



State of Alaska

Public Employees' Retirement System And Teachers' Retirement System

Actuarial Experience Study For The Period July 1, 2009 To June 30, 2013

November 2014



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November 7, 2014

Board of Trustees
Alaska Retirement Management Board
Department of Administration
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P.O. Box 110203
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Dear Members of the Board:

We are submitting our report on the results of the actuarial investigation of the demographic and economic experience of active members and retirees of the State of Alaska Public Employees' Retirement System (PERS) and the Teachers' Retirement System (TRS) for the four-year period July 1, 2009 to June 30, 2013.

The experience investigation was prepared in accordance with generally accepted actuarial practices and best practices, which suggest that the actuary periodically undertake an experience investigation into the mortality, service and compensation experience of the members and retirees of the Systems and that these investigations take place at least every 4 to 6 years. Taking into account the result of such investigation, the Board of Trustees shall adopt for the retirement Systems such mortality, service, and other tables as shall be deemed necessary and shall adopt an actuarial cost method that is in conformity with generally accepted actuarial principles and practices for measuring pension obligations.

The attached report describes the actuarial process employed and identifies the results of the study.

Summary of Recommendations

The results of the experience analysis show that for many assumptions the actual experience of the Systems has deviated from what was expected based on the current assumptions. We recommend that the assumptions be modified in order to better reflect actual experience and future expectations.

A detailed analysis is included in this report. The Table of Contents, which immediately precedes, outlines the material contained in the report.

We would be pleased to discuss the report in detail upon request. We presented the results of this report to the Board at your September meeting. The undersigned is a member of the American Academy of Actuaries and the Society of Actuaries, is fully qualified to provide actuarial services to the State of Alaska and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. We are available to answer questions regarding this report.

Sincerely,



David H. Sliskinsky, FCA, ASA, EA, MAAA
Principal, Consulting Actuary

The undersigned actuary is a member of the American Academy of Actuaries and the Society of Actuaries and is responsible for all assumptions related to the average annual per capita health claims cost and the healthcare cost trend rates, and hereby affirms her qualification to render opinions in such matters, in accordance with the Qualification Standards of the American Academy of Actuaries.



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Disclosure: Use of this report for any other purposes or by anyone other than the Alaska Retirement Management Board members and State of Alaska staff may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of the report for that purpose. No one may make any representations or warranties based on any statements or conclusions contained in this report without Buck Consultants' written consent.

Introduction

Assumptions are a key element in an actuarial valuation. In order to perform an actuarial valuation of the assets and liabilities of the Systems, the actuary must first adopt assumptions with respect to each of the following:

1. Investment return on the Systems' funds over the period benefits to current members will be paid, including inflation during the same period.
2. The relative increases in the salary of a member from the date of the valuation to the date of separation from active service.
3. The expected mortality rates among retired persons (healthy and disabled).
4. The probabilities of members separating from active service on account of withdrawal, death and disability.
5. The ages at which members will retire.
6. The rate at which separating members will elect to receive a refund of their contributions.
7. Assumptions related to number of dependents, marriage at retirement, age of spouse at retirement, etc.
8. Postemployment healthcare assumptions.

Actuarial assumptions are a critical component of an actuarial valuation. The actuarial valuation is the method by which the funding requirement is determined. Actuarial assumptions do not directly impact the total cost of a retirement program, but they are a key variable in determining the timing of that cost and the allocation between current contributions and future investment return. For example, overly conservative assumptions result in increased current cost and decreased future costs. Overly aggressive assumptions result in decreased current cost and increased future costs. The recommended changes in actuarial assumptions reflect both the most recent experience as well as future expected experience.

Based on Alaska Statute 37.10.220(a)(9), the Alaska Retirement Management Board requests an actuarial experience study at least every four years. The purpose of this study is to measure actual Systems experience since June 30, 2009, compare this experience to current assumptions and recommend changes to the assumptions. The last study was performed in 2009 for PERS and TRS and assumptions were adopted by the ARM Board in December 2010.

The objectives of this investigation are to:

- Determine appropriate rates to anticipate the following events among active members:
 - termination from employment;
 - mortality during active service;
 - disability retirement;
 - normal retirement;
 - early retirement; and
 - salary increases.

- Determine appropriate rates to anticipate mortality among retirements and disability retirements.
- Make recommendations regarding the adoption of refinements to the actuarial basis of the Systems, which are deemed appropriate by the actuary for adoption by the Board.
- Make recommendations regarding the development of postemployment healthcare methodology and assumptions.

Methodology

Data is supplied annually to the actuary by the State of Alaska Department of Administration, Retirement and Benefits Division, for purposes of the actuarial valuation report. This data includes demographic characteristics of the current and past membership, including any changes in the members' status or relationship with the Systems. The data also includes a salary history for active members. These demographic changes and salary history are the basis for the experience review.

Tabulations were compiled which show the distribution by age of the liability of members who were exposed during the four-year period to the events of termination from employment, retirement, death and disability. A member is considered exposed to an event if he meets the age and service requirements for that event. All tabulations have been weighted by the liability for each member. The assumed rates of occurrence for each event, which are currently used in the annual actuarial valuations, were then applied to the liability of members exposed to determine the liability of members expected to separate from service for each category.

The actual number of members who separated from service due to termination from employment, retirement, death or disability were then compared to the expected liability. In some instances, higher numbers of actual members compared to expected is favorable for the financial experience of the Systems and in others, this is unfavorable. Data is generally grouped by age in five year increments to provide statistically significant results.

The expected and actual salaries as of the end of each year were also compared to actual salaries as of the end of each previous year. The comparisons show an average annual total increase in both expected and actual salaries for the four-year period.

The results of the experience review are the basis for the actuary's recommendation of assumption changes. In recommending assumptions, the actuary must also take into account benefit changes. If a change in benefit levels or benefit eligibility was made during the analysis period, the actuary should consider the impact the change has on the data used in the analysis. There have been no significant changes in Alaska plan benefits during the analysis period.

In addition to comparing actual to expected experience and adjusting the results for special plan benefits and economic conditions, the actuary must consider future expectations of experience due to future plan changes or changes in the economy.

To summarize, the actuary's recommendation of assumptions is based on the following:

- comparison of actual to expected experience,
- adjustment for special plan benefits and past economic conditions, and
- adjustment for future plan changes and economic conditions.

Generally, actuarial assumptions are selected with a slight margin for adverse experience so that the financial strength of the Systems can be maintained.

Actuarial standard of practice No. 27

The Actuarial Standards Board standard entitled **Selection of Economic Assumptions for Measuring Pension Obligations**, was issued in 1996. This standard provides guidance to actuaries in selecting reasonable economic assumptions, and amplifies those provisions of Actuarial Standard of Practice No. 4, **Measuring Pension Obligations**, that relate to economic assumptions. In addition, this standard is meant to provide information to enhance non-actuaries' understanding of the process by which actuaries select these economic assumptions. Because the future is unpredictable with respect to economic contingencies, an actuary must use professional judgment to estimate possible future outcomes based on past experience and trends, and to select assumptions based on that judgment. According to the standard, an actuary's best-estimate assumption is generally represented by a range for each economic assumption, and select point from within that range. The methods described in Actuarial Standard of Practice No. 27 include the construction of assumption ranges, evaluation of reasonableness and consistency, and specific considerations that apply to individual assumptions.

Actuarial standard of practice No. 35

The Actuarial Standards Board standard entitled **Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations**, was issued in 1999. This standard expands upon and clarifies those sections of Actuarial Standard of Practice No. 4, **Measuring Pension Obligations**, which are not financial in nature. This standard provides guidelines for determining reasonable assumptions for use in a pension valuation. According to the standard, "A reasonable assumption is one that is expected to appropriately model the contingency being measured and is not anticipated to produce significant cumulative actuarial gains or losses over the measurement period." Improving computer technology has helped actuaries to collect and share data related to demographic assumptions, and this has enabled them to detail individually reasonable assumptions for specific factors. The methods described in Actuarial Standard of Practice No. 35 include the selection of assumptions, evaluation of reasonableness, and specific considerations that apply to individual assumptions.

The precepts of Actuarial Standard of Practice No.'s 4, 27 and 35 have been followed in the experience analysis investigation disclosed in this report.

Sections I, II and III show the results of this study. Section IV discusses the proposed funding method change. Section V illustrates the effect of recommended assumption changes on the June 30, 2013 valuations. The schedules in Section VI document the current and proposed actuarial assumptions.

Section 1 Demographic Assumptions

This section compares the actual experience with respect to the demographic assumptions over the last four years.

A. Mortality During Active Service and After Termination

The table below shows the liability for actual and expected member deaths during the four-year investigation period which ended June 30, 2013. "Current expected" means the expected deaths using current assumptions. "New expected" means the expected deaths using the new proposed assumptions. The experience for PERS and TRS was separated to study the mortality experience. Actual deaths greater than expected deaths indicates a conservative mortality assumption.

Pre-termination Mortality					
	Current Expected	Actual	A/CE	New Expected	A/NE
PERS Others					
Females	\$10,460,523	\$13,213,615	126%	\$12,915,153	102%
Males	\$21,706,465	\$16,007,885	74%	\$16,018,578	100%
PERS Peace Officer/Firefighter					
Females	\$288,567	\$257,389	89%	\$345,421	75%
Males	\$3,408,529	\$705,099	21%	\$2,434,826	29%
TRS					
Females	\$6,928,529	\$4,388,887	63%	\$5,047,790	87%
Males	\$4,933,426	\$5,956,303	121%	\$4,752,578	125%

Recommendation: The current expected mortality rates for PERS Others females and TRS males were lower than the actual experience. We have recommended a slight increase in the mortality rates. The current expected mortality rates for PERS Others males and TRS females during active service were higher than the actual experience, and we have recommended a decrease in the mortality rates to reflect this experience. We did not feel that there was enough credible data for the PERS Peace Officer/Firefighters to use to set their pre-termination mortality assumption. We recommend using the same tables as PERS Others. It is typical to see active service mortality lower than rates for a published table such as the current table.

Pre-termination Mortality		
	Current	Proposed
PERS Others	75% of the male and 55% of the female rates of the 1994 GAM Table, 1994 Base Year without margin projected to 2013 with Projection Scale AA	60% of the male and 65% of the female rates of the proposed post-termination healthy mortality
PERS Peace Officer / Firefighter	80% of the male and 60% of the female rates of the 1994 GAM Table, 1994 Base Year without margin projected to 2013 with Projection Scale AA	60% of the male and 65% of the female rates of the proposed post-termination healthy mortality
TRS	45% of the male and 55% of the female rates of the 1994 GAM Table, 1994 Base Year without margin projected to 2013 with Projection Scale AA	68% of the male and 65% of the female rates of the proposed post-termination healthy mortality

Post-termination Mortality					
	Current Expected	Actual	A/CE	New Expected	A/NE
PERS Others					
Females	\$116,522,719	\$107,178,124	92%	\$98,938,054	108%
Males	\$171,682,681	\$164,795,831	96%	\$149,501,553	110%
PERS Peace Officer/Firefighter					
Females	\$4,955,801	\$5,048,344	102%	\$4,253,895	119%
Males	\$41,217,252	\$29,289,897	71%	\$35,757,499	82%
TRS					
Females	\$81,207,214	\$76,282,978	94%	\$69,783,251	109%
Males	\$90,294,320	\$92,569,372	103%	\$84,317,526	110%

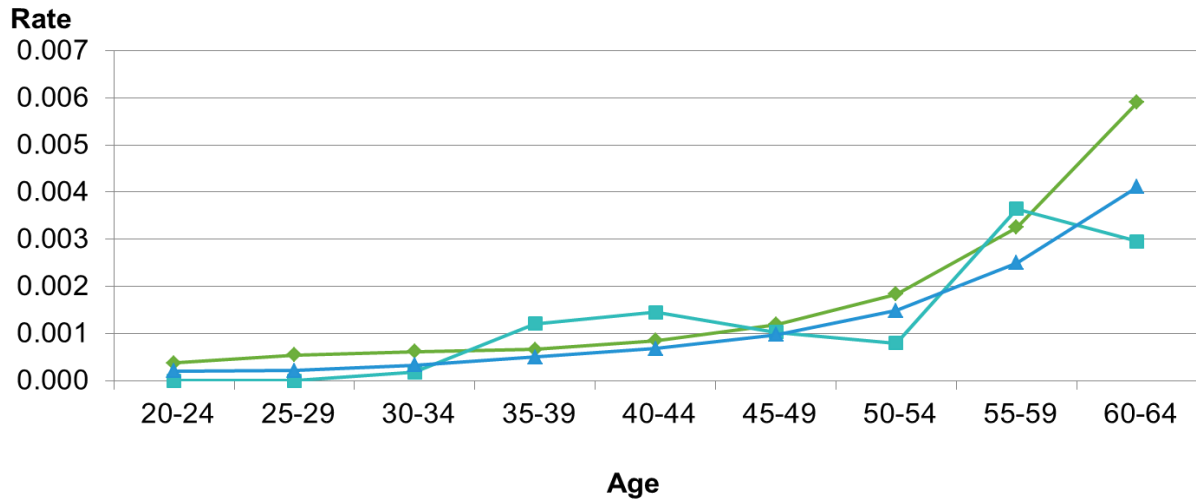
The mortality experience for all members except PERS Peace Officer/Firefighter females and TRS males during retirement was lower than we expected. A common way to apply an improvement to mortality rates is to apply a setback to a published table. A 1-year setback means that a 66-year old would have an expected rate of a 65-year old. A 1-year set-forward means that a 66-year old would have an expected rate of a 67-year old. Our analysis includes mortality of beneficiaries receiving survivor annuities.

Recommendation: The recommended rates include a margin for future life expectancy improvements. We will typically recommend a margin in proposed rates that results in 5% - 15% fewer expected deaths than actual experience to reflect expected future mortality improvement. We recommend lowering the rates for all groups.

Post-termination Mortality		
	Current	Proposed
PERS	1994 GAM Table, 1994 Base Year without margin projected to 2013 with Projection Scale AA, with 1-year set-forward for females	96% of all rates of RP-2000, 2000 Base Year projected to 2018 with Projection Scale BB
TRS	1994 GAM Table, 1994 Base Year without margin projected to 2013 with Projection Scale AA, with a 4-year setback for males and 3-year setback for females	94% of the male and 97% of the female rates of RP-2000, 2000 Base Year projected to 2018 with Projection Scale BB, with a 3-year setback for males and 4-year setback for females

The graphs on the next pages compare the actual mortality rates for PERS and TRS to the old and new assumptions at each age.

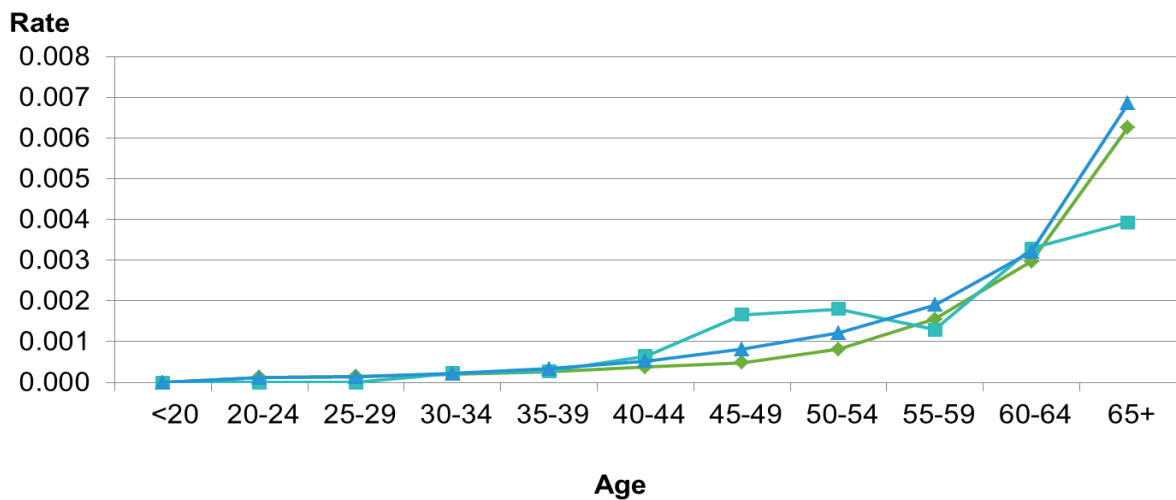
PERS Others Healthy Pre-termination Mortality Female



Expected Actual Proposed

Experience:
Current % Actual Expected: 126.32%
Proposed % Actual/Expected: 102.31%

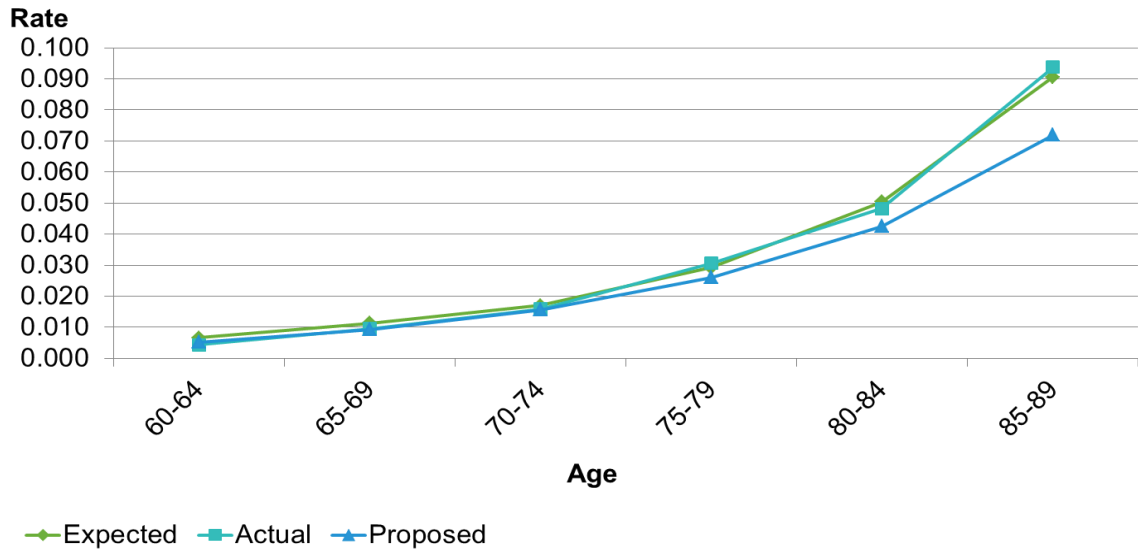
PERS Others Healthy Pre-termination Mortality Male



Expected Actual Proposed

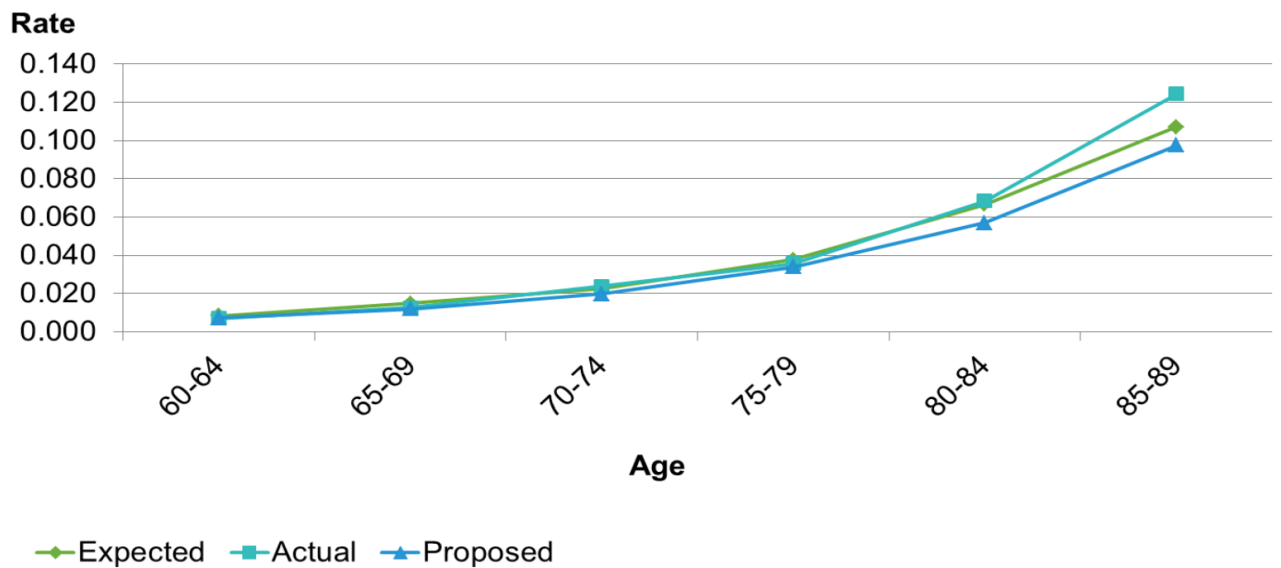
Experience:
Current % Actual Expected: 73.75%
Proposed % Actual/Expected: 99.93%

**PERS Others
Healthy Post-termination Mortality
Female**



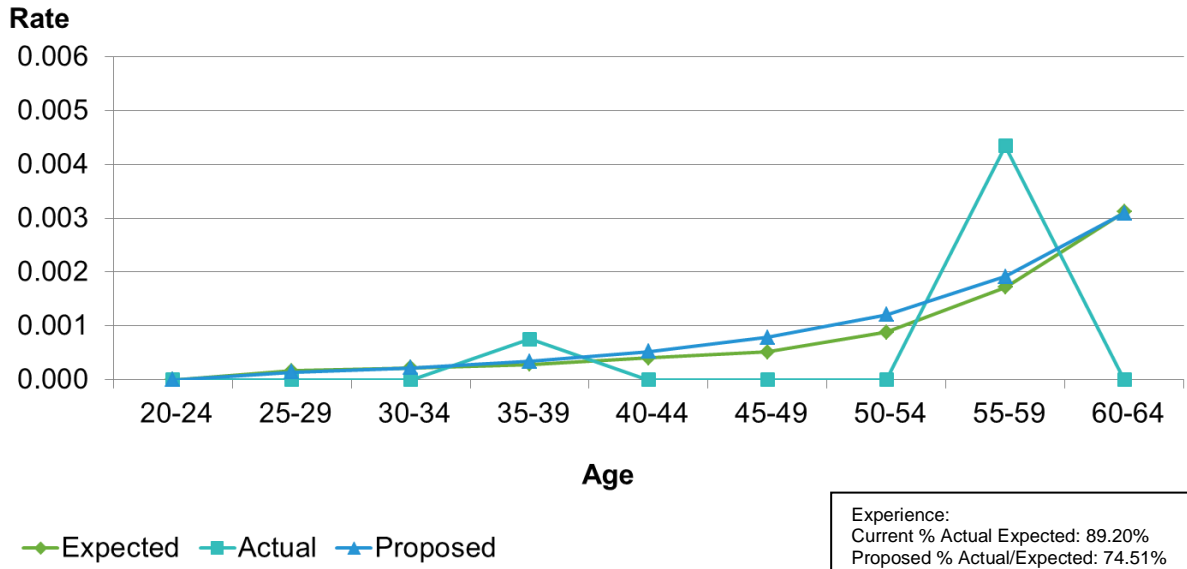
Experience:
Current % Actual Expected: 91.98%
Proposed % Actual/Expected: 108.33%

**PERS Others
Healthy Post-termination Mortality
Male**

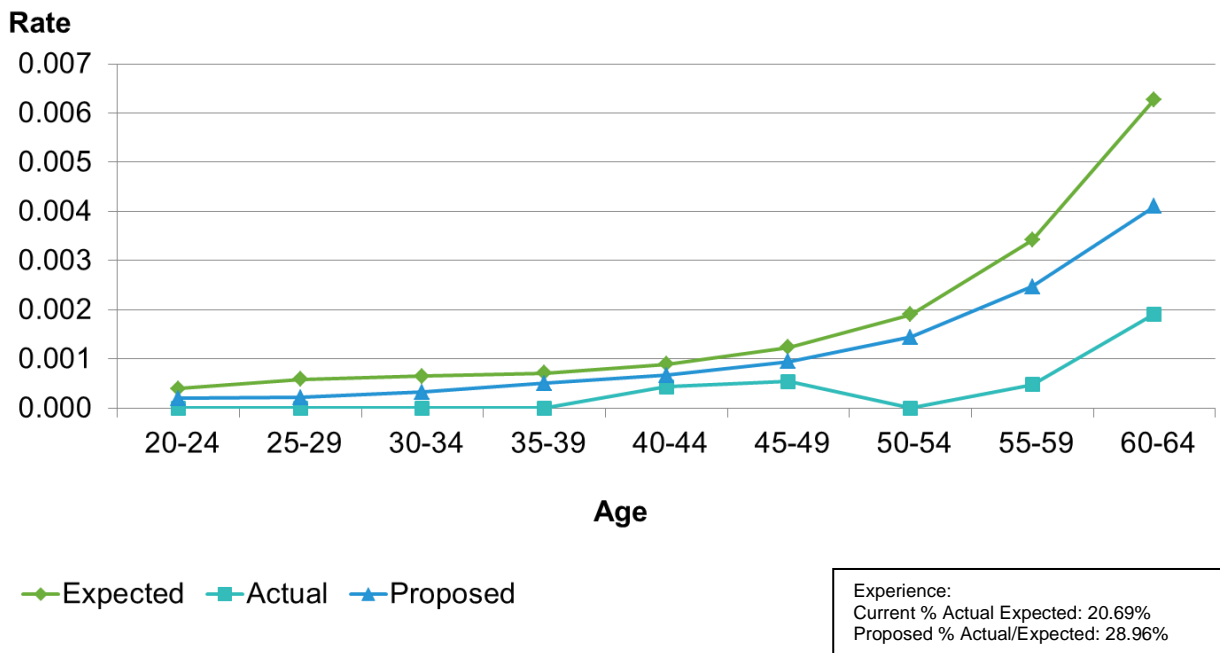


Experience:
Current % Actual Expected: 95.99%
Proposed % Actual/Expected: 110.23%

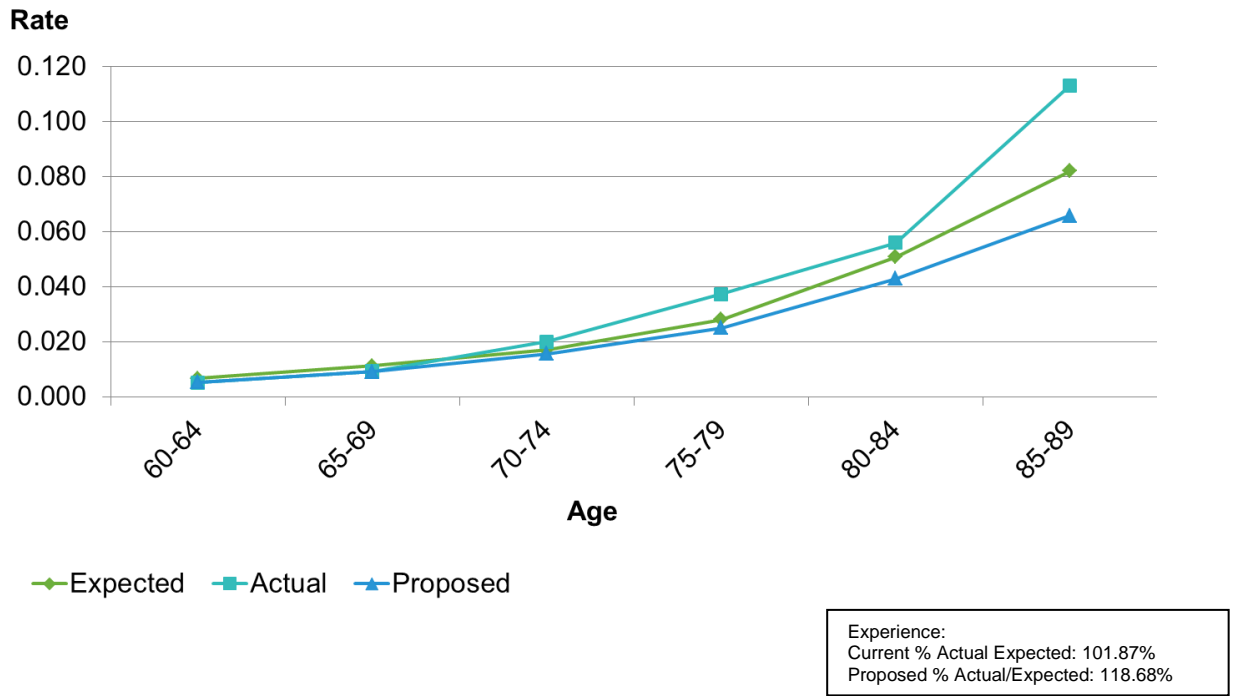
**PERS Peace Officer / Firefighter
Healthy Pre-termination Mortality
Female**



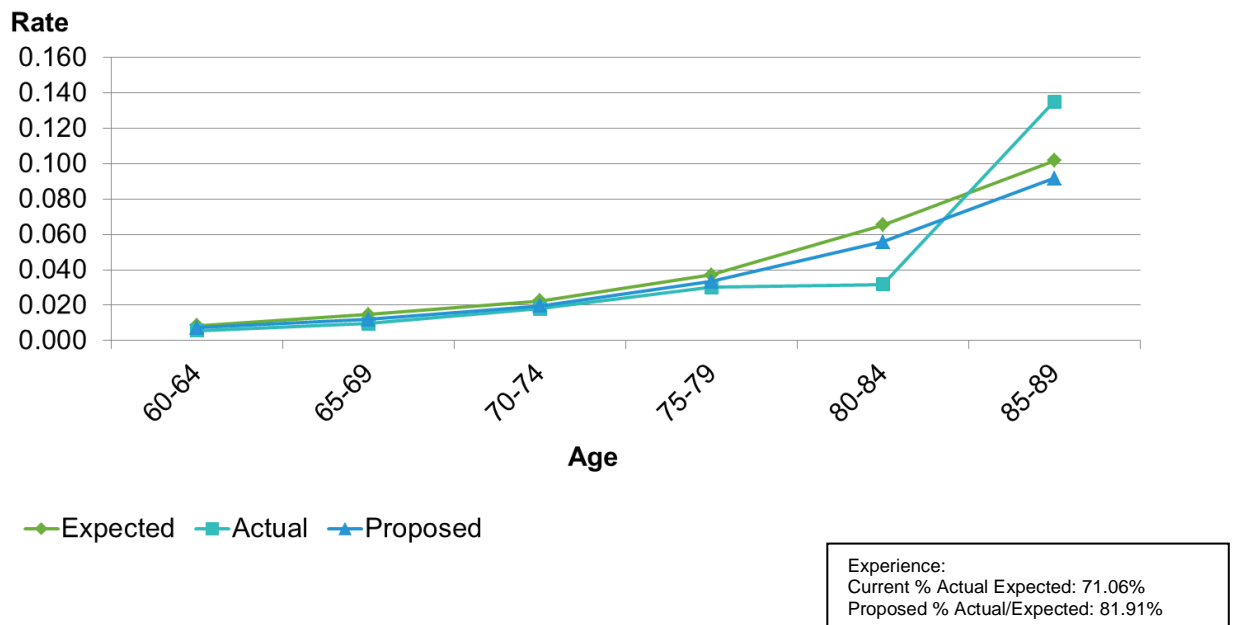
**PERS Peace Officer / Firefighter
Healthy Pre-termination Mortality
Male**



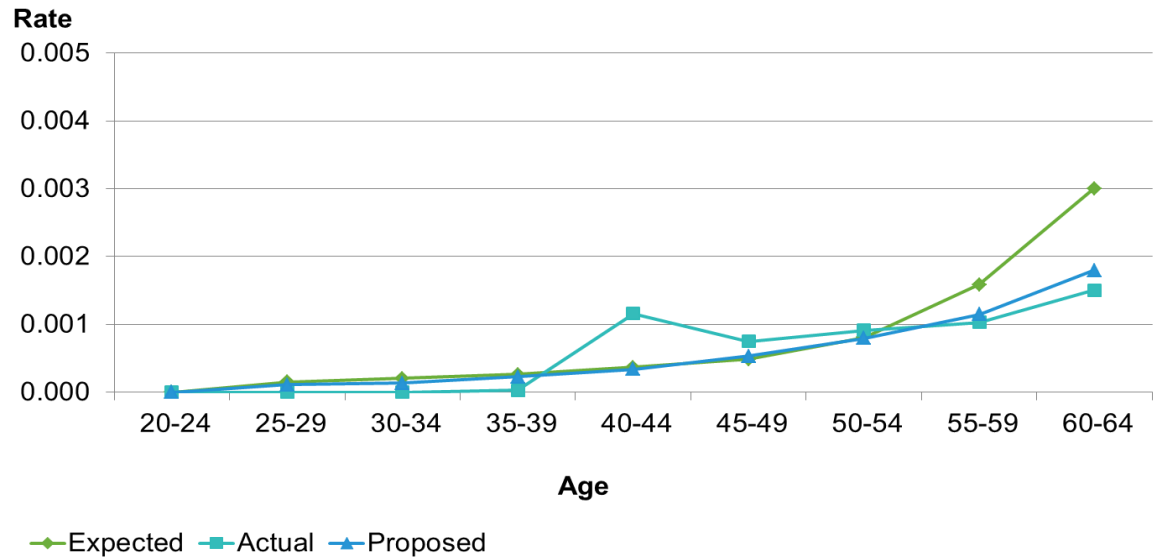
**PERS Peace Officer / Firefighter
Healthy Post-termination Mortality
Female**



