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Section 1

Introduction and Summary

Role of Assumptions in Funding the Retirement Plans

THE ULTIMATE COST OF ANY PENSION PLAN CAN BE REPRESENTED BY THE FORMULA B + E - I, where:

B = the actual benefits paid to participants with respect to retirement, termination from service, death, disability, and health insurance,

E = the costs of administration and advisory services, and

I = the investment returns generated by the fund's assets.

While none of these factors will be known exactly until the last benefit is paid, they can be estimated and measured in an actuarial valuation. One of the primary functions of an actuarial valuation is to determine an annual contribution amount that is expected to adequately provide for future benefit payouts and that is expected to remain relatively stable as a percent of salaries from year to year. To determine the annual contribution amount, assumptions must first be made that estimate the amount and incidence of future benefit payouts and the economic value of those payouts as of the valuation date.

There are two general categories of assumptions, demographic and economic. Demographic assumptions relate to the Systems' populations and how they are expected to change over time. Examples of demographic assumptions include rates of retirement, disability, termination and death.

Economic assumptions refer to the expected long-term financial experience of the Systems, and include:

- total inflation (as measured by the CPI)
- investment return on the Systems' assets
- salary increases
- retiree health premium inflation

The assumptions chosen for the actuarial valuation are central to funding the plan in an orderly way and with assurance that the funds accumulated through annual contributions and investment returns will provide participants with promised benefit payouts. Since economic and demographic factors change over time, periodic studies of the assumptions and their relation to past and expected future experience are undertaken to determine whether they continue to be valid or if changes should be made. These studies are usually done every four or five years.

The current assumptions have been used since their approval by the Public Employees' Retirement System Board in 1994, 1996 and 1998.

Summary of Recommended Changes

The following chart summarizes the recommended changes in actuarial assumptions for the June 30, 2000 valuation of the System and their estimated effect on the financial status (as measured by changes in the funding ratio and calculated contribution rate) of the System.

	Current Assumption	Proposed Assumption	Change in: Calc. Funding Ratio	Change in: Contrib. Rate
Total Inflation	4%	3.5%	2.8%	(1.62%)
Annual Investment Return	8.25%	8.25%	No change	No change
Recognition of Asset Outside 5% Corridor	Recognized	Adopt Enhancement	No change	(2.67%)
Annual Salary Increase -		Police/ Fire / Others	0.3%	(0.63%)
Inflation	4.0%	3.5% / 3.5%		
Productivity	0.5%	1.0% / 0.5%		
Merit	1.0% (first 5 years)	1.5% / 1.5% (5 years) (10 years)		
Health Premium Trend -	FY00 - 8.5% FY01 - 7.5% FY02 - 6.5% FY03 - 5.5% FY04-FY08 - 5.0% FY09 & later - 4.5% Blended monthly premium for FY00 is $481.10.	FY00 - 8.5% FY01 - 7.5% FY02 - 6.5% FY03 - 5.5% FY04-FY08 - 5.0% FY09-FY13 - 4.5% FY14 & later - 4.0% Blended monthly premium for FY00 is $486.00.	0.1%	(0.28%)
Total Turnover Rates	See Table 4 on page 39.	See Table 1 on page 32. Patterns vary by age and service, but proposed rates are generally lower for Police/Fire and higher for Others.	0.1%	(0.31%)
Disability Rates	See Table 5 on page 40.	No change	No change	No change
Retirement Rates	See Table 6 on page 41.	See Table 3 on page 34. Proposed rates are mostly lower.	1.1%	(2.44%)
Assumed Retirement Date if Under Age 50	After 22 years of service.	After 21 years of service.	No change	0.09%
Mortality Rates	1984 Unisex Pension Mortality Table set forward one year for males and set backward four years for females.	1994 Group Annuity Mortality Basic Table for males and females. 1994 Base Year.	(10.2%)	8.51%
Cost-of-Living Adjustment	71% of retirees receive COLA.	68% of retirees receive COLA.	0.1%	(0.23%)
Total Change due to Proposed Assumptions			(5.7%)	0.42%

This analysis is based on employee census information provided annually by the State of Alaska to perform the actuarial valuation of the System. Generally acceptable actuarial methods and techniques were used to analyze the data, derive the proposed assumptions and evaluate the financial effect on the system. The undersigned are available to answer any questions with respect to this report.

October 23, 2000
Date

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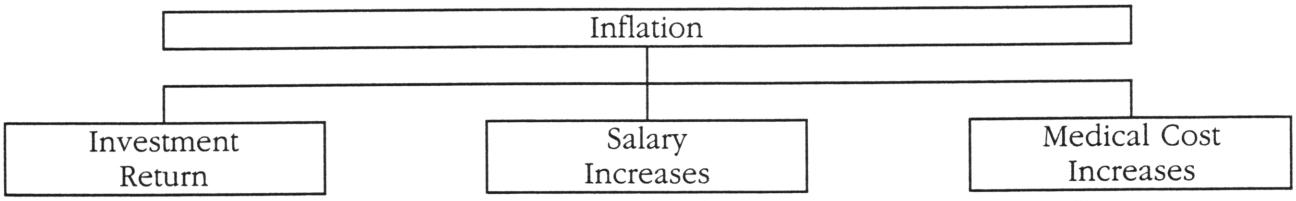
Section 2

Analysis of Economic Assumptions

THE ECONOMIC ASSUMPTIONS ARE:

- Total Inflation (as measured by the CPI)
- Annual Investment Return
- Annual Salary Increase
- Inflation in post-retirement medical rates

Total Inflation



As depicted in the diagram above, the assumed rate of future inflation is a component of each economic assumption. The inflation assumption adopted for the System is therefore crucial to proper funding.

While each of the economic assumptions has an inflation component, changes in the assumptions as a result of a change in assumed inflation will affect plan liabilities in different ways. Changes in the assumed rate of investment return will affect System liabilities in the opposite direction. In other words, decreasing the investment return rate will increase System liabilities and contribution requirements, since System assets would be expected to grow at a slower rate. In contrast to this, changes in each of the other economic assumptions will affect liabilities in the same direction. For example, decreases in the salary increase assumption and the medical cost assumption will lower System liabilities and contribution requirements. This would have the effect of offsetting the increases resulting from a lower investment return rate.

The following table indicates the direction in which liabilities would move for given changes in the assumed inflation rate.

Effect on Plan Liabilities		
	Inflation	
	↑	↓
Investment Return	↓	↑
Salary Increases	↑	↓
Medical Cost Increases	↑	↓

The inflation assumption currently being used is 4% per year and was adopted by the Board in 1994. Inflation is typically measured by the Consumer Price Index (CPI) for urban wage earners and clerical workers. This statistic is published by the U.S. Department of Labor, Bureau of Labor Statistics.

