July 31, 2009

2008 Experience Study

Oregon Public Employees Retirement System

MERCER

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Consulting. Outsourcing. Investments.

July 31, 2009

Retirement Board
Oregon Public Employees Retirement System

Subject:
2008 Experience Study – Oregon Public Employees Retirement System

Dear Members of the Board:

The results of the actuarial valuation are based on actuarial methods, procedures and assumptions adopted by the Board. These assumptions are used in developing employer contribution rates, disclosing employer liabilities pursuant to GASB requirements and for analyzing the fiscal impact of proposed legislative amendments.

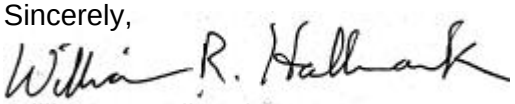
This report has been prepared exclusively for the Oregon Public Employees Retirement System to review historical experience and develop recommended actuarial methods and procedures, economic assumptions, and demographic assumptions to be used in the December 31, 2008 and 2009 actuarial valuations. This report may not be used or relied upon by any other party or for any other purpose; Mercer is not responsible for the consequences of any such unauthorized use.

The analysis in this study was based on data for the experience period from January 1, 2005, to December 31, 2008, as provided by the System. The System is solely responsible for the validity, accuracy and comprehensiveness of this information; the results of our analysis can be expected to differ and may need to be revised if the underlying data supplied is incomplete or inaccurate.

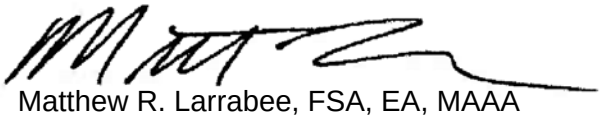
The information contained in this document (including any attachments) is not intended by Mercer to be used, and it cannot be used, for the purpose of avoiding penalties under the Internal Revenue Code that be imposed on the taxpayer.

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. The undersigned credentialed actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.

Sincerely,



William R. Hallmark, ASA, EA, MAAA



Matthew R. Larrabee, FSA, EA, MAAA

AYY/WRH/MRL/sdp/wrh/mrl/bjm:gjw

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1

Executive Summary

This report has been prepared exclusively for the Oregon Public Employees Retirement System (PERS) in order to analyze the system's experience from January 1, 2005, through December 31, 2008, and to develop recommendations for changes in valuation methods, allocation procedures, economic assumptions, and demographic assumptions.

The results of our analysis were presented to the Board on May 29, 2009 and July 16, 2009. The Board adopted the following changes on July 16, 2009.

Actuarial Methods	▪ Eliminate the PUC method change amortization base. ▪ Reduce the RHIA and RHIPA amortization period to 10 years.
Allocation Procedures	▪ Change the Money Match weighting to 50% for General Service members and 15% for Police & Fire members in the prior service segment allocation procedure.
Economic Assumptions	▪ Decrease the OPSRP administrative expense assumption. ▪ Update the healthcare cost trend rates.
Demographic Assumptions	▪ Change healthy mortality assumption from static to generational tables and adjust disability mortality assumption ▪ Add another service band to retirement rates ▪ Assume 0% merit salary increases for 2009 and 2010, consolidate assumptions for the SLGRP and Independent Employers, and minor merit increase adjustments for some groups ▪ Reduce disability incidence rates ▪ Adjust school district and SLGRP termination rates ▪ Adjust partial lump sum percentage, probability of refund percentage, purchase of credited service percentage and unused sick leave percentages for some groups. ▪ Decrease the participation rate assumption for RHIA and RHIPA

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Actuarial Methods and Allocation Procedures

Overview

Actuarial methods and allocation procedures are used as part of the valuation to determine actuarial accrued liabilities, to determine normal costs, to allocate costs to individual employers and to amortize unfunded liabilities. We used the following objectives to recommend actuarial methods and allocation procedures:

- Transparency of costs and funded status
- Predictable and stable employer contribution rates
- Protection of the plan's funded status
- Equity across generations
- Actuarial soundness
- Compliance with GASB requirements

The actuarial methods used for the December 31, 2007 actuarial valuation and the changes adopted for the December 31, 2008 and 2009 actuarial valuations are shown in the table below.

Method	December 31, 2007 Valuation	December 31, 2008 and 2009 Valuations
Cost method	Projected Unit Credit	No change
UAL Amortization method	UAL amortized as a level percent of combined Tier 1/Tier 2 and OPSRP payroll	No change

Actuarial Methods and Allocation Procedures *(continued)*

Method	December 31, 2007 Valuation	December 31, 2008 and 2009 Valuations
UAL Amortization period	▪ UAL due to the PUC method change – rolling three year period ▪ Regular UAL – Closed amortization from the first rate setting valuation in which experience is recognized – Tier 1/Tier 2 – 20 years – OPSRP – 16 Years – RHIA/RHIPA – 20 years ▪ New side accounts – Period ending 12/31/2027 ▪ New transition liabilities – Period ending 12/31/2027 plus PUC method change amortization over a rolling 3 years	▪ Eliminate PUC method change amortization base. ▪ Reduce RHIA/RHIPA amortization period to 10 years
Asset valuation method	Market value	No change
Excluded reserves	Contingency, capital preservation, and rate guarantee	No change
Rate collar	Change in contribution rates limited to greater of 20% of current rate or 300 basis points. Size of collar doubles if funded percentage falls below 80% or increases above 120%. Exclude RHIA and RHIPA (retiree medical) rates from the rate collar calculation.	No change
Allocation of Liability for Service Segments	▪ Allocate Actuarial Accrued Liability 65% (25% for police & fire) based on account balance with each employer and 35% (75% for police & fire) based on service with each employer	Change allocation to 50% (15% for police & fire) based on account balance and 50% (85% for police & fire) based on service with each employer.
	▪ Allocate Normal Cost to current employer	No change

Each of the above methods or procedures is described in greater detail on the following pages.

Actuarial Methods and Allocation Procedures *(continued)*

Actuarial Cost Method

The total cost of the Tier 1/Tier 2 program, over time, will be equal to the benefits paid less investment earnings and is not affected directly by the actuarial cost method. The actuarial cost method is simply a tool to assign costs to past, current or future years and, thus, primarily affects the timing of cost recognition.

After significant analysis, the Board adopted the Projected Unit Credit (PUC) cost method for the December 31, 2004 actuarial valuation. Under the PUC cost method, the normal cost reflects the estimated economic value of benefits earned in the next year based on the adopted investment return assumption, while recognizing that additional accruals under the Money Match formula have ceased. The actuarial accrued liability represents the estimated economic present value of benefits earned based on service to date and projected future compensation and projected interest credits on member accounts. The actuarial accrued liability under this method is always equal to or greater than the value of the benefits earned to date.

We recommend no change to the actuarial cost method.

Amortization Method

The unfunded actuarial liability (UAL) is amortized as a level percentage of combined payroll (Tier 1/Tier 2 plus OPSRP) in order to maintain more level contribution rates as payroll for the closed group of Tier 1/Tier 2 members declines and payroll of OPSRP members increases. We recommend this methodology continue.

When the PUC cost method was first adopted for the December 31, 2004 valuation, the increase in the UAL was established as a separate amortization over a rolling three-year period. The first contribution rates reflecting this amortization were effective July 1, 2007. Rates effective July 1, 2009 through June 30, 2011 include an average rate of approximately 6 percent of payroll for this amortization. By the time the current contribution rates are changed on July 1, 2011, four years of contributions will have been collected toward the 3-year amortization base. Consequently, we recommend eliminating the PUC change amortization from the valuation so it will not be included in contribution rates that become effective July 1, 2011.

The remainder of the UAL is currently amortized over the following closed periods from the first rate-setting valuation in which the experience is recognized:

- Tier 1/Tier 2 – 20 years
- OPSRP – 16 years
- RHIA/RHIPA – 20 years

Funding for RHIA and RHIPA commenced at a later date, so the funded status of these two programs is significantly lower than for the pension programs. In addition, these two programs are only available to Tier 1 and Tier 2 members. OPSRP members are not eligible. Consequently, we recommend amortizing the RHIA and RHIPA UAL over a 10-year period (instead of 20). This period approximates the average remaining service period for Tier 1 and Tier 2 members, and effectively allocates the cost of RHIA and RHIPA over the period before those expected to receive the benefit are expected to retire.

Actuarial Methods and Allocation Procedures *(continued)*

To remain consistent with PERS' administration of the contribution rate structure, this rate will be charged to Tier 1, Tier 2 and OPSRP payroll. However, since OPSRP members are not covered by these benefits, for GASB purposes, the amortization will be reported as an open, level dollar amortization and will be less than the 30-year maximum permitted by GASB.

New side accounts and new transition liabilities have been amortized over the period ending December 31, 2027. In valuations through December 31, 2007, this amortization period has exactly matched the amortization period for the regular UAL. While we are not recommending a change to this amortization period, it should be noted that it will no longer exactly match the amortization period for the UAL.

Asset Valuation Method

Effective December 31, 2004, the Board adopted market value as the actuarial value of assets, replacing the four-year smoothing method previously used to determine the actuarial asset value. Although asset smoothing is a common method for smoothing contribution rates in public sector plans, the smoothed asset value does not provide a transparent measure of the plan's funded status and UAL. Market value provides more transparency to stakeholders regarding the funded status of the plan. Instead of smoothing assets, a rate collar method (described below) is used to smooth contribution rates.

We recommend no change to the asset valuation method.

Excluded Reserves

Statute provides that the Board may establish Contingency and Capital Preservation reserve accounts to mitigate gains and losses of invested capital and other contingencies, including certain legal expenses or judgments. In addition, statute requires the establishment and maintenance of a Rate Guarantee or Deficit reserve to fund earnings crediting to Tier 1 member regular accounts when actual earnings are below expectations. The Contingency, Capital Preservation and Rate Guarantee or Deficit reserves are excluded from the actuarial asset value.

We recommend no change to the reserve accounts excluded from the valuation assets.

Rate Collar Method

Effective December 31, 2004, a rate collaring method was adopted that limits changes in contribution rates to be within a specified "collar". The rate collar restricts the change in an employer's contribution rate to the greater of 20 percent of the current rate or 300 basis points. If the funded status is less than 80 percent or greater than 120 percent, the size of the rate collar is doubled. The rate collar is applied for each employer (or rate pool) prior to any adjustments to the employer contribution rate for side accounts, transition liabilities, or pre-SLGRP pooled liabilities. The rate collar only applies to employer contribution rates for pension benefits. The effect of any significant benefit changes adopted by the Legislature is applied to the base contribution rate before determining the collar. Rates attributable to RHIA and RHIPA (retiree medical) are not subject to the collar.

Actuarial Methods and Allocation Procedures *(continued)*

Allocation of Liability for Service Segments

Over the course of a member's working career, a member may work for more than one employer covered under the Tier 1/ Tier 2 program. Since employer contribution rates are developed on an individual employer basis, the member's liability should be allocated between such a member's various Tier 1/Tier 2 employers. If all of the member's employers participate in the same rate pool, the allocation has no effect on rates, but if the employers participate in different pools or are independent, the allocation can have an impact on the different employer rates.

When a member retires, PERS allocates the cost of the retirement benefit between the employers the member worked for based on the formula that produces the member's retirement benefit. If the member's benefit is calculated under the Money Match formula, the cost is allocated in proportion to the member's account balance attributable to each employer. If the member's benefit is calculated under Full Formula, the cost is allocated in proportion to the service attributable to each employer.

In recent history, the vast majority of retirement benefits have been calculated under Money Match, so the member's liability in valuations prior to December 31, 2006 had been allocated in proportion to the member's account balance attributable to each employer. With no new member contributions to Tier 1/Tier 2, however, this procedure means no liability is allocated to employers for service after December 31, 2003 in the valuation. As Money Match benefits become less dominant and retirements with Full Formula benefits become more prevalent, a change in the allocation procedure was warranted.

Effective with the December 31, 2006 valuation, a change was made to allocate a member's actuarial accrued liability among employers based on a weighted average of the Money Match methodology, which utilizes account balance, and the Full Formula methodology, which utilizes service. The methodologies were weighted according to the percentage of the system-wide actuarial accrued liability for new retirements projected to be attributable to Money Match and Full Formula, respectively, as of the next rate-setting valuation. For the December 31, 2006 and December 31, 2007 valuations, the Money Match method was weighted 65 percent for General Service members and 25 percent for Police & Fire members.

A summary of the portion of the actuarial accrued liability for new retirements projected to be attributable to Money Match benefits over the next several years is shown in the table below:

December 31,	General Service	Police and Fire
2007	55%	19%
2008	54%	16%
2009	51%	14%
2010	49%	11%
2011	46%	9%

Since the next rate-setting valuation is the December 31, 2009 valuation, we recommend the Money Match method be weighted 50 percent for General Service members and 15 percent for Police & Fire members. This weighting will continue to be reviewed with each experience study and updated as necessary.

As in prior valuations, the member's normal cost will continue to be assigned to his or her current employer.

3

Economic Assumptions

Overview

Actuarial Standard of Practice (ASOP) No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations,* provides guidance on selecting economic assumptions used in measuring obligations under defined benefit pension plans. ASOP No. 27 suggests that economic assumptions be developed using the actuary's professional judgment, taking into consideration past experience and the actuary's expectations regarding the future. The process for selecting economic assumptions involves:

- Identifying components of each assumption and evaluating relevant data;
- Developing a best-estimate range for each economic assumption; and
- Evaluating measurement specific factors and selecting a point within the best-estimate range.

A summary of the economic assumptions used for the December 31, 2007 actuarial valuation and those adopted for the December 31, 2008 and 2009 actuarial valuations are shown below:

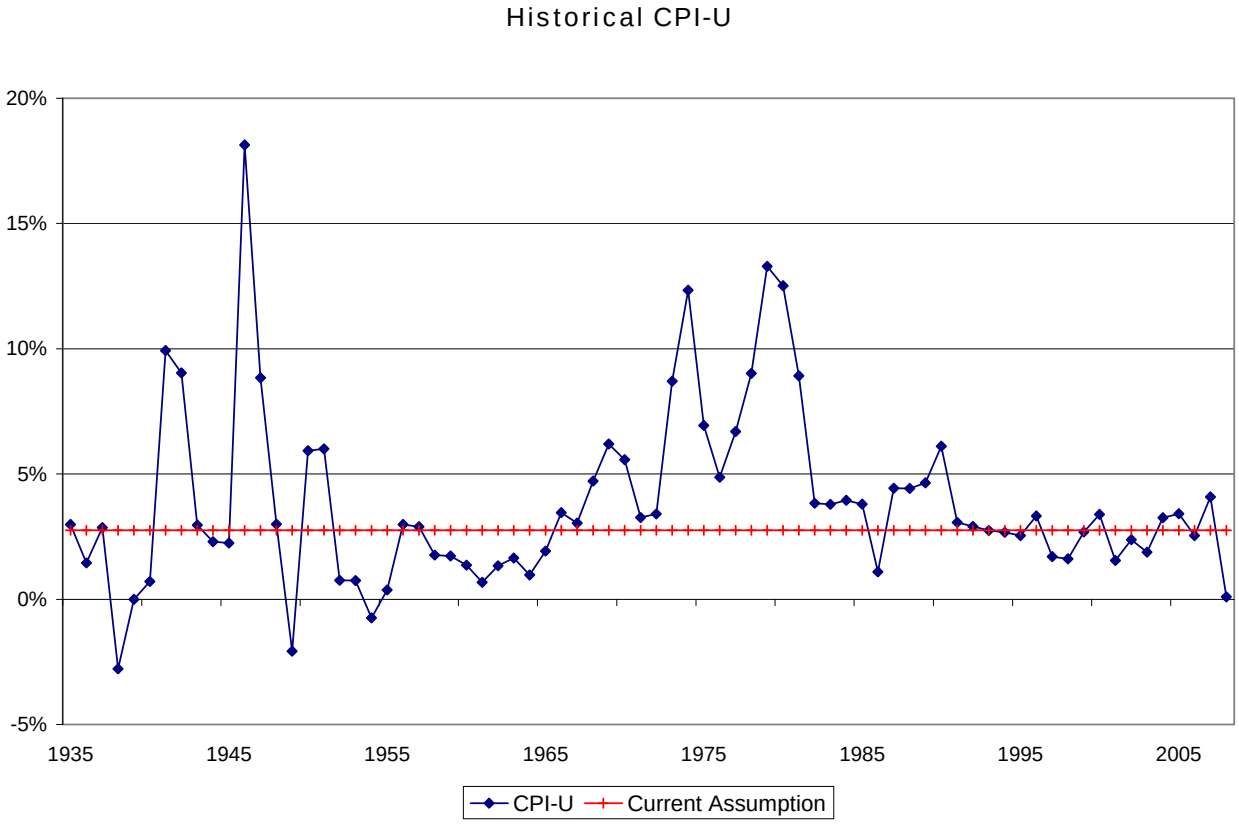
Assumption	December 31, 2007 Valuation	December 31, 2008 and 2009 Valuations
Inflation	2.75%	No Change
Real wage growth	1.00%	No Change
Payroll growth	3.75%	No Change
Regular investment return	8.00%	No Change
Variable account investment return	8.50%	No Change
OPSRP administrative expenses	$8.5 million/year	$6.6 million/year
Health cost trend rates		
▪ 2009 trend rate	7.00%	7.00%
▪ Ultimate trend rate	5.00%	4.50%
▪ Year reaching ultimate trend	2013	2029

The recommended assumptions shown above, in our opinion, were selected in a manner consistent with the requirements of ASOP No. 27. Each of the above assumptions is described in detail below and on the following pages.

Economic Assumptions *(continued)*

Inflation

The assumed inflation rate is the basis for all of the other economic assumptions. It affects other assumptions including payroll growth, investment return, and healthcare inflation.



In selecting an appropriate inflation assumption, we consider both historical data and the breakeven inflation rates inherent in current long-term Treasury Inflation Protection Securities (TIPS). The chart above shows the annual inflation rate for the years ending December 31 from 1935 through 2008 as reported by the Bureau of Labor Statistics. The mean and median annual rates over this period are 3.85 percent and 2.99 percent respectively.

Historical inflation rates vary significantly from period to period and may not be an indication of future inflation rates. With the development of a TIPS market, we can calculate a breakeven inflation rate by comparing yields on regular Treasury securities to the yields on TIPS. The table below shows yields as of December 31, 2008, for 10-year and 30-year Treasury bonds and TIPS.

As of 12/31/2008	10-Year	30-Year
Treasury Yield	2.25%	2.69%
TIPS Yield	2.14%	3.63%
Breakeven Inflation	**0.11%**	**-0.94%**

Economic Assumptions *(continued)*

Market turmoil in late 2008 produced unusual results as of the valuation date using this method. By March 31, 2009, breakeven inflation rose to 1.28 percent and 1.46 percent for 10-year and 30-year periods respectively.

We also considered two other inflation measures in our analysis: Social Security's current intermediate inflation assumption of 2.8 percent, and the Congressional Budget Office's projection of CPI of an average of 1.3 percent inflation over the period 2009-2019.

Based on the information shown above, our best-estimate range for the inflation assumption is from 1.50 percent to 3.50 percent. We therefore recommend no change to the assumed annual inflation rate of 2.75 percent.

Real Wage Growth

The expected salary growth assumption is the sum of three factors:

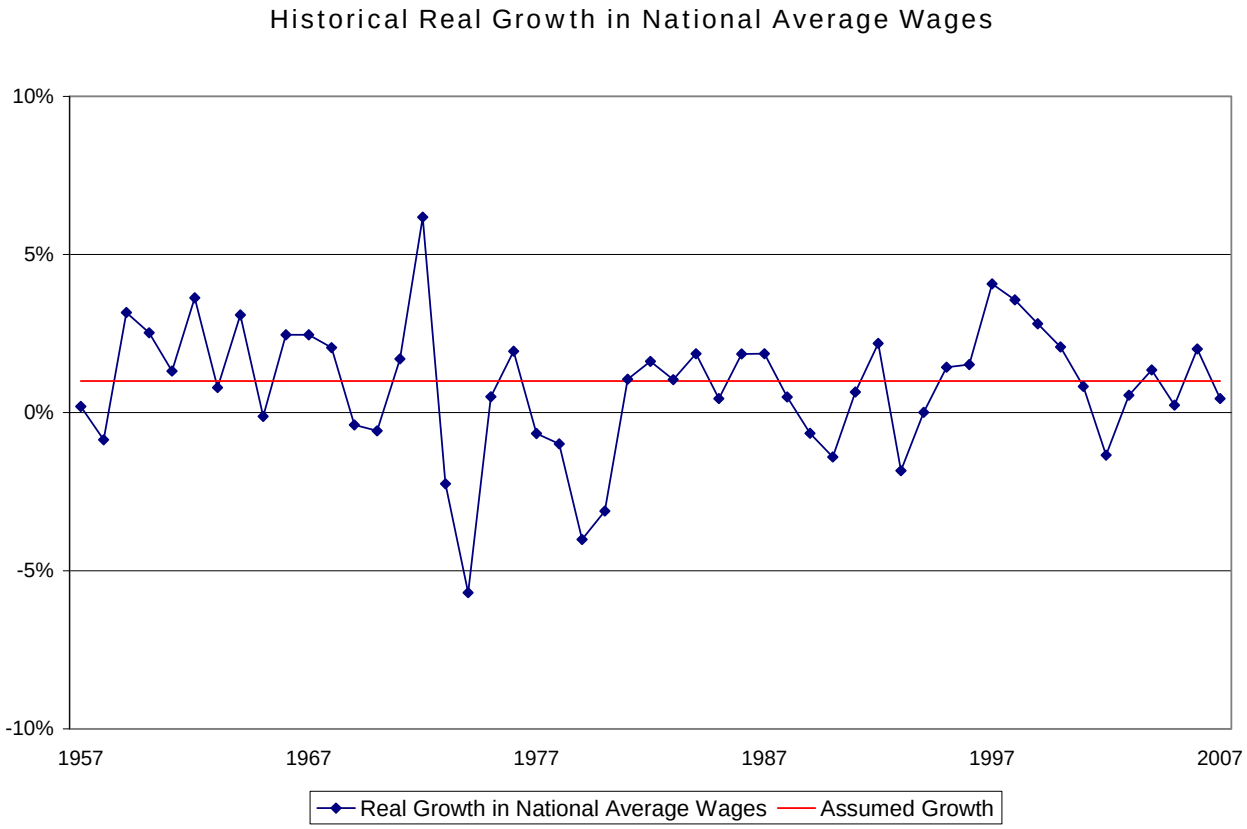
- Inflation,
- Real wage growth, and
- Merit and longevity wage growth.