**PERS Peace Officer / Firefighter
Healthy Post-termination Mortality
Male**

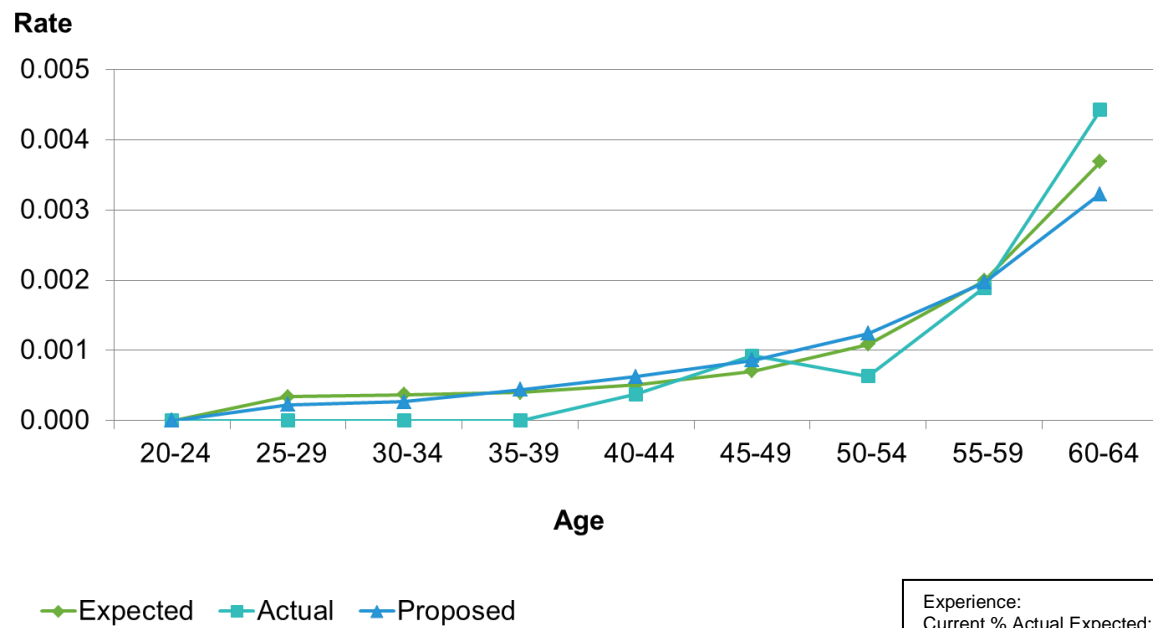


TRS
Healthy Pre-termination Mortality
Female



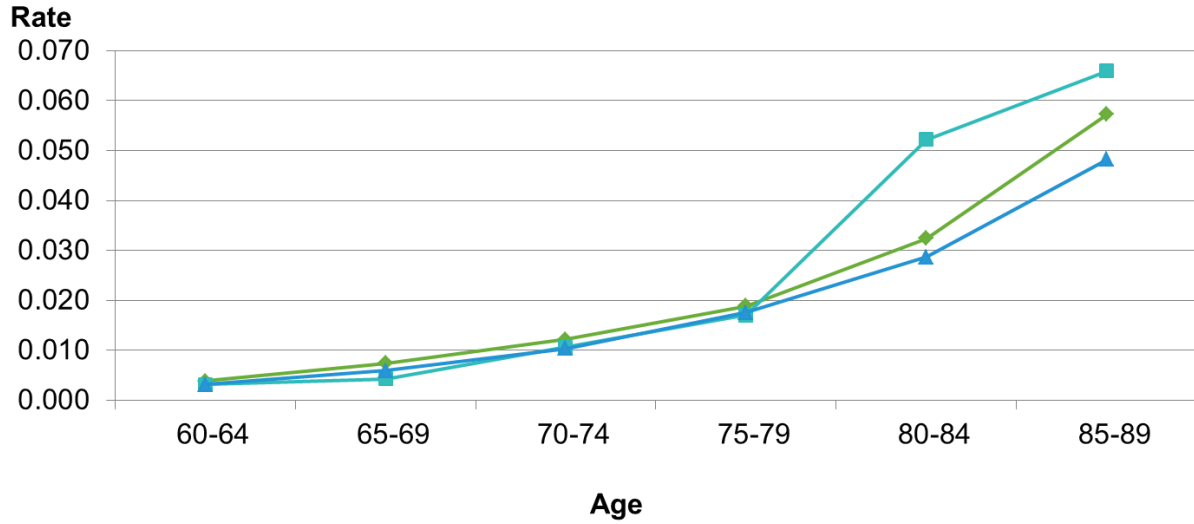
Experience:
 Current % Actual Expected: 63.35%
 Proposed % Actual/Expected: 86.95%

TRS
Healthy Pre-termination Mortality
Male



Experience:
 Current % Actual Expected: 120.74%
 Proposed % Actual/Expected: 125.33%

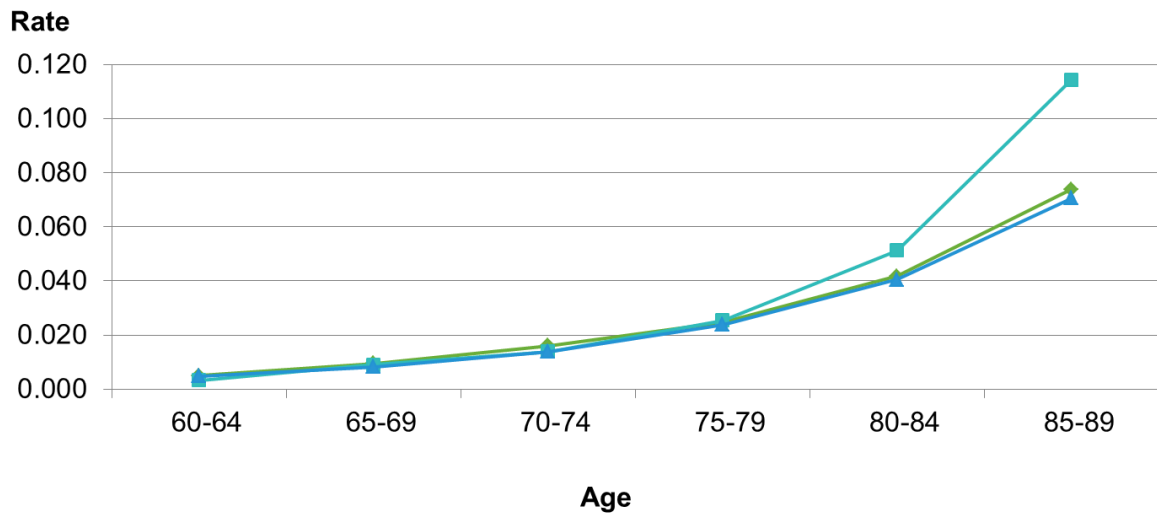
TRS
Healthy Post-termination Mortality
Female



—◆— Expected —■— Actual —▲— Proposed

Experience:
 Current % Actual Expected: 93.94%
 Proposed % Actual/Expected: 109.31%

TRS
Healthy Post-termination Mortality
Male



—◆— Expected —■— Actual —▲— Proposed

Experience:
 Current % Actual Expected: 102.52%
 Proposed % Actual/Expected: 109.79%

B. Mortality After Disability Retirement

The table below shows the liability of actual and expected member deaths during the study among disabled retirees. "Current expected" means the expected deaths using current assumptions. "New expected" means the expected deaths using the new proposed assumptions. Actual deaths greater than expected deaths indicates a conservative assumption.

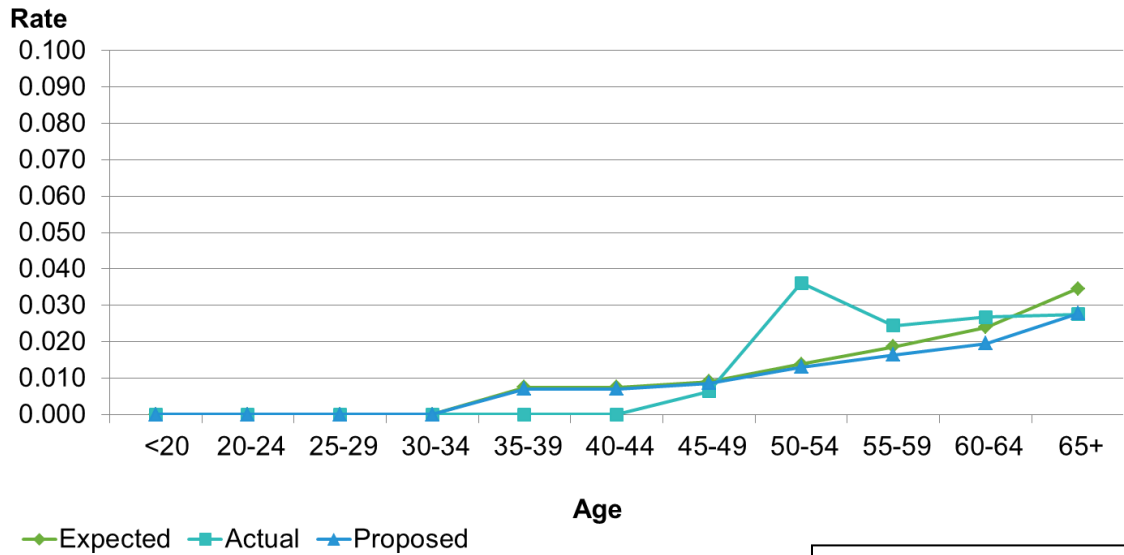
Post-retirement Disability Mortality					
	Current Expected	Actual	A/CE	New Expected	A/NE
PERS Others					
Females	\$4,219,921	\$5,203,847	123%	\$3,589,571	145%
Males	\$14,328,795	\$6,642,723	46%	\$12,371,997	54%
PERS Peace Officer/Firefighter					
Females	\$541,860	\$615,866	114%	\$469,514	131%
Males	\$6,010,520	\$1,952,263	32%	\$5,205,207	38%
TRS					
Females	\$3,723,064	\$3,464,865	93%	\$3,086,033	112%
Males	\$4,456,713	\$2,136,011	48%	\$3,639,312	59%

This assumption has very little impact on the valuation.

Recommendation: Since there are few disabled retirees, we have very little experience. Therefore, we recommend updating this table to a more current disabled mortality table.

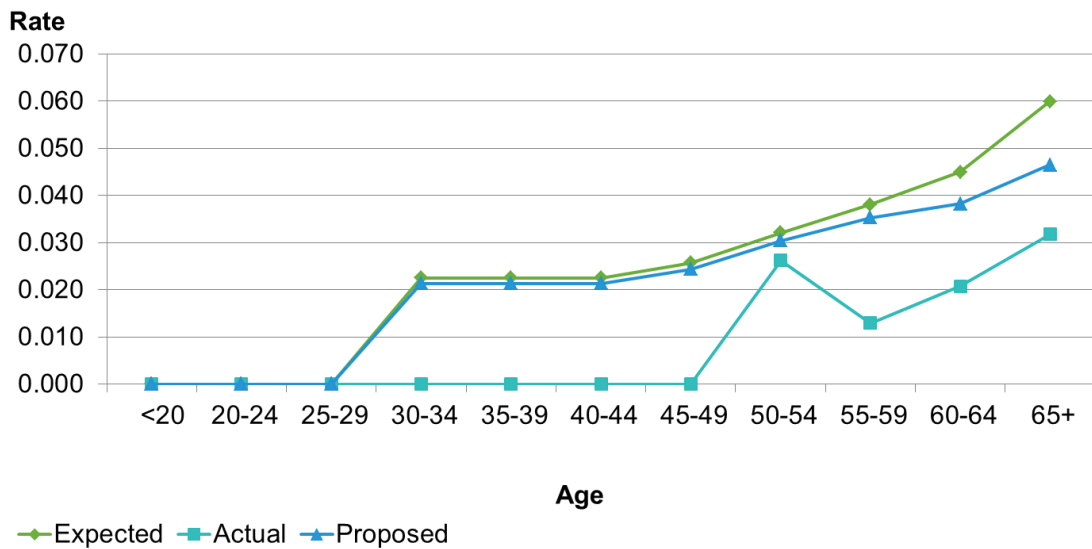
Post-retirement Disability Mortality		
	Current	Proposed
PERS	RP-2000 Disabled Retiree Table	RP-2000 Disabled Retiree Table, 2000 Base Year projected to 2018 with Projection Scale BB
TRS	RP-2000 Disabled Retiree Table	RP-2000 Disabled Retiree Table, 2000 Base Year projected to 2018 with Projection Scale BB

**PERS Others
Disabled Mortality
Female**



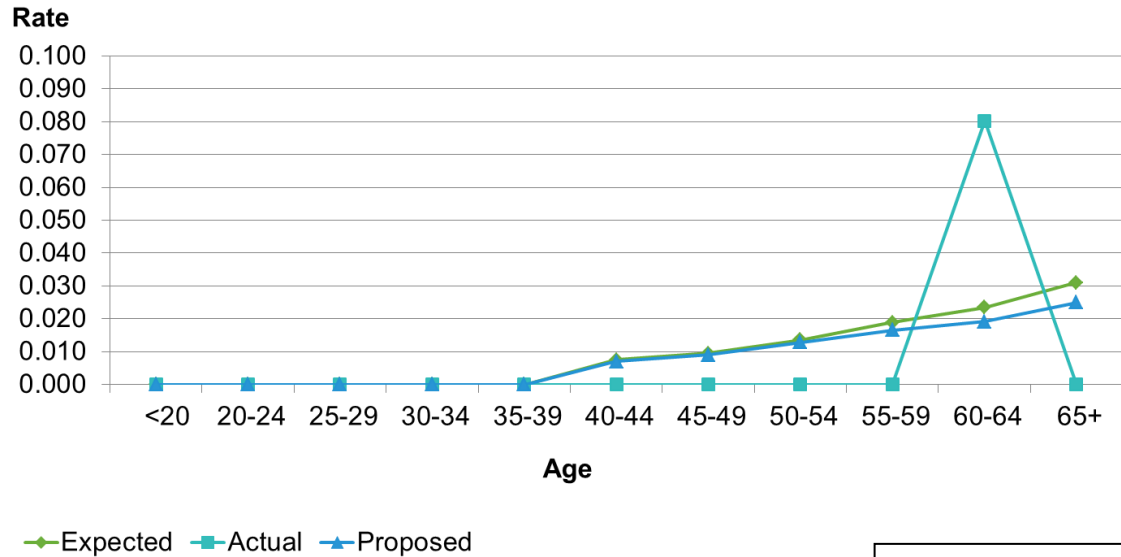
Experience:
Current % Actual Expected: 123.33%
Proposed % Actual/Expected: 144.97%

**PERS Others
Disabled Mortality
Male**



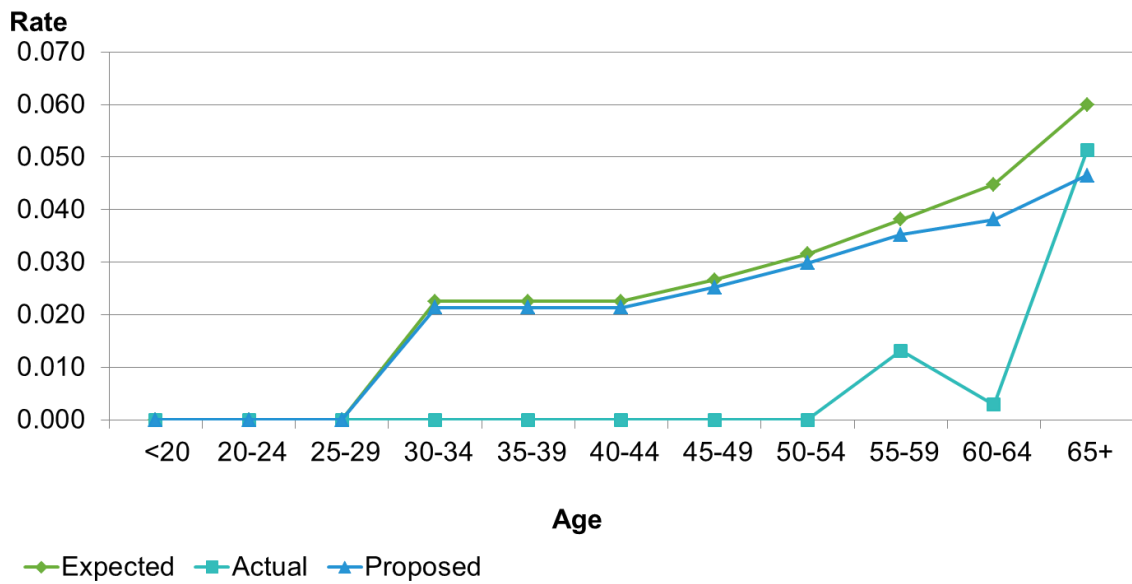
Experience:
Current % Actual Expected: 46.36%
Proposed % Actual/Expected: 53.69%

**PERS Peace Officer / Firefighter
Disabled Mortality
Female**



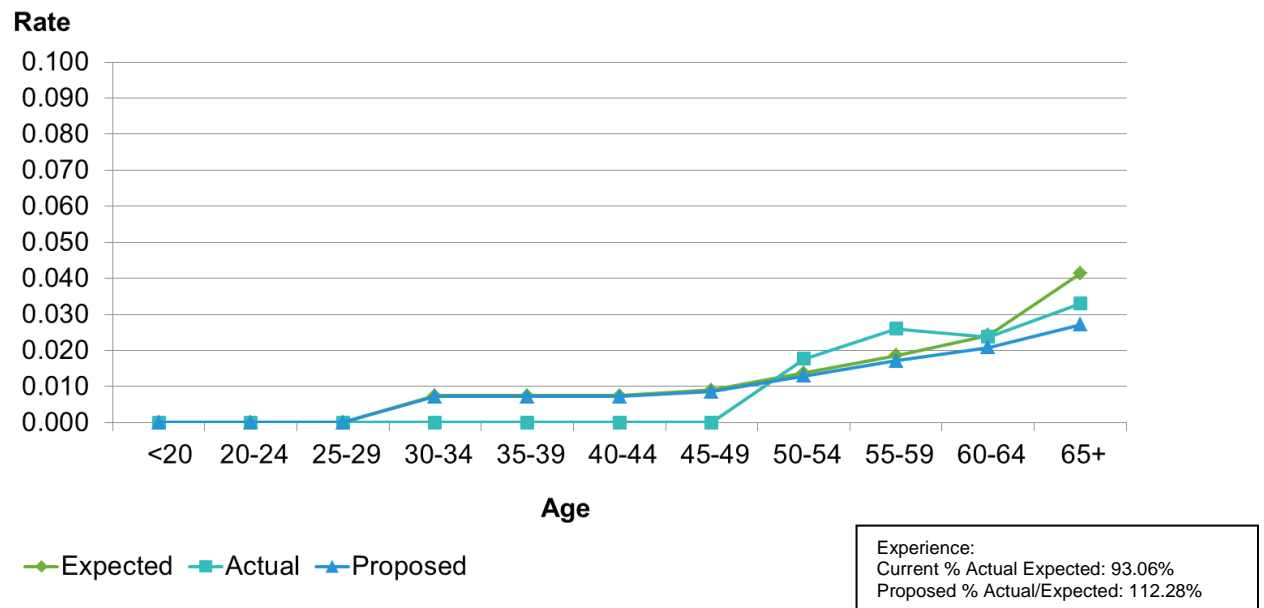
Experience:
Current % Actual Expected: 113.66%
Proposed % Actual/Expected: 131.17%

**PERS Peace Officer / Firefighter
Disabled Mortality
Male**

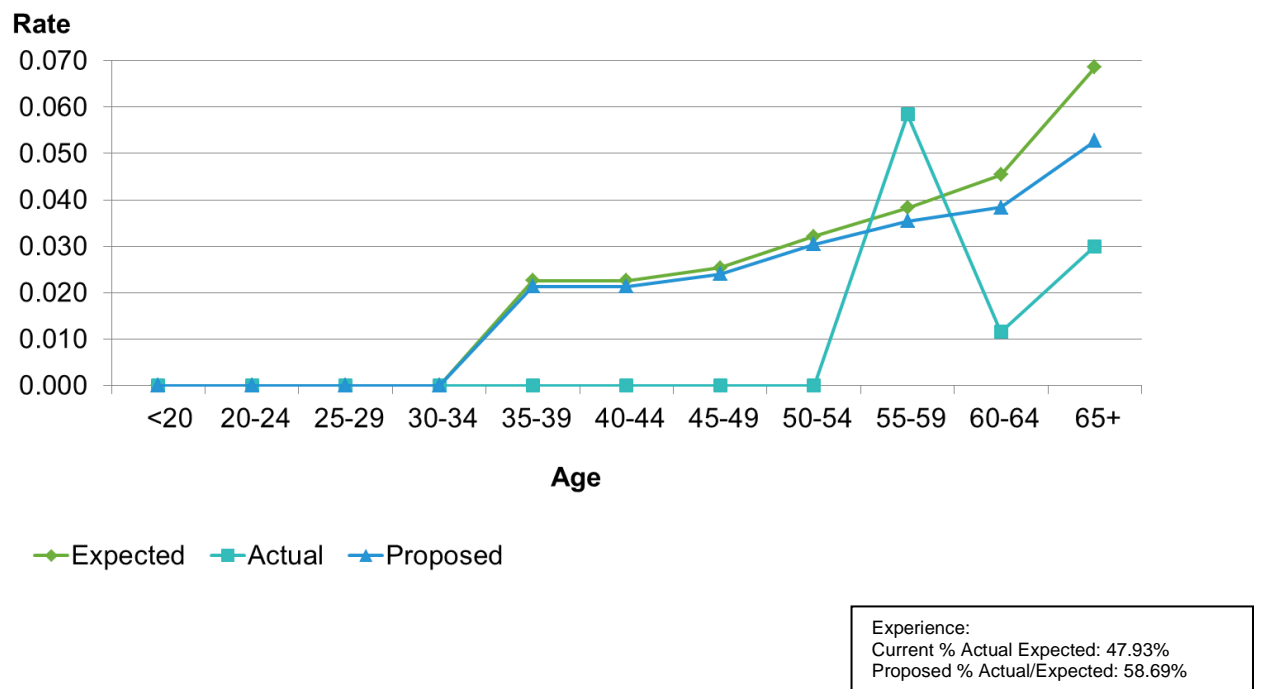


Experience:
Current % Actual Expected: 32.48%
Proposed % Actual/Expected: 37.51%

TRS
Disabled Mortality
Female



TRS
Disabled Mortality
Male



C. Withdrawal from Service Before Retirement

We reviewed the assumption for withdrawal from service before retirement. The assumption for withdrawal uses a “select and ultimate” table. During the select period (the first five years of an employee’s career for PERS (eight years for TRS)), the withdrawal assumption is based on years of service and gender. After the select period (the “ultimate period”), the withdrawal assumptions are based on age and gender. Low withdrawal rates produce higher liabilities. Therefore, low termination rates are more conservative.

The tables below show the expected liability for members who terminated employment based on current assumptions, the actual number of withdrawals, and the expected number of withdrawals based on the proposed assumptions. “Current expected” means the expected withdrawals using current assumptions. “New expected” means the expected withdrawals using the new proposed assumptions. The results are as follows:

	Females					Males				
	Current Expected	Actual	A/CE	New Expected	A/NE	Current Expected	Actual	A/CE	New Expected	A/NE
PERS Others										
Years less than 5										
-Hire Age Under 35	\$3,959,653	\$3,273,287	83%	\$3,168,812	103%	\$3,459,369	\$2,280,528	66%	\$2,250,359	101%
-Hire Age Over 35	\$11,114,337	\$10,486,778	94%	\$10,016,295	105%	\$7,902,220	\$6,533,791	83%	\$6,392,737	102%
Years 5+	\$195,863,691	\$140,997,255	72%	\$141,520,365	100%	\$144,325,375	\$109,659,404	76%	\$109,863,641	100%
PERS – Peace Officer/Firefighter										
Years less than 5	\$210,567	\$260,027	123%	\$222,607	117%	\$1,337,713	\$1,346,512	101%	\$1,330,693	101%
Years 5+	\$7,880,382	\$6,586,366	84%	\$6,288,338	105%	\$42,337,767	\$24,448,516	58%	\$24,092,642	101%
TRS										
Years less than 8	\$19,658,924	\$20,913,391	106%	\$19,658,924	106%	\$8,030,908	\$10,189,154	127%	\$9,637,089	106%
Years 8+	\$64,948,802	\$55,589,718	86%	\$58,716,377	95%	\$35,165,661	\$25,874,792	74%	\$25,238,613	103%

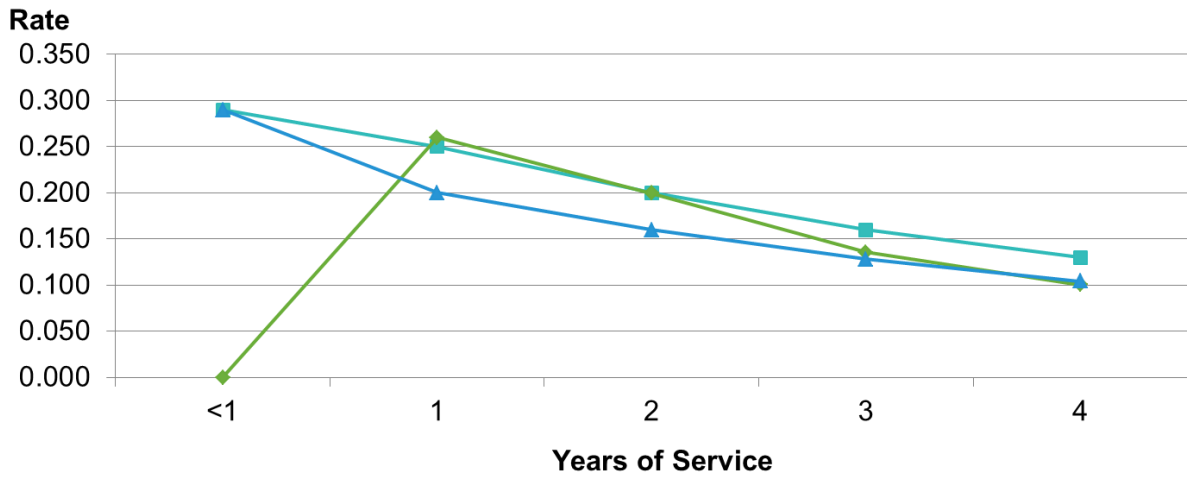
The current rates are based on the actual withdrawal experience from 2005 to 2009. Actual terminations exceeded expected terminations for nearly all groups except for PERS Others members. We typically recommend withdrawal rates with a margin for conservatism. This should offset actuarial losses that is often experienced due to new entrants with prior service or rehires who repay refunded contributions to reinstate prior service credit.

Recommendation: We recommend changing to sex-distinct rates for the select period rates and decreasing these select termination rates for all members except for PERS Peace Officer/Firefighter females and TRS members. We recommend no change to the TRS female select rates. We recommend decreasing most ultimate withdrawal rates. We believe the length of the select period is reasonable since it is tied to the vesting schedule.

Withdrawal from Service Before Retirement		
	Current	Proposed
PERS Others	<ul style="list-style-type: none"> • Unisex select rates in first 5 years grading down with different scales pre/post age 35 hires • Sex-distinct age based rates after first 5 years of service 	<ul style="list-style-type: none"> • Generally lowered all rates • Sex-distinct rates for both select and ultimate rates • Select rates different for pre/post age 35 hires
PERS Peace Officer / Firefighter	<ul style="list-style-type: none"> • Unisex select rates in first 5 years grading down from 15% to 6% • Sex-distinct, age based rates after first 5 years of service 	<ul style="list-style-type: none"> • Sex distinct select rates in first 5 years grading down from 15% to 6.5% • Decreased most ultimate rates
TRS	<ul style="list-style-type: none"> • Unisex select rates in first 8 years grading down from 17% to 6% • Sex-distinct age based rates after first 8 years of service 	<ul style="list-style-type: none"> • Sex-distinct select rates in first 8 years grading down from 20% to 6% for males, no change to female rates • Decreased male and female ultimate rates for most ages

Graphs on the following pages show the “select and ultimate” experience and current and proposed assumptions.

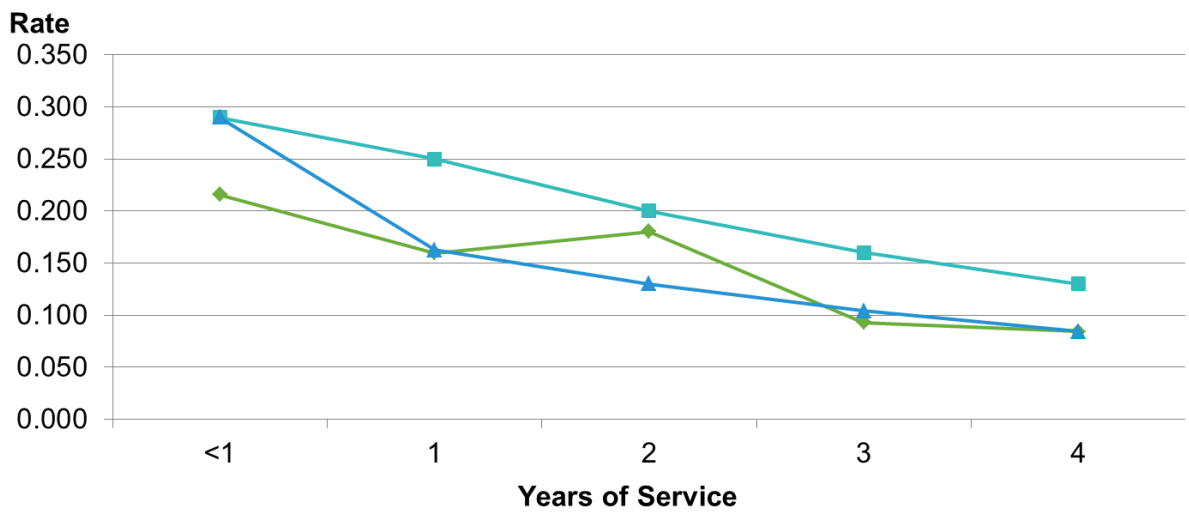
**PERS Others
Withdrawal Rates (Select)
Hire age under 35
Female**



Expected Actual Proposed

Experience:
Current % Actual Expected: 82.67%
Proposed % Actual/Expected: 103.30%

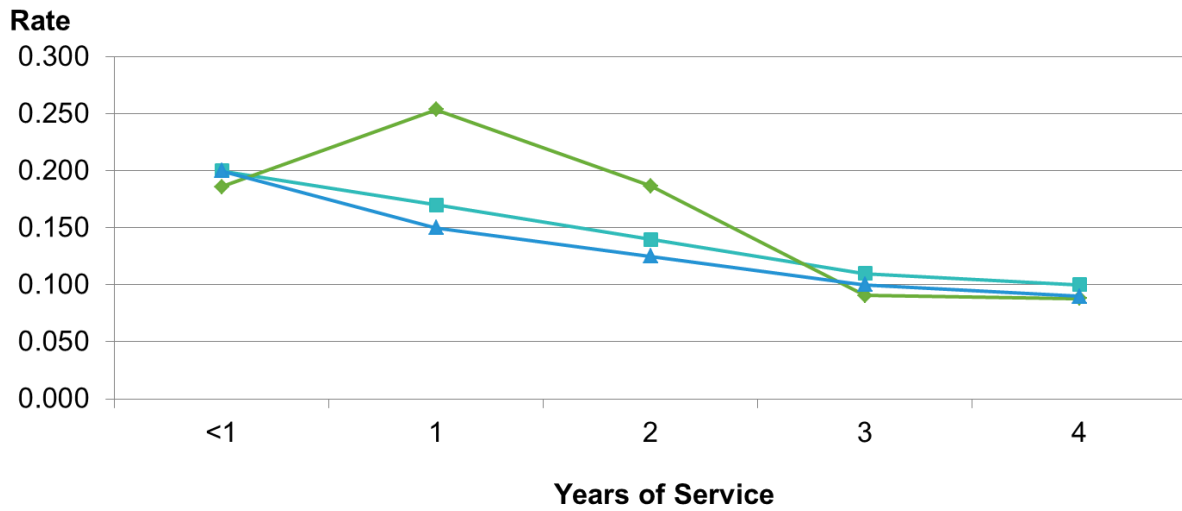
**PERS Others
Withdrawal Rates (Select)
Hire age under 35
Male**



Expected Actual Proposed

Experience:
Current % Actual Expected: 65.92%
Proposed % Actual/Expected: 101.34%

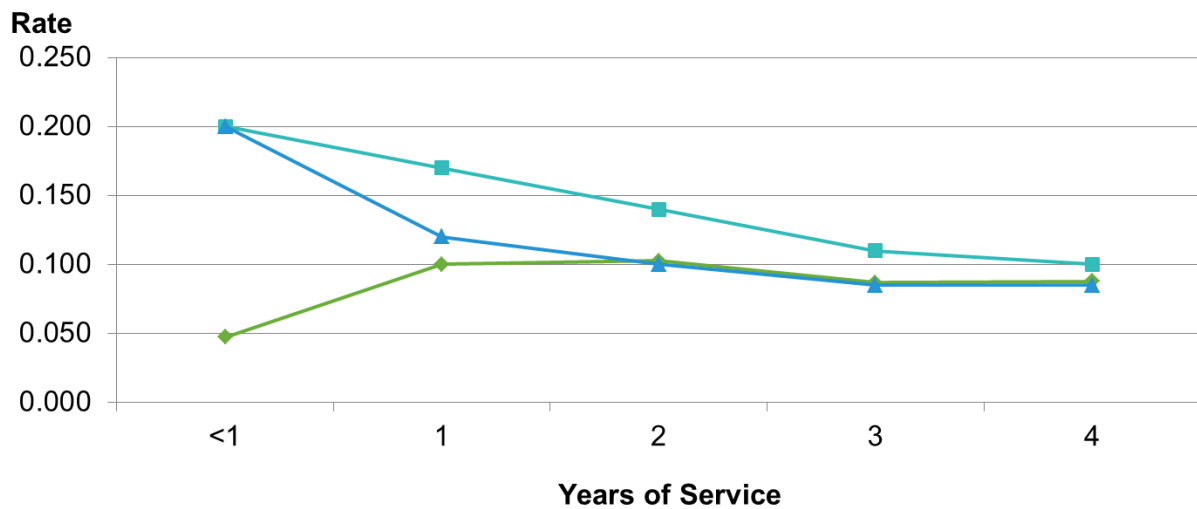
**PERS Others
Withdrawal Rates (Select)
Hire age over 35
Female**



Expected Actual Proposed

Experience:
Current % Actual Expected: 94.35%
Proposed % Actual/Expected: 104.70%

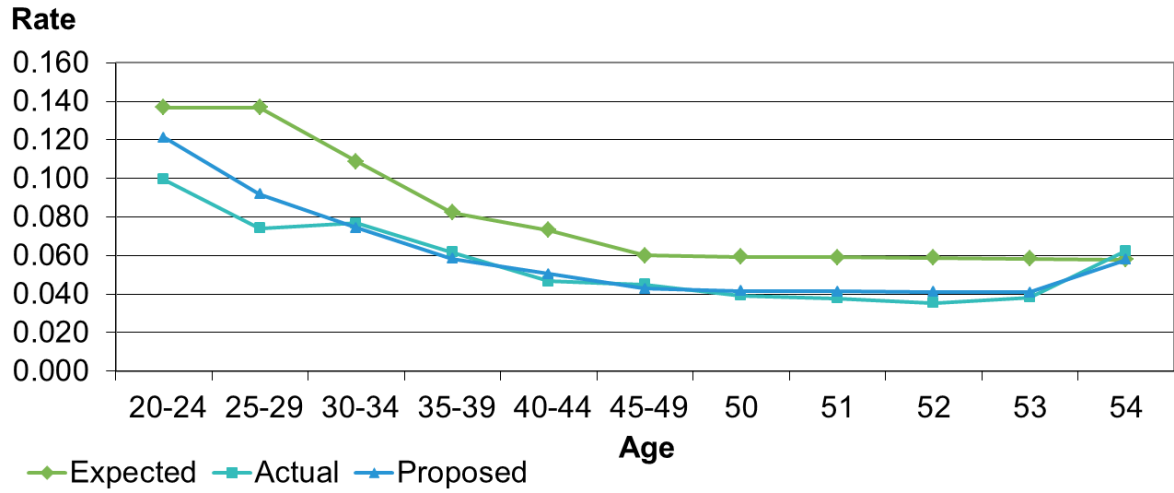
**PERS Others
Withdrawal Rates (Select)
Hire age over 35
Male**