The Consumer Price Index is a measure of the average change in prices over time of a defined basket of goods and services. It is based on prices of food, clothing, shelter, fuels, transportation, medical fees and other day-to-day living expenses. The index is created by calculating price changes for the various items. A weighted average of these price changes is then used to create the index. The index is calculated for selected individual cities and then averaged to create the national index.

The following schedule summarizes annualized national CPI data since 1939.

	National*	Anchorage*
1939-99 (60 years)	4.2%	
1969-99 (30 years)	5.2%	4.5%
1979-99 (20 years)	4.2%	3.3%
1989-99 (10 years)	3.0%	2.9%
1994-99 (5 years)	2.4%	1.9%

These data confirm that inflation, as measured by the CPI, has been trending lower since the latter half of the 1970s and the early 1980s. Average long-term inflation is 4.2%.

There may be some justification for adopting two inflation assumptions for the Systems, one for Anchorage (as a proxy for the State) and the other for the country as a whole. The rationale behind this approach is that the inflation component of investment return should reflect inflationary expectations for the U.S. in general, whereas the inflation component of the salary scale and the PRPA should reflect inflation expectations for Alaska. Recent history shows some differences between the inflation rates of Anchorage and the U.S. We do not view this divergence as significant, therefore, we recommend that one inflation assumption be adopted.

* Source: U.S. Department of Labor, Bureau of Labor Statistics (BLS).

As with the other elements of the actuarial basis, historical inflation statistics can only be used as a guide in determining appropriate assumptions which reflect reasonable expectations of future inflation levels. While trying to predict the future is risky at best, Mercer's Investment Consulting is anticipating inflation for the next ten years or more to be significantly less than the long-term rate of 4.2%. We recommend the CPI assumption be reduced to 3.50%.

Inflation rates will vary from time to time as the U.S. moves through the natural expanding and contacting economic cycles but, in deciding on a stable long-term rate, we recommend a 3.50% inflation assumption be adopted for the Systems. This is consistent with the average inflation rate during the past 20 years and with the outlook for the future.

Annual Investment Return

The investment return assumption is one of the most important elements of the actuarial basis in that it covers the entire lifetime of System participants, making the results of the valuation extremely sensitive to this assumption. The investment return assumption represents the average long-term rate of return expected to be realized on the investment portfolio of the System over the System's future lifetime. Current System liabilities and recommended contribution rates are determined by discounting all future benefits payable to current and future retirees and their beneficiaries at this rate of interest. It is important not to overestimate the expected future investment returns, otherwise actuarial losses could occur resulting in unanticipated contribution rate increases. However, it should be remembered that short-term expectations of interest rate levels should have little influence on the determination of a valuation assumption which should rather represent best estimates of the long-term average return which can be anticipated for the System assets.

The annual investment return is comprised of three major components:

- The increase in overall productivity
- The risk premium associated with each investment class
- Inflation

The first two of these represent the "real" rate of return. Since 1996, the real rate of return implicit in the investment rate has been 4.25% for PERS. The real rate of return expected on investments is a function of the time period over which results are measured and the types of investments chosen.

The following table presents rates of return for the past five years for the System:

Measurement Period	National CPI	Approximate Return on Market Value of Assets
FY99	2.2%	10.3%
FY98	1.6%	12.8%
FY97	2.3%	17.9%
FY96	3.0%	13.6%
FY95	2.8%	15.3%

A relatively long time frame should be measured when choosing a retirement system investment return expectation given that system liabilities can span 50-plus years. Therefore, the real investment return assumption for actuarial valuations may differ from the real return expectations often measured over shorter durations.

Generally, the more risk accepted in the asset classes chosen for investment, the higher expected real rate of return. Given the above discussion of time frame, the actuarial assumption for real return should be based on historic observations of real returns in the capital markets as well as expectations about the future.

In developing the basic assumptions used for this study, we have used long-term returns for various asset classes along with projections based on the current economic environment. A large portion of the data represents information for periods beginning in 1926.

The Investment Policy of the System will determine the long-term asset allocation. The current investment policy is summarized as follows:

Current PERS Investment Policy	
Asset Category	**Policy Allocation**
Domestic Large Cap	29%
Domestic Small Cap	12%
International	17%
Domestic Fixed	30%
International Fixed	5%
Real Estate	7%

Based on current Investment Policy for the System, a simple mathematical average can be applied to determine the long-term real rate of return expectation.

	Long-Term Real Return Expectation*	Current Investment Policy	Product
Domestic Large Cap Equities	6.61%	29%	1.92%
Domestic Small Cap Equities	7.39%	12%	.89%
International Equities	6.81%	17%	1.16%
Domestic Fixed Income	3.00%	30%	.90%
International Fixed Income	3.51%	5%	.18%
Real Estate	4.83%	7%	.34%
			5.39%

* Produced by Mercer Investment Consulting, Inc.

Considering that the actual year-by-year returns achieved by PERS will be volatile, reflecting the risk associated with each asset class, it is often prudent to set the real return assumption below the full expectation. We believe a real return assumption between 4.50% and 5.00% would be appropriate, and when added to the long-term inflation assumption of 3.5% yields a nominal return of 8.00% to 8.50%. We are recommending that the Board continue to assume 8.25% for the interest rate.

Recognition of Assets Outside 5% Corridor

Effective June 30, 1998, the PERS Board adopted an asset valuation method that basically spreads excessive asset gains and losses over 20 years.

Under this method, future valuation assets increase at the ***assumed*** investment return – 8.25% currently. The valuation asset is adjusted if its value falls outside a 20% corridor around market assets. This valuation asset is then compared to a 5% corridor around the market assets (as of June 30, 1999, the valuation assets are below this corridor by $683,750,000). The amount outside the corridor is amortized and applied to the calculated employer contribution rate as a level percentage of future pay over 20 years under the 1% population projection scenario. This method does not recognize any asset gain or loss for the fiscal year if the actuarial assets plus the net outstanding balance of previously amortized amounts fall within the 5% corridor of market assets.

We are proposing that the PERS Board retain this asset valuation method with one refinement. Since the amount outside the 5% corridor is in current dollars, it would be appropriate to discount future pay when amortizing over 20 years. By doing this, the adjustment to the employee contribution rate over 20 years matches the amount outside the corridor, considering the time value of money. This refinement has no effect on the funding ratio and produces an additional 2.67% employer contribution rate credit.

Annual Salary Increase

As System benefits are based on participants' salaries, an assumption needs to be made of future salary increases while an employee is a participant of the System. Anticipated

salary increases should not be underestimated as this could generate unanticipated additional liabilities which would result in increasing contribution levels.