Real wage growth represents the increase in wages above inflation for the entire group due to improvements in productivity and competitive pressures. Merit and longevity wage growth, in contrast, represent the increases in wages for an individual due to factors such as performance, promotion, or seniority.

Real wage growth combined with inflation represents the expected growth in total payroll for a stable population. Changes in payroll due to an increase or decline in the covered population are not captured by this assumption. The payroll growth assumption is used to develop the annual amount necessary to amortize the unfunded actuarial liability as a level percentage of expected payroll.

The chart below shows the real growth in national average wages over the past fifty years based on data compiled by the Social Security Administration.

Economic Assumptions *(continued)*



While the change in any one year has been volatile, the change over longer periods of time is more stable as shown in the table below.

Length of Period Ending December 31, 2008	Average Real Growth in National Average Wages
10 years	1.24%
20 years	0.94%
30 years	0.67%
40 years	0.56%
50 years	0.81%

Based on this data, a reasonable best-estimate range is from 0.75 percent to 1.50 percent. We recommend no change to the current assumption of 1.00 percent.

Payroll Growth

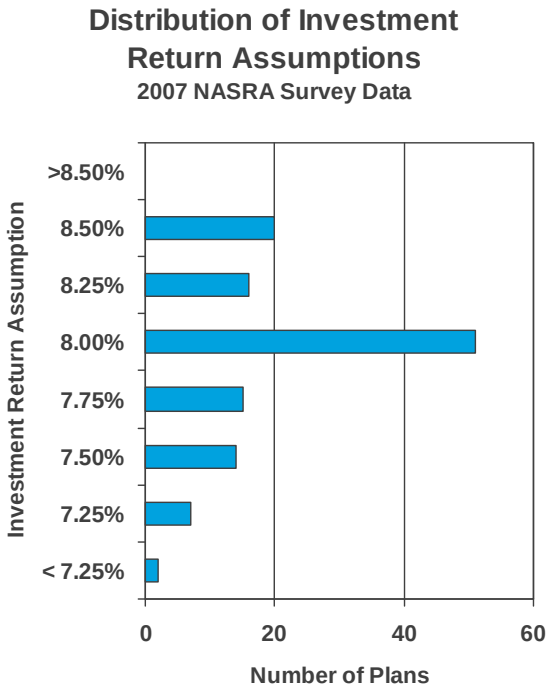
Payroll growth is the sum of inflation and real wage growth. Since we are recommending no changes to the inflation or the real wage growth assumptions, the payroll growth assumption will remain at 3.75 percent.

Economic Assumptions *(continued)*

Investment Return

The assumed rate of investment return is used to discount the future projected benefit payments from the retirement plan to the valuation date, to project interest credits on member accounts to retirement, to convert member accounts to a monthly retirement allowance under the Money Match formula, and to convert the retirement allowance to optional joint & survivor benefits. As such, it is one of the most important assumptions used in valuing the plan's liabilities and developing contribution rates. The assumption is intended to reflect the long-term expected return on the portfolio of assets that fund the benefits.

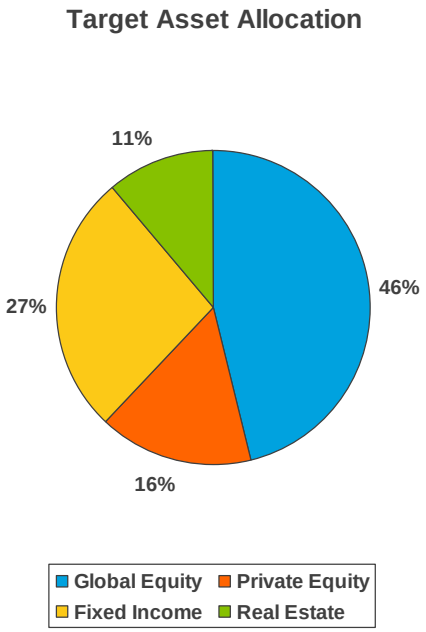
To provide some perspective on this assumption, the chart below shows the assumptions used by the 125 large public sector systems in NASRA's survey. The current Oregon PERS assumption of 8.0% is also the median and most common assumption in the survey.



Economic Assumptions *(continued)*

Regular Accounts

Based on the Oregon Investment Council's Statement of Investment Objectives and Policy Framework for the Oregon Public Employees Retirement Fund revised as of April 29, 2009, we understand the target asset allocation adopted by the OIC is as follows:



To develop an analytical basis for Board's selection of the investment return assumption, we use Mercer Investment Consulting's long-term return assumptions for each of the asset classes in which the plan is invested. Each asset class assumption is based on a consistent set of underlying assumptions, including the inflation assumption. These assumptions are not based on historical returns, but instead are based on a forward-looking economic model. Based on the target allocation and investment return assumptions for each of the asset classes, our best estimate assumption is developed as follows:

Asset Class	Target Allocation	Compound Annual Return	Annual Arithmetic Return	Standard Deviation
Private Equity	16%	9.59%	13.00%	28.4%
Global Equity	46%	8.42%	9.70%	16.9%
US Fixed Income	24%	4.66%	4.80%	5.5%
Non-US Hedged Bonds	3%	3.23%	3.40%	6.0%
Real Estate	11%	7.34%	8.20%	13.7%
Portfolio – Gross of Expenses	100%	7.99%	8.70%	12.5%
Portfolio – Net of Expenses		**7.74%**	**8.45%**	**12.5%**

Based on capital market expectations developed by Mercer Investment Consulting.

Economic Assumptions *(continued)*

We have rounded the best-estimate assumption to 7.5 percent.

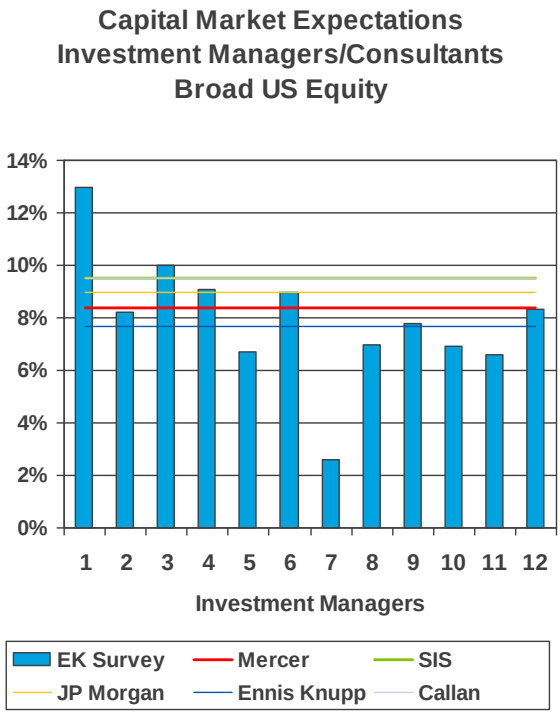
In addition, we compared the expected return to the range of returns developed using Mercer's Portfolio Return Calculator and the capital market assumptions of both Mercer Investment Consulting and Strategic Investment Solutions (SIS), the OIC's investment consultant. We assumed 5 basis points in administrative expenses and 20 basis points in passive investment expenses. We assume that expenses incurred for active management are offset by additional returns gained from active management. The table below compares the distribution of expected annualized returns over 20 years for the Regular Account based on Mercer's and SIS' capital market assumptions.

Percentile	Mercer	SIS
25th	5.9%	7.0%
35th	6.7%	7.8%
50th	7.7%	8.9%
65th	8.8%	10.0%
75th	9.6%	10.9%

In addition to the expected annualized returns shown above, SIS expects the OIC to earn 80 basis points due to active management in excess of expenses incurred for active management. Thus, for example, SIS expects a median return of 9.7 percent.

There is a significant difference between Mercer's capital market assumptions and SIS' capital market assumptions. To provide the Board some perspective on these differences, the chart below shows the results of an Ennis Knupp survey published in March 2009 of long-term capital market assumptions for broad US equity investments of various investment managers. The median assumption in the survey is 8.0 percent, but assumptions ranged from 2.6 percent to 13.0 percent. In addition, the lines on the graph represent the broad US equity expectations for Mercer (8.4 percent), SIS (9.5 percent), Callan (9.5 percent), JP Morgan (9.0 percent) and Ennis Knupp (7.7 percent).

Economic Assumptions *(continued)*



Based on Mercer's capital market outlook, we recommend an assumption of 7.5 percent. However, SIS' capital market outlook would suggest an assumption of at least 8.5 percent.

Variable Account

The expected investment return on the variable account is developed in the same manner as the assumption for regular accounts.

Based on the target allocation and investment return assumptions for each of the asset classes in the variable account, the best estimate assumption is developed as follows:

Asset Class	Target Allocation	Compound Annual Return	Annual Arithmetic Return	Standard Deviation
Global Equity	100%	8.42%	9.70%	16.9%
Portfolio – Gross of Expenses	100%	8.42%	9.70%	16.9%
Portfolio – Net of Expenses	**100%**	**8.17%**	**9.45%**	**16.9%**

The variable account is invested entirely in Global Equities. The annual arithmetic return is significantly higher than for the regular account, but so is the standard deviation. The result is a long-term compounded annual return slightly higher than the regular account. However, because this return is more volatile than the regular account return and because it is used to project benefits (instead of discounting liabilities), we recommend rounding the best estimate assumption up to 8.25 percent.

Economic Assumptions *(continued)*

Again, the expected annual return based on SIS' capital market outlook is significantly higher than the expected annual return based on Mercer's capital market outlook. If an assumption is adopted based on a market outlook other than Mercer's, we recommend that the variable account assumption be at least 50 basis points higher than the regular account assumption.

OPSRP Administrative Expenses

In the mature Tier 1/Tier 2 program, administrative expenses are modest compared to program asset levels. As such, administrative expenses for Tier 1/Tier 2 are estimated by a 5 basis point adjustment to the expected plan investment return, as noted previously in this report.

In contrast, administrative expenses for the relatively new OPSRP program are significant in comparison to OPSRP assets. As such, the December 31, 2007 valuation included an explicit administrative expense assumption for the OPSRP program of $8.5 million. The assumption is a fixed-dollar amount with two components:

- Start-up Information Technology (IT) expenses
- Regular OPSRP administrative expenses

Start-up IT expenses were funded through a Certificate of Participation with scheduled payments of $1.9 million annually through 2009. By the next rate-setting valuation, the payment for initial IT setup will be complete; therefore, we recommend removing this portion of the charge from our assumption.

An analysis of regular administrative expenses for the period from July 2007 to June 2009 indicates that $6.6 million is still an appropriate level for assumed regular administrative expenses. A summary of our recommendation is below.

Expense Category	December 31, 2007 Assumption	Recommended December 31, 2008 and 2009 Assumption
Start-up Information Technology	$1,900,000	$ 0
Regular Administrative	$6,600,000	$6,600,000
Total	$8,500,000	$6,600,000

Economic Assumptions *(continued)*

Health Cost Trend Rates

Health cost trend rates are used to predict increases in the RHIPA subsidy. The subsidy increased 8.6 percent and 4.7 percent in 2008 and 2009, respectively, with an average increase of 7.0 percent over the last five years. Mercer's healthcare actuaries expect medical costs to increase 6.5 – 8.5 percent in 2009. We recommend no change to the initial trend assumption, but based on Mercer's new trend model, we recommend a change to both the grade down period and the ultimate trend rate. The model assumes the RHIPA trend will converge to the change in national healthcare expenditures and such expenditures ultimately settle at 22 percent of GDP. At that point, healthcare trend is assumed to increase at 4.5 percent, a long-term estimate of GDP growth.

Year[1]	December 31, 2007 Valuation	December 31, 2008 and 2009 Valuations
2007	9.0%	
2008	8.0%	
2009	7.0%	7.0%
2010	6.5%	7.0%
2011	6.0%	7.0%
2012	5.5%	6.9%
2013	5.0%	6.9%
2014	5.0%	6.9%
2015	5.0%	6.9%
2016	5.0%	6.8%
2017	5.0%	6.8%
2018	5.0%	6.6%
2019	5.0%	6.4%
2020	5.0%	6.2%
2021	5.0%	6.0%
2022	5.0%	5.8%
2023	5.0%	5.6%
2024	5.0%	5.4%
2025	5.0%	5.2%
2026	5.0%	5.0%
2027	5.0%	4.9%
2028	5.0%	4.7%
2029+	5.0%	4.5%

[1] *For valuation purposes, the health cost trend rates are assumed to be applied at the beginning of the plan year.*

4

Demographic Assumptions

Overview

Actuarial Standard of Practice (ASOP) No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations,* provides guidance on selecting demographic assumptions used in measuring obligations under defined benefit pension plans. The general process for recommending demographic assumptions as defined in ASOP No. 35 is as follows:

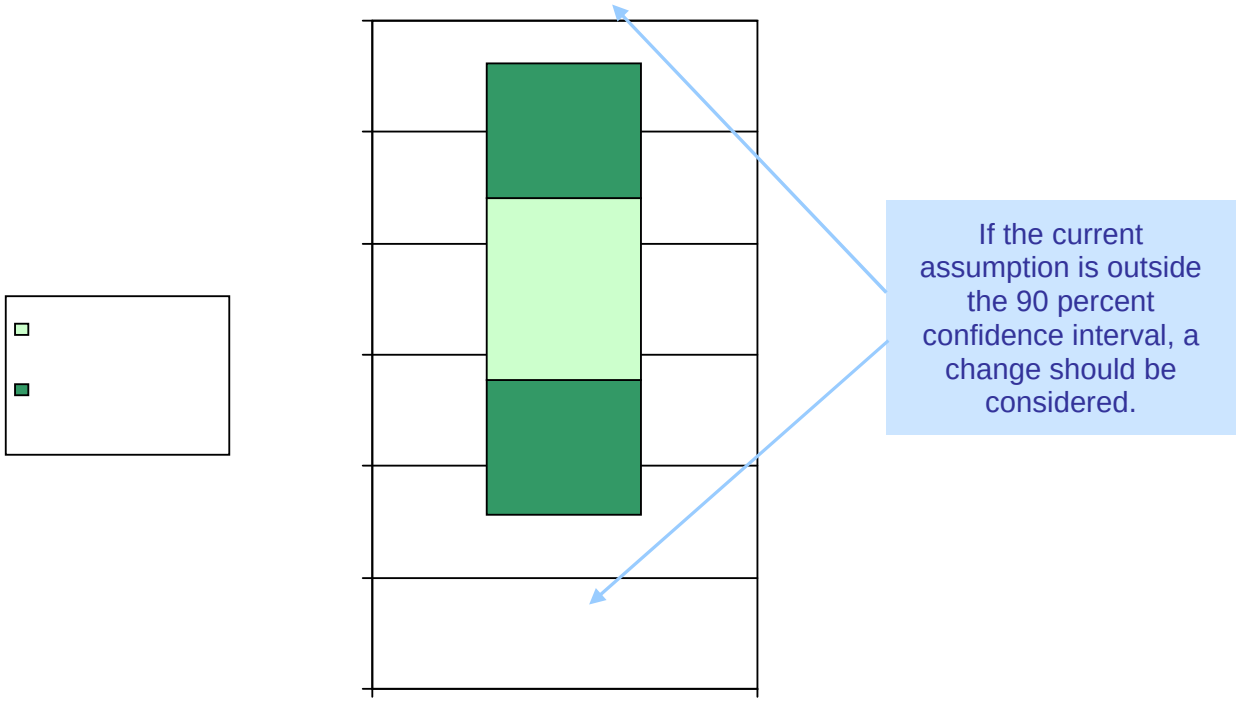
- Identify the types of assumptions;
- Consider the relevant assumption universe;
- Consider the assumption format;
- Select the specific assumptions; and
- Evaluate the reasonableness of the selected assumption.

The purpose of the demographic experience study is to compare actual experience against expected experience based on the assumptions used in the most recent actuarial valuation. The observation period used in this study is January 1, 2005 through December 31, 2008, and the current assumptions are those adopted by the Board for the December 31, 2007 actuarial valuation. If the actual experience differs significantly from the overall expected experience, or if the pattern of actual decrements by age, sex, or duration does not follow the expected pattern, new assumptions are considered.

Confidence intervals have been used to measure observed experience against current assumptions to determine the reasonableness of the assumption. The floating bars represent the 50 percent and 90 percent confidence intervals around the observed experience. The 90 percent confidence interval represents the range around the observed rate that contains the true rate during the period of study with 90 percent probability. The size of the confidence interval depends on the number of observations and the likelihood of occurrence. If an assumption is outside the 90 percent confidence interval and there is no other information to explain the observed experience, a change in assumption should be considered. A sample graph with confidence intervals is shown below:

Demographic Assumptions *(continued)*

Overview *(continued)*



The demographic assumptions used for the December 31, 2007, actuarial valuation and the recommended assumptions for the December 31, 2008, actuarial valuation are shown in detail in the following sections.

A summary of the changes adopted by the Board are as follows:

- Change healthy mortality assumption from static to generational tables and adjust disability mortality assumption
- Add another service band to retirement rates
- Assume 0% merit salary increases for 2009 and 2010 and consolidate assumptions for the SLGRP and Independent Employers
- Reduce disability rates
- Adjust school district and SLGRP termination rates
- Adjust partial lump sum percentage, probability of refund percentage and unused sick leave percentages for some groups.

The recommended assumptions, in our opinion, were selected in a manner consistent with the requirements of ASOP No. 35.

Demographic Assumptions *(continued)*

Mortality

Mortality rates are used to project the length of time benefits will be paid to current and future retirees and beneficiaries. The selection of a mortality assumption affects plan liabilities because the value of retiree benefits depends on how long the benefit payments are expected to continue. There are clear differences in the mortality rates among healthy retired members, disabled retired members and non-retired members. As a result, each of these groups is reviewed independently.

A summary of the current assumed mortality rates and recommended changes are shown below:

Assumption	December 31, 2007 Valuation	Recommended December 31, 2008 and 2009 Valuations
Healthy Annuitant Mortality	**RP 2000 Static, Combined Active/Healthy Annuitant, Sex Distinct**	**RP2000 Generational, Combined Active/Healthy Annuitant, Sex Distinct**
▪ School District male	No collar, set back 36 months	White collar, set back 12 months
▪ Other General Service male (and male beneficiary)	No collar, set back 24 months	White collar, no setback
▪ Police & Fire male	No collar, set back 12 months	Blended 33% blue collar, no setback
▪ School District female	No collar, set back 36 months	White collar, set back 18 months
▪ Other female (and female beneficiary)	No collar, set back 18 months	Blended 33% blue collar, no setback
Disabled Retiree Mortality	**RP 2000 Static, Combined Active/Healthy Annuitant, No Collar, Sex distinct**	**No change**
▪ Male	Set forward 36 months, minimum of 2.50%	Set forward 60 months, minimum of 2.25%
▪ Female	Set forward 36 months, minimum of 2.75%	Set forward 48 months, minimum of 2.25%
Non-Annuitant Mortality	**Fixed Percentage of Healthy Annuitant Mortality**	**No change**
▪ School District Male	65%	75%
▪ School District Female	50%	No change
▪ Other General Service Male	65%	75%
▪ Police & Fire Male	70%	No change
▪ Other Female	55%	50%

Healthy Annuitant Mortality

Mortality assumptions for healthy retired members are separated into five groups based on employment category and gender (school district males, school district females, police & fire males, other general service males, all other females). Experience for female police & fire members was not sufficient for them to be rated on their own, so they were combined with general service females.

Demographic Assumptions *(continued)*

Mortality *(continued)*

Mortality is expected to continue to improve in the future, and the resulting increased longevity should be anticipated in the actuarial valuation through lower projected mortality rates than indicated by current experience. The current assumption is based on a static mortality table adjusted for projected future improvements in mortality.