Expected Actual Proposed

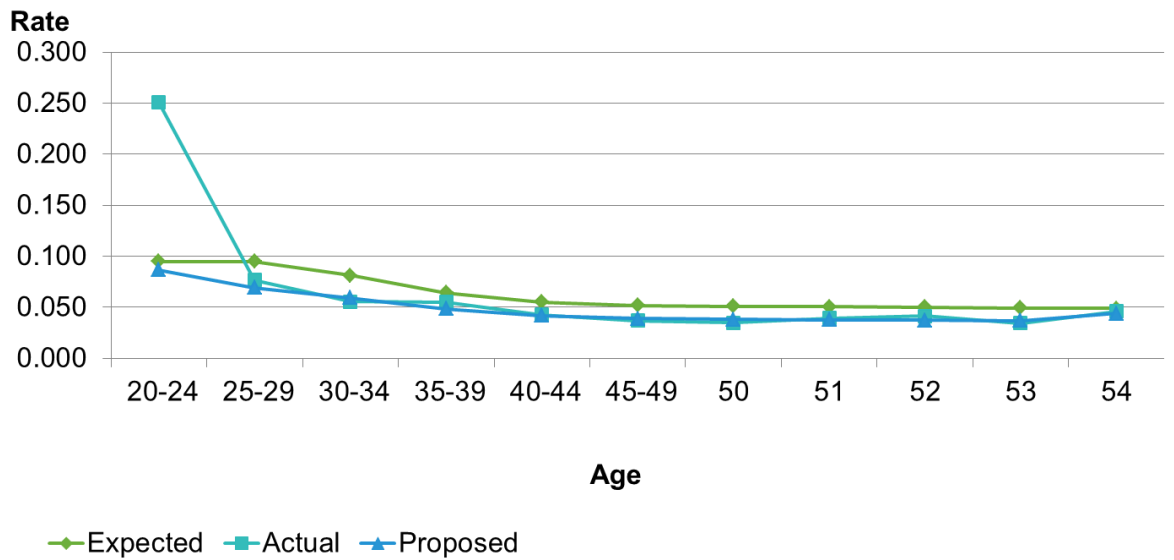
Experience:
Current % Actual Expected: 82.68%
Proposed % Actual/Expected: 102.21%

**PERS Others
Withdrawal Rates (Ultimate)
Female**



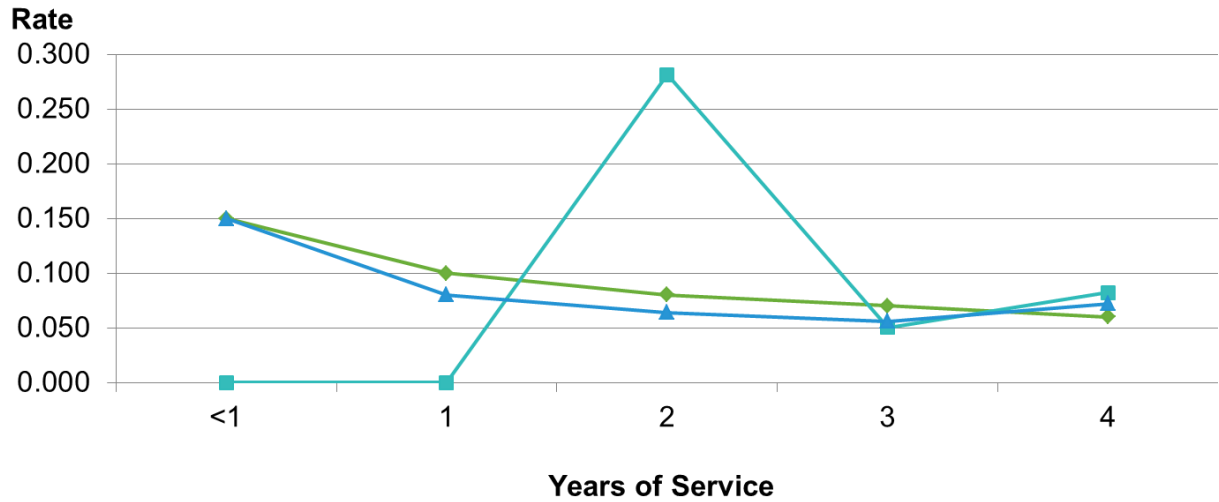
Experience:
Current % Actual Expected: 71.99%
Proposed % Actual/Expected: 99.63%

**PERS Others
Withdrawal Rates (Ultimate)
Male**



Experience:
Current % Actual Expected: 75.98%
Proposed % Actual/Expected: 99.81%

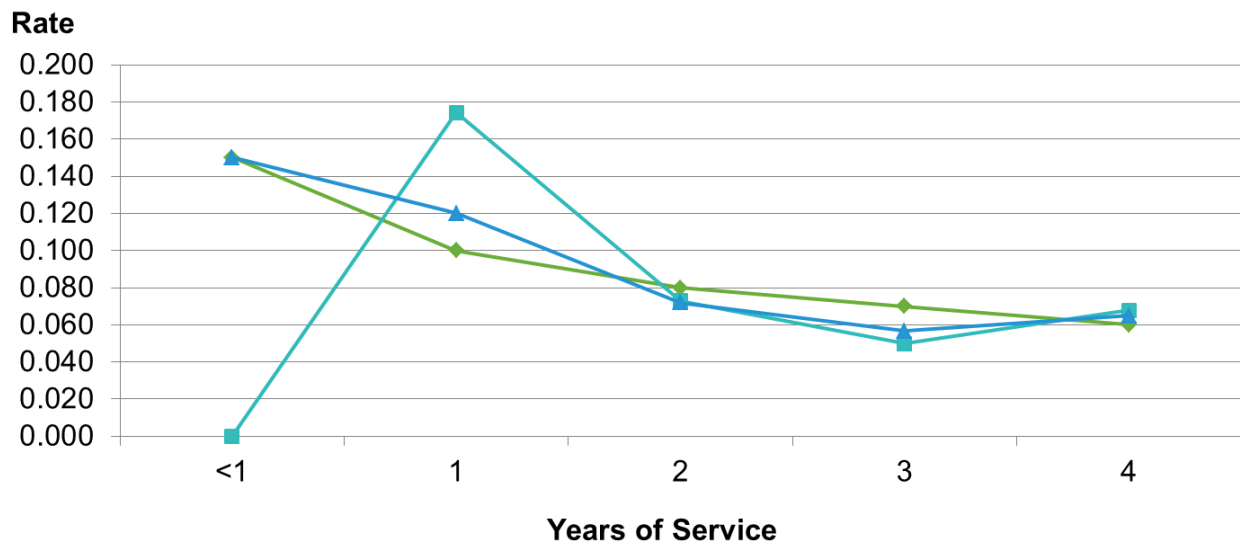
**PERS Peace Officer / Firefighter
Withdrawal Rates (Select)
Female**



Expected Actual Proposed

Experience:
Current % Actual Expected: 123.49%
Proposed % Actual/Expected: 116.81%

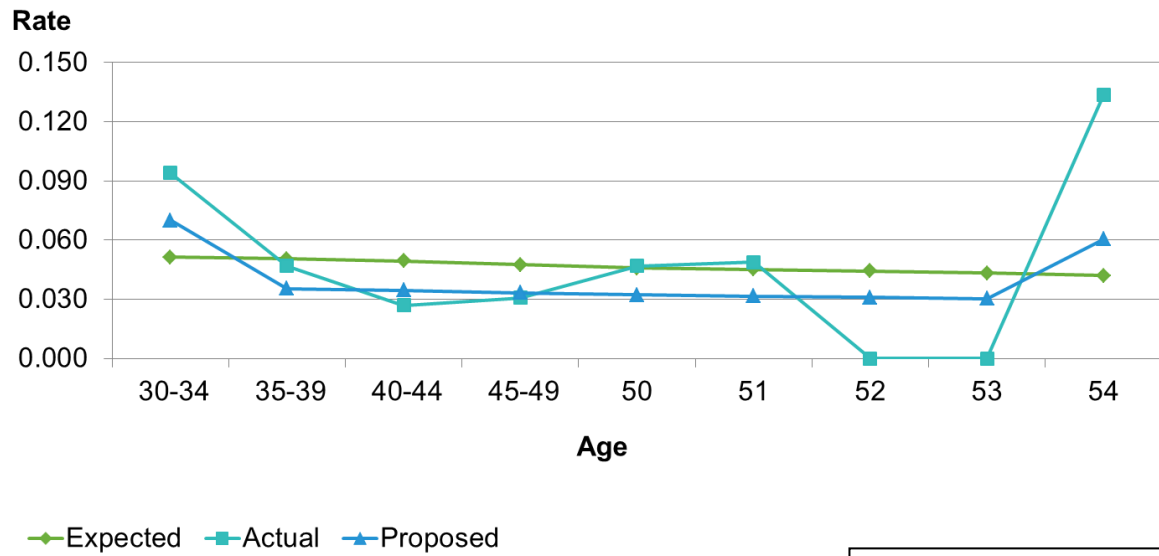
**PERS Peace Officer / Firefighter
Withdrawal Rates (Select)
Male**



Expected Actual Proposed

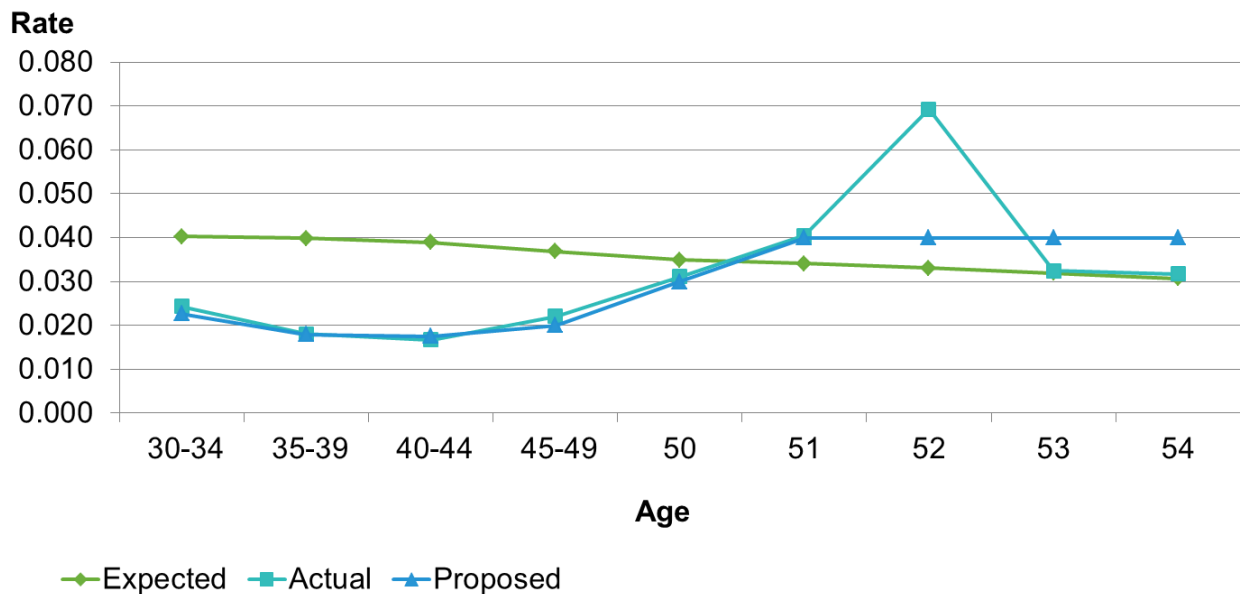
Experience:
Current % Actual Expected: 100.66%
Proposed % Actual/Expected: 101.19%

**PERS Peace Officer / Firefighter
Withdrawal Rates (Ultimate)
Female**



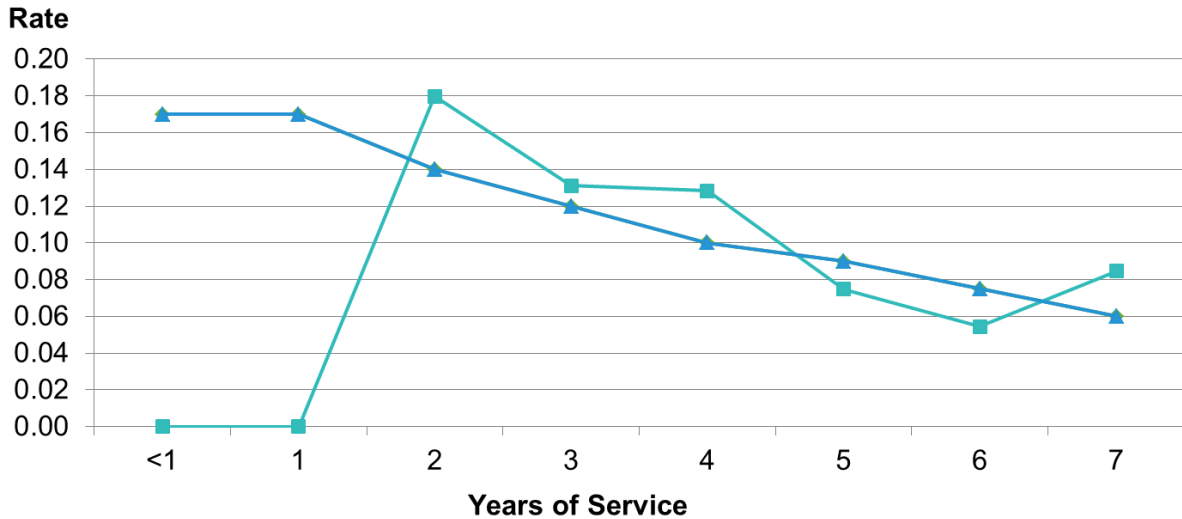
Experience:
Current % Actual Expected: 83.58%
Proposed % Actual/Expected: 104.74%

**PERS Peace Officer / Firefighter
Withdrawal Rates (Ultimate)
Male**



Experience:
Current % Actual Expected: 57.75%
Proposed % Actual/Expected: 101.48%

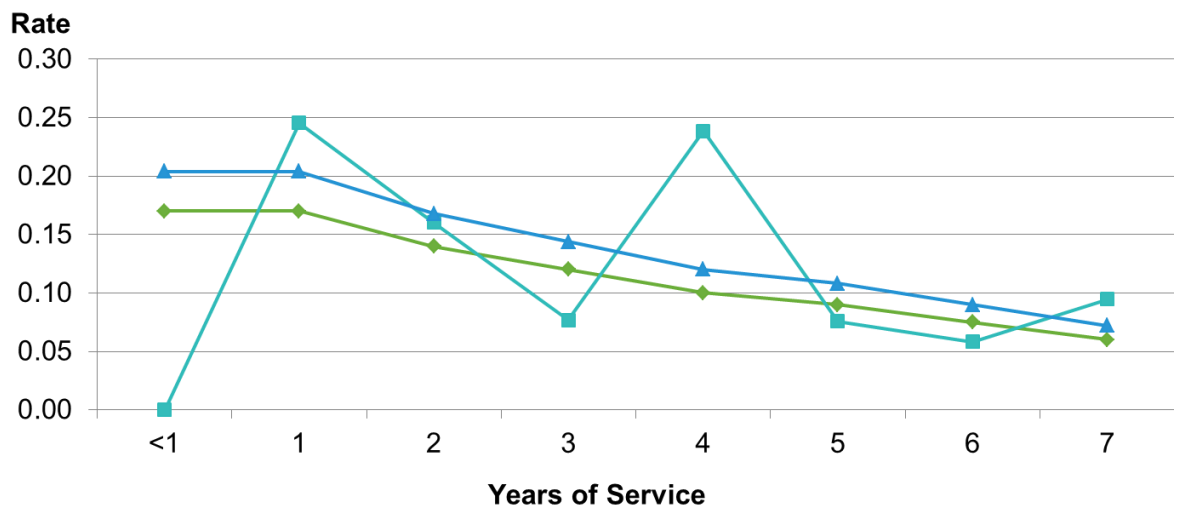
TRS
Withdrawal Rates (Select)
Female



Expected Actual Proposed

Experience:
Current % Actual Expected: 106.38%
Proposed % Actual/Expected: 106.38%

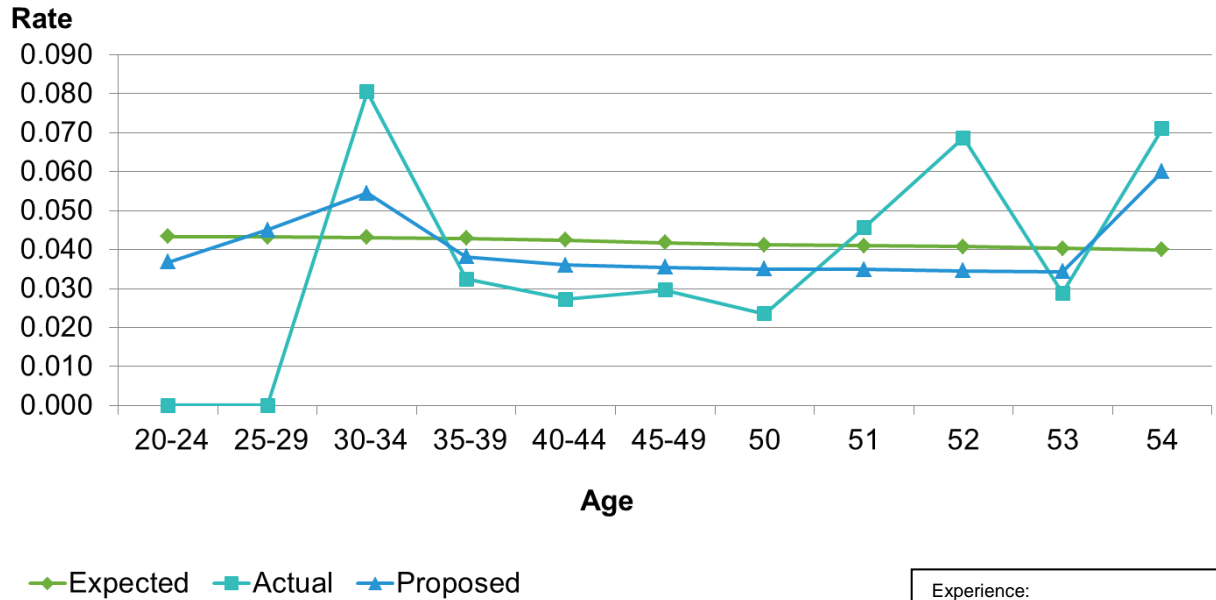
TRS
Withdrawal Rates (Select)
Male



Expected Actual Proposed

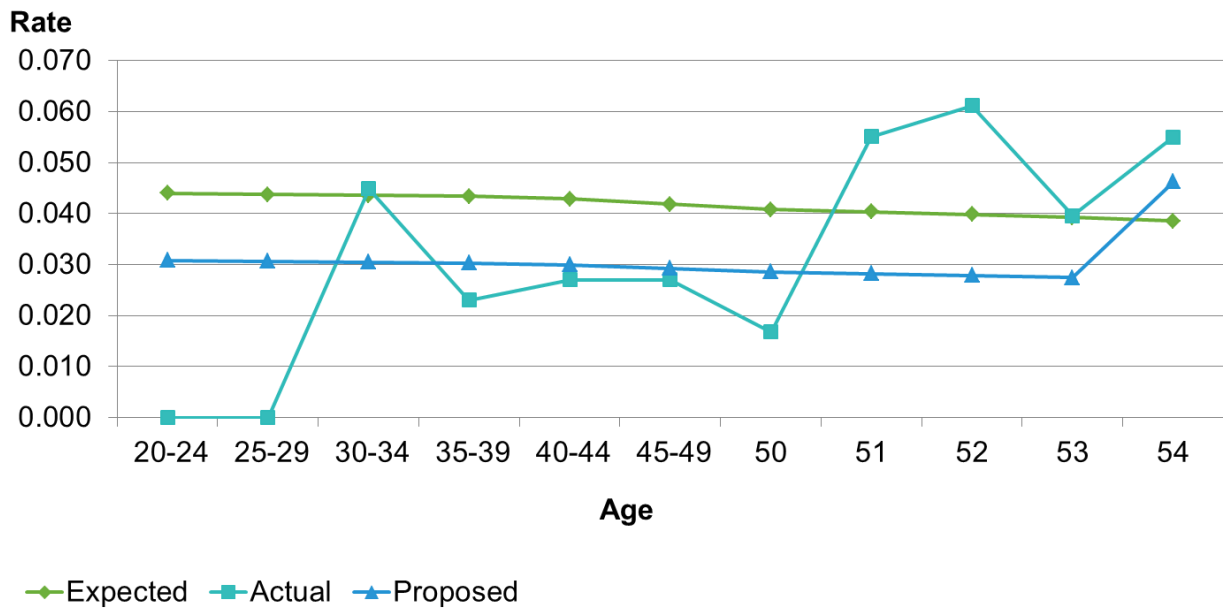
Experience:
Current % Actual Expected: 126.87%
Proposed % Actual/Expected: 105.73%

**TRS
Withdrawal Rates (Ultimate)
Female**



Experience:
 Current % Actual Expected: 85.59%
 Proposed % Actual/Expected: 94.67%

**TRS
Withdrawal Rates (Ultimate)
Male**



Experience:
 Current % Actual Expected: 73.56%
 Proposed % Actual/Expected: 102.52%

D. Retirement

We studied the retirement experience among active participants who were eligible for retirement. The results are shown in the table below. “Current expected” means the expected retirements using current assumptions. “New expected” means the expected retirements using the new proposed assumptions.

Reduced Retirement Rates										
Female						Male				
	Current Expected	Actual	A/CE	New Expected	A/NE	Current Expected	Actual	A/CE	New Expected	A/NE
PERS Others	\$178,103,106	\$161,501,841	91%	\$163,967,988	99%	\$163,376,275	\$118,907,559	73%	\$121,472,417	98%
Unisex										
	Current Expected	Actual	A/CE	New Expected	A/NE					
PERS Peace Officer/Firefighter				\$11,554,296	\$9,388,759	81%			\$10,543,282	89%
TRS				\$59,533,423	\$64,531,937	108%			\$65,224,374	99%

Unreduced Retirement Rates Unisex					
	Current Expected	Actual	A/CE	New Expected	A/NE
PERS Others	\$1,081,905,168	\$1,058,675,632	98%	\$1,078,911,474	98%

Female						Male				
	Current Expected	Actual	A/CE	New Expected	A/NE	Current Expected	Actual	A/CE	New Expected	A/NE
PERS Peace Officer / Firefighter	\$26,916,965	\$18,460,553	69%	\$21,824,474	85%	\$140,091,262	\$115,761,449	83%	\$126,339,751	92%
TRS	\$438,534,945	\$414,163,714	94%	\$417,418,343	99%	\$247,447,713	\$241,372,540	98%	\$246,541,951	98%

Under the plan, depending on their age and service, a member may receive a full unreduced benefit or a reduced benefit. The current retirement assumptions are based on age and group and reflect whether the member is eligible for full or reduced retirement benefits. The current retirement rates are based on actual experience from 2005 to 2009.

Recommendation: Generally, the actual retirements were lower than expected for reduced retirements and for unreduced retirements. Setting retirement rates in this way reflects expected retirement patterns considering both age and service. We recommend decreasing most retirement rates, except that we recommend increasing TRS reduced rates.

	Current	Proposed
PERS Others	<ul style="list-style-type: none"> • Unisex various rates • Ages 50 to 59 for reduced retirement • Ages 50 to 90 for unreduced retirement 	<ul style="list-style-type: none"> • Sex-distinct rates for reduced retirement, decreased most rates • Unisex rates for unreduced retirement, decreased most rates
PERS Peace Officer / Firefighter	<ul style="list-style-type: none"> • Unisex various rates • Ages 50 to 59 for reduced retirement • Ages 50 to 75 for unreduced retirement 	<ul style="list-style-type: none"> • Unisex rates for reduced retirement, decreased most rates • Sex-distinct rates for unreduced retirement, decreased most rates
TRS	<ul style="list-style-type: none"> • Unisex various rates for reduced retirement, various rates 50 to 59 • Sex-distinct various rates for ages 50 to 85 for unreduced retirement 	<ul style="list-style-type: none"> • Unisex rates for reduced retirement, increased rates at age 54 and 59 • Sex-distinct rates for unreduced retirement, decreased most rates

We also performed an analysis of the age the deferred vested members commence their retirement benefits.

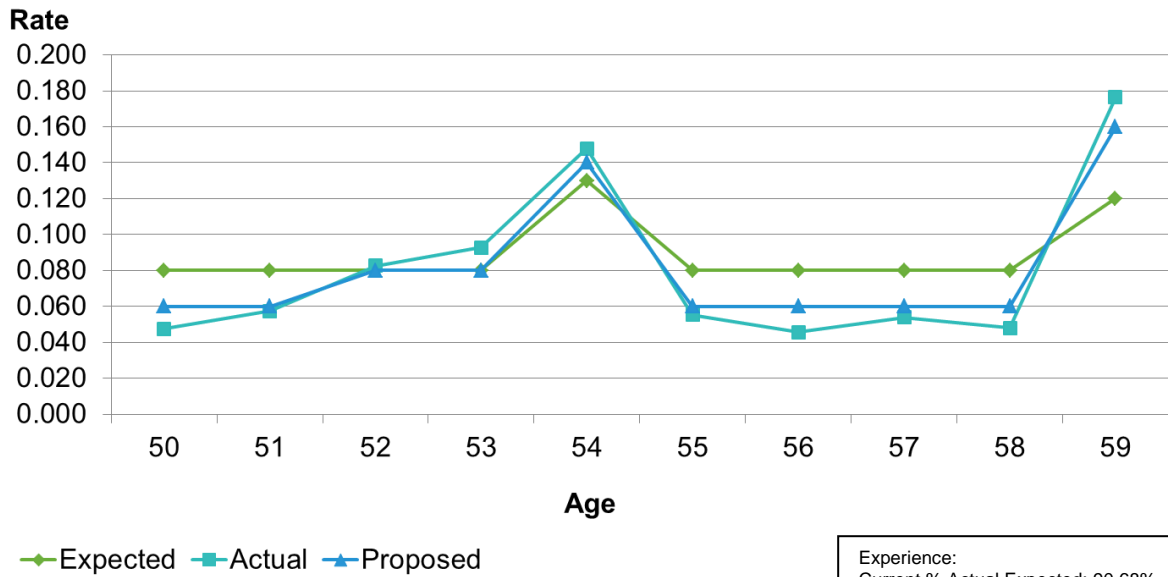
	Current Expected	Actual	New Expected
PERS Others			
- Tier 1	Earliest	56	
- Tier 2	Unreduced	60	
- Tier 3	age	61	No Change
PERS Peace Officer / Firefighter			
- Tier 1	53	56	55
- Tier 2	57	59	60
- Tier 3	57	58	60
TRS			
- Tier 1	Earliest	56	
- Tier 2	Unreduced age	61	No Change

Recommendation: Our current assumption assumes deferred vested members commence their retirement benefits at their earliest unreduced retirement age. The experience shows that these members are retiring at their unreduced retirement age. We recommend changing PERS Peace Officer/Firefighter to 55 for Tier 1, 60 for Tier 2, and 60 for Tier 3.

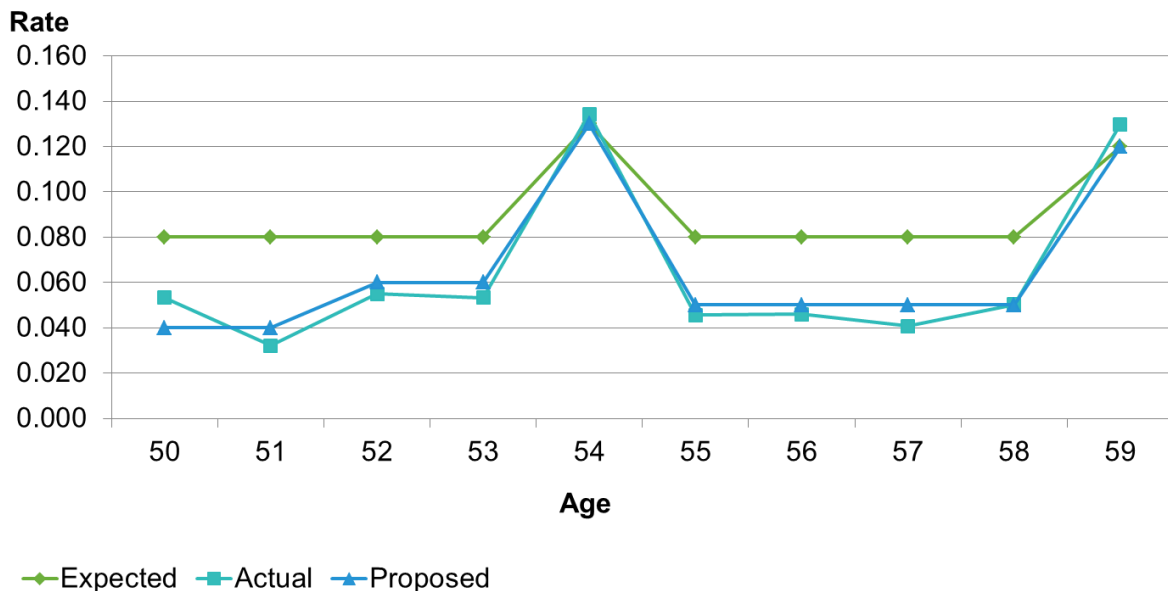
Some members may be retirement eligible when they terminate but they elect to defer receiving benefits. We believe it is reasonable to set the benefit commencement age in the aggregate based on observed commencement age.

The graphs on the next pages show the actual experience and the new proposed rates for reduced and unreduced retirement.

