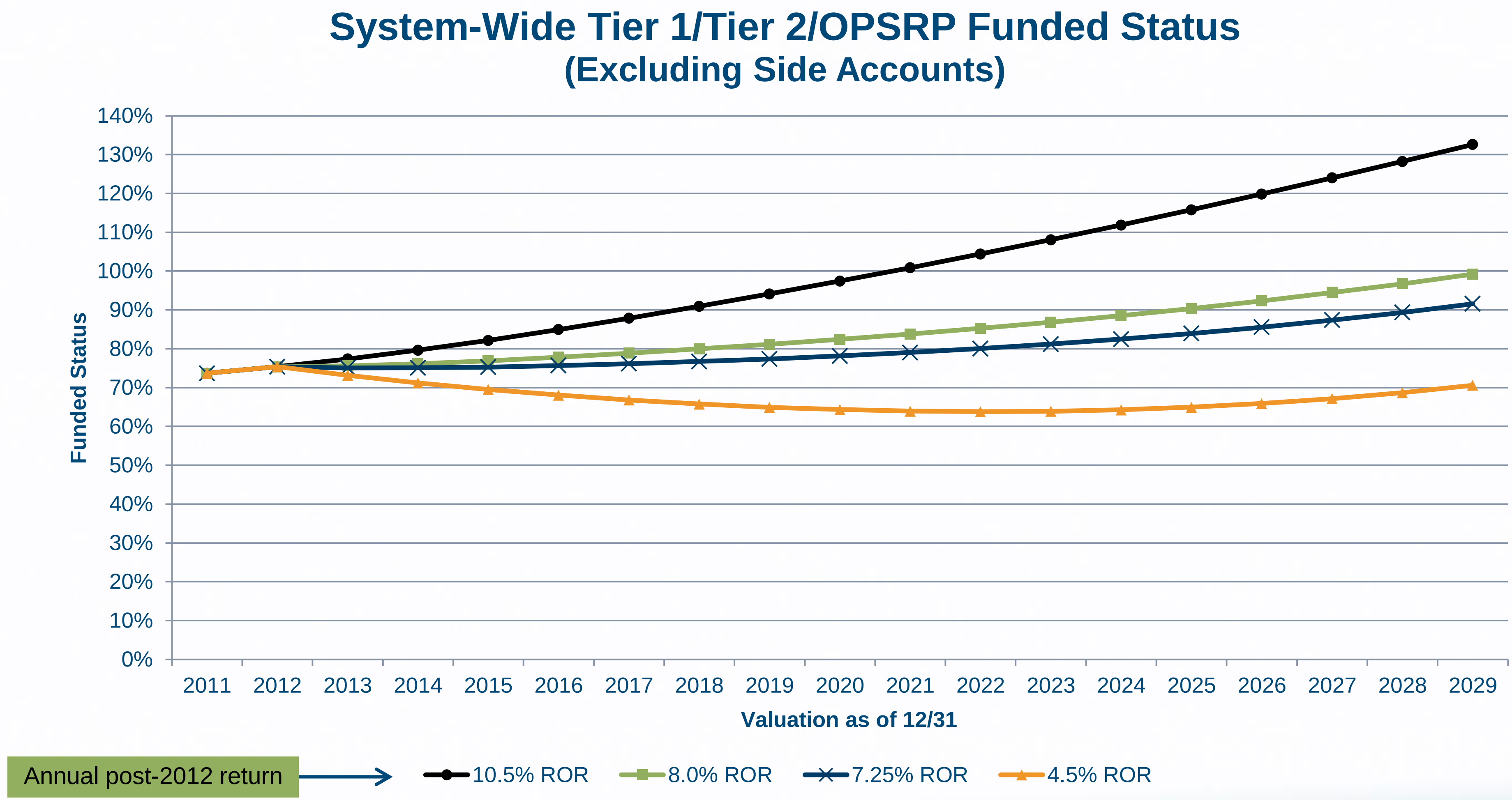
Funded Status Projections



Areas to Consider - Assessing Concepts

- Initial impact studies of potential change concepts usually focus on a single point in time and a single set of assumptions
- Deviations from assumptions
  - Investment results
  - Changes in member behavior (e.g., retirement patterns)
  - Changes in employer behavior or bargaining outcomes
- Varying effects on individuals compared to system-wide impact
- Effects on the fundamental cost equation
  - Some concepts save contribution dollars by altering the left-hand side
  - Others change the timing or anticipated balance on the right-hand side

BENEFITS + EXPENSES = EARNINGS + CONTRIBUTIONS

Certification

This presentation summarizes key results of an actuarial valuation of the Oregon Public Employees Retirement System ("PERS" or "the System") as of December 31, 2011, for the Plan Year ending December 31, 2011 and a projection of those results under a limited number of scenarios.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer our best estimate of anticipated experience affecting the System.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. The PERS Board has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in July 2011. This presentation contains only a limited analysis of the range of potential future measurements due to variation in investment returns.

Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for the System. Actuarial computations presented in this report under GASB Statements No. 25 and 27, 43 and 45 are for purposes of fulfilling financial accounting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. The calculations in this report have been made on a basis consistent with our understanding of the plan provisions described in the appendix of this report, and of GASB Statements No. 25 and 27, 43 and 45. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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The consultants who worked on this assignment are pension actuaries. Milliman’s advice is not intended to be a substitute for qualified legal or accounting counsel.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

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Appendix

Actuarial Basis

Data

We have based our projection of system liabilities on the data supplied by the Oregon Public Employees Retirement System (PERS) and summarized in the December 31, 2011 Actuarial Valuation ("2011 Valuation Report") for Oregon PERS.

Assets as of December 31, 2011, were based on values provided by Oregon PERS as shown in the 2011 Valuation Report. Calendar year 2012 asset returns were assumed to be equal to the year-to-date returns published by the Oregon Investment Council as of October 31, 2012. For regular accounts, this was equal to a 10.73% return; for variable accounts, it is equal to a 12.71% return.

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 a way that the total counts 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

Actuarial Cost Method: Projected Unit Credit, as described in the 2011 Valuation Report.

Normal cost: Normal cost increases with assumed wage growth adjusted for wage, demographic, and asset return experience (if applicable). Demographic experience follow assumptions described in the 2011 Valuation Report.

Accrued liability: Liabilities increase with normal cost and decrease with benefit payments. Results are adjusted for wage, demographic, and asset return experience (if applicable). Demographic experience follow assumptions described in the 2011 Valuation Report.

Contribution Rates: The projected contribution rates are calculated on each odd year valuation date in accordance with methodologies described in the 2011 Valuation Report. Rates are applied 18 months after the valuation date.

Appendix

Actuarial Basis

Methods / Policies (cont'd)

UAL Amortization: The UAL for Tier 1/Tier 2, OPSRP, and Retiree Health Care as of December 31, 2007 are amortized as a level percentage of combined valuation payroll over a closed period. For the Tier 1/Tier 2 UAL, this period is 20 years; for OPSRP, it is 16 years; for Retiree Health Care, it is 10 years. Gains and losses between subsequent odd-year valuations are amortized as a level percentage of combined valuation payroll over the amortization period (20 years for Tier/Tier 1, 16 years for OPSRP, 10 years for Retiree Health Care) from the odd-year valuation in which they are first recognized.

Contribution rate stabilization method: For valuation purposes, contribution rates for a rate pool (e.g. Tier 1/Tier 2 SLGRP, Tier 1/Tier 2 School Districts, OPSRP) are confined to a collar based on the prior contribution rate (prior to application of side accounts, pre-SLGRP liabilities, and 6 percent Independent Employer minimum). The new contribution rate will generally not increase or decrease from the prior contribution rate by more than the greater of 3 percentage points or 20 percent of the prior contribution rate. If the funded percentage excluding side accounts drops below 70% or increases above 130%, the size of the collar doubles. If the funded percentage excluding side accounts is between 70% and 80% or between 120% and 130%, the size of the rate collar is increased on a graded scale.

For system-wide contribution rate projections, the entire Tier 1/Tier 2 program was treated as a single rate pool.

Expenses: OPSRP administration expenses are assumed to be equal to $6.6M and are added to the OPSRP normal cost.

Actuarial Value of Assets: Equal to Market Value of Assets excluding Contingency and Tier 1 Rate Guarantee Reserves. The Tier 1 Rate Guarantee Reserve is not excluded from assets if it is negative (i.e. in deficit status).

Appendix

Actuarial Basis

Assumptions

In general, all assumptions are as described in the 2011 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%
- Tier 1 Regular account growth – 8.00%
- Actual fund investment return– Varies by scenario
- Variable account growth – 0.25% greater than fund investment return
- Wage growth assumption – 3.75%
- Wage growth experience– 3.75%
- Demographic experience – as described in 2011 Valuation report

Reserve Projection

Contingency Reserve as of 12/31/2011 was $535.3M. No future increases or decreases from this reserve were assumed.

The Tier 1 Rate Guarantee Reserve (“RGR”) was $345.3M as of 12/31/2011. The reserve was assumed to grow with returns in excess of 8% on Tier 1 Member Accounts. When aggregate returns were below 8%, applicable amounts from the RGR were transferred to Tier 1 Member Accounts to maintain the 8% target growth on the member accounts. The RGR reserve is allowed to be negative, but the reserve is not excluded from valuation assets when it is negative. We did not include in rates any potential additional employer levy that could be required to eliminate a persistent negative RGR.

Provisions

Provisions valued are as described in the 2011 Valuation Report.