To determine whether the current mortality assumption remains reasonable, we calculated the ratio of actual deaths to expected deaths (A/E ratio) during the experience study period for each of the five groups described above. A/E ratios should remain at or above 110 percent, in order to provide a margin for future mortality improvement. Since all of the current A/E ratios are below 110 percent except Police & Fire males, we recommend changing the mortality assumptions.

			Current Assumption		Recommended Assumption	
	Exposures	Actual Deaths	Expected Deaths	A/E Ratio	Expected Deaths	A/E Ratio
School District male	58,543	1,614	1,541	105%	1,613	100%
Other General Service male	86,441	2,735	2,632	104%	2,751	99%
Police & Fire male	19,758	331	337	98%	331	100%
School District Female	113,269	2,683	2,541	106%	2,676	100%
Other female	108,247	3,232	2,939	110%	3,196	101%

Instead of making additional adjustments to static mortality tables, we recommend changing the underlying tables to be based on the RP 2000 generational mortality table. A generational mortality table anticipates future improvements in mortality by using a different static mortality table for each year of birth, with the tables for later years of birth assuming lower mortality than the tables for earlier years of birth. Because the table has assumed future mortality improvement built into the table, we can compare the actual number of deaths during the experience period directly to the expected number of deaths produced by applying the generational table. That is, we can target an A/E ratio of 100 percent instead of 110 percent.

The RP 2000 generational mortality table has a number of adjustments that can be applied to match the mortality rates of Oregon PERS. In the past, we just used a “set back” to adjust the mortality rates. A “set back” of 12 months, for example, treats all members as if they were 12 months younger than they really are when applying the mortality table. In addition to a “set back,” we have also applied a collar adjustment as defined in the RP 2000 table. Essentially, a “white collar” adjustment further reduces the rates of mortality while a “blue collar” adjustment increases the rates of mortality. The basic table reflects a blend of approximately 55 percent “white collar” and 45 percent “blue collar.” Please note that “white collar” and “blue collar” are used in this context only to describe the adjustments made to the RP 2000 generational mortality table and are not intended to classify any employees as either “blue collar” or “white collar.”

Demographic Assumptions *(continued)*

Mortality *(continued)*

A summary of the current and recommended healthy retiree mortality assumptions is shown below:

	December 31, 2007 Valuation	Recommended December 31, 2008 and 2009 Valuations
Basic Table	**RP 2000 Static, Combined Active/Healthy Annuitant, Sex Distinct**	**RP2000 Generational, Combined Active/Healthy Annuitant, Sex distinct**
School District male	No collar, set back 36 months	White collar, set back 12 months
Other General Service male	No collar, set back 24 months	White collar, no setback
Police & Fire male	No collar, set back 12 months	Blended 33% blue collar, no setback
School District female	No collar, set back 36 months	White collar, set back 18 months
Other female	No collar, set back 18 months	Blended 33% blue collar, no setback
Beneficiary male	No collar, set back 24 months	White collar, no setback
Beneficiary female	No collar, set back 18 months	Blended 33% blue collar, no setback

Disabled Retiree Mortality

Disabled members are expected to have a shorter life expectancy than healthy retired members. In addition, future life expectancies for disabled members are not expected to increase as significantly as the future life expectancies for healthy retirees. As a result, A/E ratios for disabled retirees have been targeted at or near 100 percent. The A/E ratio for the current assumption is in excess of 100 percent for male mortality and below 100 percent for female mortality. In addition, the mortality rates for younger disabled retirees are higher than many other disabled mortality tables due to the minimum rates in our current assumption. Consequently, we recommend adjustments to the set forward and minimum mortality rates.

			December 31, 2007 Valuation		Recommended December 31, 2008 and 2009 Valuations	
	Exposures	Actual Deaths	Expected Deaths	A/E Ratio	Expected Deaths	A/E Ratio
Male	8,350	350	322	109%	347	101%
Female	8,841	308	325	95%	303	102%

Demographic Assumptions *(continued)*

Mortality *(continued)*

A summary of current and recommended disabled retiree mortality assumptions is shown below:

	December 31, 2007 Valuation	Recommended December 31, 2008 and 2009 Valuations
Basic Table	**RP 2000, Combined Active/Healthy Retired, No Collar, Sex Distinct**	**No change**
Male	Set forward 36 months, minimum of 2.5%	Set forward 60 months, minimum of 2.25%
Female	Set forward 36 months, minimum of 2.75%	Set forward 48 months, minimum of 2.25%

Non-Annuitant Mortality

The non-annuitant mortality assumption applies to active members and dormant members (those members who have terminated employment but are vested and entitled to a future benefit), and is a fixed percentage of the healthy annuitant mortality rates. Because the healthy annuitant mortality assumptions have changed, all of the non-annuitant mortality assumptions have also changed. The analysis below compares the current fixed percentages as applied to the new healthy annuitant mortality assumptions to determine if a change also needs to be made in the fixed percentages for each of the groups. A/E ratios for non-annuitants have been targeted around 100 percent.

			December 31, 2007 Valuation		Recommended December 31, 2008 and 2009 Valuations	
	Exposures	Actual Deaths	Expected Deaths	A/E Ratio	Expected Deaths	A/E Ratio
School District male	96,122	128	109	118%	126	102%
School District female	274,509	165	181	91%	181	91%
Other General Service male	206,228	322	278	116%	321	100%
Police & Fire male	49,316	47	51	93%	51	93%
Other female	303,396	254	281	90%	256	99%

With the very limited number of deaths in the experience period, the A/E ratio tends to fluctuate, particularly for Police & Fire males. We recommend changes to the school district male, other general service male and other female groups, which each have A/E ratios under the current assumptions outside of a 10 percent corridor from the target

Demographic Assumptions *(continued)*

Mortality *(continued)*

A summary of the current and recommended non-retired mortality assumptions is shown below:

	December 31, 2007 Valuation	Recommended December 31, 2008 and 2009 Valuations
Basic Assumption	Fixed Percentage of Healthy Annuitant Mortality	No change
School District male	65%	75%
Other General Service male	65%	75%
Police & Fire male	70%	No change
School District female	50%	No change
Other female	55%	50%

Demographic Assumptions *(continued)*

Retirement Assumptions

The retirement assumptions used in the actuarial valuation include the following assumptions:

- Retirement from active status
- Probability a member will elect a lump sum option at retirement
- Percentage of members who elect to purchase credited service at retirement.

Retirement from Active Status

Members are eligible to retire as early as age 55 (50 for Police & Fire members) or earlier if the member has 30 years of service (25 years for Police & Fire members). In our analysis, we have found significant differences in the retirement patterns based on length of service, employment category (General Service and Police & Fire), and eligibility for unreduced benefits.

A summary of the early, normal, and unreduced retirement dates under the plan are as follows:

Employment Category	Tier	Normal Retirement Age	Early Retirement Age	Unreduced Retirement
General Service	1	58	55	30 years of service
General Service	2	60	55	30 years of service
General Service	OPSRP	65	55	Age 58 with 30 years
Police & Fire	1 and 2	55	50	Age 50 with 25 years of service, or 30 years of service
Police & Fire	OPSRP	60	50	Age 53 with 25 years

Structure for Retirement Rates

Previously, separate general service retirement rates for members under 30 years of service were assigned to school districts versus SLGRP and independent employers and to Tier 1 versus Tier 2 members. All Tier 1/Tier 2 members with at least 30 years of service were assigned the same retirement rates. For police and fire members, rates were divided into an under 25 year assumption and an over 25 year assumption.

Instead of structuring retirement rates based on Tier for general service members, we recommend dividing the less than 30 year assumption into a less than 15 year assumption and a 15 to 29 year assumption. For police and fire members, we recommend dividing the less than 25 year assumption into a 0 to 12 year assumption and a 13 to 24 year assumption. This new structure will likely track member retirement decisions more closely to the extent that those decisions contemplate the amount of the retirement benefit and the affordability of retirement.

School District and General Service Retirement Rates

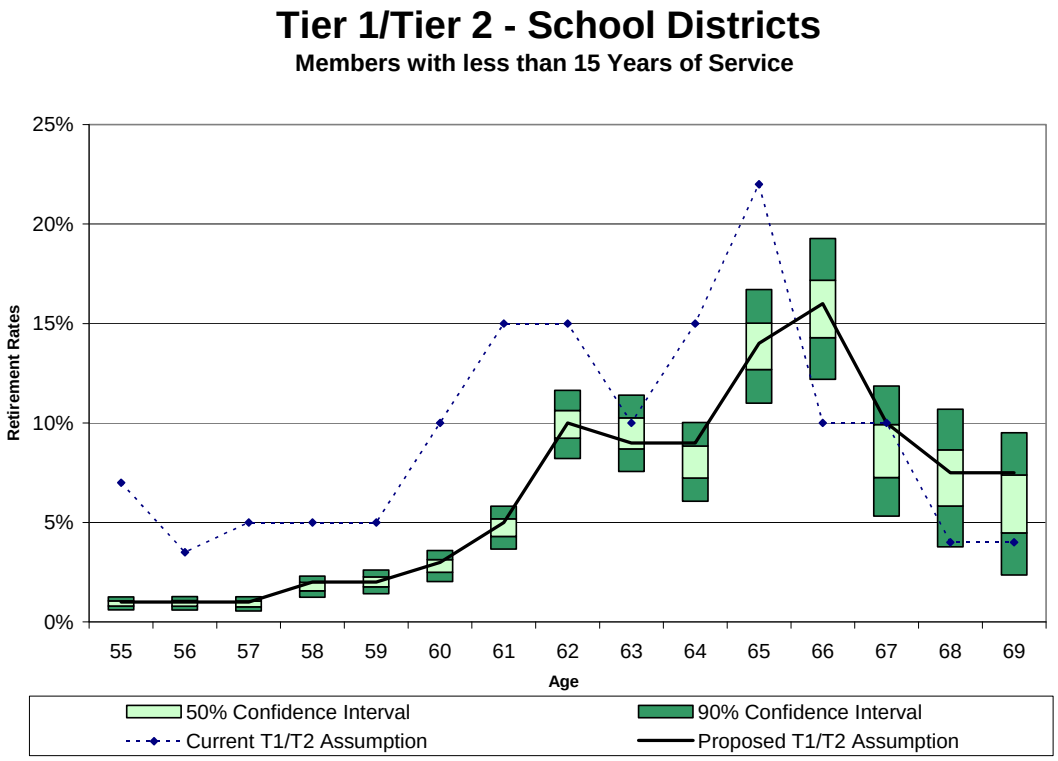
Members With Less Than 15 Years of Service

Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

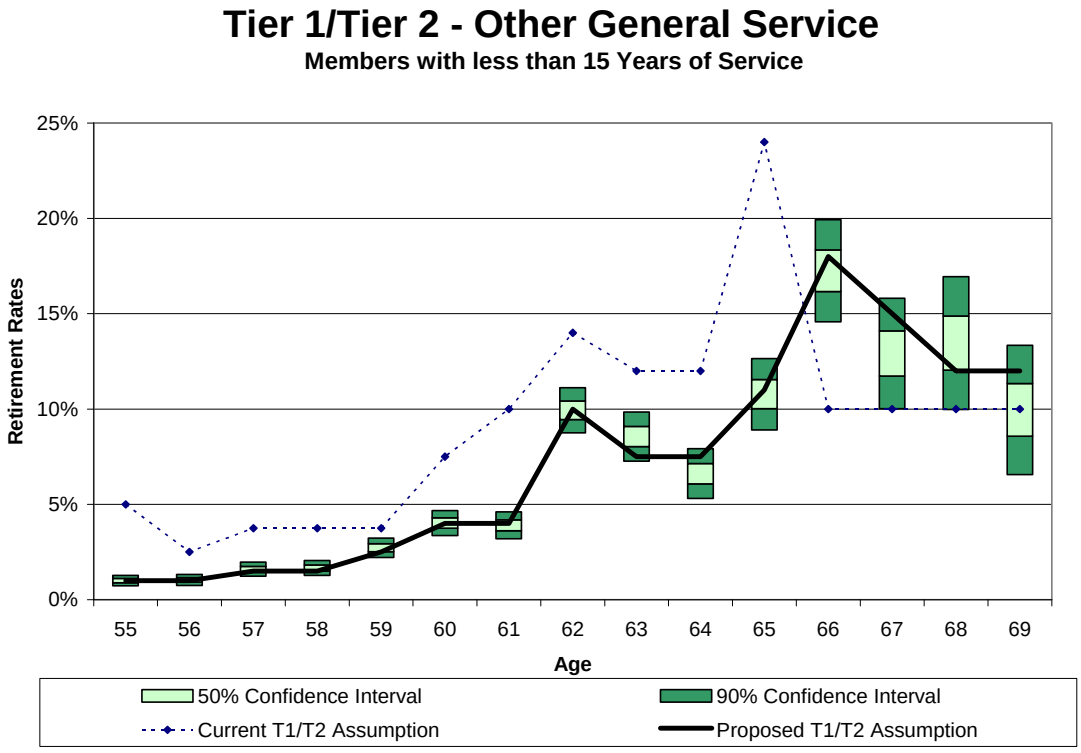
Retirement decisions by members with less than 15 years of service are likely to be heavily influenced by the availability of resources other than PERS benefits, including Social Security, prior employment, spousal benefits and savings.

The following charts show the current assumed rates of retirement, the confidence interval around observed experience and the recommended retirement rates (if different than the current rates) for School District and General Service members retiring with less than 15 years of service.



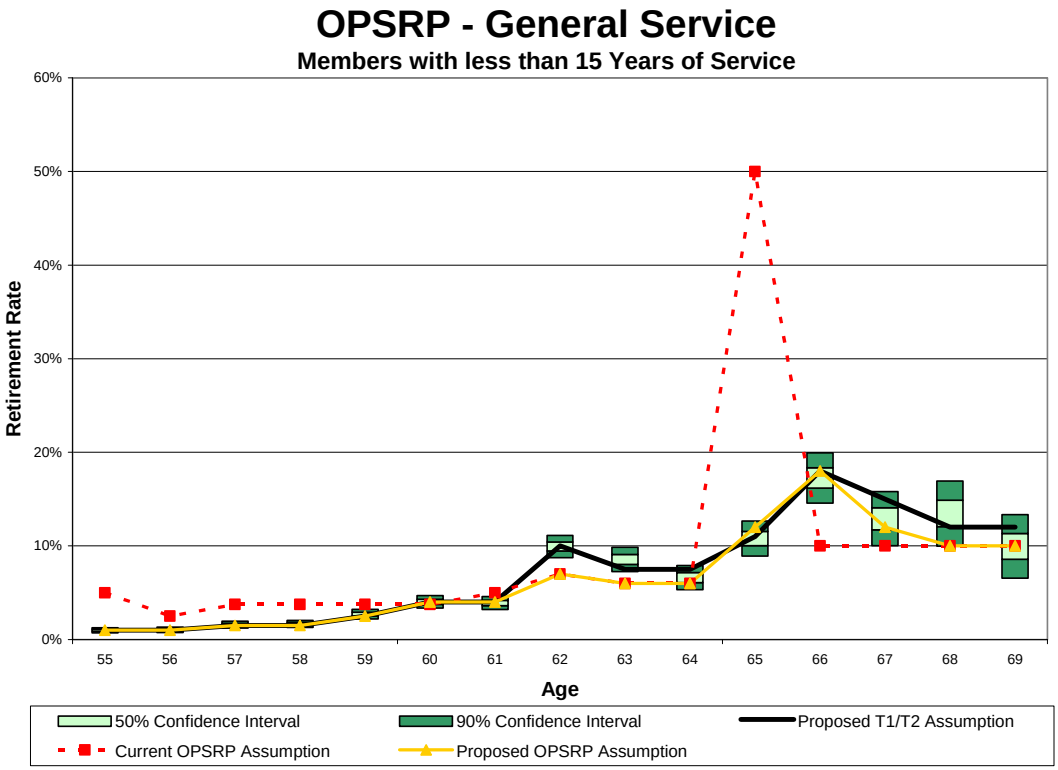
Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*



Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*



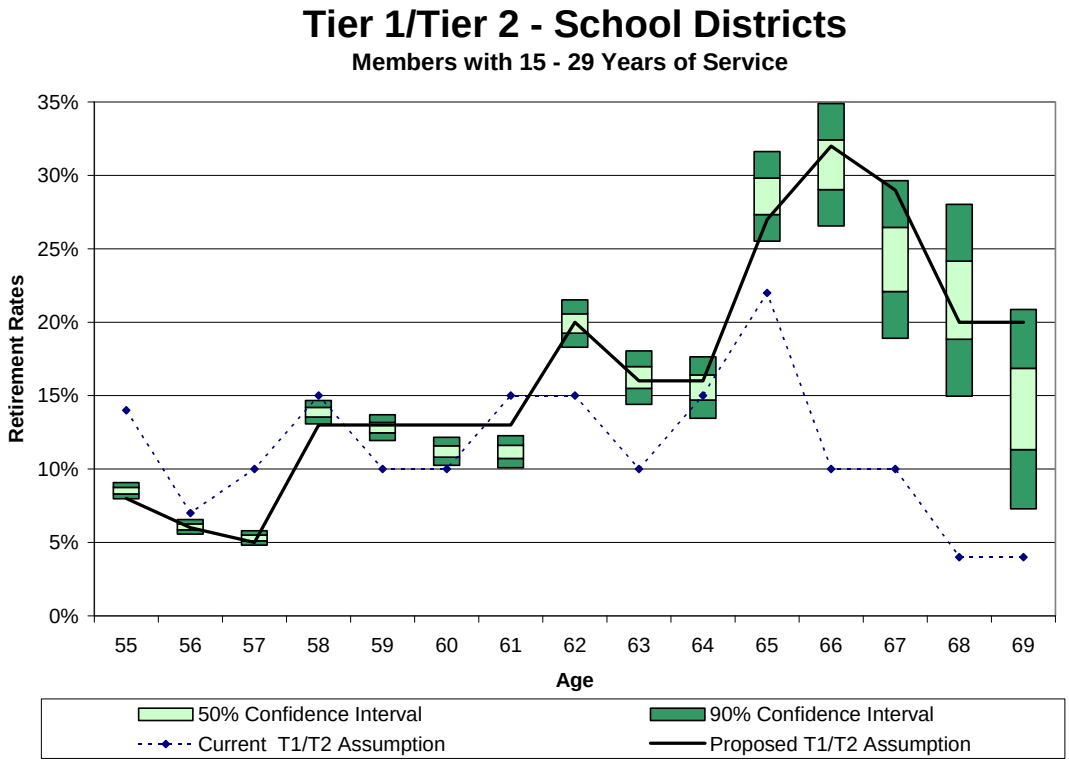
Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

Members with 15 to 30 Years of Service

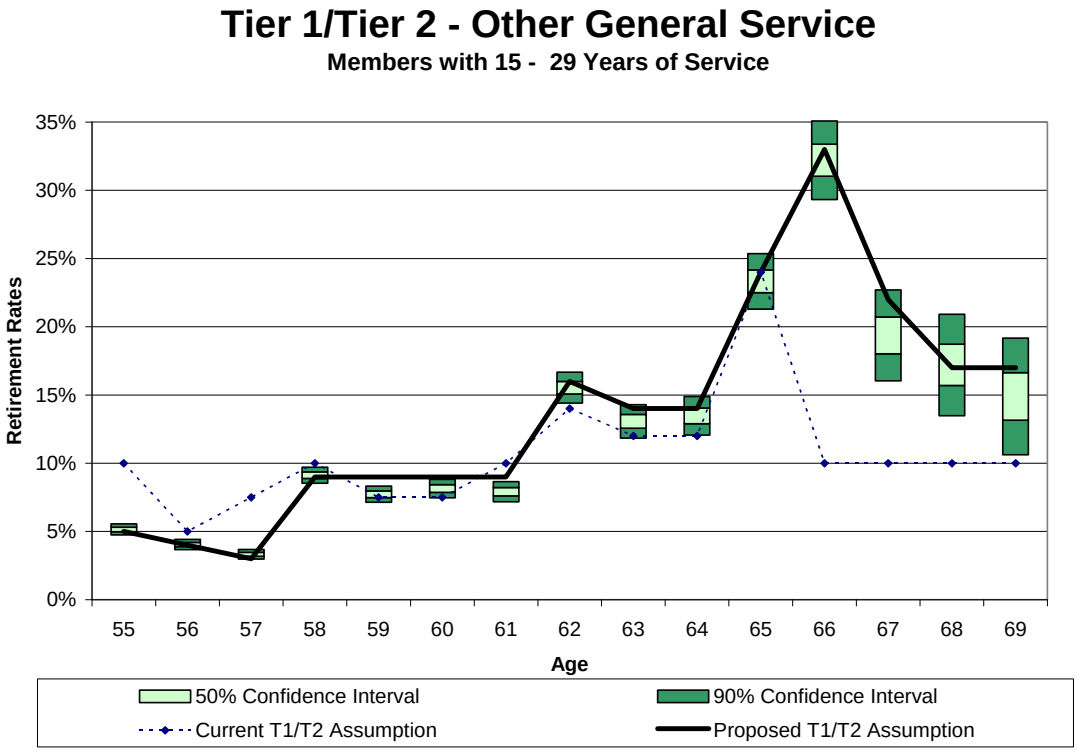
Retirement decisions by members with 15 to 29 years of years of service are likely to be influenced by the structure of PERS benefits as well as the availability of other resources, including Social Security, prior employment, spousal benefits and savings.