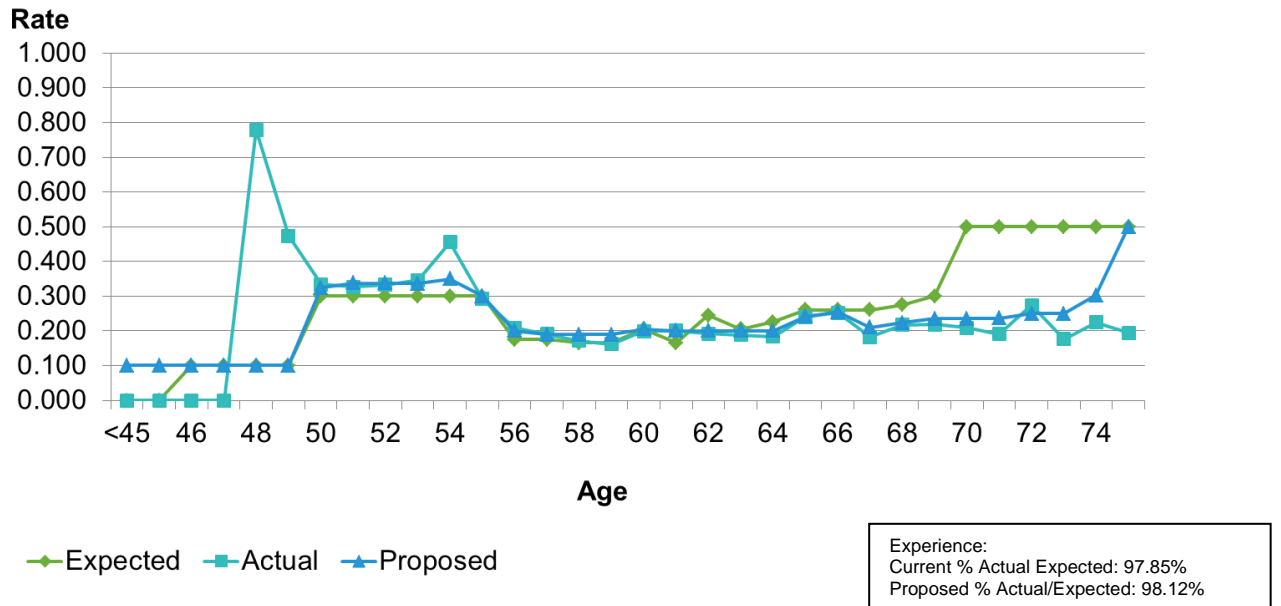
**PERS Others
Reduced Retirement Rates
Female**



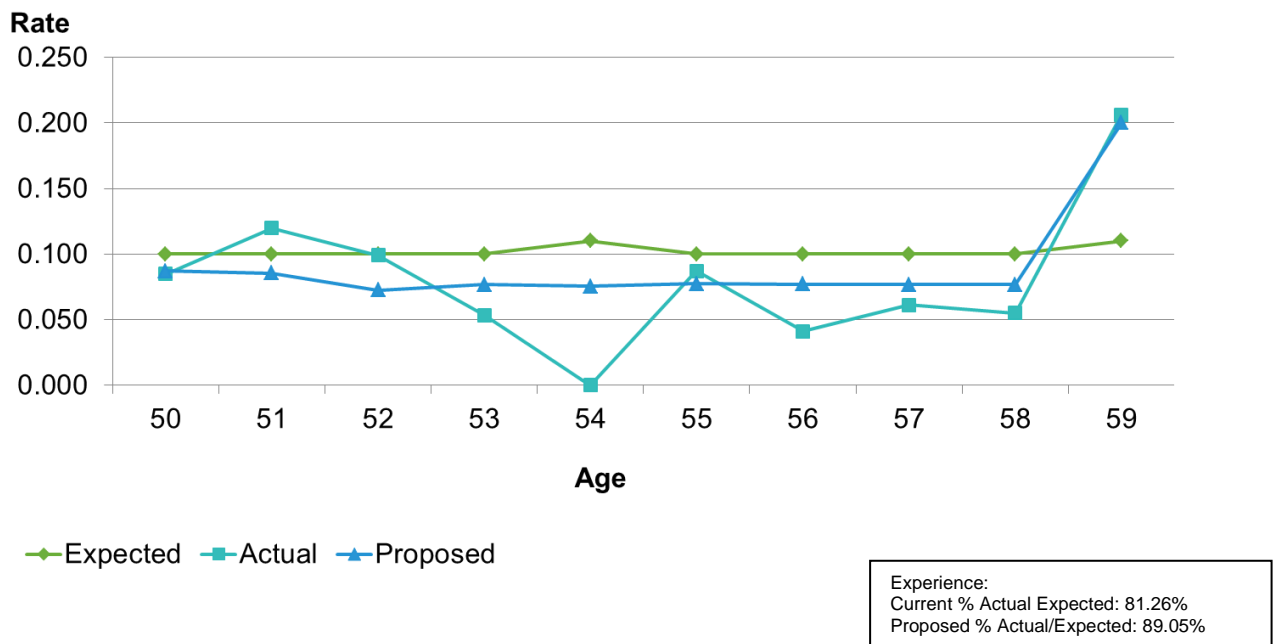
**PERS Others
Reduced Retirement Rates
Male**



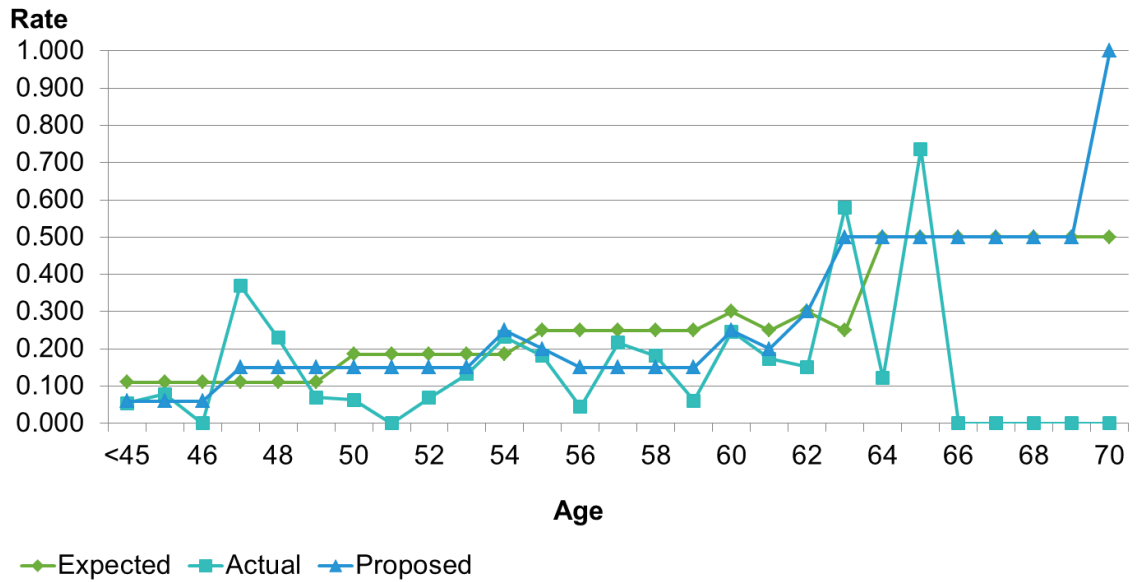
PERS Others Unreduced Retirement Rates Unisex



PERS Peace Officer / Firefighter Reduced Retirement Rates Unisex

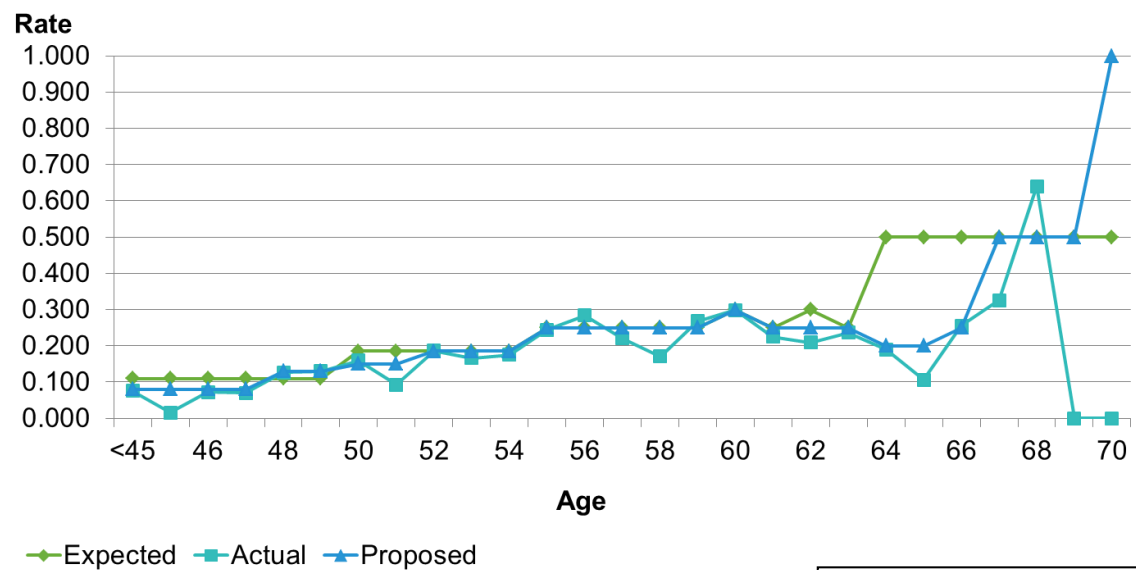


PERS Peace Officer / Firefighter Unreduced Retirement Rates Female



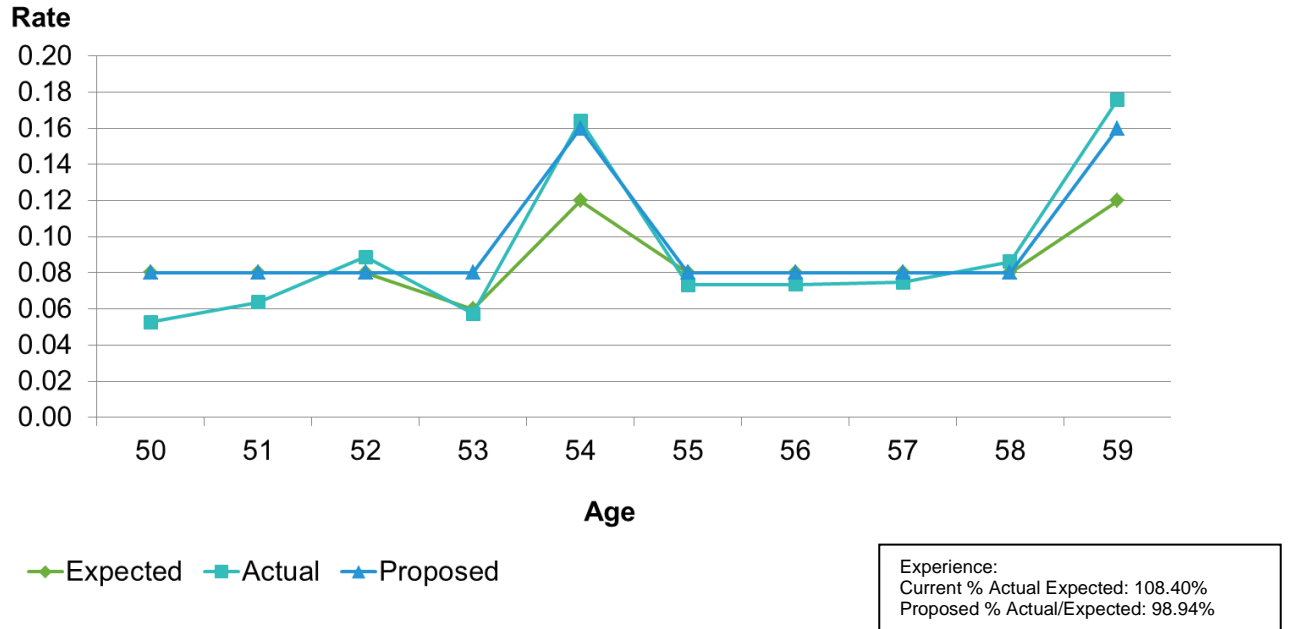
Experience:
Current % Actual Expected: 68.58%
Proposed % Actual/Expected: 84.59%

PERS Peace Officer / Firefighter Unreduced Retirement Rates Male

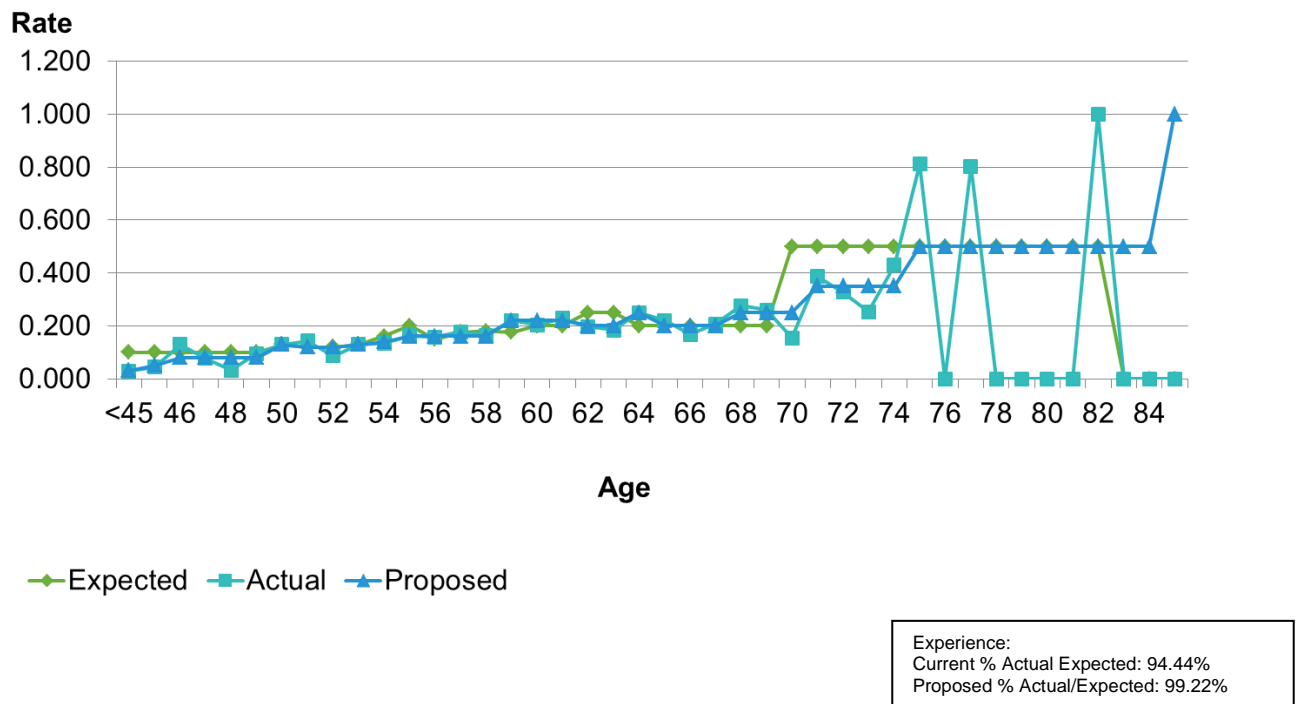


Experience:
Current % Actual Expected: 82.63%
Proposed % Actual/Expected: 91.63%

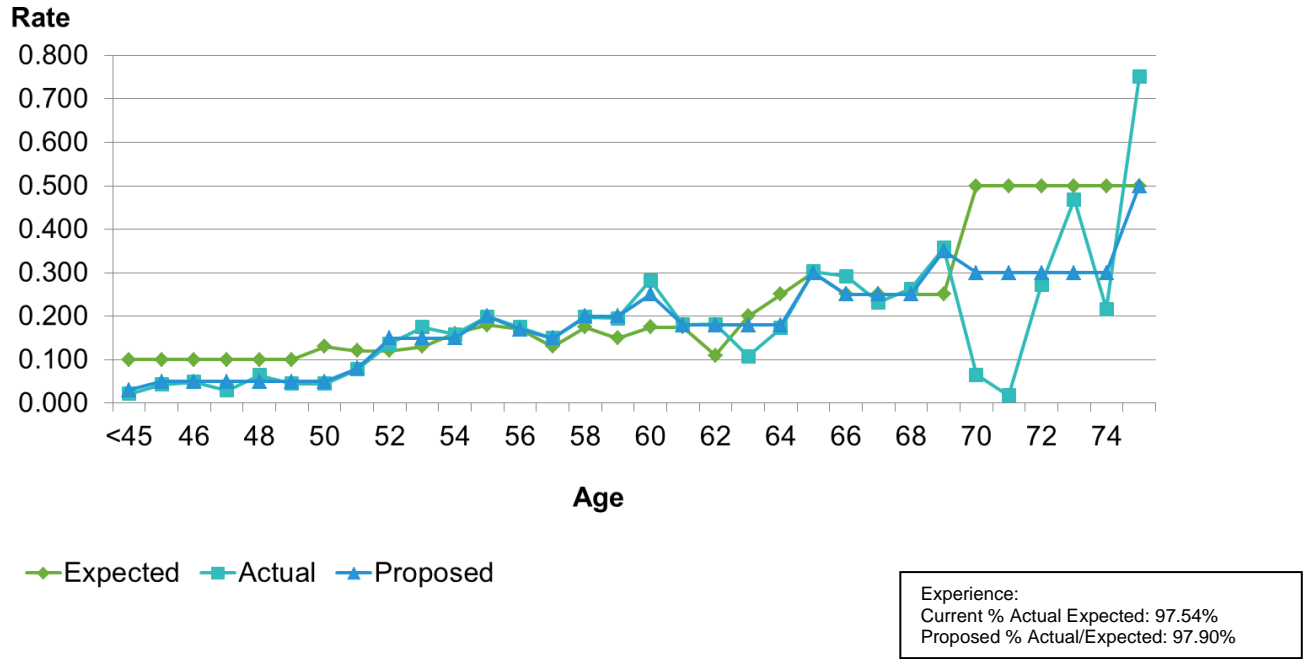
**TRS
Reduced Retirement Rates
Unisex**



**TRS
Unreduced Retirement Rates
Female**



**TRS
Unreduced Retirement Rates
Male**



E. Disability Retirements

We studied the number of members who retired under disability retirement during the past four years. The table below shows the number of actual and expected disability retirements during this study. "Current expected" means the expected disabilities using current assumptions. "New expected" means the expected disabilities using the new proposed assumptions. Actual disabilities greater than expected disabilities is a conservative assumption.

Disability Retirements										
Female						Male				
	Current Expected	Actual	A/CE	New Expected	A/NE	Current Expected	Actual	A/CE	New Expected	A/NE
PERS Others	23	26	113%	22	118%	21	16	76%	20	80%
PERS Peace Officer / Firefighter	2	0	0%	1	0%	11	5	45%	7	71%
TRS	8	14	175%	12	117%	4	4	100%	6	67%

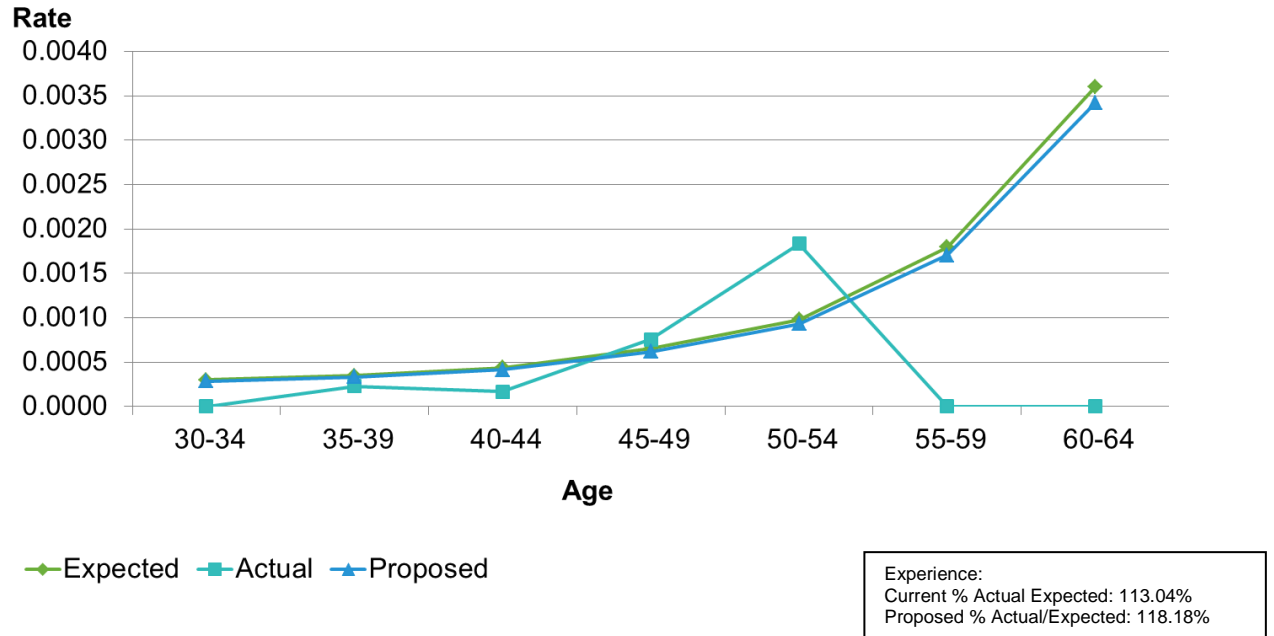
The current assumption was based on the actual experience from 2005 to 2009.

Recommendation: For the TRS members, the rates are slightly low, so we recommend increasing rates. For PERS Others and PERS Peace Officer/Firefighter members, the current rates are also slightly high, so we recommend decreasing the rates by 5% and 30%, respectively.

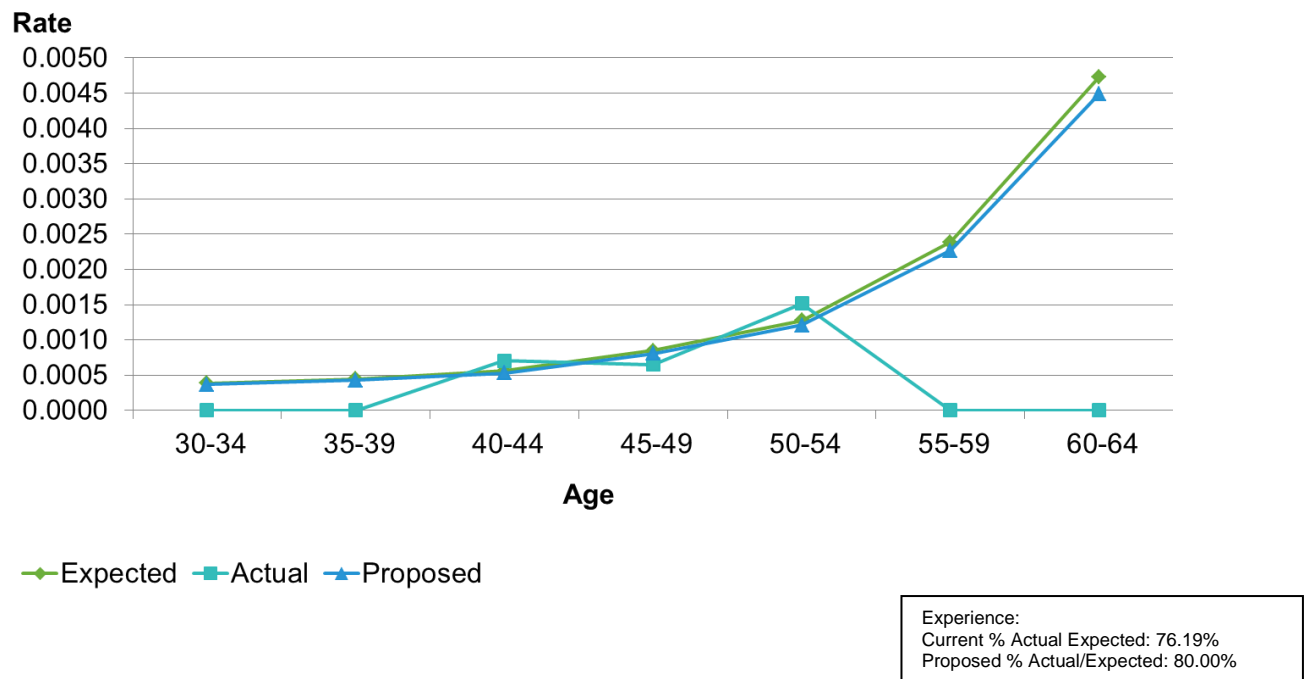
Disability Retirements		
	Current	Proposed
PERS Others	<ul style="list-style-type: none"> Age based, sex-distinct rates Rates stop at retirement eligibility 	<ul style="list-style-type: none"> Decreased rates by 5%
PERS Peace Officer / Firefighter	<ul style="list-style-type: none"> Age based, unisex rates Rates stop at retirement eligibility 	<ul style="list-style-type: none"> Decreased rates by 30%
TRS	<ul style="list-style-type: none"> Age based, sex-distinct rates Rates stop at retirement eligibility 	<ul style="list-style-type: none"> Age based, unisex rates Generally increased rates

The graphs on the next pages compare the current and proposed assumptions with the actual disability rates.

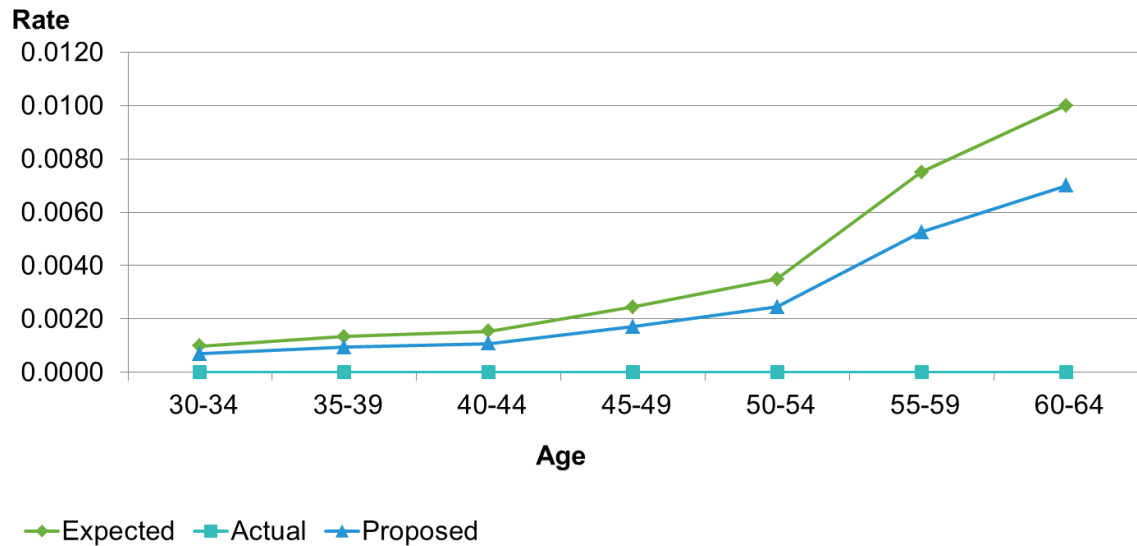
**PERS Others
Disability Rates
Female**



**PERS Others
Disability Rates
Male**

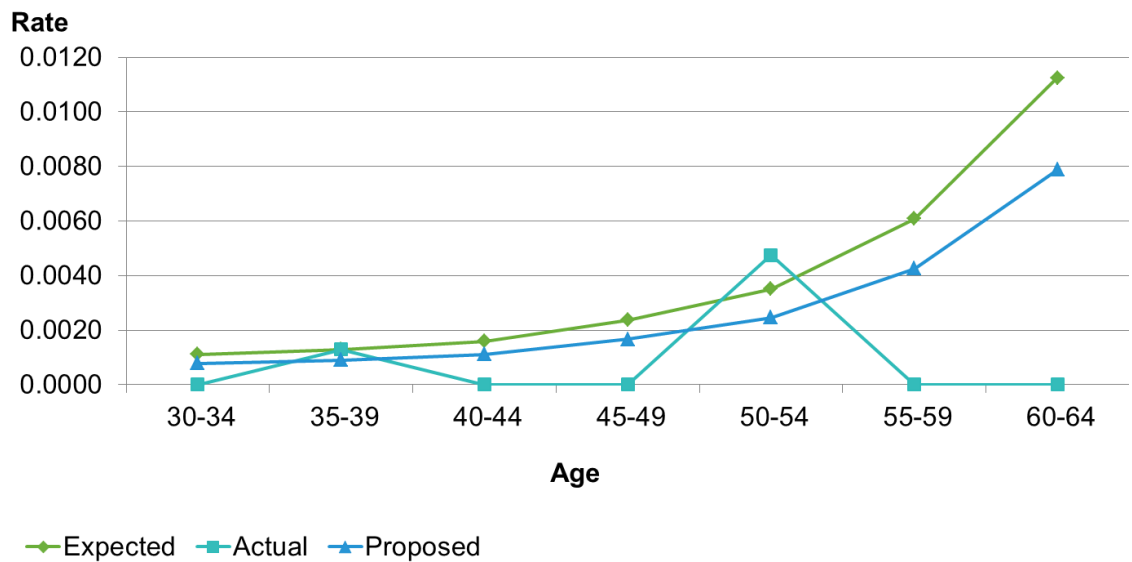


**PERS Peace Officer / Firefighter
Disability Rates
Female**



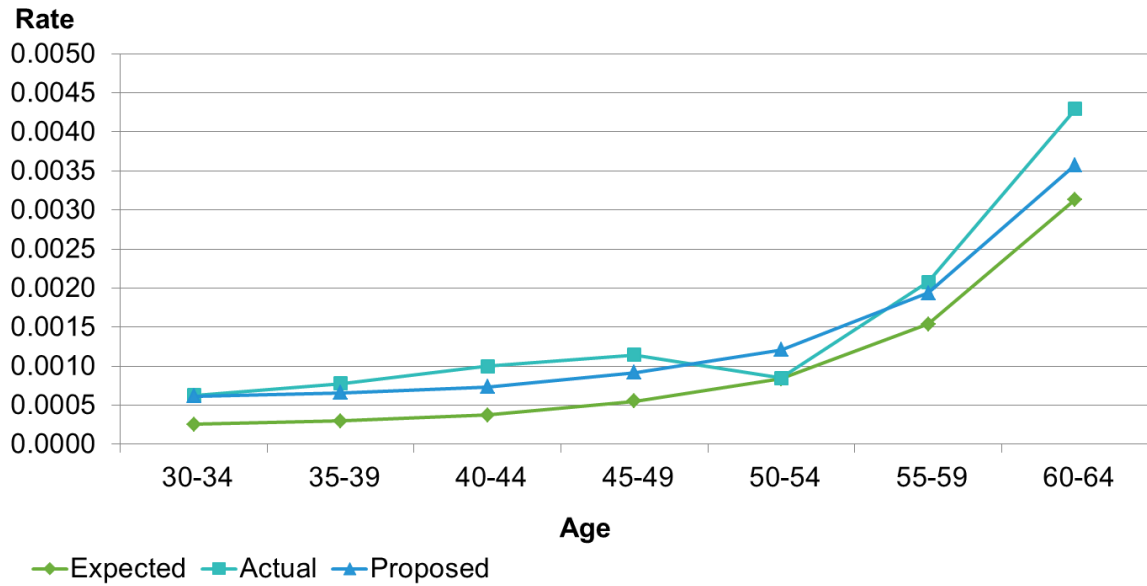
Experience:
Current % Actual Expected: 0.00%
Proposed % Actual/Expected: 0.00%

**PERS Peace Officer / Firefighter
Disability Rates
Male**



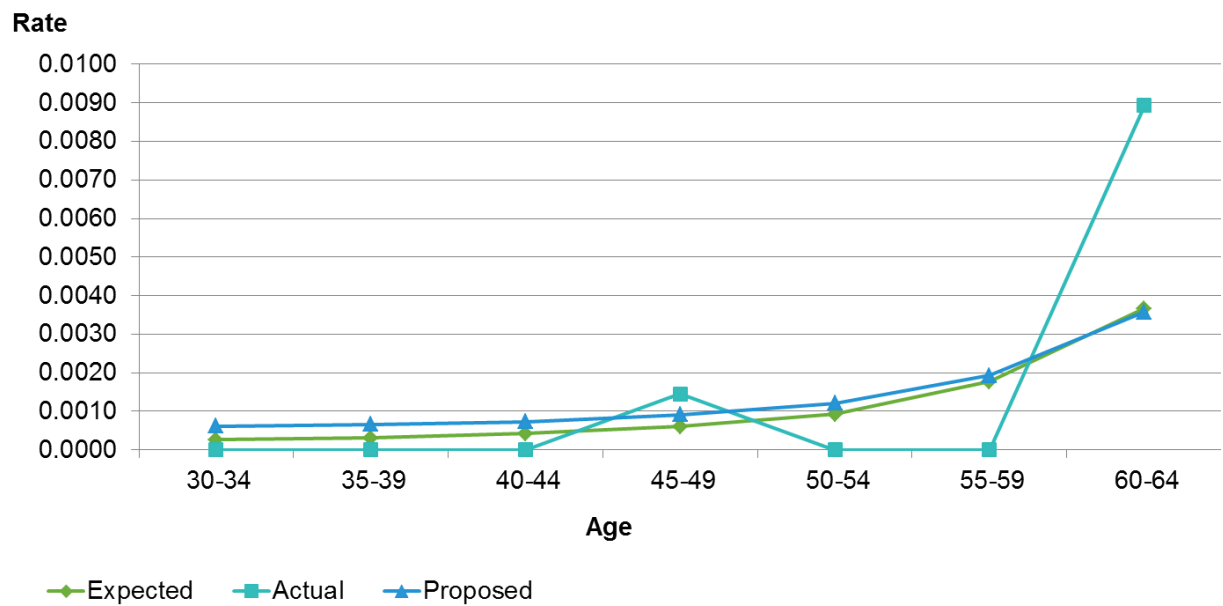
Experience:
Current % Actual Expected: 45.45%
Proposed % Actual/Expected: 71.43%

TRS
Disability Rates
Female



Experience:
Current % Actual Expected: 175.00%
Proposed % Actual/Expected: 116.67%

TRS
Disability Rates
Male



Experience:
Current % Actual Expected: 100.00%
Proposed % Actual/Expected: 67.67%

F. Withdrawal of Contributions at Termination

Vested participants who terminate prior to being eligible for retirement have the option of withdrawing their contributions with interest or leaving their money in the plan and receiving a deferred retirement annuity benefit. A low percent of members electing a refund is a conservative assumption.

We reviewed the data for vested members leaving active employment during the last four valuation years for our analysis. The results are as follows:

	Current	Rate Electing Refund	Proposed Assumption
PERS Others	15%	9%	10%
PERS Peace Officer / Firefighter	15%	14%	15%
TRS	10%	2%	5%

Recommendation: We understand that very few TRS members take a refund. We recommend changing the assumption to 5% of vested members will elect refunds.

We recommend changing the assumption for PERS Others from 15% to 10% of vested members will elect refunds.

We recommend keeping the assumption of 15% for members electing a refund for PERS Peace Officers / Firefighters.

Members who are eligible to retire also have the option of withdrawing their contributions. We assume these members elect the annuity and medical coverage which is the most valuable benefit. We do not recommend changing this assumption.

G. Other Demographic Assumptions

We have reviewed the following other demographic assumptions that are needed for the valuation:

- Marriage assumption
- Age difference between husbands and wives
- Number of dependent children
- Alaska residency
- Number of unused sick days (TRS only)
- Part-time service earned during the year
- Occupational versus nonoccupational deaths and disabilities

MARRIAGE ASSUMPTION

The marriage assumption is used in a pension valuation to estimate the death benefits payable to a spouse upon the death of an active or deferred member. It is also used to predict the optional form of payment a member will elect upon retirement. For the post-retirement healthcare valuation, this assumption is used to determine the expected number of spouses to elect participation. This last use will have the most impact on the valuation. A high marriage percent is a conservative assumption.

Typically, a percentage is used to determine marital status at retirement or death, regardless of the member's current marital status. We reviewed the actual marital status for members who are retirement eligible at each valuation date over the study period.

The results are as follows:

	PERS Others		PERS Peace Officer/ Firefighter		TRS	
	Male	Female	Male	Female	Male	Female
Total number of member exposures who are retirement eligible as of the valuation date	16,788	21,877	1,983	425	4,165	8,831
Number who are married	12,508	14,420	1,632	241	3,394	6,469
Percent married	75%	66%	82%	57%	81%	73%
Current assumption	80%	70%	80%	70%	85%	75%
Proposed assumption	75%	70%	85%	60%	85%	75%

Age Difference between Husbands and Wives

The age difference between husbands and wives is used in conjunction with the marriage assumption to value death benefits, expected optional form of payment elections and postemployment healthcare benefits. The current assumption for both PERS and TRS is that husbands are three years older than their wives.

We reviewed the actual age differences between husbands and wives for current retirees who have elected a joint and survivor benefit. The results are as follows:

	PERS Others	PERS Peace Officer/ Firefighter	TRS
Number of male retiree exposures receiving a joint and survivor benefit	28,309	6,425	9,741
Average age older	3.7 years older	3.2 years older	3.3 years older
Current age difference assumption	3 years older	3 years older	3 years older
Proposed age difference assumption	3 years older	3 years older	3 years older
Number of female retiree exposures receiving a joint and survivor benefit	26,338	602	12,395
Average age younger	1.8 years younger	1.8 years younger	1.5 years younger
Current age difference assumption	3 years younger	3 years younger	3 years younger
Proposed age difference assumption	3 years younger	3 years younger	3 years younger

Number of Dependent Children

Death and disability benefits are based on dependent children under TRS. Death benefits are payable to dependent children if no spouse exists in PERS.

Recommendation: The current assumption is that married members have two dependent children from age 25 through 45. At 46, we assume members have no dependent children. We do not have sufficient data to review this assumption. We recommend no change to this assumption.

Alaska Residency

Eligible benefit recipients who reside in Alaska receive an Alaska cost-of-living allowance. An assumption must be made regarding how many members will remain in Alaska after retirement. A high portion of retirees expected to reside in Alaska is a conservative assumption.