The salary scale can be separated into three major components:

- Merit
- Productivity
- Inflation

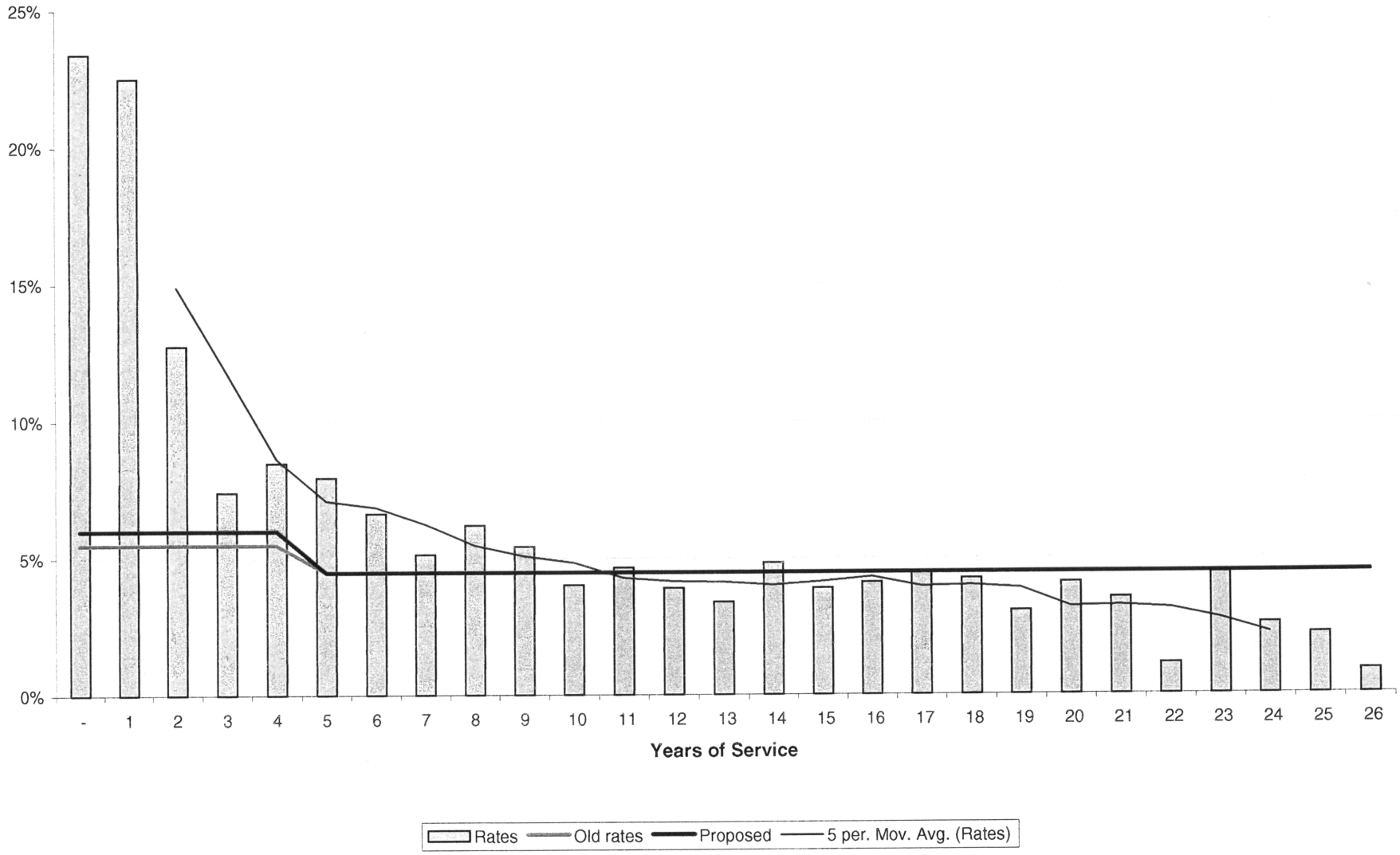
The merit and productivity increase components represent that portion of future salary increases relating to an employee's increasing responsibility and efficiency but, in terms of impact on funding the System, the inflation component is far more important. The System currently assumes a 4% inflation component, a ½% productivity component, and a 1% merit component during the first five years of service.

Over the past several years, there have been consistent gains to the System from actual salary increases less than expected from the assumption. Recent salary increases within the System appear to be following this pattern because recent inflation (as measured by the CPI) at both the national and state level had been relatively low.

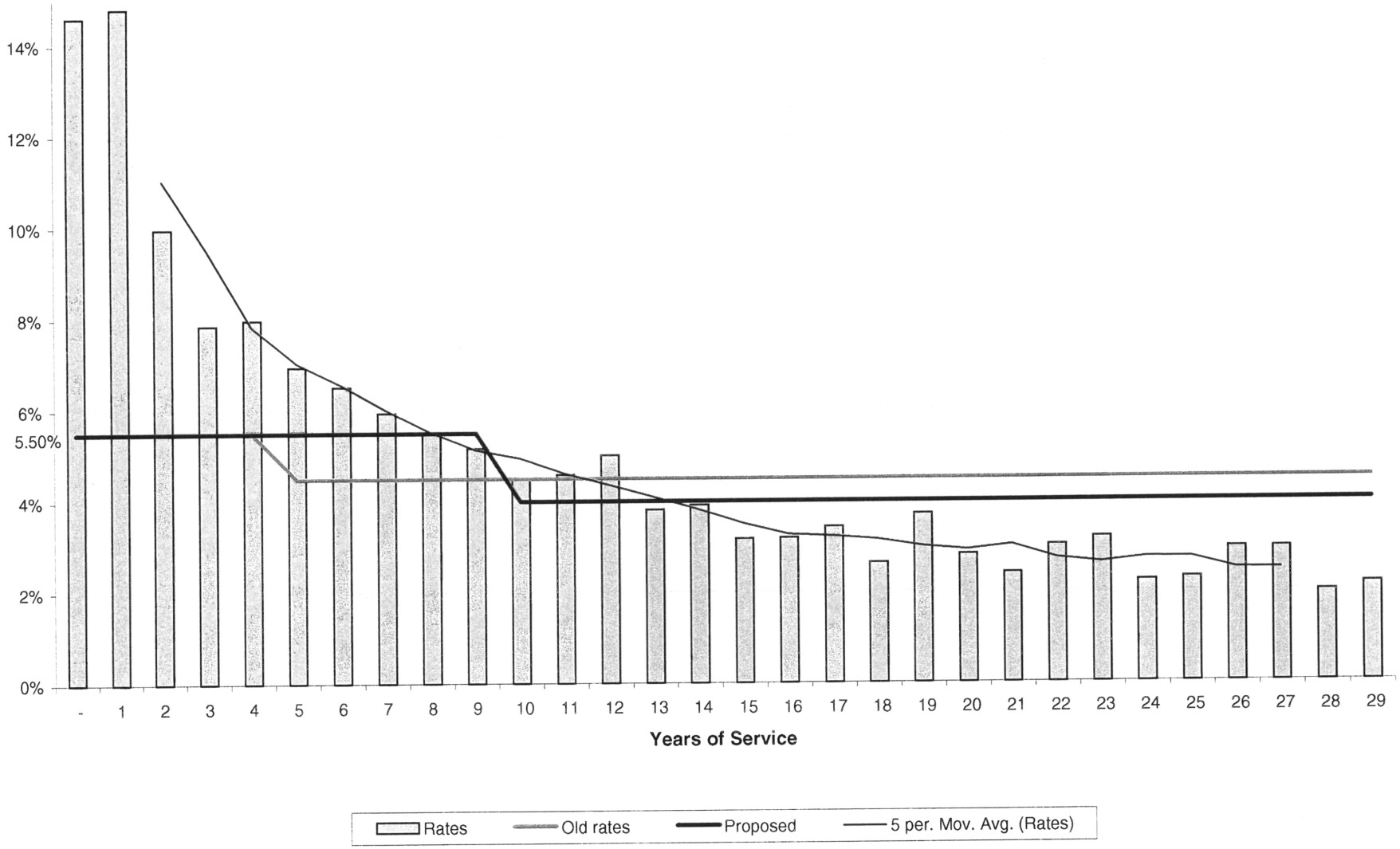
Analysis comparing recent year-over-year salary increases due to productivity have indicated very small increases for this component though the component appears to be higher for police/fire members. Similar analysis on salary increases due to merit continue to indicate accelerated increases during the first five years of service. It appears there is even a longer period of accelerated earnings increases for Others members – 10 years or so. The following chart presents our proposed changes in salary scale.