The following charts show the current assumed rates of retirement, the confidence interval around observed experience and the recommended retirement rates (if different than the current rates) for School District and General Service members retiring with more than 15 years of service and less than 30 years of service.



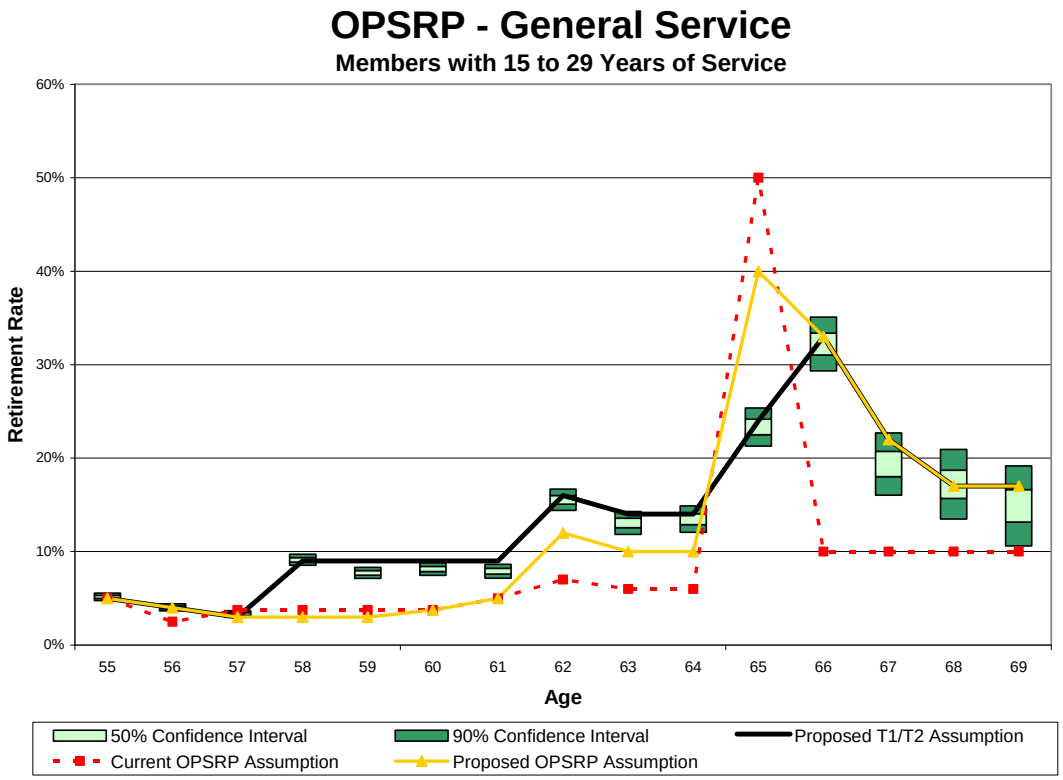
Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*



Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*



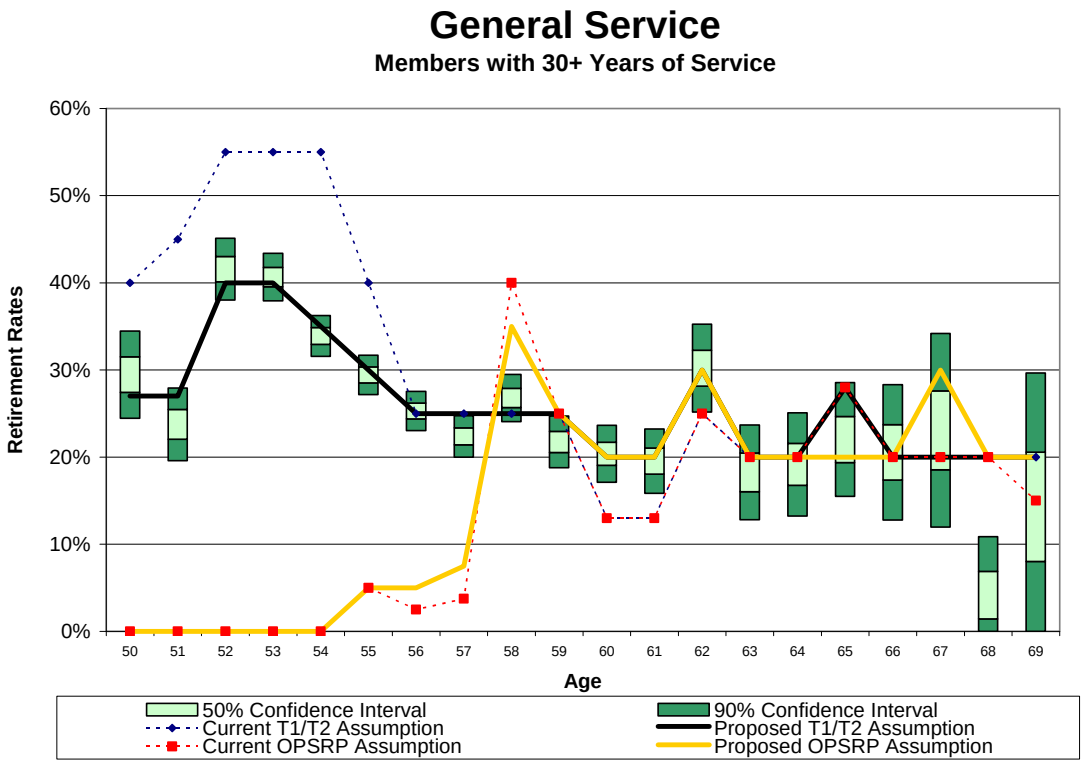
Members with 30 or More Years of Service

The retirement rate assumption for members with 30 or more years of service at retirement is not differentiated for School Districts and all other General Service members. Instead, one set of rates is developed for all general service members with 30 or more years of service. Our analysis indicated that actual retirement rates for members with 30 or more years of service were somewhat lower than the current assumption for ages less than 56 and somewhat higher for ages between 60 and 62. Our recommended assumption reflects this experience.

The following graph shows the current assumed rates of retirement, the confidence interval around observed experience and the recommended retirement rate assumption for members retiring with more than 30 years of service.

Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*



Police & Fire

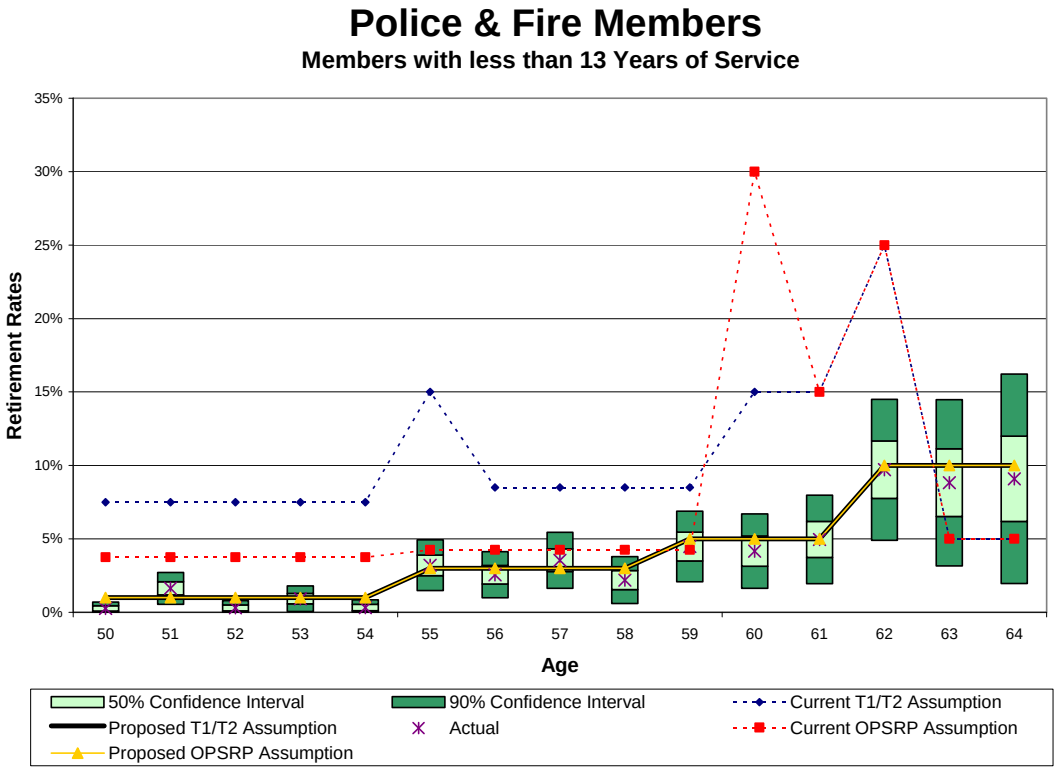
Members with Less Than 13 Years of Service

The retirement assumption for Police & Fire members differs for members retiring with less than 13 years of service, those retiring with between 13 and 24 years of service, and those retiring with more than 25 years of service. Retirement rates for members with less than 13 years of service are likely to be heavily influenced by the availability of resources other than PERS benefits, including Social Security, prior employment, spousal benefits and savings.

The following graph shows the current assumed rates of retirement, the confidence interval around observed experience and the recommended retirement rate assumption for Police & Fire members retiring with less than 13 years of service. We recommend reducing the assumption for ages less than 63.

Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*



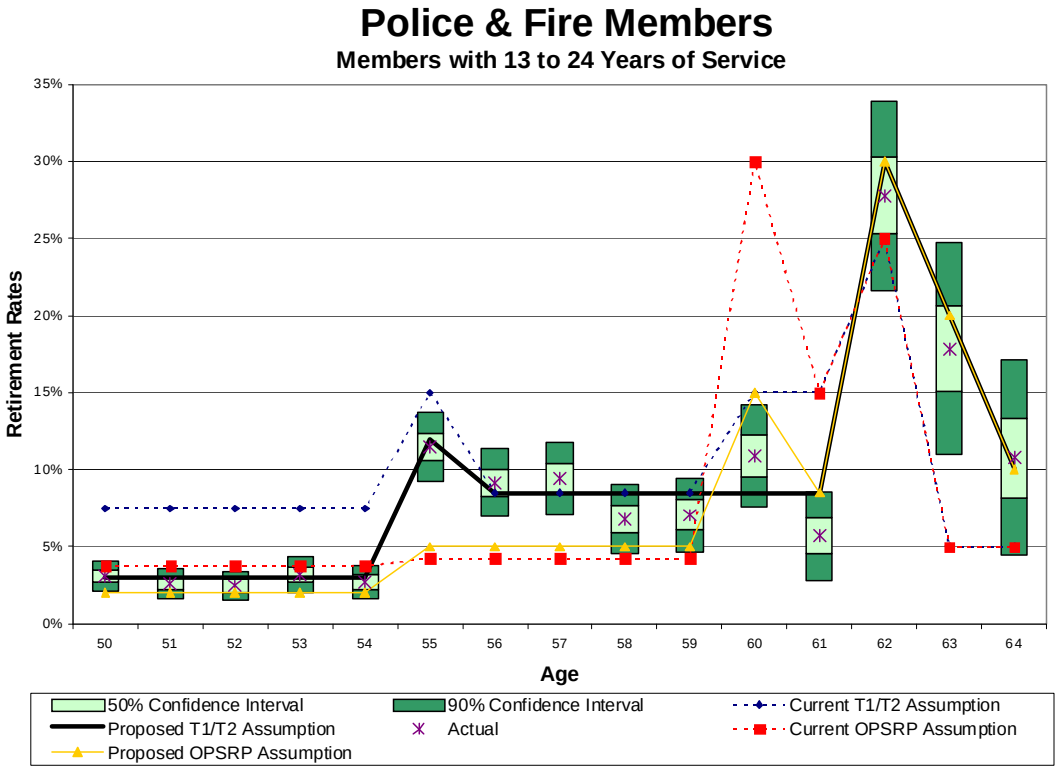
Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

Members with 13 to 24 Years of Service

Retirement rates for members with 13 to 24 years of service are likely to be influenced by the structure of PERS benefits as well as the availability of other resources, including Social Security, prior employment, spousal benefits and savings

The following graph shows the current assumed rates of retirement, the confidence interval around observed experience and the recommended retirement rate assumption for Police & Fire members retiring with between 13 and 24 years of service. We recommend reducing the assumption for ages less than 55 and from 60 to 61 and increasing the assumption for ages 62 to 64.



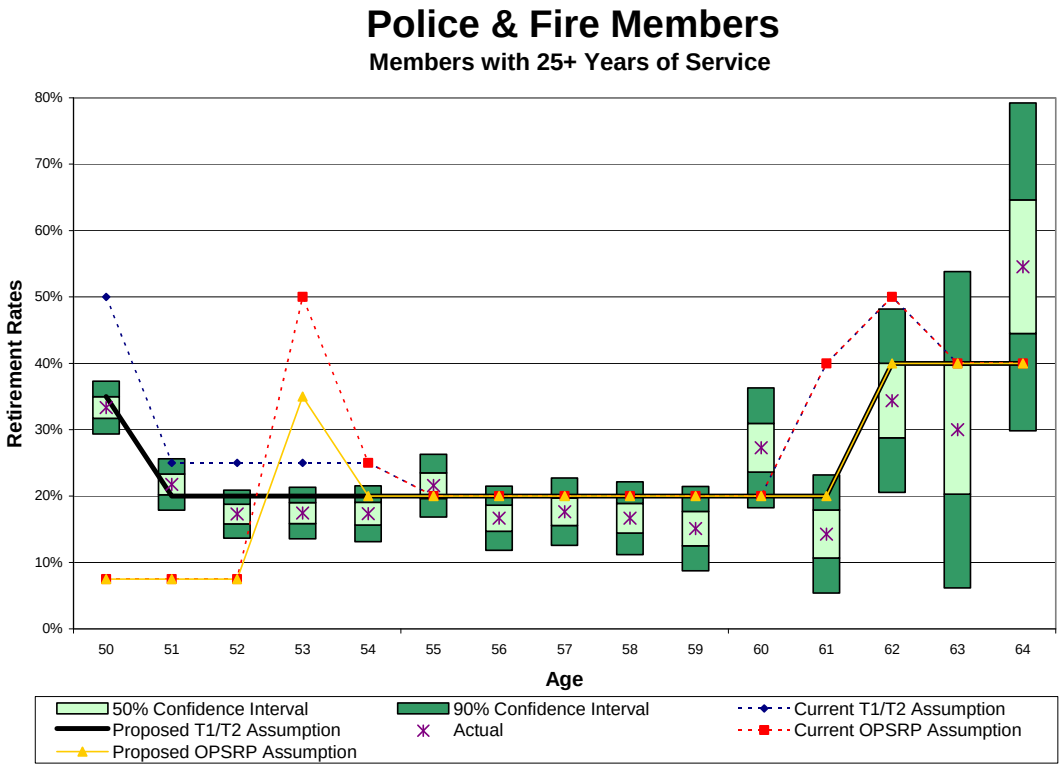
Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

Members with 25 or More Years of Service

Police & Fire members with 25 or more years of service can retire immediately at age 50 (53 for OPSRP) with unreduced retirement benefits. As a result, retirement rates at all ages are relatively high, with a spike at first eligibility for unreduced benefits, and another increase when Social Security benefits become available.

The following graph shows the current assumed rates of retirement, the confidence interval around observed experience and the recommended retirement rate assumption for Police & Fire members retiring with more than 25 years of service. We recommend reducing the assumption for ages less than 55 and for ages 61 and 62.



Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

Summary of Recommended Retirement Rates

The following table summarizes our recommended Tier 1/Tier 2 retirement rates:

	Tier 1/Tier 2 Recommended December 31, 2008 and 2009 Valuations							
	Police & Fire			General Service		School Districts		General Service (Including School Districts)
Age	< 13 yrs	13-24 yrs	25+ yrs	<15 yrs	15-29 yrs	<15 yrs	15-29 yrs	30+ yrs
Less than 50								27.0%
50	1.0%	3.0%	35.0%					27.0%
51	1.0%	3.0%	20.0%					40.0%
52	1.0%	3.0%	20.0%					40.0%
53	1.0%	3.0%	20.0%					35.0%
54	1.0%	3.0%	20.0%					30.0%
55	3.0%	12.0%	20.0%	1.0%	5.0%	1.0%	8.0%	25.0%
56	3.0%	8.5%	20.0%	1.0%	4.0%	1.0%	6.0%	25.0%
57	3.0%	8.5%	20.0%	1.5%	3.0%	1.0%	5.0%	25.0%
58	3.0%	8.5%	20.0%	1.5%	9.0%	2.0%	13.0%	25.0%
59	5.0%	8.5%	20.0%	2.5%	9.0%	2.0%	13.0%	25.0%
60	5.0%	8.5%	20.0%	4.0%	9.0%	3.0%	13.0%	20.0%
61	5.0%	8.5%	20.0%	4.0%	9.0%	5.0%	13.0%	20.0%
62	10.0%	30.0%	40.0%	10.0%	16.0%	10.0%	20.0%	30.0%
63	10.0%	20.0%	40.0%	7.5%	14.0%	9.0%	16.0%	20.0%
64	10.0%	10.0%	40.0%	7.5%	14.0%	9.0%	16.0%	20.0%
65	100.0%	100.0%	100.0%	11.0%	24.0%	14.0%	27.0%	28.0%
66				18.0%	33.0%	16.0%	32.0%	20.0%
67				15.0%	22.0%	10.0%	29.0%	20.0%
68				12.0%	17.0%	7.5%	20.0%	20.0%
69				12.0%	17.0%	7.5%	20.0%	20.0%
70				100.0%	100.0%	100.0%	100.0%	100.0%

Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

The following table summarizes our recommended OPSRP retirement rates:

	OPSRP Recommended December 31, 2008 and 2009 Valuations					
	Police & Fire			General Service		
Age	< 13 yrs	13-24 yrs	25+ yrs	<15 yrs	15-29 yrs	30+ years
50	1.0%	2.0%	7.5%			
51	1.0%	2.0%	7.5%			
52	1.0%	2.0%	7.5%			
53	1.0%	2.0%	35.0%			
54	1.0%	2.0%	20.0%			
55	3.0%	5.0%	20.0%	1.0%	5.0%	5.0%
56	3.0%	5.0%	20.0%	1.0%	4.0%	5.0%
57	3.0%	5.0%	20.0%	1.5%	3.0%	7.5%
58	3.0%	5.0%	20.0%	1.5%	3.0%	35.0%
59	5.0%	5.0%	20.0%	2.5%	3.0%	25.0%
60	5.0%	15.0%	20.0%	4.0%	3.75%	20.0%
61	5.0%	8.5%	20.0%	4.0%	5.0%	20.0%
62	10.0%	30.0%	40.0%	7.0%	12.0%	30.0%
63	10.0%	20.0%	40.0%	6.0%	10.0%	20.0%
64	10.0%	10.0%	40.0%	6.0%	10.0%	20.0%
65	100.0%	100.0%	100.0%	12.0%	40.0%	20.0%
66				18.0%	33.0%	20.0%
67				12.0%	22.0%	30.0%
68				10.0%	17.0%	20.0%
69				10.0%	17.0%	20.0%
70				100.0%	100.0%	100.0%

Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

Lump Sum Option at Retirement

At retirement, a member has the option of electing a total lump sum distribution equal to two times the member's account balance, a partial lump sum distribution equal to the member's account balance with a reduced monthly allowance, or a monthly allowance and no lump sum distribution. The percentage of active members electing a lump sum distribution at retirement has declined slightly from the prior experience study. The results of our analysis are as follows:

Election at Retirement	Number of Retired Members	Percentage of Retirements	December 31, 2007 Valuation	Recommended December 31, 2008 and 2009 Valuations
Partial Lump Sum	824	6.0%	7.0%	6.0%
Total Lump Sum				
▪ 2005	203	6.3%	8.0%	N/A
▪ 2006	280	9.1%	7.5%	N/A
▪ 2007	378	9.6%	7.0%	N/A
▪ 2008	234	6.9%	6.5%	N/A
▪ 2009	TBD	TBD	6.0%	No change
▪ 2010	TBD	TBD	5.5%	No change

When a member elects a total or partial lump sum under Money Match or a partial lump sum under Full Formula, he or she gives up the value of the COLA on the lump sum amount. A total lump sum election under Full Formula may cause the member to give up significantly more. Because there are no new contributions to member accounts and the system is projected to become dominated by Full Formula over time, we expect the total lump sum rate to decline over time.

Based on the data shown above, we recommend reducing the partial lump sum assumption from 7.0 percent to 6.0 percent. We recommend no change to the total lump sum assumption of 6.0 percent in 2009 decreasing by 0.5 percent per year until reaching 0.0 percent.