We reviewed all members and beneficiaries who are eligible to receive COLA benefits to review this assumption. The results are as follows:

	PERS Others	PERS Peace Officer/ Firefighter	TRS
Total benefit amount of all COLA eligible benefit recipient exposures (in thousands)	144,459	27,130	109,143
Total benefit amount of recipients receiving an Alaska COLA (in thousands)	99,535	17,181	67,138
Portion receiving Alaska COLA	69%	63%	62%
Current assumption	70%	70%	60%
Proposed assumption	70%	65%	60%

Since the actual percentage of benefits that have the Alaska Residency COLA is lower than the assumption for PERS Peace Office/Firefighter members, we recommend decreasing this assumption to 65%.

Number of Unused Sick Days (TRS only)

TRS members receive service credit for unused sick leave when they retire. An assumption is made to determine the expected amount of credit members will receive when they retire.

Recommendation: The current assumption is that a member will receive 4.7 days for each year of service. This effectively increases the member's service by 2.73%. We recommend lowering this assumption based on actual experience from June 30, 2009 through June 30, 2013 to 4.5 days, which will increase liability to 2.60%.

Part-time Service Earned During the Year

There are members who are employed part-time and participate in PERS and TRS. Members will earn a portion of a year of service for their part-time employment. An assumption is made regarding the amount of service these members will earn during a year. A conservative assumption would be close to 1.

We reviewed members who were part-time to analyze this assumption. The results are as follows:

	PERS Others	PERS Peace Officer / Firefighter	TRS
Total part-time member exposures	3,936	N/A	2,117
Average increase in service	.66	N/A	0.77
Current assumption	.65	1.00	.60
Proposed assumption	.65	1.00	.75

Recommendation: There were only a few Peace Officer / Firefighter members with part-time status during the study period. Therefore, we did not review this assumption for this group. We recommend keeping the assumption that all Peace Officers / Firefighters will earn a full year of service. We recommend increasing the assumption for TRS to be .75 of a year.

We recommend no change for PERS Others.

Occupational vs. Nonoccupational Death and Disability

PERS has different benefits for members who become disabled or die due to occupational causes. TRS has different benefits for those who die due to occupational causes.

We reviewed the data for members who are currently receiving a disability benefit to analyze this assumption. There is insufficient data to analyze male and female assumptions separately, so data was aggregated. Please note that we do not have data available to determine whether occupational or nonoccupational death benefits are paid. The results are as follows:

	PERS Peace Officer/ Firefighter		
	PERS Others		TRS
Disability			
Member exposures receiving a nonoccupational disability benefit	612	67	N/A
Members receiving an occupational disability benefit	601	139	N/A
Portion occupational	50%	68%	N/A
Current assumption	55%	75%	N/A
Proposed assumption	50%	70%	N/A
Death			
Current assumption	55%	75%	15%
Proposed assumption	50%	70%	15%

Recommendation: We recommend decreasing the percent occupational assumption for PERS Peace Officers / Firefighters and PERS Others to 70% and 50%, respectively. We recommend keeping the TRS assumption of 15%.

Section 2 Economic Assumptions

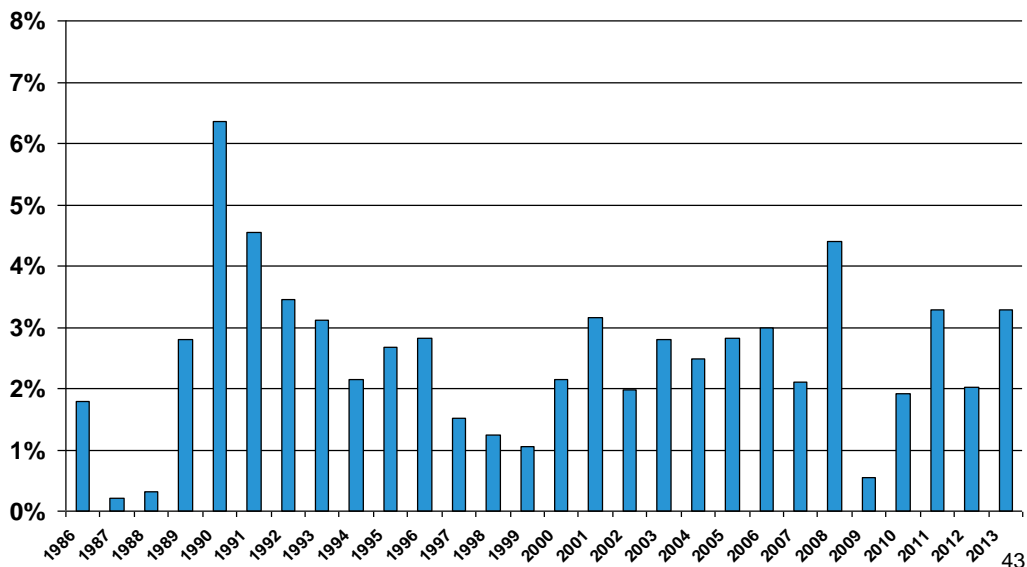
This section compares the actual experience with respect to the economic assumptions over the last four years.

A. Inflation

Inflation is a critical core component of economic actuarial assumptions. It is a component of the investment return assumption as well as the salary and payroll growth assumption. The current annual inflation assumption is 3.12%. This is higher than the actual annualized inflation rate of 2.39% experienced over the last 10 year period ending 2014 and higher than the most recent 20-year average of 2.42%. However, when higher historical inflation periods during the 70's and 80's are included, the historical inflation mean over 50 years of 4.20% exceeds the current assumption of 3.12%. This is illustrated in the following table:

Ten-Year Period Ending	Mean Inflation Rate (CPI)*
1974	5.09%
1984	7.63%
1994	3.53%
2004	2.45%
2014	2.39%
Twenty-Year Mean	2.42%
Fifty-Year Mean	4.20%

Historical inflation information is also available under the Consumer Price Index specific for Anchorage. This data is available beginning with 1986 has a mean of 2.49% which is consistent with national averages. A graph of the annual Anchorage CPI from 1986 to 2013 follows:

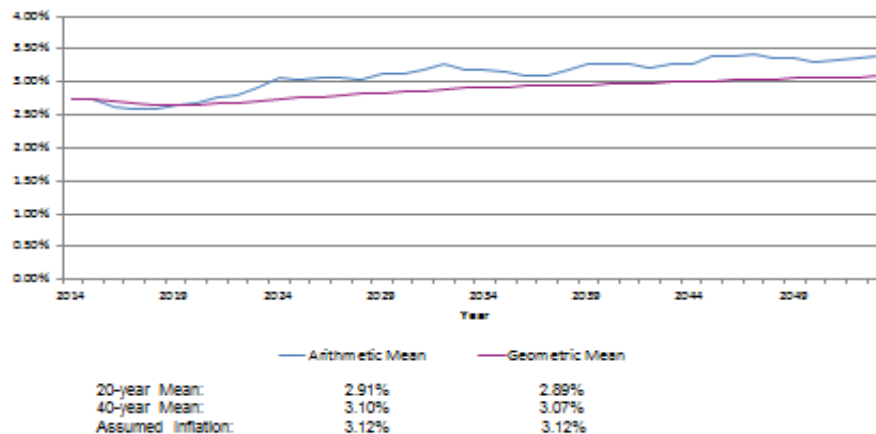


In addition, Buck performed a projection of expected inflation rates using the General Economy and Market Simulator (GEMS) developed by Conning, a portfolio company of Aquiline. This is an econometric model that uses an arbitrage free multifactor affine model which can:

- Generate realistic inflation index dynamics,
- Produce real term structures for inflation linked bonds,
- Simulate market expectations for inflation, and
- Links the price inflation model with the interest rate model for consistency.

The results of the projection for inflation using GEMS, showing both arithmetic and geometric mean rates for inflation, follows:

Inflation Forecast using GEMS



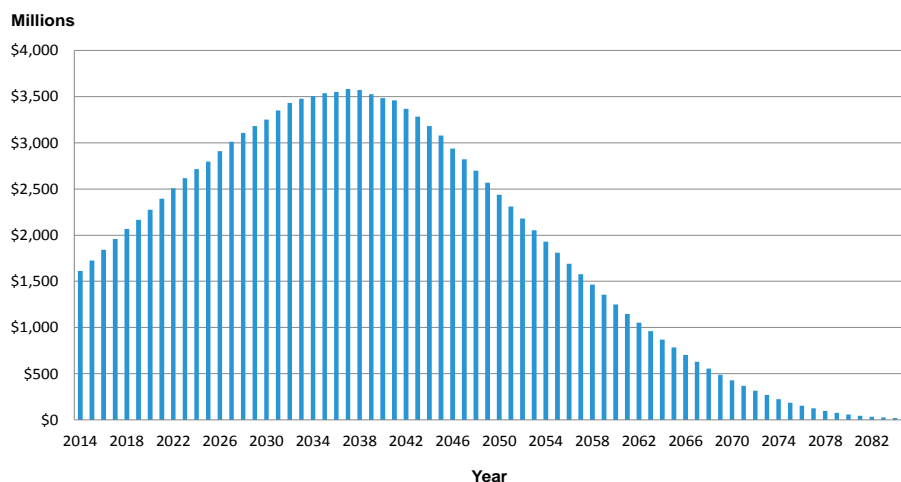
Recommendation: Short-term projections of inflation suggest lower inflation than we currently assume, increasing long-term. Our calculations are long term in nature so a higher inflation assumption is more appropriate. The current 3.12% inflation assumption falls within 20 and 50 year means of historical inflation, and is not materially different than the forecasted long-term inflation. Therefore, we recommend no change to the 3.12% inflation assumption at this time.

B. Investment Return or Discount (Interest) Rate

This assumption is the expected net return on the actuarial value of assets. Since this return is assumed for the period benefits will be paid to current members, the experience of the last four years is not necessarily a good predictor of the appropriate long-term rate. However, actual experience should be reviewed with a long-term perspective to make sure that the actuarial assumptions are reasonable.

This assumption is generally regarded as having the greatest impact on the measure of a System's actuarial liability calculation. The actuarial liability represents the present value of the future benefit payments expected to be paid from the System on the valuation date. This amount represents the value of all expected future benefit payments from the valuation date, discounted back to the valuation date for each year from the valuation date to the expected payment date. This represents a long time horizon since future payments calculated include not only payments made to current retirees, but also expected payments to currently active members who will begin receiving benefit payments when they retire, which may be as many as 40 years from the valuation date. When expected future salary increases and post-retirement pension adjustments are factored into the calculation of expected future benefits, the weighted payment time horizon, or duration of benefit payments, is increased. The time horizon of Alaska's PERS and TRS systems can be better illustrated by the following graph which shows the annual future benefits expected to be paid from fiscal years 2014 to 2082.

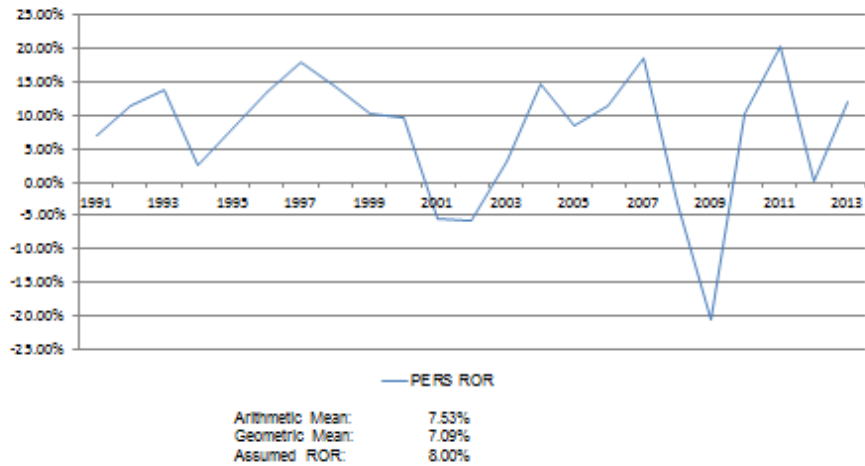
Projection of Future Annual Benefit Payments for PERS and TRS (2014 – 2082)



The graph shows that the annual benefit payments of about \$1.5 billion are expected to increase through 2037 before beginning to decline, and the amount is not expected to drop below the current level of \$1.5 billion until 2058. This is important because investment policy decisions are typically based on much shorter time horizons, typically over 5 to 7 year market cycles. Setting the investment return assumption for discount and interest rate purposes for an actuarial valuation should consider not only the expected returns over the next market cycle, but over future market cycles which cover the duration of future benefit payments.

When setting an investment return assumption, it is important to recognize historical rates of return. This gives a view of actual performance, although it is not necessarily an indication of expected future returns. The following graph shows the actual return history on market value for PERS with comparison to the mean return actually experienced from 1991 to the present:

Historical Investment Rate of Return for PERS 1991 - 2013



The mean returns for this 23 year past period are lower than the currently assumed rates, but are highly influenced by the negative returns experienced during the 2008-2009 financial crisis. By statistical measures, this event had a 2% chance of occurrence, or once every 50 years. This would suggest this period would need to cover 50 years in order to be more credible. For example, if the 2009 experience is removed, the geometric mean for PERS during this period would increase to 8.52%.

The development of the investment return assumption should also consider the Systems' asset allocation policy. A development of the expected investment rate of return using the current asset allocation policies follows.

FY 2015 Policy Allocation Target	
Asset Class	PERS and TRS
Cash	3%
Fixed Income	12%
Domestic Equities	26%
International Equities	25%
Absolute Return	5%
Alternative Equity	3%
Private Equities	9%
Real Assets	17%
Total	100%

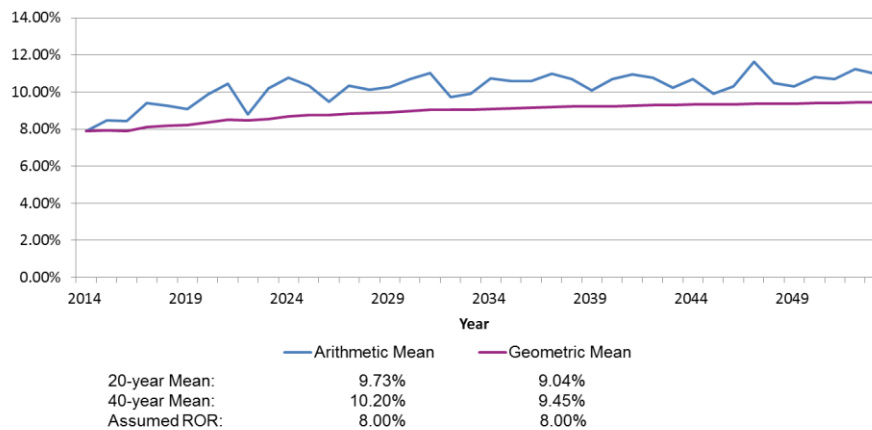
To develop expected future investment rate of returns over a period sufficiently long for use in the actuarial valuations for Alaska's Systems, we again used GEMS, an econometric modeling tool which is used in our Asset /Liability Modeling (ALM) practice. Buck uses this tool for forecasting expected rates of return because we believe it provides a more realistic projection of expected investment returns and the measurement of portfolio risk than other models available in the industry. The equity model within GEMS generates a probability for extreme behavior (fat tails) via the specification of an independent statistical jump process. The features of the returns

generated by the model include volatility clustering, low frequency/ high severity jumps, and jump clustering behaviors, all of which are observed in actual markets.

GEMS uses an Economic Scenario Generator (ESG) that provides projections of the economic environment. The portfolio asset classes are linked to the state of the projected economic environment when forecasting performance and risk. GEMS is calibrated with observed market data, both recent and historical. This calibration leads to a realistic, unbiased forecast of expected investment returns and measures of portfolio risk over both the short-term and the long-term time horizons. When economic conditions are expected to change over time, the projection of expected returns will be non-linear and portfolio risk measures (standard deviations) are likely to be slightly smaller than most models used by other firms.

The results of the GEMS forecast of expected future investment returns for Alaska's Systems assuming the current FY2015 portfolio asset allocation policy remains unchanged over the forecast period showing both arithmetic and geometric mean returns follows:

PERS and TRS Investment Rate of Return Forecasting using GEMS Net of Expenses (2014-2053)



The forecasted geometric mean returns for both asset allocation policies exceeds the currently assumed rate of return. This does not necessarily imply that the currently assumed rate of return is supported by the forecasted returns. You will notice that the forecasted returns are non-linear, initially lower returns that increase over the long-term. Actuarial Standards of Practice No. 27 for Setting Economic Assumptions has been recently amended. The revisions to the standard require actuaries to recommend a discount rate assumption that is not greater than the long-term expected investment rate of return. A margin for adverse deviation (or conservatism) is allowed by using a lower rate to the extent reasonable.

In order to insure the recommended discount rate is not greater than the assumed return, we used the non-linear geometric mean returns for the respective portfolios to discount the annual expected future benefit payments (see the graph of future benefit payments for PERS and TRS on page 45). Once the present value of benefits is determined for each portfolio, we then determined the blended, linear rate of return which provides an equal measurement of the present value of benefits. The result of our calculations follows:

	PERS	TRS
Total Plan Liability	\$21.5B	\$10.2B
Current Discount Rate	8.0%	8.0%
GEMS Liability	\$19.2B	\$9.1B
Blended GEMS Rate	8.9%	8.9%

Recommendation: Discounting future expected annual benefit payments by the forecast returns, net of expenses, shows the currently assumed discount rate of 8.0% for PERS and TRS is supportable by the long-term investment rates of return given the current asset allocation policy. However, due to the closed group nature of PERS and TRS defined benefit plans, future liquidity needs and increased risk due to the shortening of the benefit duration may require a more conservative asset allocation policy at some time in the future, reducing the expected investment rates of return from that point forward. For this reason, we do not recommend a change to the discount rate at this time. Instead, we recommend the long-term impact of increased liquidity needs and shortened benefit duration on PERS and TRS be analyzed to better understand the impact these have on the investment and funding risk to the systems.

C. Individual Salary Increases

We reviewed the salary increases over the past four years. We measured actual total pay increases for a four-year period and compared them to the total assumptions. We separated the salary increases into inflation and real components. The table below shows the average increase compared to the assumption.

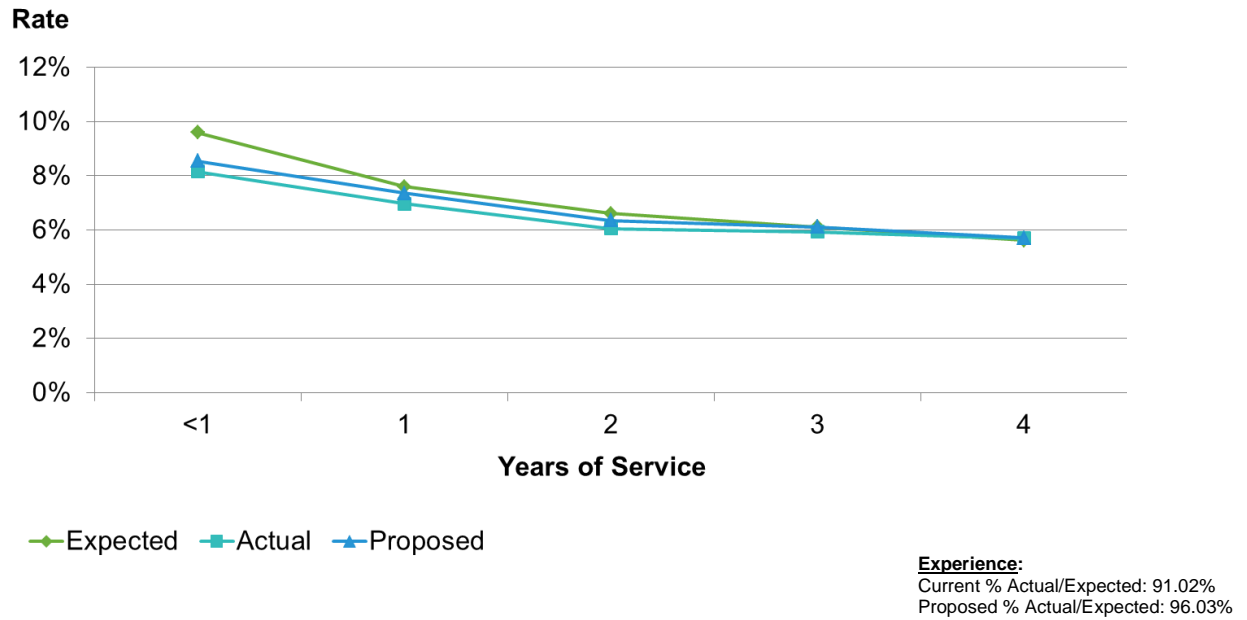
	Average Salary Increase with Inflation		
	Current Expected	Actual	New Expected
PERS Others			
First 5 years	7.44%	6.77%	7.05%
After 5 years	4.40%	4.78%	5.28%
PERS Peace Officer / Firefighter	4.77%	5.95%	5.76%
TRS	5.06%	5.32%	5.36%

To set our salary scale assumptions, we also looked at salary increases separated into inflation and real components. Our current inflation assumption is 3.12%.

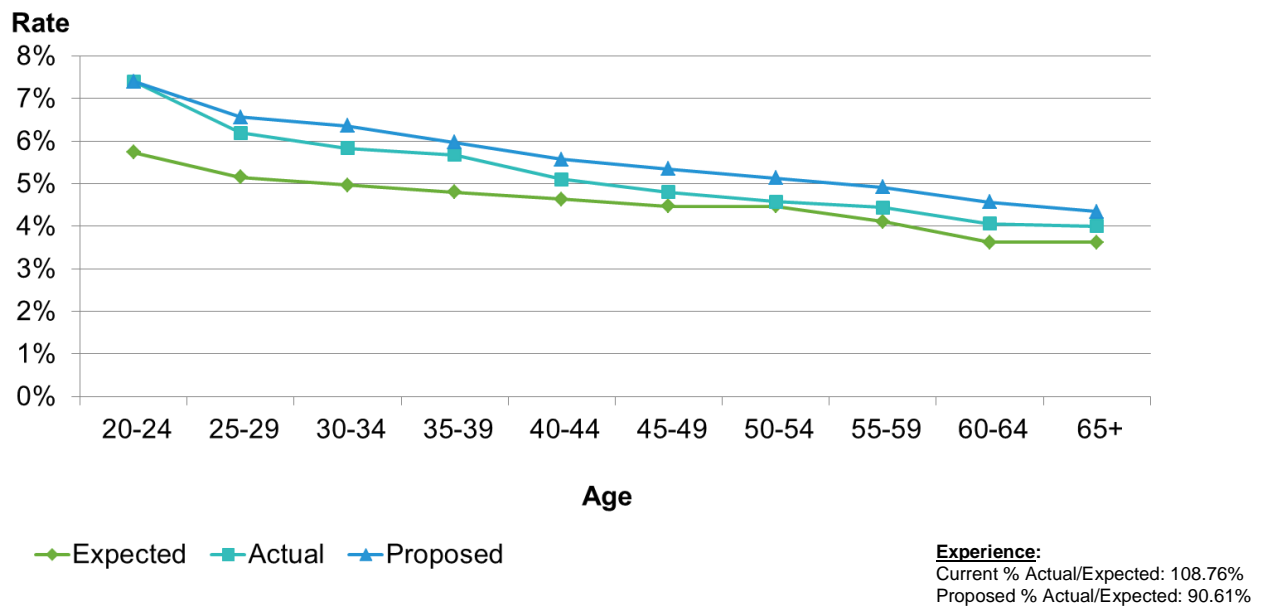
Recommendation: Generally, actual increases were more than expected. We recommend changes to the salary assumptions for all groups to reflect the experience of the last four years. The graphs on the following pages compare the current and proposed assumptions with the actual rates.

We set the salary scale assumption based on service only for TRS and PERS Peace Officers / Firefighters. For PERS Others, we set the assumption based on a 5-year select and ultimate table. Our analysis indicates these approaches are reasonable.

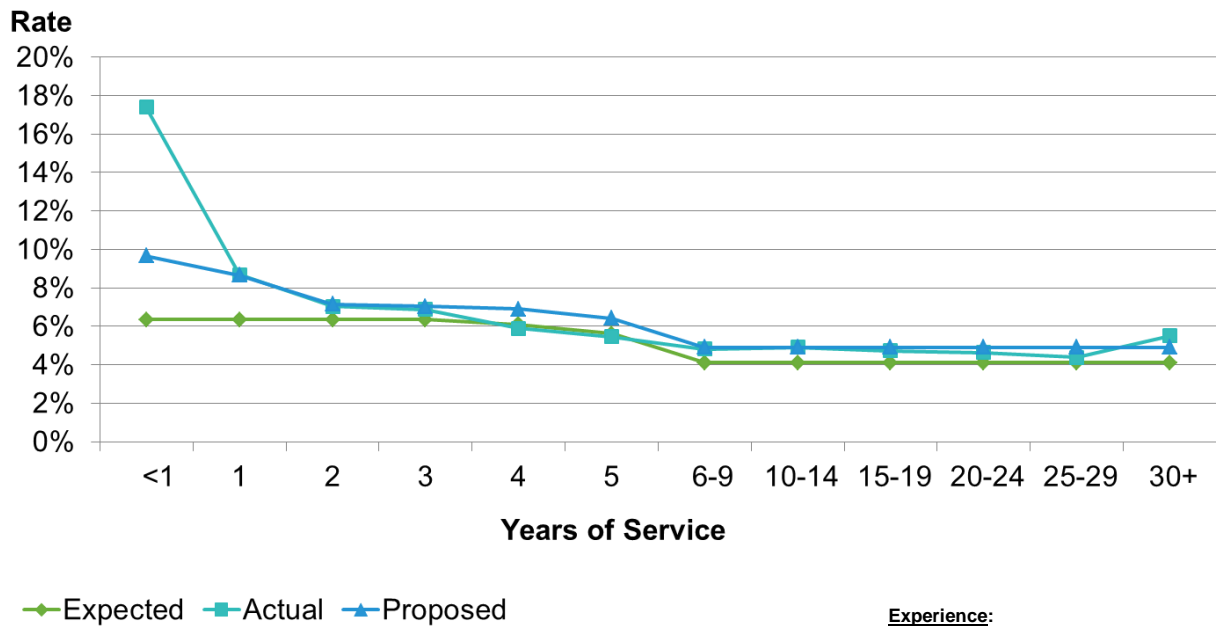
**PERS Others
Salary scale (Select)
Service less than 5 years**



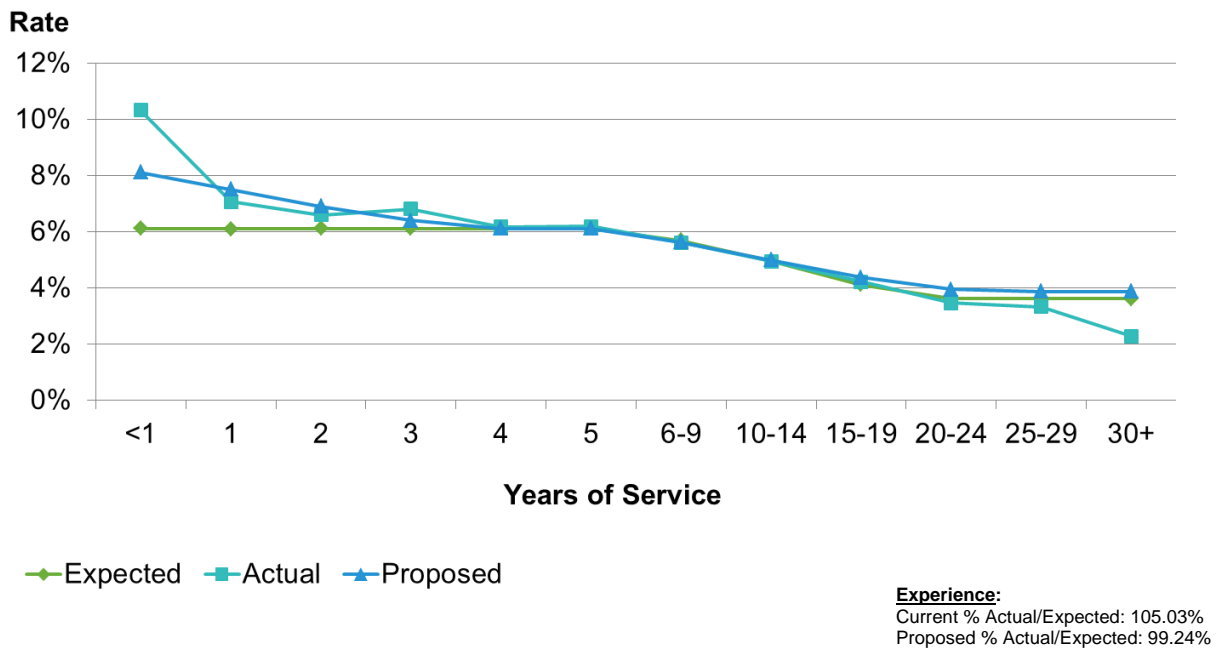
**PERS Others
Salary scale
Service over 5 years**



PERS Peace Officer / Firefighter Salary scale



TRS Salary scale



D. Payroll Growth

As part of determining the actuarial contribution rate, the unfunded accrued liability is amortized over a 25-year period as a level percent of pay. If pay is expected to increase, an assumption is made for the rate at which total payroll increases. The amortization payment will remain level as a percentage of total payroll provided:

- the active payroll on which the contribution is based remains at a constant or stationary level,
- the underlying long-term inflation rate and productivity increases are realized, and
- the total payroll grows by the assumed rate.

This procedure for amortizing unfunded accrued liabilities is common for large public plans. However, this methodology increases the risk of future funding shortfalls since adequate funding is dependent on a stationary employee population with a growing active payroll.

Currently, a net interest rate of 4.09% is used for both TRS and PERS to amortize the unfunded liability. The net interest is the ratio of the valuation interest rate of 8.00% and the expected total payroll growth. The use of a 4.23% net interest rate assumes a total payroll growth of 3.62% and uses a compound interest approach.

Additionally, current law states that the contribution rates will be paid for the members in both the defined benefit plan and the Defined Contribution Rate plan (DCR). Since the active payroll in which contributions are based upon will continue to increase, a payroll growth assumption is appropriate.

PERS				
	Number of Actives	Annual Earnings (000's)	Annual Average Earnings	Percent Increase / (Decrease) in Average Earnings
2013	35,271	\$2,198,978	\$62,345	3.3%
2012	35,327	\$2,132,009	\$60,351	3.3%
2011	35,358	\$2,065,747	\$58,424	3.8%
2010	35,674	\$2,007,885	\$56,284	3.2%
2009	34,821	\$1,899,608	\$54,554	

Total percent increase of 3.4% for the 4 year period.

TRS

	Number of Actives	Annual Earnings (000's)	Annual Average Earnings	Percent Increase / (Decrease) in Average Earnings
2013	9,624	\$702,204	\$72,964	2.0%
2012	9,902	\$708,229	\$71,524	2.8%
2011	10,011	\$696,424	\$69,566	2.5%
2010	10,078	\$683,700	\$67,840	5.1%
2009	10,018	\$646,734	\$64,557	

Total percent increase of 3.1% for the 4 year period.

Recommendation: We would recommend no change to the payroll growth assumption for both TRS and PERS.

E. Expenses

Currently, the expense assumption is included in the investment return assumption. We analyzed expenses over the last 4 years. The summary below is for PERS and TRS combined. Administrative expenses for the healthcare plan are excluded since these are included in the liability calculation.

	Fiscal Year Ending				
	2010	2011	2012	2013	Average
Expenses (000's)					
- Administrative	\$ 9,063	\$ 9,550	\$ 9,590	\$ 10,109	\$ 9,578
- Investment	25,272	32,569	33,260	37,282	32,096
- Total	\$ 34,355	\$ 42,119	\$ 42,850	\$ 47,391	\$ 41,674
Average Annual Fair Value of Assets (000's)	\$12,930,041	\$14,859,141	\$16,025,639	\$16,799,701	\$15,153,630
Expense Ratio					
- Administrative (pension)	0.07%	0.06%	0.06%	0.06%	0.063%
- Investment	0.20%	0.22%	0.21%	0.22%	0.212%
- Total	0.27%	0.28%	0.27%	0.28%	0.275%

Section 3 Postemployment Healthcare Assumptions

In this section, we have reviewed the following assumptions that are needed for the postemployment healthcare valuation:

- Base Claim Cost Rate Derivation
- Healthcare Cost Trend Rate
- Morbidity
- Retiree-Paid Premiums
- Participation Rates
- Combined Experience

Pension-related assumption and method changes impact the postemployment healthcare results in generally the same direction and magnitude as their impact on the pension valuation. Healthcare-specific assumption changes do not impact pension results.

A. Base Claim Cost Rate Derivation

Base claims cost rates are incurred healthcare costs expressed as a rate per member per year. Ideally, claims cost rates should be derived for each significant component of cost that can be expected to require differing projection assumptions or methods, i.e., medical claims, prescription drug claims, administrative costs, etc. Separate analysis is limited by the availability and credibility of cost and enrollment data for each component of cost. The valuation per capita costs reflect non-prescription claims separated by Medicare status, including eligibility for free Part A coverage. Prescription costs are analyzed separately as in prior valuations. Administrative costs are assumed in the final per capita claims cost rates used for valuation purposes, as described below. Analysis to date on Medicare Part A coverage is limited since Part A claim data is not available by individual, nor is this status incorporated into historical claim data.

For the June 30, 2013, we analyzed HealthSmart management level reporting for fiscal 2010 through April 2013, and derived recommended base claims cost rates as described in the following steps:

1. Dental, vision and audio claims (DVA) are excluded from data analyzed for this valuation.
2. Available management level reporting does not show claims or enrollment separately for Medicare and non-Medicare plan participants, but does include overall statistics as to the percentage of claims and enrollment attributable to both groups for fiscal 2010 through 2012. Fiscal 2013 management level reporting includes the percentage of claims attributable to both groups but does not address enrollment by group. DB

Tier retiree census supplied by the Division was split into under and over age 65 counts as a proxy for fiscal 2013 Medicare and non-Medicare enrollment. Historical claim level reporting and estimated impacts of Medicare coordination and plan design were used to augment cost data by Medicare status.

3. Alaska retirees who do not have 40 quarters of Medicare-covered compensation do not qualify for Medicare Part A coverage free of charge. This is a relatively small and closed group. Medicare was applied to State employment for all employees hired after March 31, 1986. For these “no-Part A” individuals, the State is the primary payer for hospital bills and other Part A services. Thus, claims costs are higher for the no-Part A group. To date, claim experience is not available separately for participants with both Medicare Parts A and B and those with Part B only. Therefore, higher no-Part A claims are spread across the entire retired population and have been applied to future claims of current active employees projected to retire in the future. To the extent that no-Part A claims can be isolated and applied strictly to the appropriate closed group, actuarial accrued liability will be more accurate and will be lower. The smaller the no-Part A population, the more accrued liabilities will decrease.