	Police/Fire	**Others**
Inflation	3.5%	3.5%
Productivity	1.0%	0.5%
Merit	1.5% (first 5 years)	1.5% (first 10 years)

Salary Increase by Service
Police/Fire



Salary Increase by Service
Others



Health Premium Trend

A unique feature of the PERS is the fact that it provides major medical insurance coverage to certain participants receiving benefits from the System and to their spouses and dependent children. Assumptions, therefore, need to be made for the rate of increase of future medical premiums. In recent years, the System has experienced no actuarial gains or losses due to health premium trends because assumed rather than actual premiums have been valued in order to reduce volatility in the calculated employer contribution rate. The actual premiums paid have been higher and lower than that assumed over recent years, but the current assumption, on average, has tracked actual experience quite well.

It is well known that, during the 1980s and 1990s, medical inflation significantly exceeded the general CPI, due in part to improving medical technology and increased utilization of services. The increase in the State's health care premiums has averaged 8.9% over the last 20 years, 8.1% over the last 10 years and 8.6% over the last five years. This is recognized in the funding of the System as the assumed increase in retiree medical premiums is significantly greater than the current assumed inflation rate of 4%. However, it is not reasonable to assume that medical inflation can exceed general price inflation by a significant margin indefinitely and the PERS assumptions recognize this by trending the excess down over time.

Currently, the health cost trend assumption, which comprises inflation and other factors such as utilization, a graded scale of rates, starting at 8.5% for FY00 and trending downward to 4.5% by FY09.

This assumption was adopted in 1999.

This current pattern of assumptions is based on the following reasoning:

- Current trend rates should be related to past experience and representative of trend rates currently being experienced in the market.

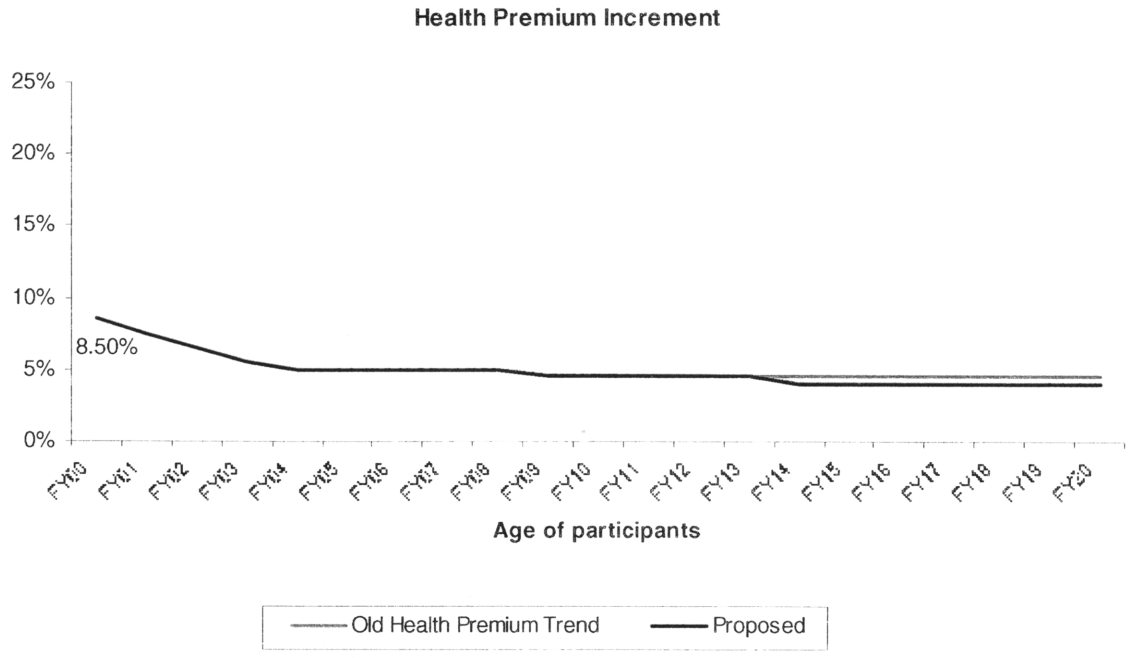
- As we project further into the future, we have less certainty about the outcome. Thus, the long-term rate should be more conservative than current rates.

- In general, trend rates are expected to decline over time as society's tolerance for expanding health care costs diminishes, as employers take more aggressive steps to control health care costs and as health care expenditures consume a larger and larger percentage of GNP.

Whether the assumption is reasonable in the longer term will depend to a large extent on how health reform emerges in Alaska or the nation. As the population ages, we expect that the health cost trend will continue to increase faster than general price inflation due to increased utilization of services. We recommend adjusting the assumed blended monthly premium to the actual FY00 premium of $486.00. In addition, we recommend the following assumptions for Health Premium Trend:

FY00	8.5%
FY01	7.5%
FY02	6.5%
FY03	5.5%
FY04-FY08	5.0%
FY09 – FY13	4.5%
FY14 and later	4.0%

This assumption recognized the recent historical System increases as well as our expectation that medical costs must eventually reduce to increases near the CPI. The comparison of the current and proposed health inflation assumption is shown below.