Purchase of Credited Service

A member has the option of purchasing service at retirement to enhance his or her retirement benefits. Service may be purchased under one or more of the following categories:

- Purchase of forfeited service
- Credit for waiting time
- Credit for educational service
- Credit for military service
- Credit for seasonal positions
- Credit for police officers and firefighters
- Purchase of retirement credit for disability time

Demographic Assumptions *(continued)*

Retirement Assumptions *(continued)*

Most purchases are full cost purchases, meaning the member pays both the member and employer cost to obtain the service. Since the member pays the full cost of the service purchased, the purchase produces no impact or only a small impact on projected Tier 1/Tier 2 employer costs. The most common, and predictable, non-full cost service purchase made by members is purchasing credit for the six-month waiting period. Thus, for valuation purposes, we have included an adjustment to account for those members who are expected to make the waiting period service purchase.

For Money Match retirements, the purchase of credited service is generally cost-neutral to the system, because the member is depositing both the member and employer contributions. Therefore, in reviewing actual experience, we separated Money Match retirements and non-Money Match retirements. No difference was observed among groups within those two categories. The following table shows the number of members who retired in the experience period and elected to purchase credit for the six-month waiting period:

	Count	Number Electing to Purchase Service	Percentage of Retirements	December 31, 2007 Valuation	Recommended December 31, 2008 and 2009 Valuations
Money Match Retirements	5527	1742	32%	0%	0%
Non-Money Match Retirements	3281	1792	55%	45%	55%

We recommend increasing the assumption of non-Money Match retirements purchasing credited service for the six month waiting period to 55 percent.

Demographic Assumptions *(continued)*

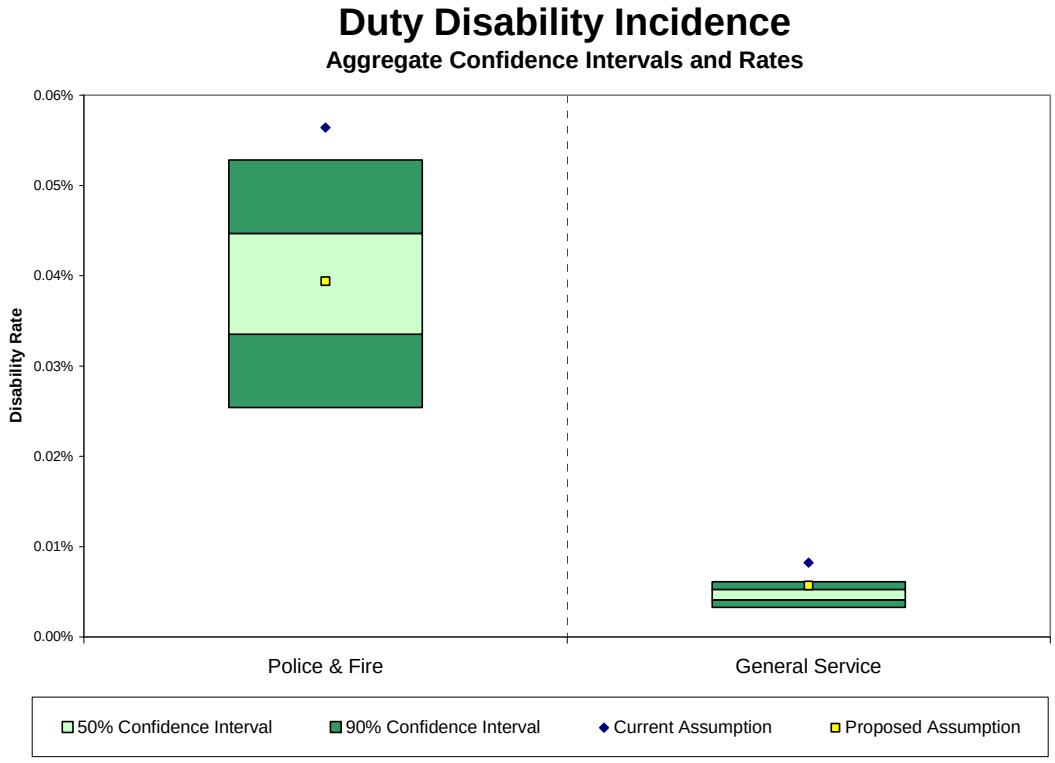
Disability Incidence Assumptions

The Plan provides duty and non-duty disability benefits to members. Members are eligible to receive duty disability benefits if they become disabled as a direct result of a job-related injury or illness, regardless of length of service. Members are eligible for non-duty disability benefits if they become disabled after ten years of service (six years if a judge), but prior to normal retirement eligibility.

Duty disability incidence rates are developed separately for Police & Fire and General Service members. Ordinary disability rates are developed for the system as a whole.

Duty Disability

Due to the limited amount of experience data available at some ages, we recommend adopting a standard table adjusted to fit within the aggregate confidence interval. Based on the continued decline in disability rates experienced, we recommend reducing the duty disability incidence assumption for both General Service and Police & Fire members to better match actual experience.



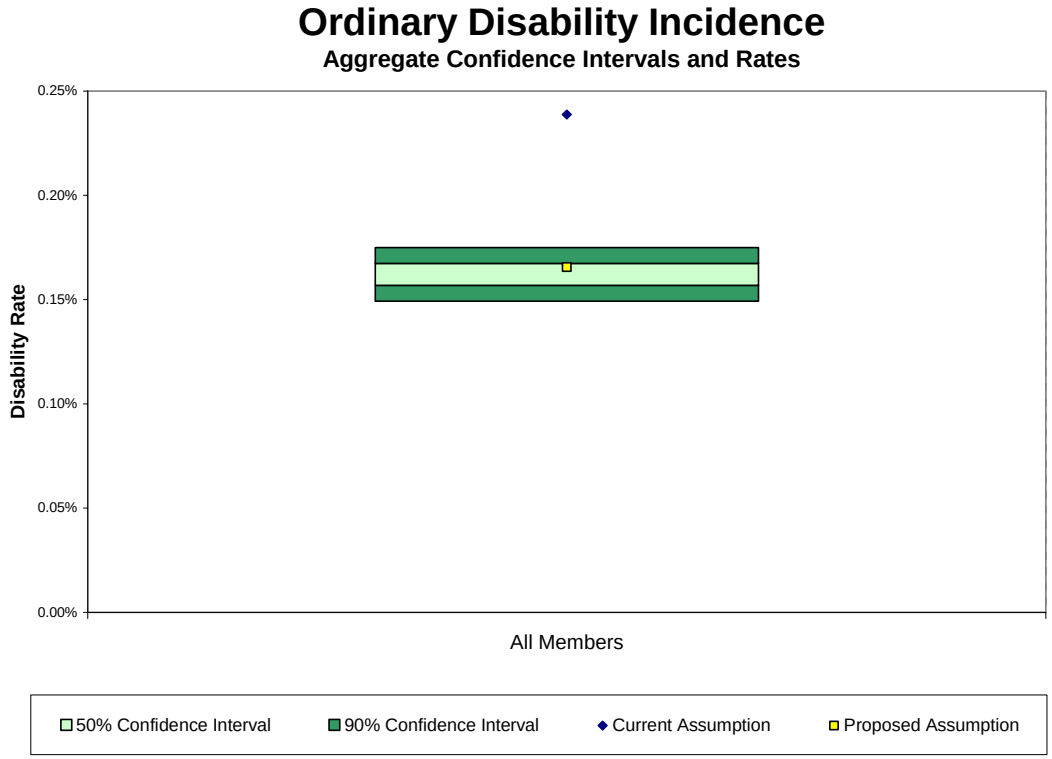
Ordinary Disability

As with duty disability, the experience data for ordinary disability was very limited at specific ages. Therefore, we recommend adopting a standard table adjusted to fit within the aggregate confidence interval. Based on the continued decline in disability rates experienced, we

Demographic Assumptions *(continued)*

Disability Incidence Assumptions *(continued)*

recommend reducing the ordinary disability incidence assumption to better match actual experience.



The following table summarizes our recommended disability incidence rates:

	December 31, 2007 Valuation	Recommended December 31, 2008 and 2009 Valuations
	PERS Specific Age Based Rates	Percentage of the 1985 Disability Class 1 Rates
Duty Disability		
▪ Police & Fire	0.020% – 0.150%	15% (0.005% – 0.127%)
▪ General Service	0.002% – 0.015%	1.5% (0.0005% – 0.013%)
Ordinary Disability	0.050% – 0.300%	50% with 0.2% cap (0.015% – 0.200%)

Demographic Assumptions *(continued)*

Termination Assumptions

The termination assumptions used in the actuarial valuation include the following assumptions:

- Termination from active status prior to retirement eligibility
- Probability that a member will elect a refund of his or her account balance before retirement.

Termination Rates

Not all active members are expected to continue working for covered employers until retirement. Termination rates represent the probabilities that a member at any given age will leave covered employment. Termination rates are established by age with select rates for the first three years of employment. Since Tier 1 and Tier 2 have been closed for more than three years, the select rates only apply to OPSRP members.

Termination rates are developed for the following groups:

- School Districts
- SLGRP General Service Males
- SLGRP General Service Females
- Independent General Service Males
- Independent General Service Females
- Police & Fire

Ultimate Termination Rates

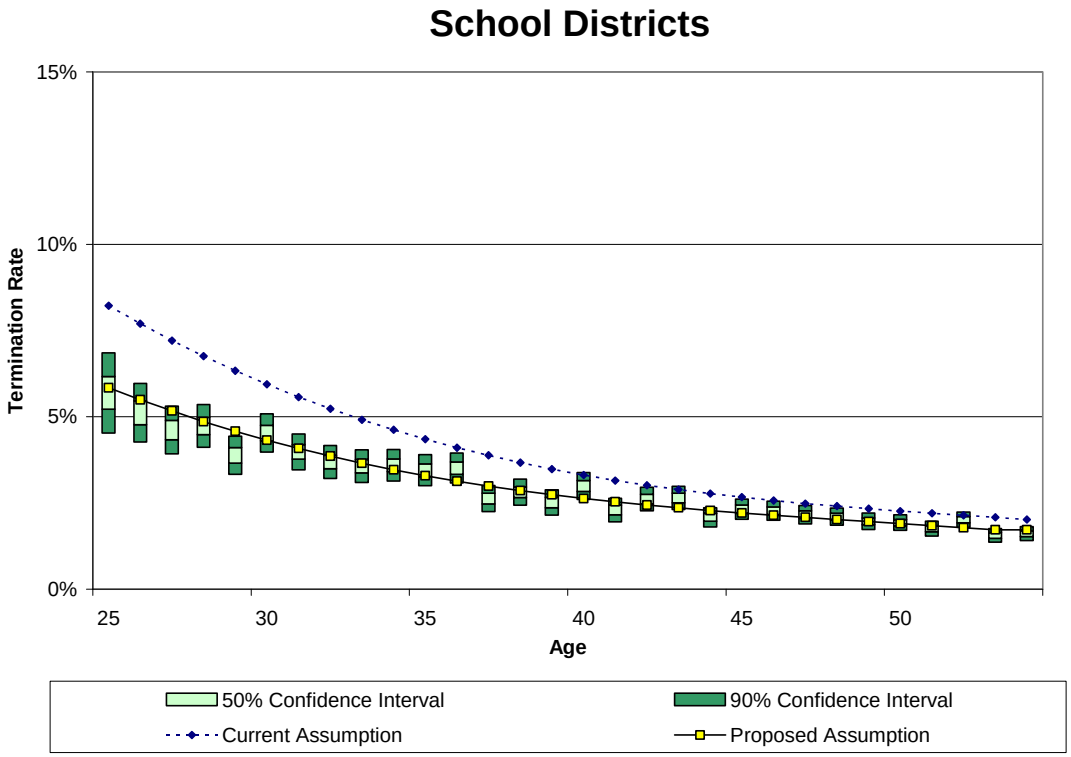
The following charts show the current ultimate assumed rates of termination, the confidence interval around observed experience, and the recommended ultimate rates of termination. These charts are based on the observed experience of members with more than three years of service.

Demographic Assumptions *(continued)*

Termination Assumptions *(continued)*

School Districts

Actual experience for school districts indicates that a modest reduction in termination rates would be appropriate.

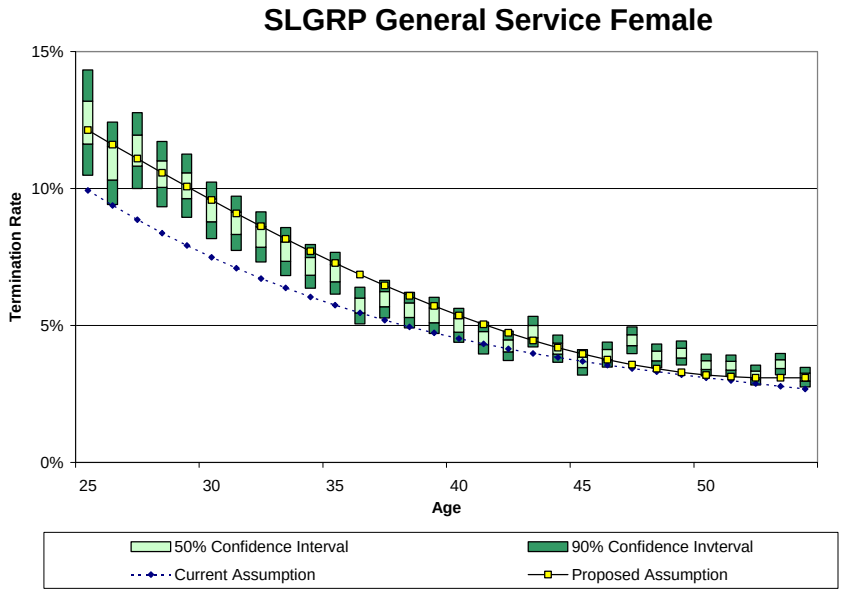


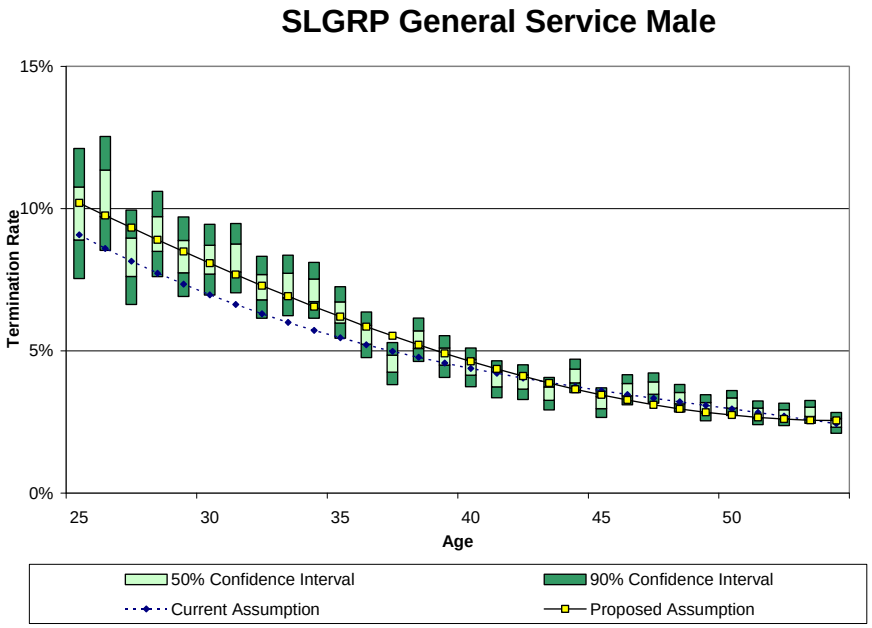
Demographic Assumptions *(continued)*

Termination Assumptions *(continued)*

SLGRP – General Service

For SLGRP members, termination rates vary by gender. Actual experience indicates that a modest increase in termination rates is appropriate.





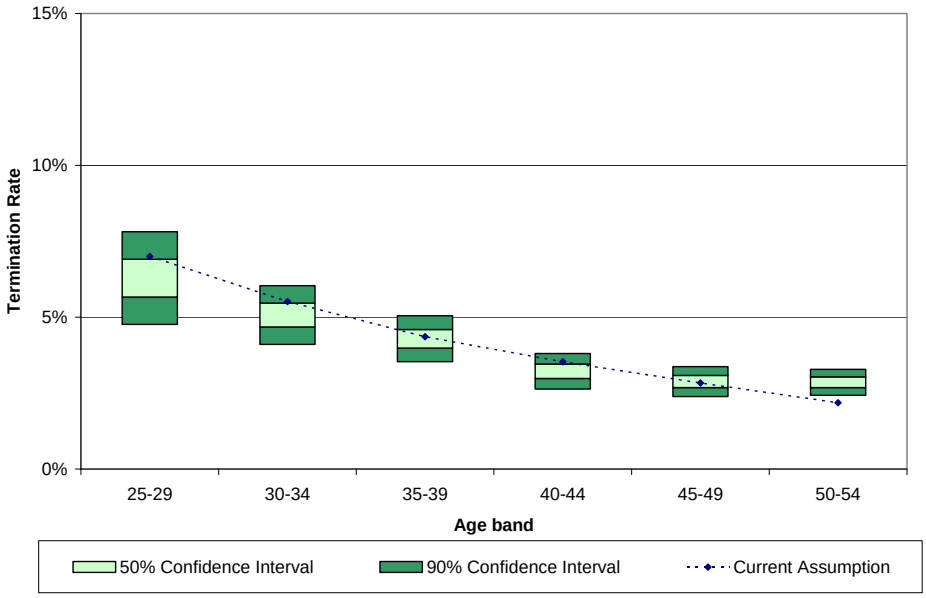
Demographic Assumptions *(continued)*

Termination Assumptions *(continued)*

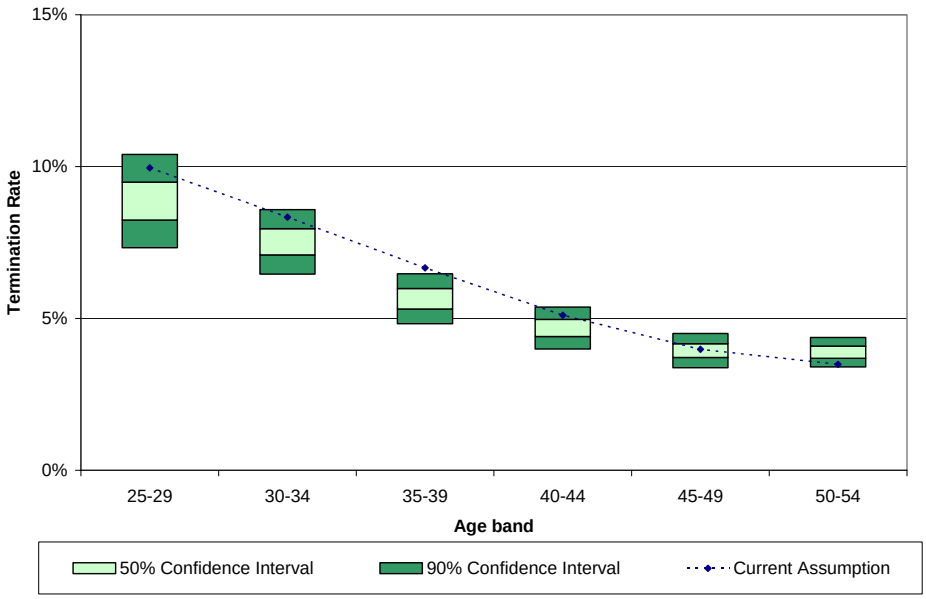
Independent Employers – General Service

Termination rates for Independent Employers also vary by gender. Recent experience follows the current assumptions fairly closely, so we recommend no changes.

Independent General Service Male



Independent General Service Female

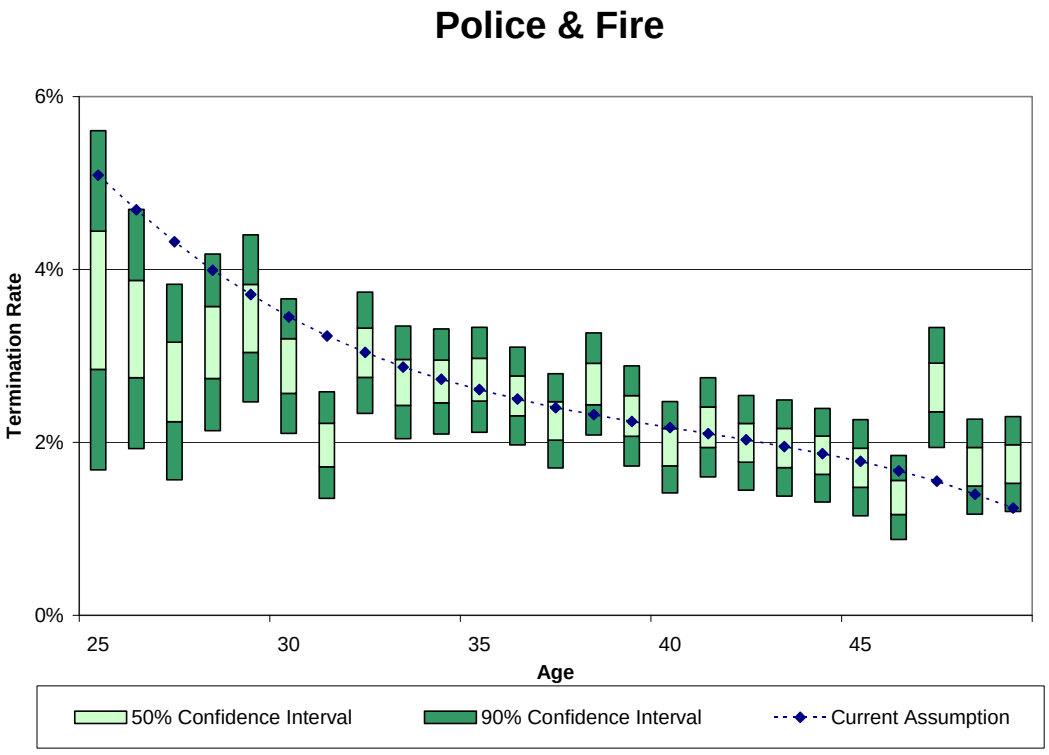


Demographic Assumptions *(continued)*

Termination Assumptions *(continued)*

Police & Fire

All police & fire members were rated together, with no variation by group or gender. The current assumed termination rates follow actual experience fairly closely, so no changes are recommended.