Based on census data received from HealthSmart, 0.6% of the current retiree population was identified as having coverage only under Medicare Part B. For future retirees, we assume their Part A eligible status based on a combination of date of hire and/or re-hire, date of birth, tier, etc.

All claims cost rates developed from management level reporting have been compared to similar rates developed from claim level data.

4. The steps above result in separate incurred claims cost rates for medical and prescription benefits for non-Medicare, Medicare Part B only and Medicare Part A&B members for the past four fiscal years. Medical claims cost rates reflect differing average ages and levels of Medicare coordination for each group. Prescription claims cost rates reflect differing average ages. We deemed incurred claim data from HealthSmart management reports to be complete for fiscal 2010, 2011 and 2012. Fiscal 2013 medical claim data was completed using a factor of 0.82; fiscal 2013 prescription claim data was completed using a factor of 0.90 – these factors were derived from historic completion patterns for AlaskaCare retiree claims. Incurred claim cost rates are projected forward to the valuation year using a blend of Alaska plan-specific trend and national trend rates over the same period, with Alaska experience receiving 75% weight, national trend 25%. These weighted trend factors for this purpose for the current valuation are as follows:

Experience Period	Alaska-Specific and National Average Weighted Trend from Experience Period to Valuation Year		Weighting Factors
	Medical	Prescription Drugs	
FY2010 to FY2011	13.0%	9.6%	10%
FY2011 to FY2012	8.1%	4.5%	20%
FY2012 to FY2013	8.3%	5.1%	40%
FY2013 to FY2014	8.9%	7.1%	30%

5. Healthcare Reform legislation passed on March 23, 2010 included several provisions with potential implications for the State of Alaska Retiree Health Plan liability. Buck evaluated the impact of the following provisions; however, none of the impacts other than noted fees have been included in the valuation results.

Because the State plan is retiree-only, and was in effect at the time the legislation was enacted, not all provisions are required. Unlimited lifetime benefits and dependent coverage to age 26 are two of these provisions. We reviewed the impact of including these provisions, but there was no decision made to adopt them, and no requirement to do so.

The Plan will be subject to the high cost plan excise tax (Cadillac tax). Based upon guidance available at the time of disclosure, Buck estimated the year in which the tax would potentially affect Alaska to be sufficiently far into the future to produce a minimal impact. Buck determined the impact to be immaterial based on a blend of pre-Medicare and Medicare retirees.

Patient-centered outcomes research fees and transitional reinsurance fees are included in the administration fees.

We have not identified any other specific provisions of healthcare reform that would be expected to have a significant impact on the measured obligation. As additional guidance on the legislation is issued, we will continue to monitor any potential impacts.

	Medical	Prescription Drugs
Pre-Medicare	\$ 11,125	\$ 2,621
Medicare Parts A & B	\$ 1,726	\$ 2,621
Medicare Part B Only	\$ 6,676	\$ 2,621
Medicare Part D	N/A	\$ 502

Note that changes to the base claim cost rate derivation methodology and assumptions that will address recent consistent healthcare gains are described in subsection F “Combined Experience.”

B. Healthcare Cost Trend Rate (HCCTR)

Healthcare cost trend rates are used to project the base claim cost rates into the future. Separate trend rates are used for medical and prescription benefits. We last changed this assumption in the June 30, 2012 valuation to use the Society of Actuaries’ long term trend model as follows:

- Medical claim trend was assumed to be higher for pre-Medicare retirees than for Medicare retirees in the select period through 2024 and the same for both groups thereafter.
- Prescription claim trend was assumed to differ from medical claim trend in the select period through 2024 with all trend rates equivalent thereafter.
- Assumed medical and prescription trend rates were set higher for near-term years than was assumed in prior years but lower after the select period.

Recommendation: At this time, we do not recommend HCCTR changes. Despite more healthcare gains than losses in recent years, assumed trend rates remain low compared to national norms and other Alaska plan experience. As we collect more experience data and improve allocation to Medicare groups, we may propose revised trend rate assumptions to better reflect recent experience of each separate group and benefit type. We will analyze historic trend rates for each group with and without large claims in order to smooth out large claim variance over time. While initial trend rates may differ by member type, we anticipate that ultimate trend rates for all three member types and both benefit types will remain uniform. Until we recommend HCCTR changes, or until significant unanticipated costs indicate otherwise, the set of trend rates used will not change but will progress toward the ultimate, long-term rates currently assumed. Finally, if the assumed inflation rate or the real rate of investment return is changed at some future date, ultimate HCCTR factors should be revisited.

C.Morbidity

Morbidity rates (also called aging factors) are used to estimate utilization of healthcare benefits at each age to reflect the fact that healthcare utilization increases with age. Separate morbidity rates are used for medical and prescription benefits.

Recommendation: We do not recommend changes to the current morbidity assumptions. As we collect more experience data, we will propose revised morbidity assumptions to better reflect utilization by age. We may recommend separate sets of morbidity assumptions for each of the Medicare groups in order to better reflect suspected Medicare cost shifting. Premera was only able to provide claims by 5-year age bands prior to age 65. After age 65, all claims were reported together in one band. This did not provide meaningful information on which to propose any revised assumptions. HealthSmart and Aetna as of January 1, 2014, are able to provide age-specific claims. As of June 2014 (i.e., past the June 30, 2013 valuation date) we have almost six years of claims data by age, but not yet a full year under Aetna. Analysis of data available for this experience study did not indicate a need to update the morbidity rates. Buck will review information available for the June 30, 2014 valuation to assess this assumption and recommend potential changes.

D.Retiree Paid Premiums

DCR Tier retirees pay 100% of plan cost prior to Medicare eligibility. Thereafter, DCR Tier retirees pay premiums based on years of service at retirement, from a maximum of 30% of plan cost with less than 15 years of service to a minimum of 10% of plan cost with 30 years of service. TRS Tier II retirees under age 60 and with less than 30 years of service are required to pay premiums to obtain coverage. PERS Tier II and III retirees under age 60 and with less than 30 years of service (25 years for peace officers and firefighters) are also required to pay premiums to obtain coverage. Tier I members under both Systems are not required to pay premiums to obtain coverage.

Currently, premiums paid by retirees are reflected on a composite basis (the portion of retirees electing retiree only and retiree plus dependent(s) coverage has been blended into a single retiree premium rate and applied to all current and future retirees). This methodology is required for current active and inactive employees since their future dependent coverage elections are unknown. However, we recommend that actual dependent coverage elections in place as of the valuation date be assumed to continue for current retirees.

Recommendation: We do not recommend changes to the assumed trend rates for retiree-paid premiums at this time. However, we will monitor actual premiums charged compared to plan cost changes and recommend changes to retiree-paid premium trend factors as appropriate.

E. Participation Rates

The participation assumption is used to estimate how many members elect to participate in the program. Members may have coverage under another employer or their spouse, or they may simply elect to waive coverage for a period of time.

Current participation assumptions by Tier are as follows:

- DCR Tier
 - For disability decrement retirements assumed rates of participation vary by age at disability from a low of 73% at age 56 or younger to a high of 94% at ages 65 and above, regardless of service
 - For retirement decrements assumed rates of participation vary by age at retirement if before age 65, from a low of 40% at age 55 to a high of 90% at age 64
 - For retirement decrements assumed rates of participation vary by years of service at retirement if after age 64, from a low of 70.5% with less than 15 years of service to a high of 94% with 30 years of service
 - This set of assumed participation rates based on decrement, age at event and service at event reflect the availability and expected cost of other coverage in future, as well as accumulation of HRA balances with increasing years of service.
- TRS Tier II, PERS Tier II and PERS Tier III: 10% of retirees are assumed to participate if they have no system-paid coverage; 100% of retirees are assumed to participate when they have system-paid coverage.
- TRS and PERS Tier I: 100% of retirees are assumed to participate since they have system-paid coverage.

Recommendation: We do not recommend changes to the assumed contributory participation rates at this time. However, we will monitor actual participation compared to assumed and recommend changes to participation assumptions as appropriate.

F. Combined Experience

All of the healthcare-related assumptions described, plus claims and enrollment data, combine to drive projected healthcare costs. Emerging healthcare experience has been favorable for seven of the last eight years, with losses occurring in 2010 only. Conservativeness in our methodology and assumptions can be broadly grouped into three sources of these consistent gains:

- Long-term focus of trend assumptions
- Continuing improved network breadth and discounts after changing third-party administrators
- Continued refinement of the claims database

The pattern of healthcare experience gains from June 30, 2006 to date parallels the development of a robust healthcare claims database from which future healthcare costs are projected. The following points highlight milestones in the development of the requisite database as of June 30, 2013:

- **Long-term Focus of Trend Assumptions** – Assumed HCCTR is based on the Society of Actuaries' long term trend model. This approach extends the select period from a decade often used in retiree medical valuations to over five decades. When combined with Buck's recommendations to set near-term trend higher than actual experience – due to the fact that national trends have also exceeded AlaskaCare experience – this longer-term outlook generates actuarial gains. And, in our first valuation for DRB, Buck recommended "holding off" one year in the prior actuary's set of trend rates grading from higher initial trend rates to a lower ultimate rate. This recommendation was based on concerns over validity of the claims data then available and the prior claim cost derivation methodology. We believe these explicitly conservative adjustments have been and are appropriate, but they do tend to lead to claims experience gains.
- **Trend and Blend Methodology** – Buck develops separate claim cost rates for each of the three years prior to the valuation, adjusts from a paid to an incurred basis, applies trend separately to bring each of the prior year's data to the valuation year, and blends each prior year's data into a single set of base year claim cost rates. This approach is labeled "trend and blend." The trend and blend approach does not itself give rise to consistent gains or losses, but does allow for two types of refinement to this key calculation over time. First, as the claims database detail and credibility are improved, more weight can be applied to paid claims nearer the valuation date. This reduces the duration until prior experience is completely reflected in future projections, while still maintaining some smoothing capability. Second, as the claims database detail and credibility are improved, constituent parts of overall claims will continue to be analyzed and projected separately, including medical claims prior to Medicare, medical claims for members with both Medicare Parts A and B, medical claims for members with Medicare Part B only, and prescription claims.
- **Network Improvements** – Premiera was selected as the plan's third-party administrator (TPA) effective July 1, 2006. Premiera medical provider discounts were significantly greater than under the prior Aetna contract. Overall paid claims for fiscal 2007 decreased 8% per member compared to fiscal 2006. Compared to assumed HCCTR, this means 2007 average costs

were almost 18% less than expected. Changes in one type of claim, such as hospitalization, does not translate directly into the same percentage gain on liabilities. Also, the trend and blend methodology inherently smoothes changes in paid claims from one year to the next. So, our June 30, 2007 valuation did not result in a one-time 18% gain, but improved hospital discounts have contributed to gains every year since. Wells Fargo Insurance Services / HealthSmart (HealthSmart) became TPA and Envision became pharmacy benefit manager (PBM) effective July 1, 2009 with similar but somewhat less favorable results. Aetna is now the TPA and PBM effective January 1, 2014. Again, we anticipate additional savings with Aetna but not as great a one-time savings as the 2006 TPA change. Note that the lower magnitude of gains arising from the switch to HealthSmart and Aetna, as compared to the switch to Premera, are consistent with Buck's assumption that significant discounts due to any one provider contracting cycle or attributable to one TPA versus another are not sustainable over time.

Note also that we do not recommend that clients change HCCTR assumptions to anticipate improvements in provider contracting. Even in cases similar to Premera's selection over Aetna due at least partially to promised lower hospitalization bills, there is typically no guarantee that such savings will materialize exactly as described in the RFP process. More importantly, it is not likely that significant discounts due to any one provider contracting cycle or attributable to one TPA versus another will be sustained over time. Providers typically negotiate in business cycles analogous to insured plans. When business pressures lean toward expanding market share, providers tend to accept greater fee discounts. When business pressures lean toward improved profitability, providers tend to risk loss of network status in order to reduce fee discounts. Similarly, if one TPA obtains significant provider discounts relative to other TPAs, there will be pressure from other TPAs to obtain the same discounts. Thus, Buck believes trend and blend claim cost derivation, coupled with an ever-improving claim cost database, provides the best basis for long-term healthcare cost projections.

- **Health Claims Database Development** – Beginning with Aetna's EPSM online reporting, continuing through Premera's Insight Reporter, then HealthSmart online tools and now back to Aetna's system, access to claims and claimant detail has steadily improved. It will likely take several years data at current quality levels to form the credible basis for a complete morbidity curve, but as the database improves a source of variance – in addition to actual versus expected claims – is introduced.

Gains generated by blending prior TPA levels of provider discounts with current levels will be mitigated in future without any additional explicit methodology or assumption changes as prior TPA-based claims drop out of the averaging period used. Also, we may recommend changing the current weighting of experience periods used from a straight average to greater emphasis on more recent years, or even shortening the experience period used. Finally, as there are fewer refinements in the claims database to be made, the impact of such refinements should diminish. All these changes should serve to reduce healthcare gains that would have otherwise arisen.

However, we caution that the impact of provider contracting under the Aetna administrative services contract will not be fully known until we perform the June 30, 2014 valuation. To the extent that Aetna provider and prescription drug contracting deliver greater savings than previously available, additional gains will arise.

Section 4 Actuarial Methods

A. Funding Method

The ultimate cost of any retirement program is equal to the benefits paid plus the administrative costs of operating the plan. This cost is provided from contributions made to the plan plus the investment return on accumulated contributions. The level and timing of the contributions needed to fund the ultimate cost are determined by the actuarial assumptions, plan provisions, member characteristics, investment experience, and the actuarial cost method. Actuarial cost methods are calculation processes which determine and allocate the cost of a retirement plan to specific periods of time. As such, it has an influence on the level and timing of the ultimate contributions.

Different actuarial cost methods can provide for faster funding earlier in a plan's existence, more level funding over time, or more flexibility in funding. The choice of an actuarial cost method will determine the pattern or pace of the funding and therefore should be linked to long term financing objectives of the fund and benefit security considerations.

The actuarial cost method used for the State of Alaska is as follows:

Entry Age Actuarial Cost –

Liabilities and contributions shown in the report are computed using the Entry Age Actuarial Cost method of funding. Any funding surpluses or unfunded accrued liability is amortized over 25 years as a level percent of pay amount. Payroll is assumed to increase by the payroll growth assumption per year for this purpose. State statutes allow the contribution rate to be determined on payroll for all members, defined benefit and defined contribution member payroll combined. However, for GASB disclosure requirements, the net amortization period will not exceed 30 years and the level dollar amortization method is used since the defined benefit plan membership was closed effective July 1, 2006.

Projected pension and postemployment healthcare benefits were determined for all active members. Cost factors designed to produce annual costs as a constant percentage of each member's expected compensation in each year for pension benefits (constant dollar amount for healthcare benefits) from the assumed entry age to the assumed retirement age were applied to the projected benefits to determine the normal cost (the portion of the total cost of the plan allocated to the current year under the method). The normal cost is determined by summing intermediate results for active members and determining an average normal cost rate which is then related to the total payroll of active members. The actuarial accrued liability for active members (the portion of the total cost of the plan allocated to prior years under the method) was determined as the excess of the actuarial present value of projected benefits over the actuarial present value of future normal costs.

The actuarial accrued liability for retired members and their beneficiaries currently receiving benefits, terminated vested members and disabled members not yet receiving benefits was determined as the actuarial present value of the benefits expected to be paid. No future normal costs are payable for these members.

The actuarial accrued liability under this method at any point in time is the theoretical amount of the fund that would have been accumulated had annual contributions equal to the normal cost been made in prior years (it does not represent the liability for benefits accrued to the valuation date). The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over the actuarial value of plan assets measured on the valuation date.

Under this method, experience gains or losses, i.e., decreases or increases in accrued liabilities attributable to deviations in experience from the actuarial assumptions, adjust the unfunded actuarial accrued liability.

This actuarial cost method will systematically fund the prospective pension benefits on an actuarially sound basis given all of the actuarial assumptions are realized.

The Entry Age Normal Cost Method is the most common method used by public systems. The 2014 NASRA Public Fund Survey on State Retirement Systems showed 99 out of 126 surveyed systems, or 79%, used this method.

Recommendation: We recommend no changes in the actuarial cost method.

B. Asset Valuation Method

To counter the natural volatility of the stock market, PERS and TRS do not measure the funded status of their pension benefits using the current market value of their Plan's assets. Instead, it determines the actuarial value of their Plan's assets by smoothing the effects of increases or decreases in market values each year over several years. For a majority of state systems, this period is generally four or five years. The effect of this approach is to take the immediate impact of a severe market drop or spike in growth and spread it out over time.

This actuarial method of smoothing means that, when the stock markets experience periods of large declines, the unfunded liability that drives the Systems' annual contributions will grow much more slowly than it did in the past. Conversely, when the markets increase in value rapidly, unfunded liabilities will drop much more slowly than they did previously. For these reasons, employer contribution rates will be much more stable.

The current method used by both PERS and TRS is a 5-year actuarial smoothing period to calculate their Actuarial Value of Assets. This procedure recognizes 20% of each plan year's appreciation (depreciation) in excess of the expected appreciation, whether realized or unrealized, beginning with the year of occurrence. After five years, the appreciation (depreciation) is fully recognized. If the adjusted market value is less than 80% of market value, or more than 120%, an adjustment will be made to bring it within that range.

Recommendation: Under SB119 passed during the 2014 Legislative Session, it is the intent of the Legislature to eliminate asset smoothing, although this intent is nonbinding. In order to follow the intent of the Legislature, we recommend the Actuarial Value of Assets be re-initialized at Fair (Market) Value as of June 30, 2014, and five-year smoothing of asset gains and losses be phased-in over the next five years. We also recommend eliminating the 80%-120% corridor. The corridor has been observed to increase volatility in the actuarial value. We believe the five-year period used for smoothing is sufficiently short to meet the requirements of Actuarial Standards of Practice No. 44.

C. Amortization Method

There are a variety of different methods that can be used to amortize the unfunded actuarial liability. Statement No. 25 of the Governmental Accounting Standards Board (GASB) sets parameters for these methods that are required for disclosure and expense purposes. Amortization periods cannot exceed 30 years. The amortization amount can be a fixed level dollar amount or a level percentage of payroll amount where the payment increases at a fixed rate, which is the expected rate of salary increases. It can be a closed amortization period, a fixed period that decreases by one year each year, or an open amortization period, where the period does not decline but resets each year. The method used by a specific plan depends on a variety of factors, including the characteristics of the plan and the covered population, statutory requirements, the funding objectives, and the degree of stability that is required in the employer's contribution rates.

Currently, PERS and TRS amortize their unfunded liability over a layered period of 25 years as a level dollar amount for funding purposes and GASB purposes.

Recommendation: In order to comply with HB385 passed during the 2014 Legislative session, we recommend changing the amortization method from the level dollar amortization method to the level percentage of total payroll method and amortize the unfunded actuarial accrued liability over a closed 25-year period beginning June 30, 2014.

Section 5 Impact of Proposed Changes

Public Employees' Retirement System

As of June 30, 2013 (\$ in thousands)	Current Assumptions	Proposed Assumptions
Pension		
Actuarial Accrued Liability (AAL)	\$ 11,945,881	\$ 12,477,057
Actuarial Value of Assets (AVA)	<u>6,510,749</u>	<u>6,510,749</u>
UAAL	\$ 5,432,132	\$ 5,966,308
Funded Ratio Based on AVA	54.5%	52.2%
Employer Normal Cost Rate	2.38%	3.79%
Past Service Cost Rate	<u>22.46%</u>	<u>24.32%</u>
Employer Contribution Rate	24.84%	28.11%
Employer Contribution Rate HB385	16.64%	19.41%
Healthcare		
Actuarial Accrued Liability (AAL)	\$ 8,046,878	\$ 8,306,459
Actuarial Value of Assets (AVA)	<u>5,651,877</u>	<u>5,651,877</u>
UAAL	\$ 2,395,001	\$ 2,654,582
Funded Ratio Based on AVA	70.2%	68.0%
Employer Normal Cost Rate	3.73%	4.12%
Past Service Cost Rate	<u>11.71%</u>	<u>12.62%</u>
Employer Contribution Rate	15.44%	16.74%
Employer Contribution Rate HB385	9.75%	10.81%
Total		
Actuarial Accrued Liability (AAL)	\$ 19,992,759	\$ 20,793,516
Actuarial Value of Assets (AVA)	<u>12,162,626</u>	<u>12,162,626</u>
UAAL	\$ 7,830,133	\$ 8,620,890
Funded Ratio Based on AVA	60.8%	58.5%
Employer Normal Cost Rate	6.11%	7.91%
Past Service Cost Rate	<u>34.17%</u>	<u>36.94%</u>
Employer Contribution Rate	40.28%	44.85%
Employer Contribution Rate HB385	26.39%	30.22%

Please note that the current and proposed assumptions and methods use an 8.00% investment return and 3.12% inflation.

Teachers' Retirement System

As of June 30, 2013 (\$ in thousands)	Current Assumptions	Proposed Assumptions
Pension		
Actuarial Accrued Liability (AAL)	\$ 6,589,553	\$ 6,748,125
Actuarial Value of Assets (AVA)	<u>3,170,313</u>	<u>3,170,313</u>
UAAL	\$ 3,419,240	\$ 3,577,812
Funded Ratio Based on AVA	48.1%	47.0%
Employer Normal Cost Rate	2.50%	2.93%
Past Service Cost Rate	<u>45.56%</u>	<u>47.20%</u>
Employer Contribution Rate	48.06%	50.13%
Employer Contribution Rate HB385	30.73%	32.38%
Healthcare		
Actuarial Accrued Liability (AAL)	\$ 3,002,554	\$ 3,091,681
Actuarial Value of Assets (AVA)	<u>1,803,763</u>	<u>1,803,763</u>
UAAL	\$ 1,198,791	\$ 1,287,918
Funded Ratio Based on AVA	60.1%	58.3%
Employer Normal Cost Rate	3.20%	3.23%
Past Service Cost Rate	<u>17.98%</u>	<u>18.94%</u>
Employer Contribution Rate	21.18%	22.17%
Employer Contribution Rate HB385	12.89%	13.63%
Total		
Actuarial Accrued Liability (AAL)	\$ 9,592,107	\$ 9,839,806
Actuarial Value of Assets (AVA)	<u>4,974,076</u>	<u>4,974,076</u>
UAAL	\$ 4,618,031	\$ 4,865,730
Funded Ratio Based on AVA	51.9%	50.6%
Employer Normal Cost Rate	5.70%	6.16%
Past Service Cost Rate	<u>63.54%</u>	<u>66.14%</u>
Employer Contribution Rate	69.24%	72.30%
Employer Contribution Rate HB385	43.62%	46.01%

Please note that the current and proposed assumptions and methods use an 8.00% investment return and 3.12% inflation.

PERS
As of June 30, 2013

	Description of Change	Pension		Healthcare		Total	
		Employer Contribution Rate	Funded Ratio	Employer Contribution Rate	Funded Ratio	Employer Contribution Rate	Funded Ratio
Before Changes		16.64%	56.0%	9.75%	72.4%	26.39%	62.6%
Termination Rates	Change to sex distinct select rates and decreased most rates for both select and ultimate.	0.65%	(0.1)%	0.22%	0.3%	0.87%	0.1%
Retirement Rates	Changed to sex distinct for reduced for PERS Others and decreased most rates. Changes to sex distinct for unreduced for P/F and decreased most rates.	(0.10)%	0.2%	(0.11)%	0.2%	(0.21)%	0.2%
Disability Rates	Decreased Others rates by 5% and P/F by 30%.	(0.01)%	0.0%	0.00%	0.0%	(0.01)%	(0.1)%
Salary Scale	Increased most rates.	0.99%	(0.7)%	(0.05)%	0.0%	0.94%	(0.4)%
Part-Time Service Accrual	No changes.	0.02%	0.0%	0.01%	0.0%	0.03%	0.0%
Marriage Assumption	Decreased Others males from 80% to 75%, no change for females. Decreased P/F females from 70% to 60% and increased P/F males from 80% to 85%.	(0.01)%	0.0%	(0.16)%	0.4%	(0.17)%	0.1%
Vested Termination Refund	Decreased Others from 15% to 10%. No change to P/F.	0.02%	(0.1)%	0.09%	(0.1)%	0.11%	(0.1)%
Occupational Assumption	Decreased both for Others 55% to 50%. Decreased both for P/F from 75% to 70%.	(0.01)%	0.1%	(0.01)%	0.0%	(0.02)%	0.0%
Deferred Vested Commencement Age	Increased ages for all tiers of P/F. No change for Others.	(0.02)%	0.0%	(0.01)%	0.0%	(0.03)%	0.0%
Alaska Residency	Decreased P/F from 70% to 65%. No change for Others	0.00%	0.0%	0.00%	0.0%	0.00%	0.1%
Disabled Mortality	Decreased most rates.	0.03%	(0.1)%	0.03%	(0.1)%	0.06%	(0.1)%
Pre-termination Mortality	Decreased most rates.	0.01%	0.0%	0.01%	0.0%	0.02%	0.0%
Post-termination Mortality	Decreased most rates.	1.20%	(1.6)%	1.04%	(2.9)%	2.24%	(2.1)%
After Changes		19.41%	53.7%	10.81%	70.2%	30.22%	60.3%

TRS
As of June 30, 2013

	Description of Change	Pension		Healthcare		Total	
		Employer Contribution Rate	Funded Ratio	Employer Contribution Rate	Funded Ratio	Employer Contribution Rate	Funded Ratio
Before Changes		30.73%	49.8%	12.89%	62.2%	43.62%	53.6%
Termination Rates	Changed to sex distinct rates for all. Increased most select rates and decreased ultimate rates.	0.20%	(0.1)%	(0.07)%	(0.1)%	0.13%	(0.1)%
Retirement Rates	Increased reduced rates for ages 54 and 59, decreased most unreduced rates.	(0.10)%	0.0%	0.08%	(0.2)%	(0.02)%	0.0%
Disability Rates	Changed to unisex rates. Increased most rates.	0.03%	0.0%	0.02%	0.0%	0.05%	0.0%
Salary Scale	Increased most rates	0.27%	(0.01)%	(0.03)%	0.0%	0.24%	(0.1)%
Part time service	Increased from 0.60 to 0.75 years.	0.07%	0.0%	0.02%	0.0%	0.09%	0.0%
Sick Time	Decrease from 4.7 to 4.5 days	(0.05)%	(0.1)%	(0.03)%	0.0%	(0.08)%	0.0%
Vested Termination Refund	Decrease from 10% to 5%	0.00%	0.0%	0.07%	(0.1)%	0.07%	0.0%
Disabled Mortality	Decreased most rates.	0.04%	0.0%	0.02%	0.0%	0.06%	0.0%
Pre-termination Mortality	Decreased rates.	0.03%	0.0%	0.01%	0.0%	0.04%	(0.1)%
Post-termination Mortality	Decreased rates.	1.16%	(0.9)%	0.65%	(1.4)%	1.81%	(1.0)%
After Changes		32.38%	48.6%	13.63%	60.4%	46.01%	52.3%

Section 6 Comparative Summary of Current & Proposed Assumption Rate Tables

PERS and TRS Disability Mortality Rates Female

Age	Current	Proposed	Age	Current	Proposed	Age	Current	Proposed
15	0.0075	0.0071	50	0.0115	0.0109	85	0.1002	0.0806
16	0.0075	0.0071	51	0.0125	0.0118	86	0.1071	0.0862
17	0.0075	0.0071	52	0.0135	0.0127	87	0.1145	0.0921
18	0.0075	0.0071	53	0.0145	0.0137	88	0.1225	0.0985
19	0.0075	0.0071	54	0.0155	0.0144	89	0.1310	0.1054
20	0.0075	0.0071	55	0.0165	0.0151	90	0.1400	0.1148
21	0.0075	0.0071	56	0.0176	0.0158	91	0.1497	0.1249
22	0.0075	0.0071	57	0.0187	0.0164	92	0.1599	0.1359
23	0.0075	0.0071	58	0.0197	0.0171	93	0.1704	0.1475
24	0.0075	0.0071	59	0.0208	0.0176	94	0.1828	0.1611
25	0.0075	0.0071	60	0.0218	0.0182	95	0.1945	0.1745
26	0.0075	0.0071	61	0.0229	0.0188	96	0.2054	0.1877
27	0.0075	0.0071	62	0.0241	0.0194	97	0.2152	0.2003
28	0.0075	0.0071	63	0.0253	0.0204	98	0.2239	0.2084
29	0.0075	0.0071	64	0.0266	0.0214	99	0.2314	0.2192
30	0.0075	0.0071	65	0.0280	0.0226	100	0.2375	0.2250
31	0.0075	0.0071	66	0.0296	0.0238	101	0.2448	0.2362
32	0.0075	0.0071	67	0.0313	0.0252	102	0.2545	0.2455
33	0.0075	0.0071	68	0.0332	0.0267	103	0.2660	0.2613
34	0.0075	0.0071	69	0.0353	0.0284	104	0.2791	0.2741
35	0.0075	0.0071	70	0.0376	0.0303	105	0.2931	0.2931
36	0.0075	0.0071	71	0.0401	0.0323	106	0.3078	0.3078
37	0.0075	0.0071	72	0.0429	0.0345	107	0.3227	0.3227
38	0.0075	0.0071	73	0.0458	0.0368	108	0.3374	0.3374
39	0.0075	0.0071	74	0.0489	0.0393	109	0.3515	0.3515
40	0.0075	0.0071	75	0.0522	0.0420	110	0.3646	0.3646
41	0.0075	0.0071	76	0.0558	0.0449	111	0.3762	0.3762
42	0.0075	0.0071	77	0.0595	0.0479	112	0.3860	0.3860
43	0.0075	0.0071	78	0.0635	0.0511	113	0.3935	0.3935
44	0.0075	0.0071	79	0.0678	0.0546	114	0.3983	0.3983
45	0.0075	0.0071	80	0.0723	0.0582	115	0.4000	0.4000
46	0.0082	0.0078	81	0.0771	0.0621	116	0.4000	0.4000
47	0.0090	0.0085	82	0.0823	0.0662	117	0.4000	0.4000
48	0.0098	0.0093	83	0.0878	0.0707	118	0.4000	0.4000
49	0.0106	0.0101	84	0.0938	0.0755	119	0.4000	0.4000

Current Assumption: RP-2000 Disabled Retiree Mortality

Proposed Assumption: RP-2000 Disabled Retiree Mortality, 2000 Base Year projected to 2018 with Projection Scale BB

**PERS and TRS
Disability Mortality Rates
Male**

Age	Current	Proposed	Age	Current	Proposed	Age	Current	Proposed
15	0.0226	0.0214	50	0.0290	0.0275	85	0.1416	0.1079
16	0.0226	0.0214	51	0.0303	0.0287	86	0.1484	0.1130
17	0.0226	0.0214	52	0.0316	0.0299	87	0.1552	0.1204
18	0.0226	0.0214	53	0.0329	0.0311	88	0.1622	0.1282
19	0.0226	0.0214	54	0.0342	0.0324	89	0.1692	0.1362
20	0.0226	0.0214	55	0.0354	0.0336	90	0.1834	0.1503
21	0.0226	0.0214	56	0.0367	0.0348	91	0.1998	0.1667
22	0.0226	0.0214	57	0.0380	0.0354	92	0.2166	0.1841
23	0.0226	0.0214	58	0.0393	0.0359	93	0.2337	0.2022
24	0.0226	0.0214	59	0.0407	0.0365	94	0.2507	0.2209
25	0.0226	0.0214	60	0.0420	0.0370	95	0.2675	0.2400
26	0.0226	0.0214	61	0.0435	0.0376	96	0.2839	0.2594
27	0.0226	0.0214	62	0.0450	0.0382	97	0.2999	0.2790
28	0.0226	0.0214	63	0.0466	0.0389	98	0.3153	0.2934
29	0.0226	0.0214	64	0.0483	0.0396	99	0.3302	0.3128
30	0.0226	0.0214	65	0.0502	0.0404	100	0.3446	0.3264
31	0.0226	0.0214	66	0.0522	0.0413	101	0.3586	0.3459
32	0.0226	0.0214	67	0.0545	0.0422	102	0.3717	0.3585
33	0.0226	0.0214	68	0.0569	0.0434	103	0.3830	0.3762
34	0.0226	0.0214	69	0.0596	0.0454	104	0.3920	0.3850
35	0.0226	0.0214	70	0.0626	0.0477	105	0.3979	0.3979
36	0.0226	0.0214	71	0.0658	0.0502	106	0.4000	0.4000
37	0.0226	0.0214	72	0.0694	0.0529	107	0.4000	0.4000
38	0.0226	0.0214	73	0.0733	0.0558	108	0.4000	0.4000
39	0.0226	0.0214	74	0.0775	0.0591	109	0.4000	0.4000
40	0.0226	0.0214	75	0.0821	0.0625	110	0.4000	0.4000
41	0.0226	0.0214	76	0.0870	0.0662	111	0.4000	0.4000
42	0.0226	0.0214	77	0.0921	0.0702	112	0.4000	0.4000
43	0.0226	0.0214	78	0.0976	0.0744	113	0.4000	0.4000
44	0.0226	0.0214	79	0.1034	0.0788	114	0.4000	0.4000
45	0.0226	0.0214	80	0.1094	0.0833	115	0.4000	0.4000
46	0.0238	0.0226	81	0.1155	0.0880	116	0.4000	0.4000
47	0.0251	0.0238	82	0.1219	0.0928	117	0.4000	0.4000
48	0.0264	0.0250	83	0.1283	0.0978	118	0.4000	0.4000
49	0.0277	0.0262	84	0.1349	0.1028	119	0.4000	0.4000

Current Assumption: RP-2000 Disabled Retiree Mortality

Proposed Assumption: RP-2000 Disabled Retiree Mortality, 2000 Base Year projected to 2018 with Projection Scale BB