Section 3

Analysis of Demographic Assumptions

THE DEMOGRAPHIC ASSUMPTIONS ARE:

- Total Turnover Rates
- Disability Rates
- Retirement Rates
- Service at Unreduced Retirement if Under Age 50
- Mortality Rates
- COLA

Total Turnover Rates

Using data collected for the annual actuarial valuations for the years 1997 through 1999, we have determined the rates of total turnover by age and service for the two-year period. Total turnover includes retirement, termination, disability and mortality rates.

The most recent two-year period was chosen for two primary reasons:

1. recent experience is the most credible, and

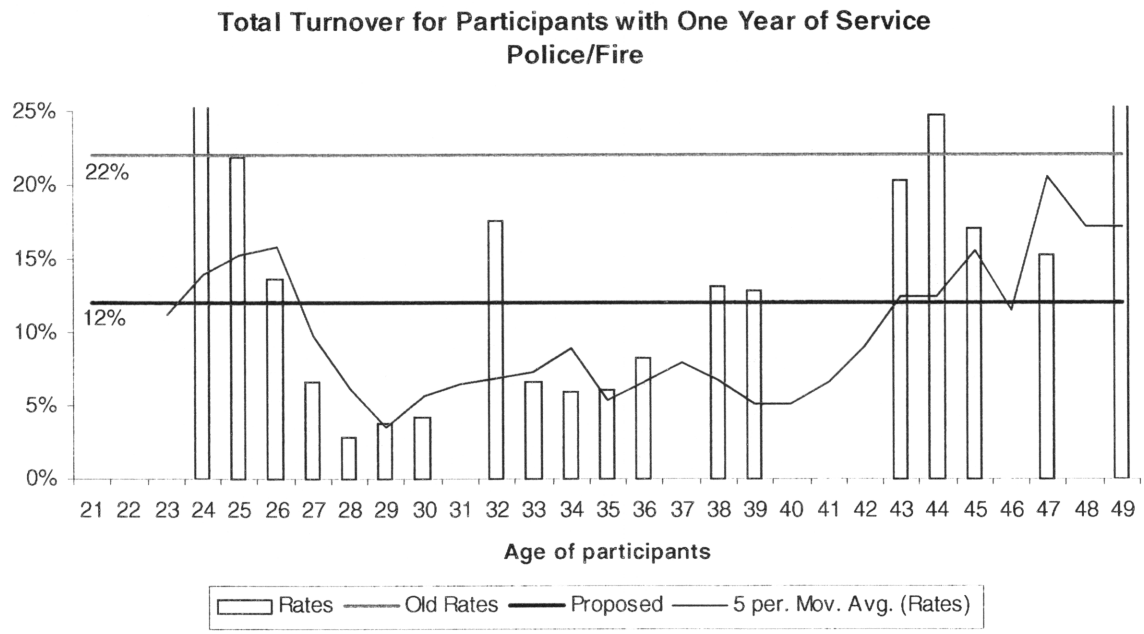
2. total turnover patterns in recent years have seen significant reduction.

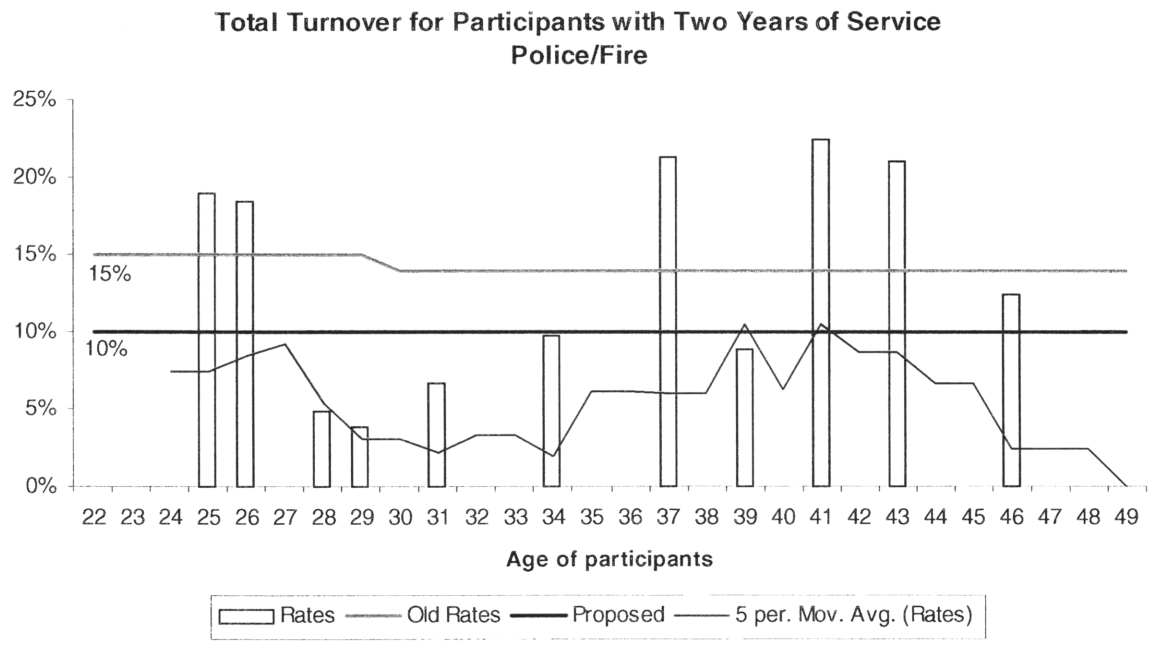
We continue to see a pattern of turnover during the first several years of service which is independent of attained age. In the past, this "select" turnover pattern has spanned the first five years of service. We continue seeing the "select" trend to about five years. The graphs below present this information.