Demographic Assumptions *(continued)*

Termination Assumptions *(continued)*

Select Termination Rates

Termination rates for the first three years of employment are assumed to be higher than the ultimate termination rates described above. Since Tier 1 and Tier 2 have been closed for more than three years, the select termination rates are only applied to OPSRP members. The following table summarizes the recommended termination rates for each of the groups.

Select Termination Rates - December 31, 2008 and 2009 Valuations

Age	School District				Police & Fire			
	1st Select Period	2nd Select Period	3rd Select Period	Ultimate	1st Select Period	2nd Select Period	3rd Select Period	Ultimate
25	8.70%	6.97%	6.58%	5.84%	14.05%	7.56%	5.44%	5.09%
35	5.85%	4.27%	3.95%	3.29%	12.10%	6.17%	4.33%	2.61%
45	4.83%	3.22%	2.89%	2.21%	13.04%	6.35%	4.12%	1.78%

Age	Independent Employers General Service Male				Independent Employers General Service Female			
	1st Select Period	2nd Select Period	3rd Select Period	Ultimate	1st Select Period	2nd Select Period	3rd Select Period	Ultimate
25	20.00%	12.53%	10.55%	7.96%	19.71%	14.26%	12.99%	10.71%
35	15.89%	8.89%	7.14%	4.79%	13.09%	9.27%	8.81%	7.35%
45	15.72%	8.23%	5.98%	3.12%	12.86%	7.93%	6.65%	4.37%

Age	SLGRP General Service Male				SLGRP General Service Female			
	1st Select Period	2nd Select Period	3rd Select Period	Ultimate	1st Select Period	2nd Select Period	3rd Select Period	Ultimate
25	18.28%	14.94%	12.97%	10.20%	18.23%	14.88%	14.21%	12.13%
35	13.44%	10.52%	8.76%	6.20%	14.90%	10.79%	9.74%	7.28%
45	10.01%	7.43%	5.84%	3.45%	12.26%	7.81%	6.59%	3.96%

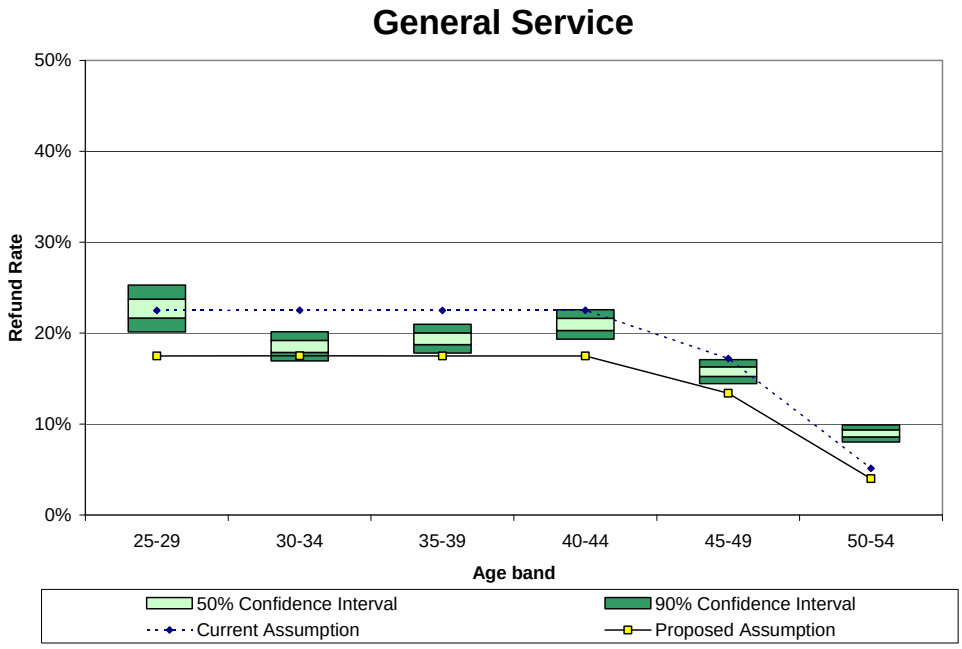
Probability of Refund Before Retirement

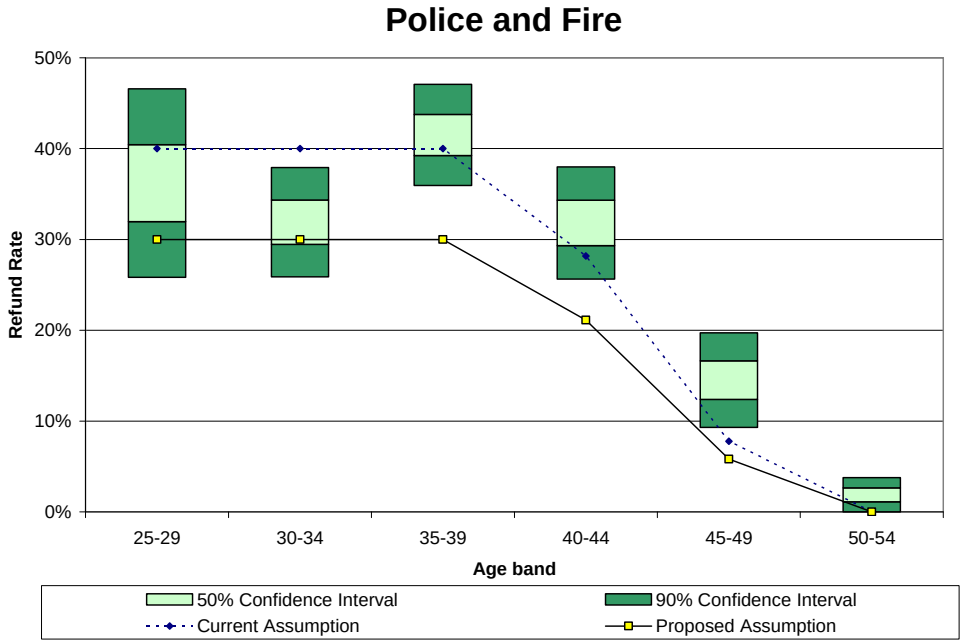
Members who are vested and terminate employment prior to retirement eligibility may elect to withdraw their account balance prior to retirement. By doing so, the members forfeit the employer-provided portion of their retirement benefit. This assumption represents the probability that a terminated member will withdraw his/her account balance in the plan before retirement and thus not receive a retirement benefit.

We recommend decreasing the assumption for both General Service members and Police & Fire members to more closely match actual and anticipated experience.

Demographic Assumptions *(continued)*

Termination Assumptions *(continued)*





Demographic Assumptions *(continued)*

Salary Increase Assumptions

The salary increase assumptions analyzed with demographic experience were:

- Merit scale increases
- Unused Sick Leave adjustments.

Merit Scale

The merit scale assumption is used in conjunction with the inflation and real wage growth assumptions to project individual member salaries to retirement. To focus on the merit and longevity component of salary increases, actual inflation and actual real wage growth were subtracted from observed salary increases. In order to capture experience across a broader range of budget and collective bargaining cycles, the analysis covered experience from 2001 through 2008. As shown in the table below, actual inflation was measured using CPI-U and the actual real growth in wages is measured by the real increase in national average wages reported by the Social Security Administration.

Year	Actual Inflation (CPI-U)	Actual Real Wage Growth
2000	3.39%	2.07%
2001	1.55%	0.83%
2002	2.38%	-1.34%
2003	1.88%	0.55%
2004	3.26%	1.35%
2005	3.42%	0.24%
2006	2.54%	2.01%
2007	4.08%	0.44%

In the past, separate assumptions have been set for OHSU, the SLGRP, and Independent Employers. OHSU has now joined the SLGRP, and we found no significant difference between experience for the SLGRP and Independent Employers. Consequently, the analysis of the merit scale assumptions was consolidated to the following three groups:

- School Districts
- SLGRP/Independent Employer General Service
- Police & Fire

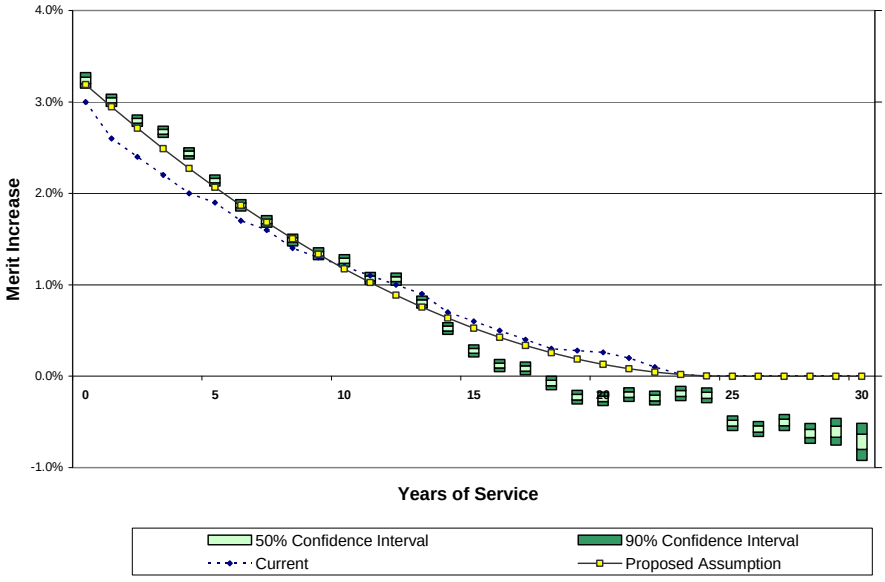
The following charts show the current assumed rates of merit salary increases, the confidence interval around observed experience, and the recommended rates of merit salary increases. In general, we recommend slight increases in the merit salary increase assumptions for all groups. For School Districts, the data shows a negative merit increase after 17 or 18 years of service during the experience period. We limit our assumption to 0 percent, but will monitor this trend over time.

Demographic Assumptions *(continued)*

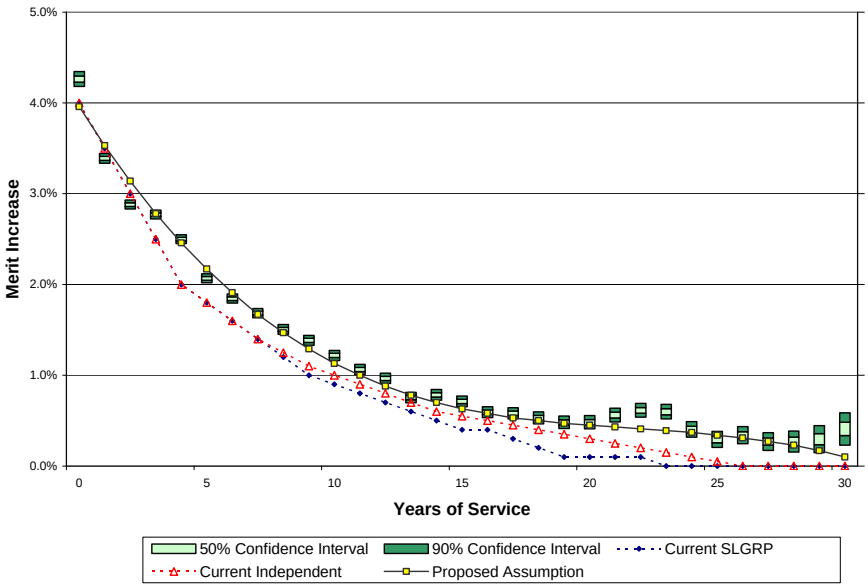
Salary Increase Assumptions *(continued)*

Recognizing the current economic environment and government budgets, we recommend that a 0 percent merit salary increase be assumed for 2009 and 2010 for all groups and all years of service. Note that pay will still be expected to increase for inflation and real wage growth, but not for merit.

School Districts



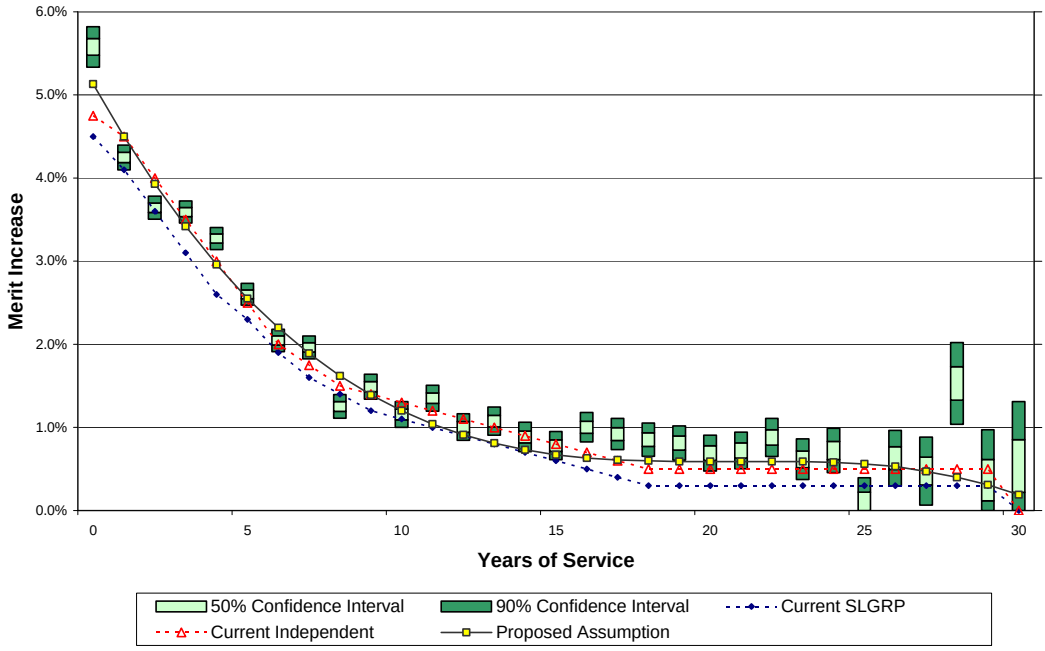
Other General Service



Demographic Assumptions *(continued)*

Salary Increase Assumptions *(continued)*

Police & Fire



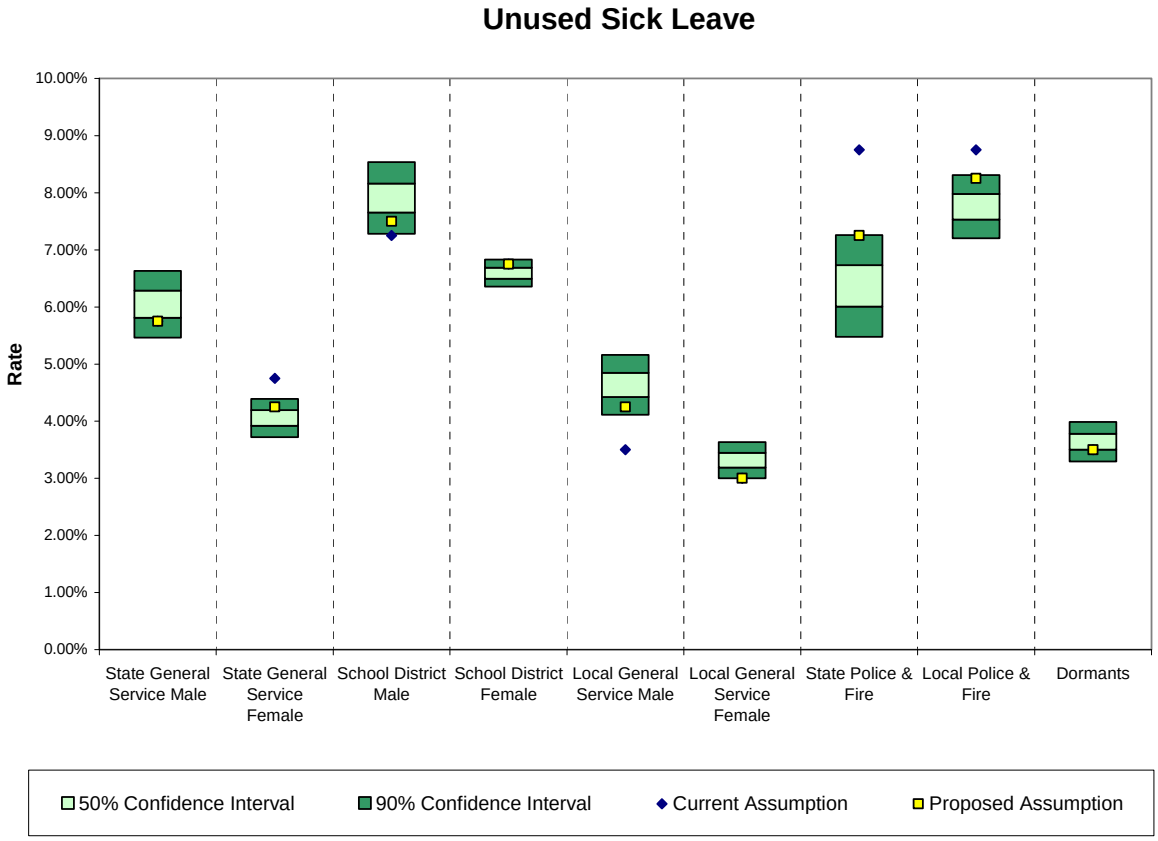
Unused Sick Leave

Employers may elect to participate in the Unused Sick Leave Program. This program allows members to convert the value of one-half of their accumulated sick leave into additional retirement benefits. The assumption represents the percentage increase in a member's final average pay due to the inclusion of the value of 50 percent of the member's accumulated sick leave, and is only applied to employers who participate in the program.

For active members, there are currently eight sets of rates developed by employer group, employment category (general service or police and fire) and gender. The chart below shows the current assumption, the confidence intervals of the observed experience, and the recommended assumption for each of the groups studied.

Demographic Assumptions *(continued)*

Salary Increase Assumptions *(continued)*



Due to the volatility in experience from one study to the next, for the groups where we recommended changes the recommended change is between the prior assumption and the actual observed experience, but within the confidence interval around current experience.

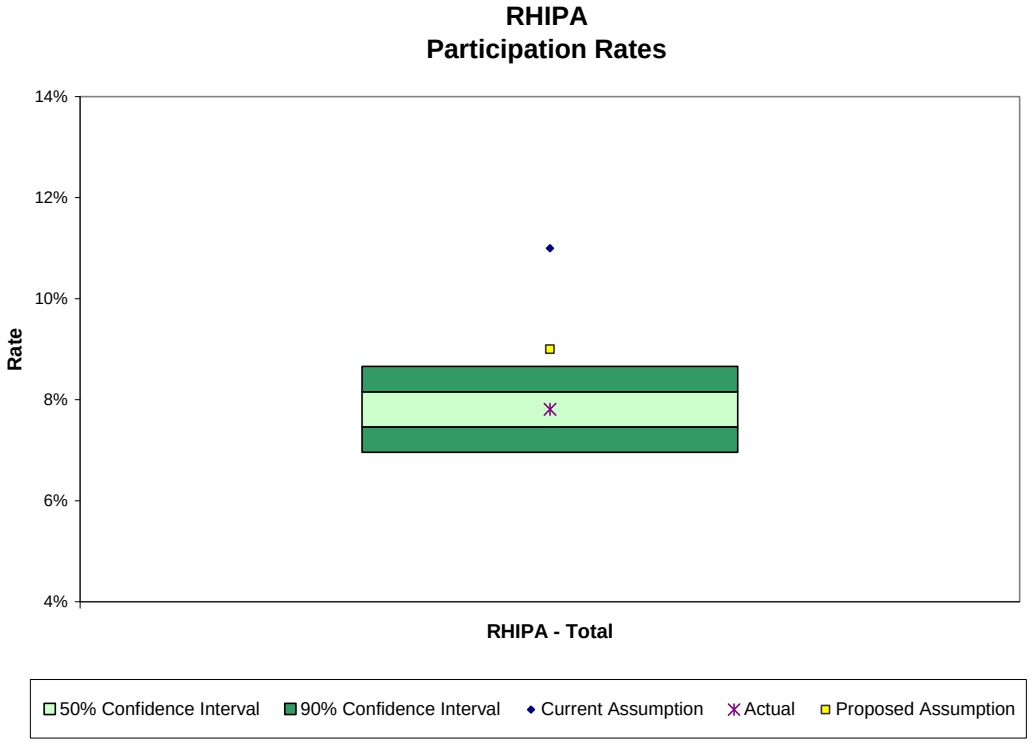
Demographic Assumptions *(continued)*

Retiree Healthcare Assumptions

There are two retiree healthcare programs offered to eligible members, the Retiree Health Insurance Premium Account (RHIPA) and the Retiree Health Insurance Account (RHIA).