**PERS Peace Officer / Firefighter
Pre-termination Mortality Rates**

Female

Age	Current	Proposed	Age	Current	Proposed	Age	Current	Proposed
15	0.000103	0.000100	50	0.000665	0.000991	85	0.038980	0.038887
16	0.000118	0.000105	51	0.000745	0.001095	86	0.044195	0.043371
17	0.000129	0.000109	52	0.000856	0.001193	87	0.050234	0.048373
18	0.000134	0.000111	53	0.000978	0.001305	88	0.056091	0.053879
19	0.000136	0.000112	54	0.001111	0.001407	89	0.063736	0.059830
20	0.000135	0.000113	55	0.001270	0.001549	90	0.070848	0.067336
21	0.000133	0.000114	56	0.001474	0.001730	91	0.078456	0.075301
22	0.000135	0.000115	57	0.001712	0.001912	92	0.086514	0.083583
23	0.000138	0.000116	58	0.001970	0.002118	93	0.096846	0.092034
24	0.000141	0.000119	59	0.002266	0.002355	94	0.106005	0.100518
25	0.000144	0.000122	60	0.002604	0.002632	95	0.115653	0.108913
26	0.000151	0.000127	61	0.002987	0.002973	96	0.125793	0.117100
27	0.000155	0.000132	62	0.003421	0.003343	97	0.139044	0.124961
28	0.000161	0.000139	63	0.003916	0.003840	98	0.150475	0.130016
29	0.000170	0.000147	64	0.004470	0.004328	99	0.162502	0.136784
30	0.000187	0.000156	65	0.005065	0.004874	100	0.174982	0.140379
31	0.000207	0.000181	66	0.005686	0.005500	101	0.191374	0.147369
32	0.000220	0.000207	67	0.006314	0.006107	102	0.204576	0.153186
33	0.000229	0.000233	68	0.006899	0.006751	103	0.218752	0.163049
34	0.000239	0.000257	69	0.007454	0.007462	104	0.233998	0.171022
35	0.000250	0.000281	70	0.008053	0.008407	105	0.249108	0.182904
36	0.000262	0.000304	71	0.008605	0.009329	106	0.262876	0.192074
37	0.000277	0.000327	72	0.009498	0.010376	107	0.274094	0.201380
38	0.000295	0.000354	73	0.010356	0.011534	108	0.282896	0.210563
39	0.000316	0.000383	74	0.011506	0.012783	109	0.290084	0.219363
40	0.000344	0.000417	75	0.012564	0.014113	110	0.295462	0.227521
41	0.000372	0.000458	76	0.014026	0.015549	111	0.298832	0.234778
42	0.000400	0.000504	77	0.016014	0.017125	112	0.300000	0.240873
43	0.000425	0.000554	78	0.017912	0.018877	113	0.300000	0.245548
44	0.000447	0.000608	79	0.019964	0.020841	114	0.300000	0.248544
45	0.000462	0.000664	80	0.022241	0.023037	115	0.300000	0.249600
46	0.000481	0.000723	81	0.024813	0.025498	116	0.300000	0.249600
47	0.000508	0.000784	82	0.027750	0.028266	117	0.300000	0.249600
48	0.000551	0.000848	83	0.030970	0.031386	118	0.300000	0.249600
49	0.000598	0.000916	84	0.034426	0.034906	119	1.000000	1.000000

Current Assumption: 60% of the 1994 Group Annuity Mortality Table, 1994 Base Year without margin projected to 2013 using Projection Scale AA

Proposed Assumption: 65% of the Alaska Healthy Post-Termination Mortality Rate

**PERS Peace Officer / Firefighter
Pre-termination Mortality Rates
Male**

Age	Current	Proposed	Age	Current	Proposed	Age	Current	Proposed
15	0.000206	0.000147	50	0.001571	0.001167	85	0.073196	0.048601
16	0.000234	0.000155	51	0.001716	0.001336	86	0.079634	0.053884
17	0.000257	0.000164	52	0.001883	0.001455	87	0.088751	0.060797
18	0.000275	0.000172	53	0.002100	0.001591	88	0.099307	0.068537
19	0.000289	0.000181	54	0.002331	0.001744	89	0.109062	0.077135
20	0.000303	0.000188	55	0.002644	0.001978	90	0.121907	0.086571
21	0.000323	0.000195	56	0.003015	0.002292	91	0.133329	0.096025
22	0.000345	0.000200	57	0.003466	0.002515	92	0.148100	0.106027
23	0.000380	0.000204	58	0.003989	0.002775	93	0.161191	0.116472
24	0.000419	0.000205	59	0.004489	0.003073	94	0.175253	0.127248
25	0.000470	0.000205	60	0.005050	0.003425	95	0.193451	0.138257
26	0.000534	0.000206	61	0.005801	0.003826	96	0.208278	0.149421
27	0.000569	0.000208	62	0.006550	0.004287	97	0.222608	0.160693
28	0.000590	0.000214	63	0.007549	0.004813	98	0.240779	0.168970
29	0.000609	0.000225	64	0.008515	0.005324	99	0.254300	0.180186
30	0.000627	0.000242	65	0.009565	0.005904	100	0.267754	0.188016
31	0.000642	0.000272	66	0.010895	0.006558	101	0.286848	0.199258
32	0.000656	0.000307	67	0.012098	0.007184	102	0.301359	0.206513
33	0.000663	0.000344	68	0.013069	0.007842	103	0.317507	0.216693
34	0.000664	0.000383	69	0.014299	0.008689	104	0.335084	0.221764
35	0.000666	0.000422	70	0.015318	0.009744	105	0.352468	0.229182
36	0.000674	0.000459	71	0.016752	0.010782	106	0.368034	0.230400
37	0.000697	0.000493	72	0.018385	0.011971	107	0.380160	0.230400
38	0.000721	0.000526	73	0.020140	0.013334	108	0.388536	0.230400
39	0.000753	0.000557	74	0.021980	0.014876	109	0.394246	0.230400
40	0.000792	0.000589	75	0.024487	0.016602	110	0.397751	0.230400
41	0.000837	0.000623	76	0.026887	0.018504	111	0.399515	0.230400
42	0.000890	0.000663	77	0.030303	0.020583	112	0.400000	0.230400
43	0.000943	0.000709	78	0.034339	0.022872	113	0.400000	0.230400
44	0.000997	0.000762	79	0.038945	0.025419	114	0.400000	0.230400
45	0.001059	0.000823	80	0.044082	0.028245	115	0.400000	0.230400
46	0.001133	0.000882	81	0.049708	0.031612	116	0.400000	0.230400
47	0.001226	0.000946	82	0.055777	0.035318	117	0.400000	0.230400
48	0.001331	0.001015	83	0.060931	0.039369	118	0.400000	0.230400
49	0.001445	0.001089	84	0.067455	0.043784	119	1.000000	1.000000

Current Assumption: 80% of the 1994 Group Annuity Mortality Table, 1994 Base Year without margin projected to 2013 using Projection Scale AA

Proposed Assumption: 60% of the Alaska Healthy Pre-Termination Mortality Rates

**PERS Peace Officer / Firefighter
Post-termination Mortality Rates
Female**

Age	Current	Proposed	Age	Current	Proposed	Age	Current	Proposed
15	0.000196	0.000155	50	0.001241	0.001524	85	0.073658	0.059827
16	0.000215	0.000161	51	0.001426	0.001684	86	0.083723	0.066725
17	0.000224	0.000167	52	0.001631	0.001835	87	0.093485	0.074420
18	0.000226	0.000171	53	0.001851	0.002007	88	0.106227	0.082891
19	0.000224	0.000173	54	0.002117	0.002165	89	0.118079	0.092046
20	0.000222	0.000174	55	0.002457	0.002383	90	0.130760	0.103593
21	0.000225	0.000175	56	0.002854	0.002662	91	0.144189	0.115847
22	0.000230	0.000176	57	0.003284	0.002942	92	0.161410	0.128589
23	0.000235	0.000179	58	0.003777	0.003259	93	0.176674	0.141591
24	0.000239	0.000183	59	0.004339	0.003623	94	0.192756	0.154643
25	0.000251	0.000188	60	0.004979	0.004050	95	0.209655	0.167558
26	0.000258	0.000195	61	0.005701	0.004574	96	0.231741	0.180154
27	0.000269	0.000203	62	0.006527	0.005143	97	0.250792	0.192248
28	0.000283	0.000214	63	0.007450	0.005908	98	0.270837	0.200025
29	0.000311	0.000226	64	0.008442	0.006658	99	0.291636	0.210437
30	0.000344	0.000240	65	0.009476	0.007498	100	0.318956	0.215967
31	0.000367	0.000279	66	0.010523	0.008462	101	0.340960	0.226721
32	0.000382	0.000318	67	0.011499	0.009396	102	0.364586	0.235671
33	0.000398	0.000358	68	0.012424	0.010386	103	0.389996	0.250844
34	0.000417	0.000396	69	0.013422	0.011479	104	0.415180	0.263111
35	0.000437	0.000432	70	0.014342	0.012933	105	0.438126	0.281391
36	0.000462	0.000467	71	0.015830	0.014352	106	0.456824	0.295499
37	0.000492	0.000504	72	0.017260	0.015964	107	0.471493	0.309816
38	0.000526	0.000544	73	0.019177	0.017744	108	0.483473	0.323943
39	0.000573	0.000589	74	0.020940	0.019666	109	0.492436	0.337482
40	0.000620	0.000642	75	0.023377	0.021712	110	0.498054	0.350032
41	0.000666	0.000704	76	0.026690	0.023921	111	0.500000	0.361196
42	0.000708	0.000775	77	0.029853	0.026346	112	0.500000	0.370574
43	0.000744	0.000852	78	0.033273	0.029042	113	0.500000	0.377767
44	0.000770	0.000936	79	0.037068	0.032063	114	0.500000	0.382376
45	0.000802	0.001022	80	0.041355	0.035441	115	0.500000	0.384000
46	0.000847	0.001112	81	0.046249	0.039227	116	0.500000	0.384000
47	0.000918	0.001206	82	0.051616	0.043487	117	0.500000	0.384000
48	0.000997	0.001304	83	0.057377	0.048286	118	0.500000	0.384000
49	0.001109	0.001410	84	0.064966	0.053702	119	1.000000	1.000000

Current Assumption: 1994 Group Annuity Mortality Table, 1994 Base Year without margin projected to 2013 using Projection Scale AA, with 1-year set-forward

Proposed Assumption: 96% of all rates of RP-2000, 2000 Base Year projected to 2018 with Projection Scale BB

**PERS Peace Officer / Firefighter
Post-termination Mortality Rates
Male**

Age	Current	Proposed	Age	Current	Proposed	Age	Current	Proposed
15	0.000258	0.000245	50	0.001964	0.001944	85	0.091495	0.081002
16	0.000292	0.000258	51	0.002145	0.002227	86	0.099542	0.089807
17	0.000322	0.000274	52	0.002354	0.002426	87	0.110938	0.101329
18	0.000344	0.000287	53	0.002625	0.002652	88	0.124133	0.114229
19	0.000362	0.000301	54	0.002914	0.002907	89	0.136327	0.128559
20	0.000379	0.000314	55	0.003305	0.003296	90	0.152384	0.144286
21	0.000404	0.000325	56	0.003769	0.003820	91	0.166662	0.160042
22	0.000432	0.000333	57	0.004333	0.004192	92	0.185126	0.176712
23	0.000475	0.000339	58	0.004986	0.004625	93	0.201488	0.194120
24	0.000523	0.000342	59	0.005611	0.005121	94	0.219067	0.212080
25	0.000587	0.000342	60	0.006312	0.005708	95	0.241814	0.230428
26	0.000668	0.000344	61	0.007251	0.006377	96	0.260347	0.249035
27	0.000711	0.000347	62	0.008188	0.007144	97	0.278260	0.267822
28	0.000737	0.000357	63	0.009436	0.008021	98	0.300974	0.281616
29	0.000762	0.000375	64	0.010644	0.008874	99	0.317876	0.300310
30	0.000784	0.000404	65	0.011956	0.009839	100	0.334693	0.313360
31	0.000803	0.000454	66	0.013618	0.010930	101	0.358560	0.332097
32	0.000820	0.000511	67	0.015123	0.011973	102	0.376699	0.344188
33	0.000829	0.000574	68	0.016336	0.013070	103	0.396884	0.361155
34	0.000830	0.000638	69	0.017873	0.014482	104	0.418855	0.369606
35	0.000832	0.000703	70	0.019147	0.016240	105	0.440585	0.381971
36	0.000843	0.000765	71	0.020940	0.017969	106	0.460043	0.384000
37	0.000871	0.000822	72	0.022981	0.019952	107	0.475200	0.384000
38	0.000901	0.000877	73	0.025175	0.022223	108	0.485670	0.384000
39	0.000941	0.000929	74	0.027475	0.024793	109	0.492807	0.384000
40	0.000990	0.000981	75	0.030609	0.027670	110	0.497189	0.384000
41	0.001047	0.001039	76	0.033609	0.030840	111	0.499394	0.384000
42	0.001112	0.001105	77	0.037879	0.034305	112	0.500000	0.384000
43	0.001178	0.001181	78	0.042924	0.038120	113	0.500000	0.384000
44	0.001247	0.001271	79	0.048681	0.042365	114	0.500000	0.384000
45	0.001323	0.001371	80	0.055102	0.047075	115	0.500000	0.384000
46	0.001417	0.001470	81	0.062135	0.052687	116	0.500000	0.384000
47	0.001532	0.001577	82	0.069722	0.058863	117	0.500000	0.384000
48	0.001663	0.001692	83	0.076164	0.065615	118	0.500000	0.384000
49	0.001806	0.001814	84	0.084319	0.072973	119	1.000000	1.000000

Current Assumption: 1994 Group Annuity Mortality Table, 1994 Base Year without margin projected to 2013 using Projection Scale AA

Proposed Assumption: 96% of all rates of RP-2000, 2000 Base Year projected to 2018 with Projection Scale BB

**PERS Peace Officer / Firefighter
Withdrawal Rates
Members with less than 5 years of service**

Years of Service	Female		Male	
	Current	Proposed (rounded)	Current	Proposed (rounded)
0	0.15	0.15	0.15	0.15
1	0.10	0.08	0.10	0.12
2	0.08	0.06	0.08	0.07
3	0.07	0.06	0.07	0.06
4	0.06	0.07	0.06	0.06

Members with 5 or more years of service

Age	Female		Male		Age	Female		Male	
	Current	Proposed	Current	Proposed		Current	Proposed	Current	Proposed
20	0.051867	0.080000	0.041148	0.040894	45	0.048463	0.033802	0.037833	0.019012
21	0.051844	0.080000	0.041098	0.040894	46	0.048040	0.033527	0.037365	0.019506
22	0.051820	0.080000	0.041043	0.040894	47	0.047545	0.033251	0.036818	0.020000
23	0.051799	0.080000	0.040978	0.038801	48	0.047003	0.032862	0.036216	0.023333
24	0.051763	0.080000	0.040894	0.036708	49	0.046444	0.032474	0.035581	0.026667
25	0.051745	0.080000	0.040822	0.034616	50	0.045835	0.032085	0.034887	0.030000
26	0.051721	0.080000	0.040754	0.032523	51	0.045115	0.031581	0.034073	0.040000
27	0.051653	0.080000	0.040663	0.030430	52	0.044201	0.030941	0.033070	0.040000
28	0.051592	0.078000	0.040592	0.028877	53	0.043144	0.030201	0.031919	0.040000
29	0.051505	0.076000	0.040510	0.027324	54	0.041974	0.060402	0.030646	0.040000
30	0.051431	0.074000	0.040447	0.025771	55	0.040561	0.060402	0.029148	0.040000
31	0.051334	0.072000	0.040373	0.024218	56	0.038709	0.060402	0.027271	0.040000
32	0.051251	0.070000	0.040317	0.022665	57	0.036326	0.060402	0.024939	0.040000
33	0.051149	0.063077	0.040260	0.021722	58	0.033764	0.060402	0.022459	0.040000
34	0.051044	0.056154	0.040215	0.020779	59	0.030323	0.060402	0.019263	0.040000
35	0.050915	0.049231	0.040154	0.019836	60	0.026437	0.060402	0.015673	0.040000
36	0.050778	0.042308	0.040080	0.018893	61	0.022201	0.060402	0.011732	0.040000
37	0.050611	0.035385	0.039963	0.017950	62	0.017278	0.060402	0.007141	0.040000
38	0.050431	0.035234	0.039816	0.017866	63	0.011720	0.060402	0.001951	0.040000
39	0.050236	0.035082	0.039650	0.017782	64	0.005717	0.060402	0.043200	0.040000
40	0.050035	0.034930	0.039466	0.017699	65	0.054000	0.060402	0.043200	0.040000
41	0.049813	0.034779	0.039250	0.017615	65+	0.054000	0.060402	0.043200	0.040000
42	0.049540	0.034627	0.038972	0.017531					
43	0.049243	0.034352	0.038659	0.018025					
44	0.048884	0.034077	0.038278	0.018519					

Current Assumption: Based on the actual withdrawal experience from 2005 to 2009

Proposed Assumption: Based on the actual withdrawal experience from 2009 to 2013.
Changed to sex distinct and decreased most select and ultimate rates.

**PERS Peace Officer / Firefighter
Reduced Retirement Rates**

Age	Female		Male	
	Current	Proposed	Current	Proposed
<50	N/A		N/A	
50	0.100000	0.087041	0.100000	0.087041
51	0.100000	0.085580	0.100000	0.085580
52	0.100000	0.072383	0.100000	0.072383
53	0.100000	0.076688	0.100000	0.076688
54	0.110000	0.075561	0.110000	0.075561
55	0.100000	0.077429	0.100000	0.077429
56	0.100000	0.077106	0.100000	0.077106
57	0.100000	0.076730	0.100000	0.076730
58	0.100000	0.076820	0.100000	0.076820
59	0.110000	0.200000	0.110000	0.200000
60	N/A		N/A	
61	N/A		N/A	
62	N/A		N/A	
63	N/A		N/A	
64	N/A		N/A	
65	N/A		N/A	
66	N/A		N/A	
67	N/A		N/A	
68	N/A		N/A	
69	N/A		N/A	
70	N/A		N/A	
71	N/A		N/A	
72	N/A		N/A	
73	N/A		N/A	
74	N/A		N/A	
75	N/A		N/A	

Current Assumption: Based on the actual retirement experience from 2005 to 2009

Proposed Assumption: Rates were adjusted based on actual experience from 2009 to 2013. Kept rates unisex rates and decreased most rates.

**PERS Peace Officer / Firefighter
Unreduced Retirement Rates**

Age	Female		Male	
	Current	Proposed	Current	Proposed
<47	0.110000	0.060000	0.110000	0.080000
47	0.110000	0.150000	0.110000	0.080000
48	0.110000	0.150000	0.110000	0.130000
49	0.110000	0.150000	0.110000	0.130000
50	0.185000	0.150000	0.185000	0.150000
51	0.185000	0.150000	0.185000	0.150000
52	0.185000	0.150000	0.185000	0.185000
53	0.185000	0.150000	0.185000	0.185000
54	0.185000	0.250000	0.185000	0.185000
55	0.250000	0.200000	0.250000	0.250000
56	0.250000	0.150000	0.250000	0.250000
57	0.250000	0.150000	0.250000	0.250000
58	0.250000	0.150000	0.250000	0.250000
59	0.250000	0.150000	0.250000	0.250000
60	0.300000	0.250000	0.300000	0.300000
61	0.250000	0.200000	0.250000	0.250000
62	0.300000	0.300000	0.300000	0.250000
63	0.250000	0.500000	0.250000	0.250000
64	0.500000	0.500000	0.500000	0.200000
65	0.500000	0.500000	0.500000	0.200000
66	0.500000	0.500000	0.500000	0.250000
67	0.500000	0.500000	0.500000	0.500000
68	0.500000	0.500000	0.500000	0.500000
69	0.500000	0.500000	0.500000	0.500000
70	0.500000	1.000000	0.500000	1.000000
71	0.500000	1.000000	0.500000	1.000000
72	0.500000	1.000000	0.500000	1.000000
73	0.500000	1.000000	0.500000	1.000000
74	0.500000	1.000000	0.500000	1.000000
75	1.000000	1.000000	1.000000	1.000000

Current Assumption: Based on the actual retirement experience from 2005 to 2009

Proposed Assumption: Rates were adjusted based on actual experience from 2009 to 2013.
Changed all rates to sex distinct and decreased most rates.

**PERS Peace Officer / Firefighter
Disability Rates**

Age	Unisex		Age	Unisex	
	Current	Proposed		Current	Proposed
20	0.000880	0.000224	40	0.001440	0.001027
21	0.000890	0.000224	41	0.001500	0.001068
22	0.000900	0.000224	42	0.001590	0.001108
23	0.000910	0.000305	43	0.001700	0.001221
24	0.000930	0.000387	44	0.001850	0.001333
25	0.000940	0.000468	45	0.002030	0.001446
26	0.000950	0.000550	46	0.002200	0.001559
27	0.000980	0.000631	47	0.002390	0.001671
28	0.001000	0.000658	48	0.002590	0.001828
29	0.001030	0.000685	49	0.002790	0.001985
30	0.001050	0.000712	50	0.003000	0.002142
31	0.001080	0.000739	51	0.003250	0.002299
32	0.001100	0.000765	52	0.003580	0.002456
33	0.001130	0.000793	53	0.003980	0.002868
34	0.001160	0.000821	54	0.004440	0.003280
35	0.001200	0.000849			
36	0.001240	0.000877			
37	0.001290	0.000905			
38	0.001340	0.000946			
39	0.001390	0.000986			

Current Assumption: There were no changes for the disability rates for PERS Peace Officer / Firefighter except to stop the rates at earliest retirement age.

Proposed Assumption: Decreased previous rates by 30%.

**PERS Peace Officer / Firefighter
Salary Scale**

Years of service	Percent increase	
	Current	Proposed
0	6.36%	9.66%
1	6.36%	8.66%
2	6.36%	7.16%
3	6.36%	7.03%
4	6.11%	6.91%
5	5.61%	6.41%
6	4.12%	5.66%
7	4.12%	4.92%
8	4.12%	4.92%
9	4.12%	4.92%
10	4.12%	4.92%
11	4.12%	4.92%
12	4.12%	4.92%
13	4.12%	4.92%
14	4.12%	4.92%
15	4.12%	4.92%
16	4.12%	4.92%
17	4.12%	4.92%
18	4.12%	4.92%
19	4.12%	4.92%
20+	4.12%	4.92%

Current Assumption: Based on the actual experience from 2005 to 2009

Proposed Assumption: Based on actual experience from 2009 to 2013. Increased rates for less than seven years of service.

PERS Others
Pre-termination Mortality Rates
Female

Age	Current	Proposed	Age	Current	Proposed	Age	Current	Proposed
15	0.000094	0.000100	50	0.000610	0.000991	85	0.035731	0.038887
16	0.000108	0.000105	51	0.000683	0.001095	86	0.040512	0.043371
17	0.000118	0.000109	52	0.000784	0.001193	87	0.046048	0.048373
18	0.000123	0.000111	53	0.000897	0.001305	88	0.051417	0.053879
19	0.000124	0.000112	54	0.001018	0.001407	89	0.058425	0.059830
20	0.000123	0.000113	55	0.001164	0.001549	90	0.064944	0.067336
21	0.000122	0.000114	56	0.001352	0.001730	91	0.071918	0.075301
22	0.000123	0.000115	57	0.001570	0.001912	92	0.079304	0.083583
23	0.000127	0.000116	58	0.001806	0.002118	93	0.088776	0.092034
24	0.000129	0.000119	59	0.002077	0.002355	94	0.097171	0.100518
25	0.000132	0.000122	60	0.002387	0.002632	95	0.106016	0.108913
26	0.000138	0.000127	61	0.002738	0.002973	96	0.115310	0.117100
27	0.000142	0.000132	62	0.003136	0.003343	97	0.127457	0.124961
28	0.000148	0.000139	63	0.003590	0.003840	98	0.137936	0.130016
29	0.000156	0.000147	64	0.004097	0.004328	99	0.148960	0.136784
30	0.000171	0.000156	65	0.004643	0.004874	100	0.160400	0.140379
31	0.000189	0.000181	66	0.005212	0.005500	101	0.175426	0.147369
32	0.000202	0.000207	67	0.005787	0.006107	102	0.187528	0.153186
33	0.000210	0.000233	68	0.006324	0.006751	103	0.200522	0.163049
34	0.000219	0.000257	69	0.006833	0.007462	104	0.214498	0.171022
35	0.000229	0.000281	70	0.007382	0.008407	105	0.228349	0.182904
36	0.000240	0.000304	71	0.007888	0.009329	106	0.240969	0.192074
37	0.000254	0.000327	72	0.008707	0.010376	107	0.251253	0.201380
38	0.000271	0.000354	73	0.009493	0.011534	108	0.259321	0.210563
39	0.000289	0.000383	74	0.010547	0.012783	109	0.265910	0.219363
40	0.000315	0.000417	75	0.011517	0.014113	110	0.270840	0.227521
41	0.000341	0.000458	76	0.012857	0.015549	111	0.273930	0.234778
42	0.000366	0.000504	77	0.014680	0.017125	112	0.275000	0.240873
43	0.000389	0.000554	78	0.016419	0.018877	113	0.275000	0.245548
44	0.000409	0.000608	79	0.018300	0.020841	114	0.275000	0.248544
45	0.000423	0.000664	80	0.020388	0.023037	115	0.275000	0.249600
46	0.000441	0.000723	81	0.022745	0.025498	116	0.275000	0.249600
47	0.000466	0.000784	82	0.025437	0.028266	117	0.275000	0.249600
48	0.000505	0.000848	83	0.028389	0.031386	118	0.275000	0.249600
49	0.000548	0.000916	84	0.031557	0.034906	119	1.000000	1.000000

Current Assumption: 55% of the 1994 Group Annuity Mortality Table, 1994 Base Year without margin projected to 2013 using Projection Scale AA

Proposed Assumption: 65% of the Alaska Healthy Pre-Termination Mortality Rates

PERS Others
Pre-termination Mortality Rates
Male

Age	Current	Proposed	Age	Current	Proposed	Age	Current	Proposed
15	0.000193	0.000147	50	0.001473	0.001167	85	0.068621	0.048601
16	0.000219	0.000155	51	0.001609	0.001336	86	0.074656	0.053884
17	0.000241	0.000164	52	0.001765	0.001455	87	0.083204	0.060797
18	0.000258	0.000172	53	0.001969	0.001591	88	0.093100	0.068537
19	0.000271	0.000181	54	0.002186	0.001744	89	0.102245	0.077135
20	0.000284	0.000188	55	0.002479	0.001978	90	0.114288	0.086571
21	0.000303	0.000195	56	0.002827	0.002292	91	0.124996	0.096025
22	0.000324	0.000200	57	0.003249	0.002515	92	0.138844	0.106027
23	0.000356	0.000204	58	0.003739	0.002775	93	0.151116	0.116472
24	0.000392	0.000205	59	0.004208	0.003073	94	0.164300	0.127248
25	0.000441	0.000205	60	0.004734	0.003425	95	0.181360	0.138257
26	0.000501	0.000206	61	0.005438	0.003826	96	0.195260	0.149421
27	0.000533	0.000208	62	0.006141	0.004287	97	0.208695	0.160693
28	0.000553	0.000214	63	0.007077	0.004813	98	0.225730	0.168970
29	0.000571	0.000225	64	0.007983	0.005324	99	0.238407	0.180186
30	0.000588	0.000242	65	0.008967	0.005904	100	0.251020	0.188016
31	0.000602	0.000272	66	0.010214	0.006558	101	0.268920	0.199258
32	0.000615	0.000307	67	0.011342	0.007184	102	0.282524	0.206513
33	0.000622	0.000344	68	0.012252	0.007842	103	0.297663	0.216693
34	0.000623	0.000383	69	0.013405	0.008689	104	0.314141	0.221764
35	0.000624	0.000422	70	0.014360	0.009744	105	0.330439	0.229182
36	0.000632	0.000459	71	0.015705	0.010782	106	0.345032	0.230400
37	0.000653	0.000493	72	0.017236	0.011971	107	0.356400	0.230400
38	0.000676	0.000526	73	0.018881	0.013334	108	0.364253	0.230400
39	0.000706	0.000557	74	0.020606	0.014876	109	0.369605	0.230400
40	0.000742	0.000589	75	0.022957	0.016602	110	0.372892	0.230400
41	0.000785	0.000623	76	0.025207	0.018504	111	0.374546	0.230400
42	0.000834	0.000663	77	0.028409	0.020583	112	0.375000	0.230400
43	0.000884	0.000709	78	0.032193	0.022872	113	0.375000	0.230400
44	0.000935	0.000762	79	0.036511	0.025419	114	0.375000	0.230400
45	0.000993	0.000823	80	0.041327	0.028245	115	0.375000	0.230400
46	0.001063	0.000882	81	0.046601	0.031612	116	0.375000	0.230400
47	0.001149	0.000946	82	0.052291	0.035318	117	0.375000	0.230400
48	0.001248	0.001015	83	0.057123	0.039369	118	0.375000	0.230400
49	0.001354	0.001089	84	0.063239	0.043784	119	1.000000	1.000000

Current Assumption: 75% of the 1994 Group Annuity Mortality Table, 1994 Base Year without margin projected to 2013 using Projection Scale AA

Proposed Assumption: 60% of the Alaska Healthy Pre-Termination Mortality Rates

PERS Others
Post-termination Mortality Rates
Female

Age	Current	Proposed	Age	Current	Proposed	Age	Current	Proposed
15	0.000196	0.000155	50	0.001241	0.001524	85	0.073658	0.059827
16	0.000215	0.000161	51	0.001426	0.001684	86	0.083723	0.066725
17	0.000224	0.000167	52	0.001631	0.001835	87	0.093485	0.074420
18	0.000226	0.000171	53	0.001851	0.002007	88	0.106227	0.082891
19	0.000224	0.000173	54	0.002117	0.002165	89	0.118079	0.092046
20	0.000222	0.000174	55	0.002457	0.002383	90	0.130760	0.103593
21	0.000225	0.000175	56	0.002854	0.002662	91	0.144189	0.115847
22	0.000230	0.000176	57	0.003284	0.002942	92	0.161410	0.128589
23	0.000235	0.000179	58	0.003777	0.003259	93	0.176674	0.141591
24	0.000239	0.000183	59	0.004339	0.003623	94	0.192756	0.154643
25	0.000251	0.000188	60	0.004979	0.004050	95	0.209655	0.167558
26	0.000258	0.000195	61	0.005701	0.004574	96	0.231741	0.180154
27	0.000269	0.000203	62	0.006527	0.005143	97	0.250792	0.192248
28	0.000283	0.000214	63	0.007450	0.005908	98	0.270837	0.200025
29	0.000311	0.000226	64	0.008442	0.006658	99	0.291636	0.210437
30	0.000344	0.000240	65	0.009476	0.007498	100	0.318956	0.215967
31	0.000367	0.000279	66	0.010523	0.008462	101	0.340960	0.226721
32	0.000382	0.000318	67	0.011499	0.009396	102	0.364586	0.235671
33	0.000398	0.000358	68	0.012424	0.010386	103	0.389996	0.250844
34	0.000417	0.000396	69	0.013422	0.011479	104	0.415180	0.263111
35	0.000437	0.000432	70	0.014342	0.012933	105	0.438126	0.281391
36	0.000462	0.000467	71	0.015830	0.014352	106	0.456824	0.295499
37	0.000492	0.000504	72	0.017260	0.015964	107	0.471493	0.309816
38	0.000526	0.000544	73	0.019177	0.017744	108	0.483473	0.323943
39	0.000573	0.000589	74	0.020940	0.019666	109	0.492436	0.337482
40	0.000620	0.000642	75	0.023377	0.021712	110	0.498054	0.350032
41	0.000666	0.000704	76	0.026690	0.023921	111	0.500000	0.361196
42	0.000708	0.000775	77	0.029853	0.026346	112	0.500000	0.370574
43	0.000744	0.000852	78	0.033273	0.029042	113	0.500000	0.377767
44	0.000770	0.000936	79	0.037068	0.032063	114	0.500000	0.382376
45	0.000802	0.001022	80	0.041355	0.035441	115	0.500000	0.384000
46	0.000847	0.001112	81	0.046249	0.039227	116	0.500000	0.384000
47	0.000918	0.001206	82	0.051616	0.043487	117	0.500000	0.384000
48	0.000997	0.001304	83	0.057377	0.048286	118	0.500000	0.384000
49	0.001109	0.001410	84	0.064966	0.053702	119	1.000000	1.000000

Current Assumption: 1994 Group Annuity Mortality Table, 1994 Base Year without margin projected to 2013 using Projection Scale AA, with 1-year set-forward

Proposed Assumption: 96% of all rates of RP-2000, 2000 Base Year projected to 2018 with Projection Scale BB

PERS Others
Post-termination Mortality Rates
Male

Age	Current	Proposed	Age	Current	Proposed	Age	Current	Proposed
15	0.000258	0.000245	50	0.001964	0.001944	85	0.091495	0.081002
16	0.000292	0.000258	51	0.002145	0.002227	86	0.099542	0.089807
17	0.000322	0.000274	52	0.002354	0.002426	87	0.110938	0.101329
18	0.000344	0.000287	53	0.002625	0.002652	88	0.124133	0.114229
19	0.000362	0.000301	54	0.002914	0.002907	89	0.136327	0.128559
20	0.000379	0.000314	55	0.003305	0.003296	90	0.152384	0.144286
21	0.000404	0.000325	56	0.003769	0.003820	91	0.166662	0.160042
22	0.000432	0.000333	57	0.004333	0.004192	92	0.185126	0.176712
23	0.000475	0.000339	58	0.004986	0.004625	93	0.201488	0.194120
24	0.000523	0.000342	59	0.005611	0.005121	94	0.219067	0.212080
25	0.000587	0.000342	60	0.006312	0.005708	95	0.241814	0.230428
26	0.000668	0.000344	61	0.007251	0.006377	96	0.260347	0.249035
27	0.000711	0.000347	62	0.008188	0.007144	97	0.278260	0.267822
28	0.000737	0.000357	63	0.009436	0.008021	98	0.300974	0.281616
29	0.000762	0.000375	64	0.010644	0.008874	99	0.317876	0.300310
30	0.000784	0.000404	65	0.011956	0.009839	100	0.334693	0.313360
31	0.000803	0.000454	66	0.013618	0.010930	101	0.358560	0.332097
32	0.000820	0.000511	67	0.015123	0.011973	102	0.376699	0.344188
33	0.000829	0.000574	68	0.016336	0.013070	103	0.396884	0.361155
34	0.000830	0.000638	69	0.017873	0.014482	104	0.418855	0.369606
35	0.000832	0.000703	70	0.019147	0.016240	105	0.440585	0.381971
36	0.000843	0.000765	71	0.020940	0.017969	106	0.460043	0.384000
37	0.000871	0.000822	72	0.022981	0.019952	107	0.475200	0.384000
38	0.000901	0.000877	73	0.025175	0.022223	108	0.485670	0.384000
39	0.000941	0.000929	74	0.027475	0.024793	109	0.492807	0.384000
40	0.000990	0.000981	75	0.030609	0.027670	110	0.497189	0.384000
41	0.001047	0.001039	76	0.033609	0.030840	111	0.499394	0.384000
42	0.001112	0.001105	77	0.037879	0.034305	112	0.500000	0.384000
43	0.001178	0.001181	78	0.042924	0.038120	113	0.500000	0.384000
44	0.001247	0.001271	79	0.048681	0.042365	114	0.500000	0.384000
45	0.001323	0.001371	80	0.055102	0.047075	115	0.500000	0.384000
46	0.001417	0.001470	81	0.062135	0.052687	116	0.500000	0.384000
47	0.001532	0.001577	82	0.069722	0.058863	117	0.500000	0.384000
48	0.001663	0.001692	83	0.076164	0.065615	118	0.500000	0.384000
49	0.001806	0.001814	84	0.084319	0.072973	119	1.000000	1.000000

Current Assumption: 1994 Group Annuity Mortality Table, 1994 Base Year without margin projected to 2013 using Projection Scale AA

Proposed Assumption: 96% of all rates of RP-2000, 2000 Base Year projected to 2018 with Projection Scale BB

PERS Others
Withdrawal Rates
Members with less than 5 years of service

Service	Hire Age < 35				Hire Age > 35			
	Current (rounded)		Proposed		Current (rounded)		Proposed	
	Male	Female	Male (rounded)	Female (rounded)	Male	Female	Male	Female
0	0.29	0.29	0.29	0.29	0.20	0.20	0.20	0.20
1	0.25	0.25	0.16	0.20	0.17	0.17	0.12	0.15
2	0.20	0.20	0.13	0.16	0.14	0.14	0.10	0.13
3	0.16	0.16	0.10	0.13	0.11	0.11	0.09	0.10
4	0.13	0.13	0.08	0.10	0.10	0.10	0.09	0.09

Members with 5 or more years of service

Age	Female		Male		Age	Female		Male	
	Current	Proposed	Current	Proposed		Current	Proposed	Current	Proposed
20	0.136769	0.136735	0.095000	0.095000	45	0.060380	0.045685	0.052422	0.039880
21	0.136765	0.136735	0.095000	0.095000	46	0.060236	0.043828	0.052192	0.039357
22	0.136749	0.136735	0.095000	0.095000	47	0.060055	0.041972	0.051918	0.038834
23	0.136746	0.128522	0.095000	0.090250	48	0.059841	0.041891	0.051599	0.038701
24	0.136734	0.120309	0.095000	0.085500	49	0.059628	0.041809	0.051270	0.038568
25	0.136734	0.112096	0.095000	0.080750	50	0.059380	0.041566	0.050893	0.038170
26	0.136730	0.103883	0.095000	0.076000	51	0.059093	0.041365	0.050459	0.037844
27	0.136708	0.095670	0.095000	0.071250	52	0.058745	0.041121	0.049946	0.037460
28	0.136678	0.091756	0.095000	0.069160	53	0.058349	0.040844	0.049364	0.037023
29	0.136643	0.087842	0.095000	0.067060	54	0.057924	0.057924	0.048732	0.043859
30	0.126000	0.083927	0.095000	0.064960	55	0.057418	0.057924	0.048006	0.043859
31	0.119000	0.080013	0.090000	0.062870	56	0.056756	0.057924	0.047122	0.043859
32	0.111000	0.076099	0.084000	0.060770	57	0.055901	0.057924	0.046045	0.043859
33	0.105000	0.072399	0.077300	0.058280	58	0.054935	0.057924	0.044865	0.043859
34	0.099000	0.068699	0.073500	0.055780	59	0.053708	0.057924	0.043447	0.043859
35	0.093000	0.064999	0.070000	0.053290	60	0.052321	0.057924	0.041859	0.043859
36	0.087000	0.061299	0.067000	0.050790	61	0.050780	0.057924	0.040081	0.043859
37	0.083000	0.057599	0.064500	0.048300	62	0.049011	0.057924	0.038026	0.043859
38	0.079000	0.056330	0.062500	0.046930	63	0.047001	0.057924	0.035690	0.043859
39	0.076000	0.055061	0.061000	0.045560	64	0.044808	0.057924	0.033139	0.043859
40	0.073471	0.053792	0.059000	0.044190	65+	0.062500	0.057924	0.055000	0.043859
41	0.073368	0.052523	0.057300	0.042820					
42	0.073253	0.051254	0.055500	0.041450					
43	0.073146	0.049398	0.053900	0.040930					
44	0.073023	0.047541	0.052700	0.040400					

Current Assumption: Based on actual experience from 2005 to 2009

Proposed Assumption: Rates were adjusted based on actual experience from 2009 to 2013.
 Changed to sex-distinct select rates and decreased most ultimate rates.