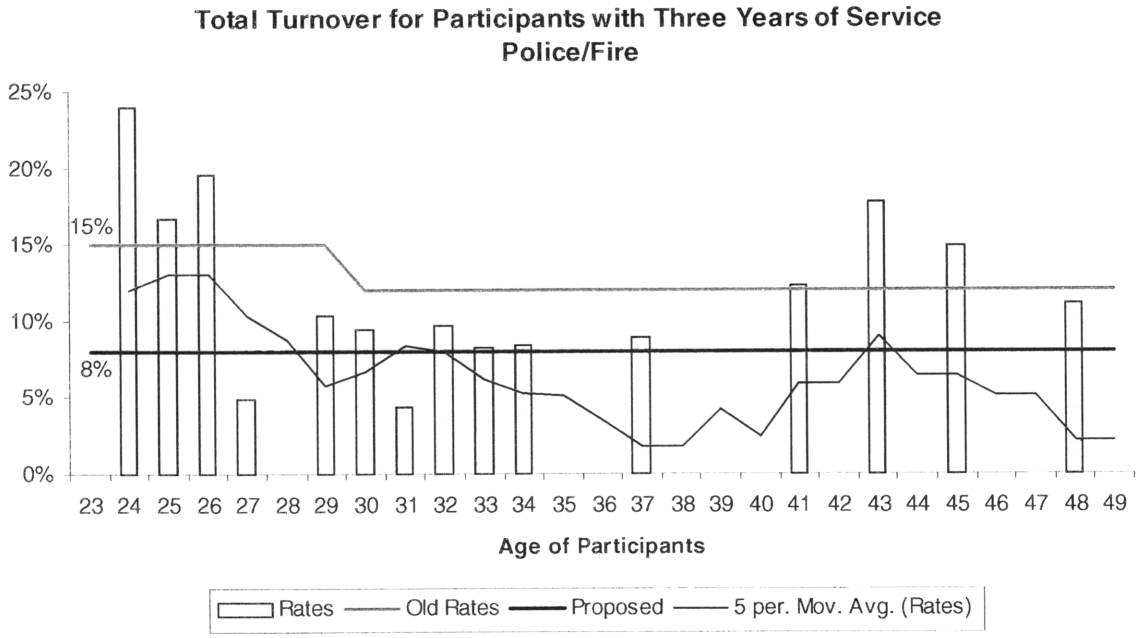
"Ultimate" turnover rates, those for employees with five or more years of service, are in general lower than rates during the select period. These rates vary by age, and are shown separately as ultimate turnover rates after five years.

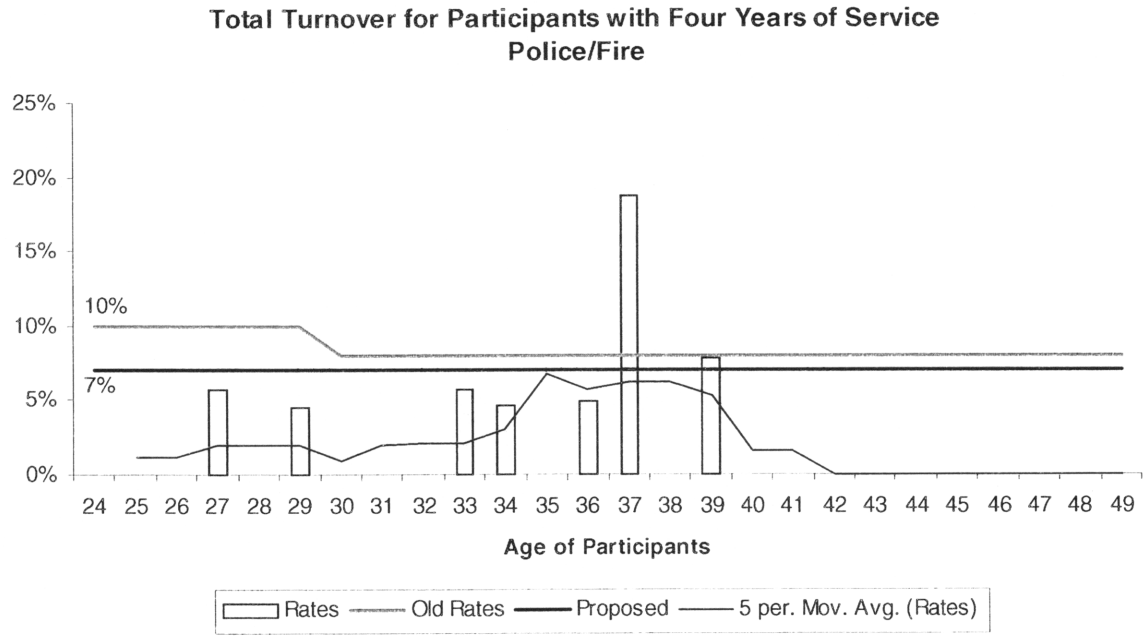
The observed rates of turnover for PERS Police/Fire members are lower during both the five-year select period and the ultimate period than the current assumption. Observed rates of turnover for Others members are mostly higher, particularly during the five-year select period. We have adjusted the assumption to reflect these changes in turnover pattern.

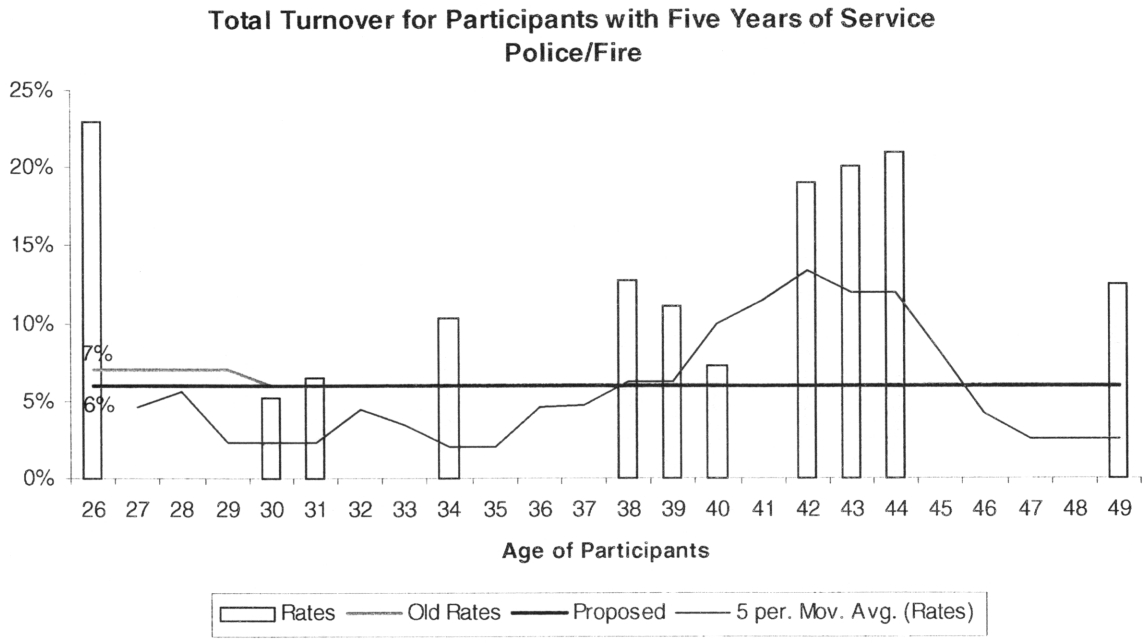
The proposed total turnover assumption is presented in Section 4, Table 1 on page 32. This change in turnover rates will slightly decrease system liabilities and contribution rates.