RHIPA

RHIPA is a program for eligible retirees from State employment that provides a subsidized pre-Medicare insurance plan. Participation rates during the period of study dropped to below 8 percent compared to an assumption of 11 percent. This decline in participation may be due, at least in part, to competition from the PEBB alternative. Since changes in this competitive relationship could change participation rates in RHIPA quickly, as shown in the table below, we recommend a somewhat conservative assumption of 9 percent, slightly above the 90 percent confidence interval.

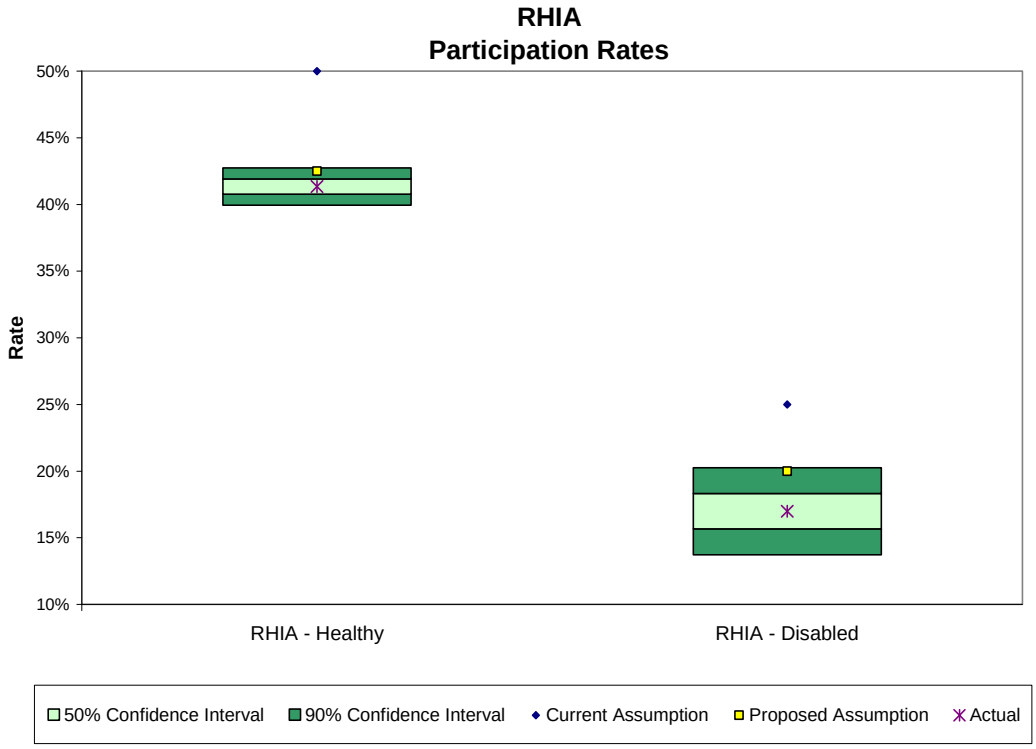


Demographic Assumptions *(continued)*

Retiree Healthcare Assumptions *(continued)*

RHIA

RHIA is a subsidized Medicare supplemental insurance program offered to all eligible retirees. Participation rates during the period of study dropped to approximately 41 percent for healthy retirees and 17 percent for disabled retirees compared to assumptions of 50 percent and 25 percent respectively. This decline in participation may be due, at least in part, to the diminishing relevance of the flat-dollar subsidy. As shown in the table below, we recommend somewhat conservative assumptions of 42.5 percent and 20 percent in order to provide some margin against changes in the participation rate.



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Appendix

Data

The analysis in this study was based on data for the experience period from January 1, 2005, to December 31, 2008, as provided by the Oregon Public Employees Retirement System. The System is solely responsible for the validity, accuracy and comprehensiveness of this information; the results of our analysis can be expected to differ and may need to be revised if the underlying data supplied is incomplete or inaccurate.

The member data was summarized according to the actual and potential member decrements for each year in the study. Actual and potential decrements were grouped according to age or service depending on the demographic assumption.

Appendix *(continued)*

Assumption Tables

A complete listing of all the assumptions, methods and procedures adopted by the Board on July 16, 2009 that are used in the actuarial valuation are summarized on the following pages.

Methods and Procedures

Actuarial cost method	Projected unit credit
UAL amortization method	Level percent of combined Tier 1, Tier 2, and OPSRP payroll
UAL amortization period	▪ Closed amortization from the first rate setting valuation in which the experience is recognized – Tier 1/Tier 2 – 20 years – OPSRP – 16 years – RHIA/RHIPA – 10 years ▪ Side accounts are amortized over the period ending December 31, 2027 ▪ Transition liabilities are amortized over the period ending December 31, 2027
Asset valuation method	Market value
Excluded reserves	Contingency, capital preservation, and rate guarantee
Contribution Rate Stabilization Method	The change in contribution rates for each pension rate pool is limited to the greatest of 20% of current rate or 300 basis points. The size of the rate collar doubles if the funded percentage falls below 80% or increases above 120%. For purposes of the rate collar, significant plan amendments change the current contribution rate before the rate collar is calculated. Retiree medical rates are excluded from the rate collar.
Allocation of Liability for Service Segments	Allocate Actuarial Accrued Liability 50% (15% for police & fire) based on account balance with each employer and 50% (85% for police & fire) based on service with each employer Allocate Normal Cost to current employer
Allocation of Benefits-In-Force (BIF) Reserve	The BIF is allocated to each rate pool in proportion to the retiree liability attributable to the rate pool.

Appendix *(continued)*

Economic Assumptions

Inflation	2.75%
Real wage growth	1.00%
Payroll growth	3.75%
Investment Return	8.00%
Interest Crediting	
▪ Regular account	8.00%
▪ Variable account	8.50%
Health cost trend rates	
▪ 2009 trend rate	7.00%
▪ Ultimate trend rate	4.50%
▪ Year reaching ultimate trend	2029

Appendix *(continued)*

Demographic Assumptions

Mortality

	Healthy Annuitant Mortality										Beneficiary Mortality			
			Other General				School District							
Age	School District Male		Service Male		Police & Fire Male		Female		Other Female		Male		Female	
Year of Birth	**1940**	**1950**	**1940**	**1950**	**1940**	**1950**	**1940**	**1950**	**1940**	**1950**	**1940**	**1950**	**1940**	**1950**
50	0.001843	0.001843	0.001978	0.001978	0.002121	0.002121	0.001404	0.001404	0.001712	0.001712	0.001978	0.001978	0.001712	0.001712
51	0.001978	0.001978	0.002303	0.002259	0.002449	0.002402	0.001526	0.001526	0.001876	0.001847	0.002303	0.002259	0.001876	0.001847
52	0.002303	0.002259	0.002497	0.002398	0.002661	0.002556	0.001678	0.001664	0.002031	0.001974	0.002497	0.002398	0.002031	0.001974
53	0.002497	0.002398	0.002714	0.002554	0.002906	0.002735	0.001846	0.001805	0.002201	0.002122	0.002714	0.002554	0.002201	0.002122
54	0.002714	0.002554	0.002947	0.002719	0.003177	0.002931	0.002012	0.001948	0.002397	0.002303	0.002947	0.002719	0.002397	0.002303
55	0.002947	0.002719	0.003303	0.003001	0.003598	0.003269	0.002201	0.002118	0.002655	0.002550	0.003303	0.003001	0.002655	0.002550
56	0.003303	0.003001	0.003749	0.003362	0.004151	0.003722	0.002445	0.002348	0.002987	0.002881	0.003749	0.003362	0.002987	0.002881
57	0.003749	0.003362	0.004091	0.003628	0.004599	0.004078	0.002769	0.002665	0.003340	0.003225	0.004091	0.003628	0.003340	0.003225
58	0.004091	0.003628	0.004489	0.003946	0.005119	0.004500	0.003134	0.003024	0.003745	0.003597	0.004489	0.003946	0.003745	0.003597
59	0.004489	0.003946	0.004967	0.004296	0.005723	0.004950	0.003518	0.003387	0.004213	0.004028	0.004967	0.004296	0.004213	0.004028
60	0.004967	0.004296	0.005583	0.004751	0.006470	0.005506	0.003943	0.003778	0.004767	0.004533	0.005583	0.004751	0.004767	0.004533
61	0.005583	0.004751	0.006258	0.005380	0.007258	0.006240	0.004422	0.004216	0.005435	0.005170	0.006258	0.005380	0.005435	0.005170
62	0.006258	0.005380	0.007096	0.006101	0.008204	0.007053	0.004975	0.004732	0.006188	0.005885	0.007096	0.006101	0.006188	0.005885
63	0.007096	0.006101	0.008127	0.007058	0.009339	0.008111	0.005601	0.005327	0.007091	0.006744	0.008127	0.007058	0.007091	0.006744
64	0.008127	0.007058	0.009159	0.007954	0.010444	0.009070	0.006321	0.006012	0.007992	0.007601	0.009159	0.007954	0.007992	0.007601
65	0.009159	0.007954	0.010309	0.008953	0.011686	0.010149	0.007115	0.006767	0.008999	0.008560	0.010309	0.008953	0.008999	0.008560
66	0.010309	0.008953	0.011631	0.010205	0.013148	0.011536	0.007978	0.007588	0.010157	0.009660	0.011631	0.010205	0.010157	0.009660
67	0.011631	0.010205	0.012809	0.011238	0.014467	0.012692	0.008969	0.008531	0.011292	0.010740	0.012809	0.011238	0.011292	0.010740
68	0.012809	0.011238	0.013910	0.012081	0.015711	0.013646	0.010035	0.009544	0.012495	0.011884	0.013910	0.012081	0.012495	0.011884
69	0.013910	0.012081	0.015146	0.013154	0.017108	0.014858	0.011127	0.010583	0.013820	0.013144	0.015146	0.013154	0.013820	0.013144
70	0.015146	0.013154	0.016571	0.014247	0.018694	0.016072	0.012299	0.011698	0.015525	0.014766	0.016571	0.014247	0.015525	0.014766
71	0.016571	0.014247	0.018123	0.015581	0.020341	0.017487	0.013678	0.013009	0.016983	0.015991	0.018123	0.015581	0.016983	0.015991
72	0.018123	0.015581	0.019911	0.017118	0.022202	0.019087	0.015116	0.014302	0.018789	0.017692	0.019911	0.017118	0.018789	0.017692
73	0.019911	0.017118	0.021946	0.018867	0.024302	0.020893	0.016633	0.015661	0.020482	0.019093	0.021946	0.018867	0.020482	0.019093
74	0.021946	0.018867	0.024253	0.020851	0.026679	0.022937	0.018277	0.017120	0.022528	0.021000	0.024253	0.020851	0.022528	0.021000
75	0.024253	0.020851	0.027223	0.023643	0.029759	0.025846	0.020061	0.018700	0.024311	0.022434	0.027223	0.023643	0.024311	0.022434
76	0.027223	0.023643	0.030153	0.026188	0.032763	0.028454	0.021921	0.020327	0.026590	0.024537	0.030153	0.026188	0.026590	0.024537
77	0.030153	0.026188	0.033908	0.029749	0.036634	0.032141	0.023926	0.022079	0.029564	0.027559	0.033908	0.029749	0.029564	0.027559
78	0.033908	0.029749	0.038210	0.033864	0.041033	0.036367	0.026525	0.024608	0.032396	0.030198	0.038210	0.033864	0.032396	0.030198
79	0.038210	0.033864	0.043098	0.038585	0.046011	0.041193	0.029404	0.027409	0.035541	0.033130	0.043098	0.038585	0.035541	0.033130
80	0.043098	0.038585	0.048593	0.043947	0.051599	0.046665	0.032367	0.030171	0.039118	0.036464	0.048593	0.043947	0.039118	0.036464
81	0.048593	0.043947	0.055234	0.050459	0.058341	0.053297	0.035679	0.033259	0.043155	0.040227	0.055234	0.050459	0.043155	0.040227
82	0.055234	0.050459	0.062795	0.057949	0.065956	0.060866	0.039398	0.036726	0.047667	0.044433	0.062795	0.057949	0.047667	0.044433
83	0.062795	0.057949	0.069811	0.064423	0.072888	0.067262	0.043544	0.040590	0.052734	0.049157	0.069811	0.064423	0.052734	0.049157
84	0.069811	0.064423	0.079241	0.073865	0.082273	0.076692	0.048177	0.044909	0.058395	0.054434	0.079241	0.073865	0.058395	0.054434
85	0.079241	0.073865	0.087808	0.081852	0.090690	0.084539	0.053359	0.049739	0.066358	0.062483	0.087808	0.081852	0.066358	0.062483
86	0.087808	0.081852	0.097286	0.090686	0.099919	0.093141	0.059960	0.056193	0.075465	0.071776	0.097286	0.090686	0.075465	0.071776
87	0.097286	0.090686	0.110668	0.104204	0.113034	0.106432	0.068272	0.064630	0.085937	0.082560	0.110668	0.104204	0.085937	0.082560
88	0.110668	0.104204	0.125898	0.119742	0.127928	0.121673	0.077856	0.074448	0.095114	0.091377	0.125898	0.119742	0.095114	0.091377
89	0.125898	0.119742	0.139300	0.132489	0.140772	0.133889	0.087537	0.084098	0.107905	0.104712	0.139300	0.132489	0.107905	0.104712
90	0.139300	0.132489	0.158076	0.151865	0.159096	0.152845	0.098405	0.095046	0.118455	0.114949	0.158076	0.151865	0.118455	0.114949
91	0.158076	0.151865	0.172194	0.165429	0.172602	0.165820	0.110006	0.106750	0.129254	0.125428	0.172194	0.165429	0.129254	0.125428
92	0.172194	0.165429	0.192618	0.186917	0.192488	0.186791	0.120745	0.117171	0.139991	0.135848	0.192618	0.186917	0.139991	0.135848
93	0.192618	0.186917	0.207797	0.201647	0.207169	0.201037	0.131684	0.127786	0.155628	0.152544	0.207797	0.201647	0.155628	0.152544
94	0.207797	0.201647	0.222501	0.215915	0.221530	0.214973	0.145076	0.141531	0.166137	0.162844	0.222501	0.215915	0.166137	0.162844
95	0.222501	0.215915	0.245399	0.240535	0.244247	0.239406	0.158468	0.155327	0.176009	0.172521	0.245399	0.240535	0.176009	0.172521
96	0.245399	0.240535	0.264163	0.258927	0.264163	0.258927	0.169107	0.165755	0.191098	0.187310	0.264163	0.258927	0.191098	0.187310
97	0.264163	0.258927	0.278443	0.272924	0.278443	0.272924	0.182686	0.179065	0.207418	0.205353	0.278443	0.272924	0.207418	0.205353
98	0.278443	0.272924	0.303534	0.300512	0.303534	0.300512	0.199258	0.196332	0.215593	0.213446	0.303534	0.300512	0.215593	0.213446
99	0.303534	0.300512	0.317571	0.314409	0.317571	0.314409	0.211506	0.209400	0.222532	0.220317	0.317571	0.314409	0.222532	0.220317
100	0.317571	0.314409	0.331039	0.327744	0.331039	0.327744	0.219063	0.216882	0.228151	0.225880	0.331039	0.327744	0.228151	0.225880
101	0.331039	0.327744	0.358628	0.358628	0.358628	0.358628	0.225342	0.223099	0.244834	0.244834	0.358628	0.358628	0.244834	0.244834
102	0.358628	0.358628	0.371685	0.371685	0.371685	0.371685	0.236493	0.235357	0.254498	0.254498	0.371685	0.371685	0.254498	0.254498
103	0.371685	0.371685	0.383040	0.383040	0.383040	0.383040	0.249666	0.249666	0.266044	0.266044	0.383040	0.383040	0.266044	0.266044
104	0.383040	0.383040	0.392003	0.392003	0.392003	0.392003	0.260271	0.260271	0.279055	0.279055	0.392003	0.392003	0.279055	0.279055
105	0.392003	0.392003	0.397886	0.397886	0.397886	0.397886	0.272550	0.272550	0.293116	0.293116	0.397886	0.397886	0.293116	0.293116
106	0.397886	0.397886	0.400000	0.400000	0.400000	0.400000	0.286086	0.286086	0.307811	0.307811	0.400000	0.400000	0.307811	0.307811
107	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.300464	0.300464	0.322725	0.322725	0.400000	0.400000	0.322725	0.322725
108	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.315268	0.315268	0.337441	0.337441	0.400000	0.400000	0.337441	0.337441
109	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.330083	0.330083	0.351544	0.351544	0.400000	0.400000	0.351544	0.351544
110	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.344493	0.344493	0.364617	0.364617	0.400000	0.400000	0.364617	0.364617
111	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.358081	0.358081	0.376246	0.376246	0.400000	0.400000	0.376246	0.376246
112	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.370432	0.370432	0.386015	0.386015	0.400000	0.400000	0.386015	0.386015
113	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.381131	0.381131	0.393507	0.393507	0.400000	0.400000	0.393507	0.393507
114	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.389761	0.389761	0.398308	0.398308	0.400000	0.400000	0.398308	0.398308
115	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.395908	0.395908	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000
116	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.399154	0.399154	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000
117	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000
118	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000
119	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000	0.400000
120	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000