PERS Others
Reduced Retirement Rates

Age	Female		Male	
	Current	Proposed	Current	Proposed
<50	N/A	N/A	N/A	N/A
50	0.08	0.06	0.08	0.04
51	0.08	0.06	0.08	0.04
52	0.08	0.08	0.08	0.06
53	0.08	0.08	0.08	0.06
54	0.13	0.14	0.13	0.14
55	0.08	0.06	0.08	0.05
56	0.08	0.06	0.08	0.05
57	0.08	0.06	0.08	0.05
58	0.08	0.06	0.08	0.05
59	0.12	0.16	0.12	0.14
60	N/A	N/A	N/A	N/A
61	N/A	N/A	N/A	N/A
62	N/A	N/A	N/A	N/A
63	N/A	N/A	N/A	N/A
64	N/A	N/A	N/A	N/A
65	N/A	N/A	N/A	N/A
66	N/A	N/A	N/A	N/A
67	N/A	N/A	N/A	N/A
68	N/A	N/A	N/A	N/A
69	N/A	N/A	N/A	N/A
70-89	N/A	N/A	N/A	N/A
90+	N/A	N/A	N/A	N/A

Current Assumption: Based on actual experience from 2005 to 2009

Proposed Assumption: Rates adjusted based on actual experience from 2009 to 2013. Changed all rates to sex-distinct and decreased most rates

PERS Others
Unreduced Retirement Rates

Age	Female		Male	
	Current (rounded)	Proposed (rounded)	Current (rounded)	Proposed (rounded)
<50	0.10	0.10	0.10	0.10
50	0.30	0.35	0.30	0.30
51	0.30	0.35	0.30	0.33
52	0.30	0.35	0.30	0.33
53	0.30	0.35	0.30	0.33
54	0.30	0.35	0.30	0.35
55	0.30	0.30	0.30	0.30
56	0.18	0.20	0.18	0.20
57	0.18	0.18	0.18	0.20
58	0.17	0.18	0.17	0.20
59	0.17	0.18	0.17	0.20
60	0.21	0.21	0.21	0.20
61	0.17	0.20	0.17	0.20
62	0.25	0.20	0.25	0.20
63	0.21	0.20	0.21	0.20
64	0.23	0.20	0.23	0.20
65	0.26	0.26	0.26	0.23
66	0.26	0.26	0.26	0.25
67	0.26	0.22	0.26	0.20
68	0.28	0.22	0.28	0.23
69	0.30	0.22	0.30	0.25
70	0.50	0.22	0.50	0.25
71	0.50	0.22	0.50	0.25
72	0.50	0.25	0.50	0.25
73	0.50	0.25	0.50	0.25
74	0.50	0.25	0.50	0.25
75-89	0.50	0.50	0.50	0.50
90+	1.00	1.00	1.00	1.00

Current Assumption: Based on actual experience from 2005 to 2009

Proposed Assumption: Rates adjusted based on actual experience from 2009 to 2013. Changed all rates to unisex and decreased most rates

**PERS Others
Salary scale**

Percent Increase		
Years of Service	Current (rounded)	Proposed
0	9.60%	8.55%
1	7.60%	7.36%
2	6.61%	6.35%
3	6.11%	6.11%
4	5.61%	5.71%
5+	Age based	Age based

Percent increase					
Age	Current	Proposed	Age	Current	Proposed
20	5.11%	7.91%	45	4.53%	5.44%
21	5.11%	7.83%	46	4.50%	5.40%
22	5.11%	7.75%	47	4.47%	5.36%
23	5.11%	7.51%	48	4.44%	5.31%
24	5.11%	7.27%	49	4.40%	5.27%
25	5.11%	7.03%	50	4.61%	5.22%
26	5.09%	6.79%	51	4.54%	5.18%
27	5.06%	6.55%	52	4.47%	5.13%
28	5.04%	6.52%	53	4.39%	5.09%
29	5.01%	6.49%	54	4.32%	5.05%
30	4.99%	6.47%	55	4.24%	5.01%
31	4.96%	6.44%	56	4.17%	4.97%
32	4.94%	6.41%	57	4.09%	4.93%
33	4.91%	6.33%	58	4.02%	4.85%
34	4.89%	6.24%	59	3.94%	4.77%
35	4.86%	6.16%	60	4.00%	4.69%
36	4.83%	6.07%	61	4.00%	4.60%
37	4.80%	5.99%	62	4.00%	4.52%
38	4.76%	5.90%	63	4.00%	4.46%
39	4.73%	5.82%	64	4.00%	4.40%
40	4.70%	5.73%	65+	4.00%	4.34%
41	4.67%	5.64%			
42	4.63%	5.55%			
43	4.60%	5.52%			
44	4.57%	5.48%			

Current Assumption: Based on actual experience from 2005 to 2009

Proposed Assumption: Rates adjusted based on actual experience from 2009 to 2013. Increased most rates.

**PERS Others
Disability Rates**

Age	Female		Male		Age	Female		Male	
	Current	Proposed	Current	Proposed		Current	Proposed	Current	Proposed
20	0.000235	0.000188	0.000306	0.000218	40	0.000386	0.000381	0.000503	0.000489
21	0.000235	0.000188	0.000306	0.000218	41	0.000403	0.000397	0.000524	0.000510
22	0.000244	0.000188	0.000317	0.000218	42	0.000429	0.000413	0.000558	0.000531
23	0.000244	0.000200	0.000317	0.000240	43	0.000454	0.000454	0.000590	0.000586
24	0.000252	0.000212	0.000328	0.000261	44	0.000496	0.000495	0.000645	0.000641
25	0.000252	0.000224	0.000328	0.000283	45	0.000546	0.000536	0.000711	0.000695
26	0.000252	0.000236	0.000328	0.000304	46	0.000588	0.000577	0.000765	0.000750
27	0.000261	0.000248	0.000339	0.000326	47	0.000638	0.000618	0.000830	0.000805
28	0.000269	0.000255	0.000350	0.000334	48	0.000698	0.000680	0.000907	0.000886
29	0.000278	0.000262	0.000361	0.000342	49	0.000748	0.000742	0.000973	0.000967
30	0.000286	0.000269	0.000371	0.000349	50	0.000806	0.000804	0.001049	0.001048
31	0.000286	0.000277	0.000371	0.000357	51	0.000874	0.000867	0.001136	0.001129
32	0.000294	0.000284	0.000383	0.000365	52	0.000958	0.000929	0.001245	0.001210
33	0.000302	0.000293	0.000393	0.000377	53	0.001067	0.001084	0.001388	0.001421
34	0.000311	0.000303	0.000405	0.000389	54	0.001193	0.001239	0.001551	0.001633
35	0.000319	0.000312	0.000415	0.000401					
36	0.000336	0.000322	0.000437	0.000413					
37	0.000345	0.000331	0.000448	0.000425					
38	0.000362	0.000348	0.000470	0.000446					
39	0.000370	0.000364	0.000481	0.000467					

Current Assumption: Based on actual experience from 2005 to 2009

Proposed Assumption: Based on actual experience from 2009 to 20013. Decreased most rates by 5%.

TRS
Pre-termination Mortality Rates
Female

Age	Current	Proposed	Age	Current	Proposed	Age	Current	Proposed
15	0.000094	0.000094	50	0.000610	0.000674	85	0.035731	0.023782
16	0.000108	0.000094	51	0.000683	0.000731	86	0.040512	0.026364
17	0.000118	0.000094	52	0.000784	0.000791	87	0.046048	0.029273
18	0.000123	0.000094	53	0.000897	0.000855	88	0.051417	0.032557
19	0.000124	0.000094	54	0.001018	0.000908	89	0.058425	0.036270
20	0.000123	0.000098	55	0.001164	0.000985	90	0.064944	0.041195
21	0.000122	0.000101	56	0.001352	0.001054	91	0.071918	0.046790
22	0.000123	0.000104	57	0.001570	0.001132	92	0.079304	0.053071
23	0.000127	0.000105	58	0.001806	0.001221	93	0.088776	0.060012
24	0.000129	0.000105	59	0.002077	0.001344	94	0.097171	0.067536
25	0.000132	0.000106	60	0.002387	0.001501	95	0.106016	0.075519
26	0.000138	0.000107	61	0.002738	0.001659	96	0.115310	0.083819
27	0.000142	0.000109	62	0.003136	0.001837	97	0.127457	0.092288
28	0.000148	0.000111	63	0.003590	0.002080	98	0.137936	0.098984
29	0.000156	0.000114	64	0.004097	0.002367	99	0.148960	0.107245
30	0.000171	0.000118	65	0.004643	0.002723	100	0.160400	0.113238
31	0.000189	0.000123	66	0.005212	0.003118	101	0.175426	0.120836
32	0.000202	0.000130	67	0.005787	0.003582	102	0.187528	0.125724
33	0.000210	0.000137	68	0.006324	0.004036	103	0.200522	0.132264
34	0.000219	0.000146	69	0.006833	0.004546	104	0.214498	0.135739
35	0.000229	0.000169	70	0.007382	0.005130	105	0.228349	0.142493
36	0.000240	0.000193	71	0.007888	0.005696	106	0.240969	0.148118
37	0.000254	0.000217	72	0.008707	0.006297	107	0.251253	0.154838
38	0.000271	0.000240	73	0.009493	0.006959	108	0.259321	0.162410
39	0.000289	0.000262	74	0.010547	0.007841	109	0.265910	0.170594
40	0.000315	0.000283	75	0.011517	0.008701	110	0.270840	0.179146
41	0.000341	0.000305	76	0.012857	0.009678	111	0.273930	0.187826
42	0.000366	0.000330	77	0.014680	0.010757	112	0.275000	0.196391
43	0.000389	0.000357	78	0.016419	0.011923	113	0.275000	0.204599
44	0.000409	0.000389	79	0.018300	0.013163	114	0.275000	0.212207
45	0.000423	0.000427	80	0.020388	0.014502	115	0.275000	0.218975
46	0.000441	0.000470	81	0.022745	0.015972	116	0.275000	0.224661
47	0.000466	0.000517	82	0.025437	0.017607	117	0.275000	0.229021
48	0.000505	0.000567	83	0.028389	0.019438	118	0.275000	0.231815
49	0.000548	0.000620	84	0.031557	0.021486	119	1.000000	1.000000

Current Assumption: 55% of the 1994 Group Annuity Mortality Table, 1994 Base Year without margin projected to 2013 using Projection Scale AA

Proposed Assumption: 60% of Post-Termination Healthy Mortality

TRS
Pre-termination Mortality Rates
Male

Age	Current	Proposed	Age	Current	Proposed	Age	Current	Proposed
15	0.000116	0.000163	50	0.000884	0.00105	85	0.041173	0.039193
16	0.000132	0.000163	51	0.000965	0.001126	86	0.044794	0.043689
17	0.000145	0.000163	52	0.001059	0.001208	87	0.049922	0.049483
18	0.000155	0.000163	53	0.001181	0.001295	88	0.05586	0.055939
19	0.000163	0.000172	54	0.001311	0.001483	89	0.061347	0.063161
20	0.000170	0.000182	55	0.001487	0.001615	90	0.068573	0.071260
21	0.000182	0.000191	56	0.001696	0.001766	91	0.074998	0.080328
22	0.000194	0.000200	57	0.001950	0.001901	92	0.083306	0.090400
23	0.000214	0.000209	58	0.002244	0.002117	93	0.090670	0.101453
24	0.000235	0.000216	59	0.002525	0.002409	94	0.098580	0.112526
25	0.000264	0.000222	60	0.002841	0.002643	95	0.108816	0.124240
26	0.000301	0.000226	61	0.003263	0.002917	96	0.117156	0.136471
27	0.000320	0.000228	62	0.003684	0.003229	97	0.125217	0.149090
28	0.000332	0.000228	63	0.004246	0.003599	98	0.135438	0.159079
29	0.000343	0.000229	64	0.004790	0.004021	99	0.143044	0.171919
30	0.000353	0.000231	65	0.005380	0.004504	100	0.150612	0.181575
31	0.000361	0.000238	66	0.006128	0.005057	101	0.161352	0.194404
32	0.000369	0.000249	67	0.006805	0.005594	102	0.169515	0.203598
33	0.000373	0.000269	68	0.007351	0.006202	103	0.178598	0.216309
34	0.000374	0.000302	69	0.008043	0.007017	104	0.188485	0.225144
35	0.000374	0.000340	70	0.008616	0.007828	105	0.198263	0.237581
36	0.000379	0.000382	71	0.009423	0.008702	106	0.207019	0.244839
37	0.000392	0.000425	72	0.010341	0.009643	107	0.213840	0.250568
38	0.000405	0.000468	73	0.011329	0.010813	108	0.218552	0.254329
39	0.000423	0.000509	74	0.012364	0.011964	109	0.221763	0.255680
40	0.000445	0.000547	75	0.013774	0.013285	110	0.223735	0.255680
41	0.000471	0.000584	76	0.015124	0.014797	111	0.224727	0.255680
42	0.000500	0.000618	77	0.017045	0.016508	112	0.225000	0.255680
43	0.000530	0.000653	78	0.019316	0.018423	113	0.225000	0.255680
44	0.000561	0.000692	79	0.021906	0.020534	114	0.225000	0.255680
45	0.000596	0.000736	80	0.024796	0.022841	115	0.225000	0.255680
46	0.000638	0.000787	81	0.027961	0.025382	116	0.225000	0.255680
47	0.000690	0.000846	82	0.031375	0.028208	117	0.225000	0.255680
48	0.000749	0.000913	83	0.034274	0.031344	118	0.225000	0.255680
49	0.000813	0.000979	84	0.037943	0.035081	119	1.000000	1.000000

Current Assumption: 55% of the 1994 Group Annuity Table, 1994 Base Year without margin projected to 2013 using Projection Scale AA

Proposed Assumption: 68% of Post-Termination Healthy Mortality

TRS
Post-termination Mortality Rates
Female

Age	Current	Proposed	Age	Current	Proposed	Age	Current	Proposed
15	0.000171	0.000156	50	0.000847	0.001124	85	0.046249	0.039636
16	0.000171	0.000156	51	0.000918	0.001219	86	0.051616	0.043940
17	0.000171	0.000156	52	0.000997	0.001318	87	0.057377	0.048789
18	0.000171	0.000156	53	0.001109	0.001424	88	0.064966	0.054261
19	0.000196	0.000156	54	0.001241	0.001513	89	0.073658	0.060450
20	0.000215	0.000163	55	0.001426	0.001641	90	0.083723	0.068659
21	0.000224	0.000169	56	0.001631	0.001756	91	0.093485	0.077983
22	0.000226	0.000173	57	0.001851	0.001887	92	0.106227	0.088452
23	0.000224	0.000175	58	0.002117	0.002035	93	0.118079	0.100021
24	0.000222	0.000176	59	0.002457	0.002240	94	0.130760	0.112560
25	0.000225	0.000176	60	0.002854	0.002501	95	0.144189	0.125866
26	0.000230	0.000178	61	0.003284	0.002765	96	0.161410	0.139699
27	0.000235	0.000181	62	0.003777	0.003062	97	0.176674	0.153813
28	0.000239	0.000185	63	0.004339	0.003466	98	0.192756	0.164973
29	0.000251	0.000190	64	0.004979	0.003946	99	0.209655	0.178741
30	0.000258	0.000197	65	0.005701	0.004538	100	0.231741	0.188730
31	0.000269	0.000205	66	0.006527	0.005196	101	0.250792	0.201393
32	0.000283	0.000216	67	0.007450	0.005970	102	0.270837	0.209540
33	0.000311	0.000228	68	0.008442	0.006727	103	0.291636	0.220440
34	0.000344	0.000243	69	0.009476	0.007576	104	0.318956	0.226232
35	0.000367	0.000282	70	0.010523	0.008550	105	0.340960	0.237489
36	0.000382	0.000322	71	0.011499	0.009494	106	0.364586	0.246863
37	0.000398	0.000362	72	0.012424	0.010494	107	0.389996	0.258063
38	0.000417	0.000400	73	0.013422	0.011599	108	0.415180	0.270683
39	0.000437	0.000436	74	0.014342	0.013068	109	0.438126	0.284323
40	0.000462	0.000472	75	0.015830	0.014502	110	0.456824	0.298577
41	0.000492	0.000509	76	0.017260	0.016130	111	0.471493	0.313043
42	0.000526	0.000550	77	0.019177	0.017929	112	0.483473	0.327318
43	0.000573	0.000595	78	0.020940	0.019871	113	0.492436	0.340998
44	0.000620	0.000649	79	0.023377	0.021938	114	0.498054	0.353678
45	0.000666	0.000711	80	0.026690	0.024170	115	0.500000	0.364959
46	0.000708	0.000783	81	0.029853	0.026620	116	0.500000	0.374435
47	0.000744	0.000861	82	0.033273	0.029345	117	0.500000	0.381702
48	0.000770	0.000946	83	0.037068	0.032397	118	0.500000	0.386359
49	0.000802	0.001033	84	0.041355	0.035811	119	1.000000	1.000000

Current Assumption: 1994 Group Annuity Mortality Table, 1994 Base Year without margin projected to 2013 using Projection Scale AA, with a 3-year setback

Proposed Assumption: 97% of RP-2000 rates, 2000 Base Year, projected to 2018 with Scale BB, with a 4-year setback

TRS
Post-termination Mortality Rates
Male

Age	Current	Proposed	Age	Current	Proposed	Age	Current	Proposed
15	0.000258	0.000240	50	0.001417	0.001544	85	0.062135	0.057637
16	0.000258	0.000240	51	0.001532	0.001656	86	0.069722	0.064248
17	0.000258	0.000240	52	0.001663	0.001777	87	0.076164	0.072770
18	0.000258	0.000240	53	0.001806	0.001904	88	0.084319	0.082264
19	0.000258	0.000253	54	0.001964	0.002181	89	0.091495	0.092884
20	0.000292	0.000268	55	0.002145	0.002375	90	0.099542	0.104794
21	0.000322	0.000281	56	0.002354	0.002597	91	0.110938	0.118129
22	0.000344	0.000295	57	0.002625	0.002795	92	0.124133	0.132941
23	0.000362	0.000307	58	0.002914	0.003113	93	0.136327	0.149196
24	0.000379	0.000318	59	0.003305	0.003543	94	0.152384	0.165479
25	0.000404	0.000326	60	0.003769	0.003887	95	0.166662	0.182705
26	0.000432	0.000332	61	0.004333	0.004289	96	0.185126	0.200693
27	0.000475	0.000335	62	0.004986	0.004749	97	0.201488	0.219249
28	0.000523	0.000335	63	0.005611	0.005293	98	0.219067	0.233940
29	0.000587	0.000337	64	0.006312	0.005913	99	0.241814	0.252821
30	0.000668	0.000340	65	0.007251	0.006624	100	0.260347	0.267022
31	0.000711	0.000350	66	0.008188	0.007436	101	0.278260	0.285888
32	0.000737	0.000367	67	0.009436	0.008227	102	0.300974	0.299408
33	0.000762	0.000395	68	0.010644	0.009121	103	0.317876	0.318102
34	0.000784	0.000444	69	0.011956	0.010318	104	0.334693	0.331094
35	0.000803	0.000500	70	0.013618	0.011511	105	0.358560	0.349384
36	0.000820	0.000562	71	0.015123	0.012798	106	0.376699	0.360058
37	0.000829	0.000625	72	0.016336	0.014180	107	0.396884	0.368483
38	0.000830	0.000688	73	0.017873	0.015902	108	0.418855	0.374013
39	0.000832	0.000749	74	0.019147	0.017595	109	0.440585	0.376000
40	0.000843	0.000805	75	0.020940	0.019536	110	0.460043	0.376000
41	0.000871	0.000858	76	0.022981	0.021760	111	0.475200	0.376000
42	0.000901	0.000909	77	0.025175	0.024276	112	0.485670	0.376000
43	0.000941	0.000961	78	0.027475	0.027093	113	0.492807	0.376000
44	0.000990	0.001017	79	0.030609	0.030198	114	0.497189	0.376000
45	0.001047	0.001082	80	0.033609	0.033590	115	0.499394	0.376000
46	0.001112	0.001157	81	0.037879	0.037326	116	0.500000	0.376000
47	0.001178	0.001244	82	0.042924	0.041482	117	0.500000	0.376000
48	0.001247	0.001343	83	0.048681	0.046095	118	0.500000	0.376000
49	0.001323	0.001439	84	0.055102	0.051589	119	1.000000	1.000000

Current Assumption: 1994 Group Annuity Mortality Table, 1994 Base Year without margin projected to 2013 using Projection Scale AA, with a 4-year setback

Proposed Assumption: 94% of RP-2000 Mortality Table, 2000 Base Year, projected to 2018 with Scale BB, 3-year setback

TRS
Withdrawal Rates
Members with less than 8 years of service

Service	Female		Male	
	Current	Proposed	Current	Proposed
0	0.170	0.170	0.170	0.204
1	0.170	0.170	0.170	0.204
2	0.140	0.140	0.140	0.168
3	0.120	0.120	0.120	0.144
4	0.100	0.100	0.100	0.120
5	0.090	0.090	0.090	0.108
6	0.075	0.075	0.075	0.090
7	0.060	0.060	0.060	0.072

Members with 8 or more years of service

Age	Female		Male		Age	Female		Male	
	Current	Proposed	Current	Proposed		Current	Proposed	Current	Proposed
15	0.043747	0.037185	0.044584	0.031209	40	0.042658	0.036224	0.043189	0.030159
16	0.043714	0.037157	0.044528	0.031170	41	0.042559	0.036155	0.043065	0.030085
17	0.043692	0.037138	0.044483	0.031138	42	0.042460	0.036086	0.042908	0.030010
18	0.043681	0.037129	0.044438	0.031107	43	0.042372	0.035976	0.042762	0.029866
19	0.043670	0.037120	0.044415	0.031091	44	0.042262	0.035867	0.042570	0.029721
20	0.043351	0.036848	0.044067	0.030847	45	0.042130	0.035757	0.042357	0.029577
21	0.043351	0.036848	0.044044	0.030831	46	0.042009	0.035648	0.042132	0.029432
22	0.043340	0.036839	0.043999	0.030799	47	0.041844	0.035538	0.041850	0.029288
23	0.043340	0.036839	0.043965	0.030776	48	0.041657	0.035380	0.041524	0.029046
24	0.043329	0.036830	0.043909	0.030736	49	0.041470	0.035221	0.041187	0.028805
25	0.043329	0.036830	0.043864	0.030705	50	0.041250	0.035063	0.040804	0.028563
26	0.043318	0.036820	0.043819	0.030673	51	0.040997	0.034847	0.040354	0.028248
27	0.043307	0.036762	0.043774	0.030642	52	0.040700	0.034595	0.039825	0.027878
28	0.043274	0.041480	0.043729	0.030610	53	0.040348	0.034296	0.039240	0.027468
29	0.043241	0.046198	0.043684	0.030579	54	0.039974	0.059961	0.038588	0.046305
30	0.043208	0.050917	0.04365	0.030555	55	0.039523	0.059285	0.037845	0.045414
31	0.043186	0.055635	0.043628	0.030540	56	0.038940	0.058410	0.036945	0.044334
32	0.043142	0.060353	0.043594	0.030516	57	0.038192	0.057288	0.035843	0.043012
33	0.043109	0.055569	0.043572	0.030500	58	0.037345	0.056018	0.034639	0.041567
34	0.043065	0.050784	0.043560	0.030455	59	0.036267	0.054401	0.033188	0.039826
35	0.043021	0.046000	0.043538	0.030431	60	0.035046	0.052569	0.031557	0.037868
36	0.042955	0.041215	0.043504	0.030407	61	0.033682	0.050523	0.029745	0.035694
37	0.042900	0.036431	0.043459	0.030383	62	0.032131	0.048197	0.027642	0.033170
38	0.042823	0.036362	0.043380	0.030308	63	0.030360	0.045540	0.025245	0.030294
39	0.042746	0.036293	0.043290	0.030234	64	0.028435	0.042653	0.022647	0.027176
					65+	0.044000	0.066000	0.045000	0.054000

Current Assumption:

Rates adjusted based on actual experience from 2005 to 2009

Proposed Assumption:

Sex distinct rates in first 8 years grading down from 20% to 6% for males, no change for females. Decreased most male and female rates for members with 8 or more years of service

TRS
Reduced Retirement Rates

Age	Female		Male	
	Current	Proposed	Current	Proposed
>50	N/A	N/A	N/A	N/A
50	0.08	0.08	0.08	0.08
51	0.08	0.08	0.08	0.08
52	0.08	0.08	0.08	0.08
53	0.06	0.08	0.06	0.08
54	0.12	0.16	0.12	0.16
55	0.08	0.08	0.08	0.08
56	0.08	0.08	0.08	0.08
57	0.08	0.08	0.08	0.08
58	0.08	0.08	0.08	0.08
59	0.12	0.16	0.12	0.16
60	N/A	N/A	N/A	N/A
61	N/A	N/A	N/A	N/A
62	N/A	N/A	N/A	N/A
63	N/A	N/A	N/A	N/A
64	N/A	N/A	N/A	N/A
65	N/A	N/A	N/A	N/A
66	N/A	N/A	N/A	N/A
67	N/A	N/A	N/A	N/A
68	N/A	N/A	N/A	N/A
69	N/A	N/A	N/A	N/A
70-84	N/A	N/A	N/A	N/A
85+	N/A	N/A	N/A	N/A

Current Assumption: Rates adjusted based on actual experience from 2005 to 2009

Proposed Assumption: Rates adjusted based on actual experience from 2009 to 2013. Increased rates at ages 54 and 59

TRS
Unreduced Retirement Rates

Age	Female		Male	
	Current	Proposed	Current	Proposed
<45	0.10	0.03	0.10	0.03
46	0.10	0.05	0.10	0.05
47	0.10	0.08	0.10	0.05
48	0.10	0.08	0.10	0.05
49	0.10	0.08	0.10	0.05
50	0.13	0.13	0.13	0.05
51	0.12	0.12	0.12	0.08
52	0.12	0.12	0.12	0.15
53	0.13	0.13	0.13	0.15
54	0.16	0.14	0.16	0.15
55	0.20	0.16	0.18	0.20
56	0.15	0.16	0.17	0.17
57	0.18	0.16	0.13	0.15
58	0.18	0.16	0.18	0.20
59	0.18	0.22	0.15	0.20
60	0.20	0.22	0.18	0.25
61	0.20	0.22	0.18	0.18
62	0.25	0.20	0.11	0.18
63	0.25	0.20	0.20	0.18
64	0.20	0.25	0.25	0.18
65	0.20	0.20	0.30	0.30
66	0.20	0.20	0.25	0.25
67	0.20	0.20	0.25	0.25
68	0.20	0.25	0.25	0.25
69	0.20	0.25	0.25	0.35
70	0.50	0.25	0.50	0.30
71	0.50	0.35	0.50	0.30
72	0.50	0.35	0.50	0.30
73	0.50	0.35	0.50	0.30
74	0.50	0.35	0.50	0.30
75-84	0.50	0.50	0.50	0.50
85+	1.00	1.00	1.00	1.00

Current Assumption: Based on actual experience from 2005 to 2009.

Proposed Assumption: Rates adjusted based on actual experience from 2009 to 2013

TRS
Disability Rates

Age	Female		Male		Age	Female		Male	
	Current	Proposed	Current	Proposed		Current	Proposed	Current	Proposed
20	0.000202	0.000560	0.000224	0.000560	40	0.000331	0.000703	0.000368	0.000703
21	0.000202	0.000563	0.000224	0.000563	41	0.000346	0.000718	0.000384	0.000718
22	0.000209	0.000565	0.000232	0.000565	42	0.000367	0.000733	0.000408	0.000733
23	0.000209	0.000574	0.000232	0.000574	43	0.000389	0.000770	0.000432	0.000770
24	0.000216	0.000583	0.000240	0.000583	44	0.000425	0.000806	0.000472	0.000806
25	0.000216	0.000593	0.000240	0.000593	45	0.000468	0.000843	0.000520	0.000843
26	0.000216	0.000602	0.000240	0.000602	46	0.000504	0.000879	0.000560	0.000879
27	0.000223	0.000611	0.000248	0.000611	47	0.000547	0.000916	0.000608	0.000916
28	0.000230	0.000611	0.000256	0.000611	48	0.000598	0.000975	0.000664	0.000975
29	0.000238	0.000612	0.000264	0.000612	49	0.000641	0.001034	0.000712	0.001034
30	0.000245	0.000612	0.000272	0.000612	50	0.000691	0.001093	0.000768	0.001093
31	0.000245	0.000613	0.000272	0.000613	51	0.000749	0.001152	0.000832	0.001152
32	0.000252	0.000613	0.000280	0.000613	52	0.000821	0.001211	0.000912	0.001211
33	0.000259	0.000622	0.000288	0.000622	53	0.000914	0.001356	0.001016	0.001356
34	0.000266	0.000631	0.000296	0.000631	54	0.001022	0.001501	0.001136	0.001501
35	0.000274	0.000641	0.000304	0.000641					
36	0.000288	0.000650	0.000320	0.000650					
37	0.000295	0.000659	0.000328	0.000659					
38	0.00031	0.000674	0.000344	0.000674					
39	0.000317	0.000689	0.000352	0.000689					

Current Assumption: Based on actual experience from 2005 to 2009.

Proposed Assumption: Based on actual experience from 2009 to 2013. Changed to unisex rates and increased most rates.

**TRS
Salary Scale**

Years of service	Percent increase	
	Current	Proposed
0	6.11%	8.11%
1	6.11%	7.51%
2	6.11%	6.91%
3	6.11%	6.41%
4	6.11%	6.11%
5	6.11%	6.11%
6	5.94%	5.90%
7	5.78%	5.69%
8	5.61%	5.55%
9	5.44%	5.40%
10	5.28%	5.26%
11	5.11%	5.11%
12	4.94%	4.96%
13	4.78%	4.84%
14	4.61%	4.72%
15	4.45%	4.60%
16	4.28%	4.49%
17	4.11%	4.37%
18	3.95%	4.27%
19	3.78%	4.17%
20	3.62%	4.07%
21	3.62%	3.97%
22+	3.62%	3.87%

Current Assumption: Based on actual experience from 2005 to 2009.

Proposed Assumption: Service based rates grading down from 8.1% to 3.9%