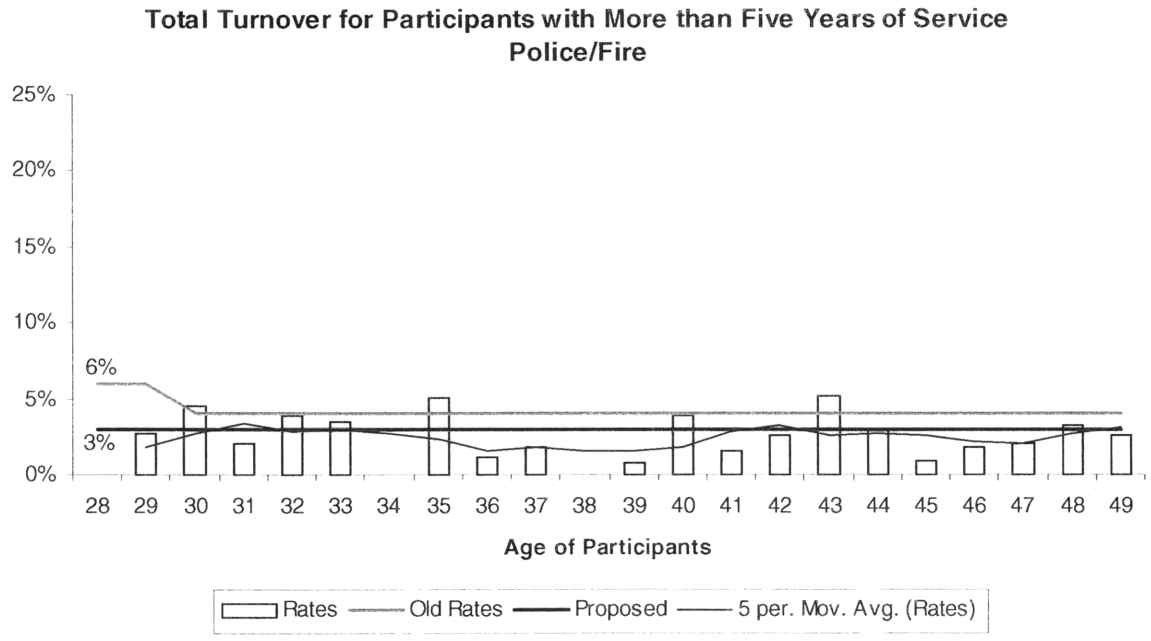

Total Turnover for Participants with One Year of Service
Police/Fire
25%
20%
15%
10%
5%
0%
22%
12%
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
Age of participants
Rates
Old Rates
Proposed
5 per. Mov. Avg. (Rates)

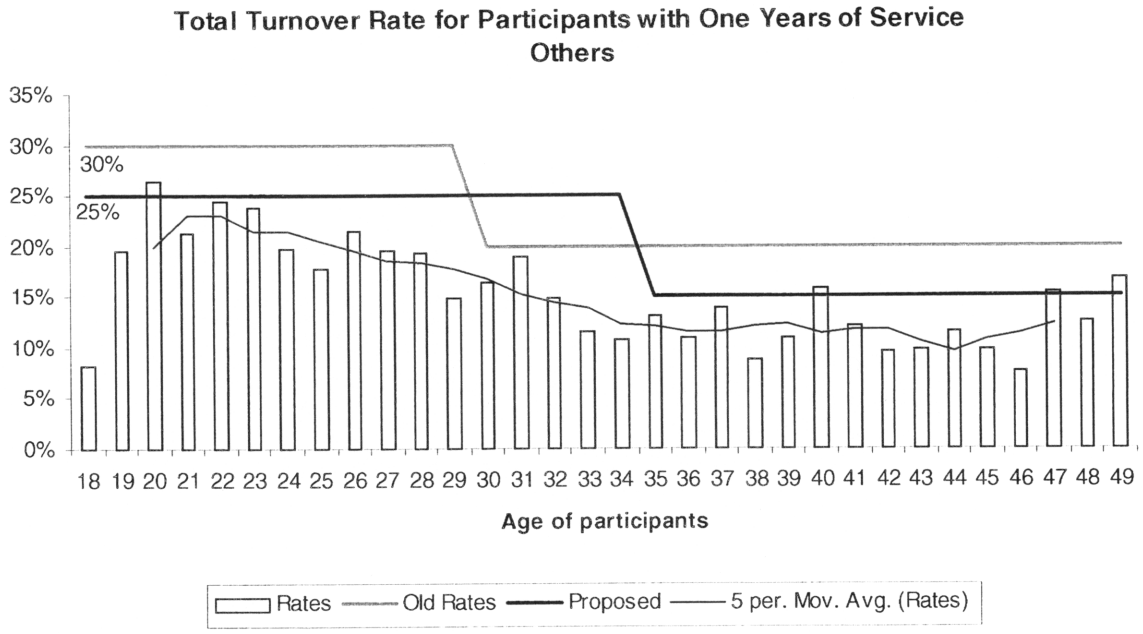

Total Turnover for Participants with Two Years of Service
Police/Fire
25%
20%
15%
10%
5%
0%
15%
10%
22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
Age of participants
Rates
Old Rates
Proposed
5 per. Mov. Avg. (Rates)

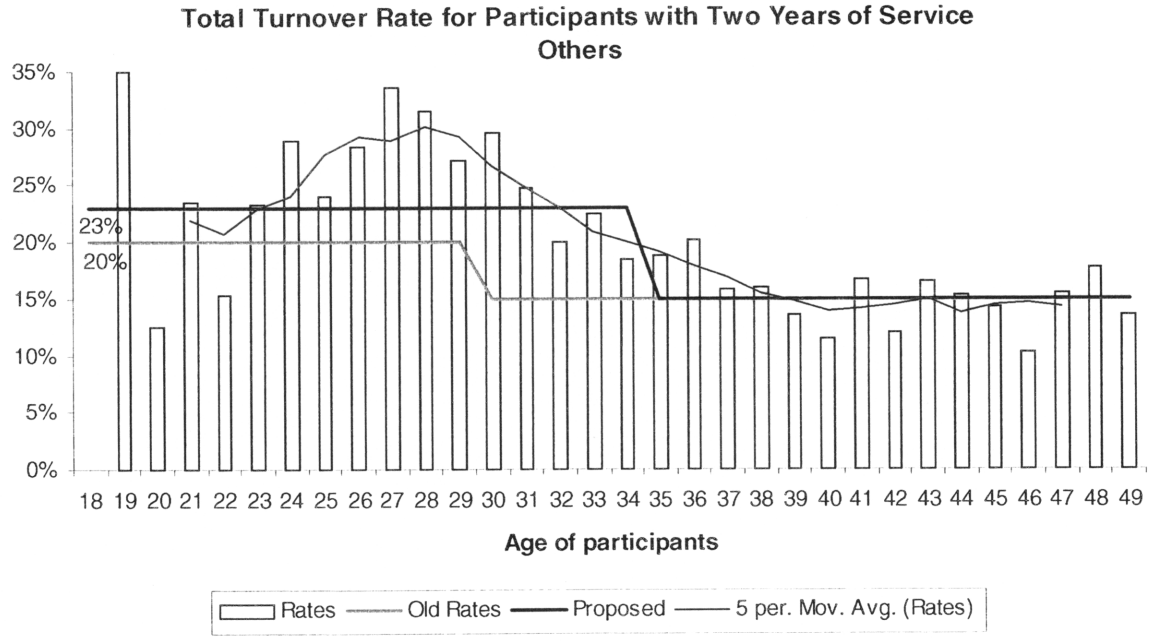

Total Turnover for Participants with Three Years of Service
Police/Fire
25%
20%
15%
10%
5%
0%
15%
8%
23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
Age of Participants
Rates
Old Rates
Proposed
5 per. Mov. Avg. (Rates)