Appendix *(continued)*

Demographic Assumptions *(continued)*

Mortality **(continued)**

Disabled Retiree Mortality			Non-Annuitant Mortality									
				Other General					School District			
			Age	School District Male		Service Male		Police & Fire Male		Female		Other Female	
Age	Male	Female	Year of Birth	1950	1960	1950	1960	1950	1960	1950	1960	1950	1960
45	0.022500	0.022500	20	0.000197	0.000197	0.000206	0.000206	0.000259	0.000259	0.000102	0.000102	0.000104	0.000104
46	0.022500	0.022500	21	0.000206	0.000206	0.000213	0.000213	0.000268	0.000268	0.000103	0.000103	0.000104	0.000104
47	0.022500	0.022500	22	0.000213	0.000213	0.000218	0.000218	0.000275	0.000275	0.000103	0.000103	0.000105	0.000105
48	0.022500	0.022500	23	0.000218	0.000218	0.000223	0.000223	0.000280	0.000280	0.000104	0.000104	0.000107	0.000107
49	0.022500	0.022500	24	0.000223	0.000223	0.000224	0.000224	0.000282	0.000282	0.000106	0.000106	0.000109	0.000109
50	0.022500	0.022500	25	0.000224	0.000224	0.000224	0.000224	0.000282	0.000282	0.000107	0.000107	0.000112	0.000112
51	0.022500	0.022500	26	0.000224	0.000224	0.000226	0.000226	0.000284	0.000284	0.000110	0.000110	0.000116	0.000116
52	0.022500	0.022500	27	0.000226	0.000226	0.000228	0.000228	0.000287	0.000287	0.000114	0.000114	0.000121	0.000121
53	0.022500	0.022500	28	0.000228	0.000228	0.000234	0.000234	0.000295	0.000295	0.000118	0.000118	0.000128	0.000128
54	0.022500	0.022500	29	0.000234	0.000234	0.000246	0.000246	0.000310	0.000310	0.000124	0.000124	0.000135	0.000135
55	0.022500	0.022500	30	0.000246	0.000246	0.000265	0.000265	0.000333	0.000333	0.000130	0.000130	0.000143	0.000143
56	0.022500	0.022500	31	0.000265	0.000265	0.000291	0.000291	0.000367	0.000367	0.000138	0.000138	0.000163	0.000163
57	0.022500	0.022500	32	0.000291	0.000291	0.000323	0.000323	0.000404	0.000404	0.000153	0.000153	0.000182	0.000182
58	0.022500	0.022500	33	0.000323	0.000323	0.000361	0.000361	0.000445	0.000445	0.000172	0.000172	0.000202	0.000202
59	0.022500	0.022500	34	0.000361	0.000361	0.000401	0.000401	0.000486	0.000486	0.000191	0.000191	0.000222	0.000222
60	0.022500	0.022500	35	0.000401	0.000401	0.000443	0.000443	0.000528	0.000528	0.000209	0.000209	0.000242	0.000242
61	0.022500	0.022500	36	0.000443	0.000443	0.000487	0.000487	0.000570	0.000570	0.000226	0.000226	0.000262	0.000262
62	0.022500	0.022500	37	0.000487	0.000487	0.000530	0.000530	0.000610	0.000610	0.000241	0.000241	0.000283	0.000283
63	0.022500	0.022500	38	0.000530	0.000530	0.000575	0.000575	0.000651	0.000651	0.000256	0.000256	0.000306	0.000306
64	0.022500	0.022500	39	0.000575	0.000575	0.000620	0.000620	0.000692	0.000692	0.000273	0.000273	0.000332	0.000332
65	0.022500	0.022500	40	0.000620	0.000620	0.000668	0.000668	0.000734	0.000734	0.000291	0.000291	0.000361	0.000361
66	0.024570	0.022500	41	0.000668	0.000668	0.000719	0.000713	0.000781	0.000774	0.000311	0.000311	0.000394	0.000388
67	0.027281	0.022500	42	0.000719	0.000713	0.000776	0.000761	0.000834	0.000817	0.000336	0.000334	0.000433	0.000420
68	0.030387	0.022500	43	0.000776	0.000761	0.000843	0.000815	0.000895	0.000865	0.000366	0.000357	0.000474	0.000453
69	0.033900	0.022970	44	0.000843	0.000815	0.000919	0.000875	0.000964	0.000919	0.000400	0.000385	0.000520	0.000490
70	0.037834	0.025458	45	0.000919	0.000875	0.001007	0.000943	0.001044	0.000977	0.000440	0.000417	0.000569	0.000525
71	0.042169	0.028106	46	0.001007	0.000943	0.001094	0.001004	0.001121	0.001030	0.000485	0.000452	0.000621	0.000560
72	0.046906	0.030966	47	0.001094	0.001004	0.001187	0.001068	0.001206	0.001085	0.000534	0.000487	0.000676	0.000595
73	0.052123	0.034105	48	0.001187	0.001068	0.001283	0.001128	0.001294	0.001137	0.000587	0.000523	0.000733	0.000634
74	0.057927	0.037595	49	0.001283	0.001128	0.001382	0.001185	0.001387	0.001189	0.000644	0.000561	0.000792	0.000673
75	0.064368	0.041506	50	0.001382	0.001185	0.001484	0.001237	0.001485	0.001238	0.000702	0.000602	0.000856	0.000721
76	0.072041	0.045879	51	0.001484	0.001237	0.001694	0.001399	0.001681	0.001388	0.000763	0.000646	0.000923	0.000786
77	0.080486	0.050780	52	0.001694	0.001399	0.001799	0.001470	0.001789	0.001462	0.000832	0.000705	0.000987	0.000857
78	0.089718	0.056294	53	0.001799	0.001470	0.001916	0.001565	0.001914	0.001564	0.000903	0.000777	0.001061	0.000941
79	0.099779	0.062506	54	0.001916	0.001565	0.002039	0.001666	0.002051	0.001676	0.000974	0.000855	0.001151	0.001041
80	0.110757	0.069517	55	0.002039	0.001666	0.002251	0.001858	0.002288	0.001889	0.001059	0.000949	0.001275	0.001177
81	0.122797	0.077446	56	0.002251	0.001858	0.002522	0.002103	0.002606	0.002173	0.001174	0.001074	0.001440	0.001356
82	0.136043	0.086376	57	0.002522	0.002103	0.002721	0.002292	0.002855	0.002405	0.001333	0.001244	0.001613	0.001534
83	0.150590	0.096337	58	0.002721	0.002292	0.002960	0.002519	0.003150	0.002681	0.001512	0.001432	0.001799	0.001711
84	0.166420	0.107303	59	0.002960	0.002519	0.003222	0.002742	0.003465	0.002949	0.001694	0.001611	0.002014	0.001915
85	0.183408	0.119154	60	0.003222	0.002742	0.003563	0.003033	0.003854	0.003280	0.001889	0.001797	0.002267	0.002156
86	0.199769	0.131682	61	0.003563	0.003033	0.004035	0.003469	0.004368	0.003755	0.002108	0.002005	0.002585	0.002458
87	0.216605	0.144604	62	0.004035	0.003469	0.004576	0.003934	0.004937	0.004245	0.002366	0.002251	0.002943	0.002799
88	0.233662	0.157618	63	0.004576	0.003934	0.005294	0.004598	0.005678	0.004931	0.002664	0.002534	0.003372	0.003207
89	0.250693	0.170433	64	0.005294	0.004598	0.005966	0.005181	0.006349	0.005514	0.003006	0.002859	0.003800	0.003615
90	0.267491	0.182799	65	0.005966	0.005181	0.006715	0.005832	0.007104	0.006170	0.003384	0.003219	0.004280	0.004070
91	0.283905	0.194509	66	0.006715	0.005832	0.007654	0.006715	0.008075	0.007085	0.003794	0.003609	0.004830	0.004594
92	0.299852	0.205379	67	0.007654	0.006715	0.008429	0.007394	0.008885	0.007795	0.004266	0.004057	0.005370	0.005107
93	0.315296	0.215240	68	0.008429	0.007394	0.009061	0.007869	0.009552	0.008296	0.004772	0.004539	0.005942	0.005652
94	0.330207	0.223947	69	0.009061	0.007869	0.009866	0.008568	0.010400	0.009033	0.005292	0.005033	0.006572	0.006251
95	0.344556	0.231387	70	0.009866	0.008568	0.010685	0.009186	0.011251	0.009672	0.005849	0.005563	0.007383	0.007022
96	0.358628	0.237467	71	0.010685	0.009186	0.011686	0.010046	0.012241	0.010524	0.006505	0.006187	0.007995	0.007528
97	0.371685	0.244834	72	0.011686	0.010046	0.012839	0.011038	0.013361	0.011487	0.007151	0.006766	0.008846	0.008329
98	0.383040	0.254498	73	0.012839	0.011038	0.014150	0.012166	0.014625	0.012574	0.007831	0.007374	0.009547	0.008899
99	0.392003	0.266044	74	0.014150	0.012166	0.015638	0.013445	0.016056	0.013804	0.008560	0.008018	0.010500	0.009788
100	0.397886	0.279055	75	0.015638	0.013445	0.017732	0.015401	0.018092	0.015713	0.009350	0.008716	0.011217	0.010352
101	0.400000	0.293116	76	0.017732	0.015401	0.019641	0.017058	0.019918	0.017299	0.010164	0.009425	0.012269	0.011322
102	0.400000	0.307811	77	0.019641	0.017058	0.022312	0.019576	0.022499	0.019740	0.011040	0.010188	0.013779	0.012845
103	0.400000	0.322725	78	0.022312	0.019576	0.025398	0.022510	0.025457	0.022562	0.012304	0.011416	0.015099	0.014075
104	0.400000	0.337441	79	0.025398	0.022510	0.028939	0.025909	0.028835	0.025816	0.013705	0.012775	0.016565	0.015441
105	0.400000	0.351544	80	0.028939	0.025909	0.032960	0.029809	0.032666	0.029542	0.015086	0.014063	0.018232	0.016995
106	0.400000	0.364617	81	0.032960	0.029809	0.037844	0.034574	0.037308	0.034084	0.016630	0.015501	0.020114	0.018749
107	0.400000	0.376246	82	0.037844	0.034574	0.043462	0.040107	0.042606	0.039317	0.018363	0.017117	0.022217	0.020710
108	0.400000	0.386015	83	0.043462	0.040107	0.048317	0.044588	0.047083	0.043450	0.020295	0.018918	0.024578	0.022911
109	0.400000	0.393507	84	0.048317	0.044588	0.055399	0.051641	0.053684	0.050043	0.022455	0.020931	0.027217	0.025371
110	0.400000	0.398308	85	0.055399	0.051641	0.061389	0.057224	0.059177	0.055163	0.024870	0.023183	0.031241	0.029417
111	0.400000	0.400000	86	0.061389	0.057224	0.068015	0.063401	0.065198	0.060776	0.028097	0.026333	0.035888	0.034133
112	0.400000	0.400000	87	0.068015	0.063401	0.078153	0.073589	0.074502	0.070151	0.032315	0.030593	0.041280	0.039658
113	0.400000	0.400000	88	0.078153	0.073589	0.089807	0.085416	0.085171	0.081007	0.037224	0.035596	0.045689	0.043894
114	0.400000	0.400000	89	0.089807	0.085416	0.099367	0.094509	0.093722	0.089140	0.042049	0.040397	0.052356	0.050806
115	1.000000	0.400000	90	0.099367	0.094509	0.113899	0.109424	0.106991	0.102788	0.047523	0.045903	0.057474	0.055773
116	1.000000	1.000000	91	0.113899	0.109424	0.124072	0.119197	0.116074	0.111514	0.053375	0.051796	0.062714	0.060858
117	1.000000	1.000000	92	0.124072	0.119197	0.140188	0.136038	0.130754	0.126883	0.058586	0.056852	0.067924	0.065918
118	1.000000	1.000000	93	0.140188	0.136038	0.151235	0.146759	0.140726	0.136560	0.063893	0.062002	0.076272	0.074760
119	1.000000	1.000000	94	0.151235	0.146759	0.161936	0.157143	0.150481	0.146027	0.070766	0.069037	0.081422	0.079808
120	1.000000	1.000000	95	0.161936	0.157143	0.180401	0.176826	0.167584	0.164263	0.077664	0.076124	0.086260	0.084551

Appendix *(continued)*

Demographic Assumptions *(continued)*

Retirement Assumptions (Tier 1/Tier 2)

Retirement from Active Status (Tier 1/Tier 2)

	Police & Fire			General Service		School Districts		General Service (Including School Districts)
Age	< 13 yrs	13-24 yrs	25+ yrs	<15 yrs	15-29 yrs	<15 yrs	15-29 yrs	30+ yrs
Less than 50								27.0%
50	1.0%	3.0%	35.0%					27.0%
51	1.0%	3.0%	20.0%					27.0%
52	1.0%	3.0%	20.0%					40.0%
53	1.0%	3.0%	20.0%					40.0%
54	1.0%	3.0%	20.0%					35.0%
55	3.0%	12.0%	20.0%	1.0%	5.0%	1.0%	8.0%	30.0%
56	3.0%	8.5%	20.0%	1.0%	4.0%	1.0%	6.0%	25.0%
57	3.0%	8.5%	20.0%	1.5%	3.0%	1.0%	5.0%	25.0%
58	3.0%	8.5%	20.0%	1.5%	9.0%	2.0%	13.0%	25.0%
59	5.0%	8.5%	20.0%	2.5%	9.0%	2.0%	13.0%	25.0%
60	5.0%	8.5%	20.0%	4.0%	9.0%	3.0%	13.0%	20.0%
61	5.0%	8.5%	20.0%	4.0%	9.0%	5.0%	13.0%	20.0%
62	10.0%	30.0%	40.0%	10.0%	16.0%	10.0%	20.0%	30.0%
63	10.0%	20.0%	40.0%	7.5%	14.0%	9.0%	16.0%	20.0%
64	10.0%	10.0%	40.0%	7.5%	14.0%	9.0%	16.0%	20.0%
65	100.0%	100.0%	100.0%	11.0%	24.0%	14.0%	27.0%	28.0%
66				18.0%	33.0%	16.0%	32.0%	20.0%
67				15.0%	22.0%	10.0%	29.0%	20.0%
68				12.0%	17.0%	7.5%	20.0%	20.0%
69				12.0%	17.0%	7.5%	20.0%	20.0%
70				100.0%	100.0%	100.0%	100.0%	100.0%

Appendix *(continued)*

Demographic Assumptions *(continued)*

Retirement Assumptions (OPSRP)

Retirement from Active Status (OPSRP)

	Police & Fire			General Service		
Age	< 13 yrs	13-24 yrs	25+ yrs	< 15 yrs	15-29 yrs	30+ yrs
50	1.0%	2.0%	7.5%			
51	1.0%	2.0%	7.5%			
52	1.0%	2.0%	7.5%			
53	1.0%	2.0%	35.0%			
54	1.0%	2.0%	20.0%			
55	3.0%	5.0%	20.0%	1.0%	5.0%	5.0%
56	3.0%	5.0%	20.0%	1.0%	4.0%	5.0%
57	3.0%	5.0%	20.0%	1.5%	3.0%	7.5%
58	3.0%	5.0%	20.0%	1.5%	3.0%	35.0%
59	5.0%	5.0%	20.0%	2.5%	3.0%	25.0%
60	5.0%	15.0%	20.0%	4.0%	3.75%	20.0%
61	5.0%	8.5%	20.0%	4.0%	5.0%	20.0%
62	10.0%	30.0%	40.0%	7.0%	12.0%	30.0%
63	10.0%	20.0%	40.0%	6.0%	10.0%	20.0%
64	10.0%	10.0%	40.0%	6.0%	10.0%	20.0%
65	100.0%	100.0%	100.0%	12.0%	40.0%	20.0%
66				18.0%	33.0%	20.0%
67				12.0%	22.0%	30.0%
68				10.0%	17.0%	20.0%
69				10.0%	17.0%	20.0%
70				100.0%	100.0%	100.0%

Lump Sum Option at Retirement

Partial Lump Sum	6.0% for all years
Total Lump Sum	6.0% for 2009, declining by 0.5% per year until reaching 0.0%

Appendix *(continued)*

Demographic Assumptions *(continued)*

Purchase of Credited Service at Retirement

Money Match Retirements	0%
Non-Money Match Retirements	55%

Disability Assumptions

	Duty Disability		Ordinary Disability
Age	Police & Fire	General Service	
20	0.005%	0.000%	0.015%
25	0.006%	0.001%	0.022%
30	0.010%	0.001%	0.032%
35	0.015%	0.001%	0.049%
40	0.024%	0.002%	0.079%
45	0.039%	0.004%	0.130%
50	0.067%	0.007%	0.200%
55	0.127%	0.013%	0.200%
60	0.181%	0.018%	0.200%

Appendix *(continued)*

Demographic Assumptions *(continued)*

Termination Assumptions (Ultimate Rates)

Age	School District	SLGRP General Service Male	SLGRP General Service Female	Independent Employers General Service Male	Independent Employers General Service Female	Police & Fire
20 or less	7.99%	12.49%	14.81%	7.96%	11.00%	5.09%
21	7.50%	12.02%	14.27%	7.96%	11.00%	5.09%
22	7.05%	11.56%	13.73%	7.96%	11.00%	5.09%
23	6.62%	11.10%	13.19%	7.96%	11.00%	5.09%
24	6.22%	10.65%	12.66%	7.96%	11.00%	5.09%
25	5.84%	10.20%	12.13%	7.96%	10.71%	5.09%
26	5.49%	9.76%	11.60%	7.54%	10.41%	4.69%
27	5.17%	9.33%	11.09%	7.15%	10.10%	4.32%
28	4.86%	8.90%	10.57%	6.78%	9.77%	3.99%
29	4.58%	8.49%	10.07%	6.44%	9.44%	3.71%
30	4.32%	8.08%	9.58%	6.11%	9.10%	3.45%
31	4.08%	7.68%	9.09%	5.81%	8.75%	3.23%
32	3.86%	7.29%	8.62%	5.53%	8.40%	3.04%
33	3.65%	6.92%	8.16%	5.27%	8.05%	2.87%
34	3.46%	6.55%	7.71%	5.02%	7.70%	2.73%
35	3.29%	6.20%	7.28%	4.79%	7.35%	2.61%
36	3.13%	5.85%	6.86%	4.57%	7.01%	2.50%
37	2.99%	5.53%	6.46%	4.37%	6.67%	2.40%
38	2.86%	5.21%	6.08%	4.18%	6.34%	2.32%
39	2.74%	4.91%	5.71%	4.01%	6.01%	2.24%
40	2.63%	4.63%	5.36%	3.84%	5.70%	2.17%
41	2.53%	4.36%	5.04%	3.68%	5.40%	2.10%
42	2.44%	4.11%	4.73%	3.53%	5.12%	2.03%
43	2.36%	3.87%	4.45%	3.39%	4.85%	1.95%
44	2.28%	3.65%	4.19%	3.25%	4.60%	1.87%
45	2.21%	3.45%	3.96%	3.12%	4.37%	1.78%
46	2.14%	3.27%	3.75%	2.98%	4.16%	1.67%
47	2.08%	3.10%	3.57%	2.86%	3.98%	1.55%
48	2.02%	2.96%	3.42%	2.73%	3.82%	1.40%
49	1.96%	2.84%	3.29%	2.60%	3.69%	1.24%
50	1.90%	2.74%	3.19%	2.47%	3.58%	1.24%
51	1.84%	2.66%	3.13%	2.33%	3.51%	1.24%
52	1.78%	2.60%	3.09%	2.19%	3.47%	1.24%
53	1.72%	2.56%	3.09%	2.05%	3.47%	1.24%
54 +	1.72%	2.55%	3.09%	1.90%	3.43%	1.24%

Appendix *(continued)*

Demographic Assumptions *(continued)*

Termination Assumptions (Select Rates)

Select Termination Rates - December 31, 2008 and 2009 Valuations

Age	School District				Police & Fire			
	1st Select Period	2nd Select Period	3rd Select Period	Ultimate	1st Select Period	2nd Select Period	3rd Select Period	Ultimate
25	8.70%	6.97%	6.58%	5.84%	14.05%	7.56%	5.44%	5.09%
35	5.85%	4.27%	3.95%	3.29%	12.10%	6.17%	4.33%	2.61%
45	4.83%	3.22%	2.89%	2.21%	13.04%	6.35%	4.12%	1.78%

Age	Independent Employers General Service Male				Independent Employers General Service Female			
	1st Select Period	2nd Select Period	3rd Select Period	Ultimate	1st Select Period	2nd Select Period	3rd Select Period	Ultimate
25	20.00%	12.53%	10.55%	7.96%	19.71%	14.26%	12.99%	10.71%
35	15.89%	8.89%	7.14%	4.79%	13.09%	9.27%	8.81%	7.35%
45	15.72%	8.23%	5.98%	3.12%	12.86%	7.93%	6.65%	4.37%

Age	SLGRP General Service Male				SLGRP General Service Female			
	1st Select Period	2nd Select Period	3rd Select Period	Ultimate	1st Select Period	2nd Select Period	3rd Select Period	Ultimate
25	18.28%	14.94%	12.97%	10.20%	18.23%	14.88%	14.21%	12.13%
35	13.44%	10.52%	8.76%	6.20%	14.90%	10.79%	9.74%	7.28%
45	10.01%	7.43%	5.84%	3.45%	12.26%	7.81%	6.59%	3.96%

Appendix *(continued)*

Demographic Assumptions *(continued)*

Probability of Refund Before Retirement

Age	General Service	Police & Fire
Less than Age 30	17.50%	30.00%
30	17.50%	30.00%
31	17.50%	30.00%
32	17.50%	30.00%
33	17.50%	30.00%
34	17.50%	30.00%
35	17.50%	30.00%
36	17.50%	30.00%
37	17.50%	30.00%
38	17.50%	30.00%
39	17.50%	30.00%
40	17.50%	27.00%
41	17.50%	24.00%
42	17.50%	21.00%
43	17.50%	18.00%
44	17.50%	15.00%
45	17.50%	12.00%
46	15.56%	9.00%
47	13.61%	6.00%
48	11.67%	3.00%
49	9.72%	0.00%
50	7.78%	0.00%
51	5.83%	0.00%
52	3.89%	0.00%
53	1.94%	0.00%
54 +	0.00%	0.00%

Appendix *(continued)*

Demographic Assumptions *(continued)*

Merit Salary Increase Assumptions

Duration	School District	Other General Service	Police & Fire
0	3.19%	3.96%	5.13%
1	2.95%	3.53%	4.50%
2	2.71%	3.14%	3.93%
3	2.49%	2.78%	3.42%
4	2.27%	2.46%	2.96%
5	2.07%	2.17%	2.55%
6	1.87%	1.91%	2.20%
7	1.68%	1.67%	1.89%
8	1.50%	1.47%	1.62%
9	1.33%	1.29%	1.39%
10	1.18%	1.13%	1.20%
11	1.03%	1.00%	1.04%
12	0.89%	0.88%	0.91%
13	0.76%	0.78%	0.81%
14	0.64%	0.70%	0.73%
15	0.53%	0.63%	0.67%
16	0.43%	0.58%	0.63%
17	0.34%	0.53%	0.61%
18	0.26%	0.50%	0.60%
19	0.19%	0.47%	0.59%
20	0.13%	0.45%	0.59%
21	0.08%	0.43%	0.59%
22	0.05%	0.41%	0.59%
23	0.02%	0.39%	0.59%
24	0.00%	0.37%	0.58%
25	0.00%	0.34%	0.56%
26	0.00%	0.31%	0.53%
27	0.00%	0.27%	0.47%
28	0.00%	0.23%	0.40%
29	0.00%	0.17%	0.31%
30	0.00%	0.10%	0.19%

Appendix *(continued)*

Demographic Assumptions *(continued)*

Unused Sick Leave	
Actives	
State General Service Male	5.75%
State General Service Female	4.25%
School District Male	7.50%
School District Female	6.75%
Local General Service Male	4.25%
Local General Service Female	3.00%
State Police & Fire	7.25%
Local Police & Fire	8.25%
Dormants	3.50%

Retiree Healthcare Assumptions

Retiree Healthcare Participation

RHIPA	9.0%
RHIA	
▪ Healthy Retired	42.5%
▪ Disabled Retired	20.0%

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