Total Turnover for Participants with Four Years of Service
Police/Fire
25%
20%
15%
10%
5%
0%
10%
7%
24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
Age of Participants
Rates
Old Rates
Proposed
5 per. Mov. Avg. (Rates)


Total Turnover for Participants with Five Years of Service
Police/Fire
25%
20%
15%
10%
5%
0%
7%
6%
26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
Age of Participants
Rates
Old Rates
Proposed
5 per. Mov. Avg. (Rates)


Total Turnover for Participants with More than Five Years of Service
Police/Fire
25%
20%
15%
10%
5%
0%
6%
3%
28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
Age of Participants
Rates
Old Rates
Proposed
5 per. Mov. Avg. (Rates)


Total Turnover Rate for Participants with One Years of Service
Others
35%
30%
25%
20%
15%
10%
5%
0%
30%
25%
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
Age of participants
Rates
Old Rates
Proposed
5 per. Mov. Avg. (Rates)


Total Turnover Rate for Participants with Two Years of Service
Others
35%
30%
25%
20%
15%
10%
5%
0%
23%
20%
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
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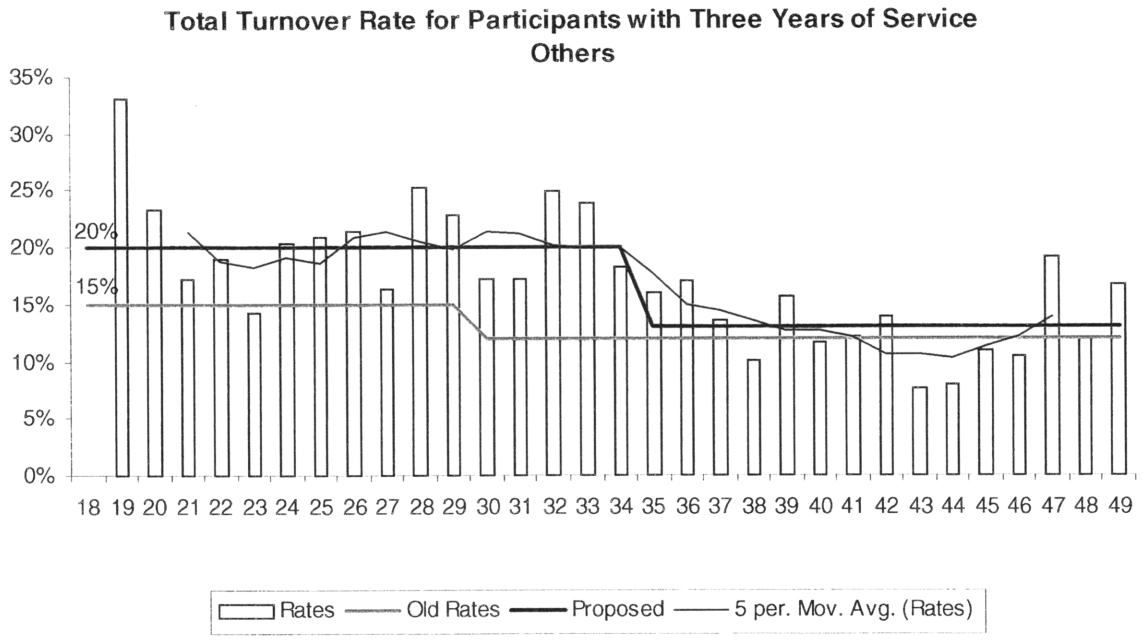
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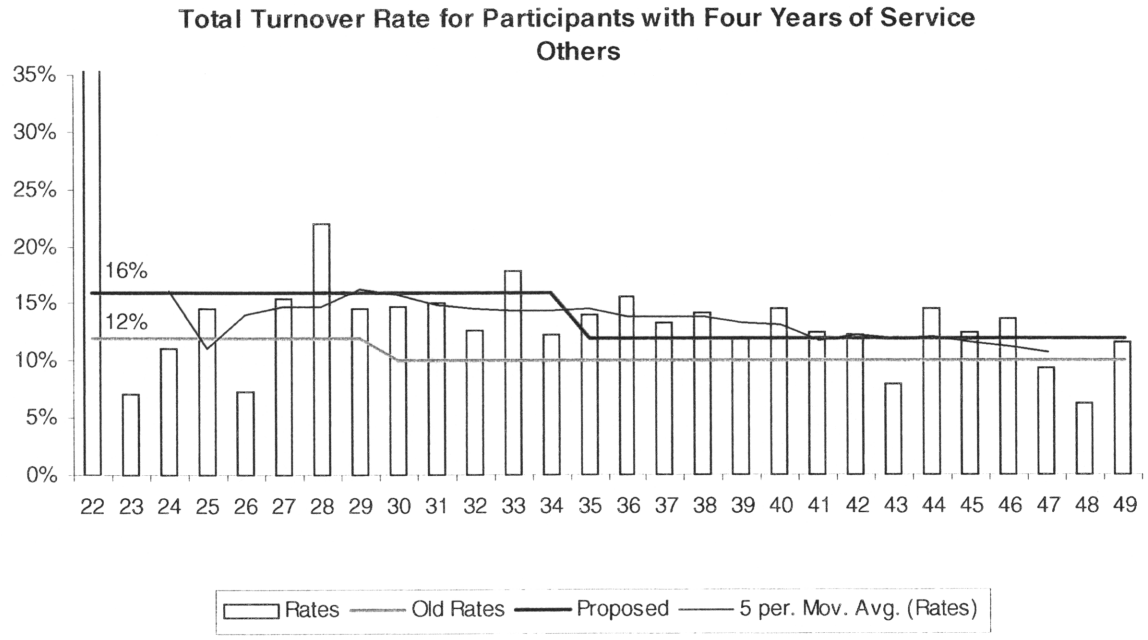
Total Turnover Rate for Participants with Four Years of Service
Others
35%
30%
25%
20%
15%
10%
5%
0%
16%
12%
22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
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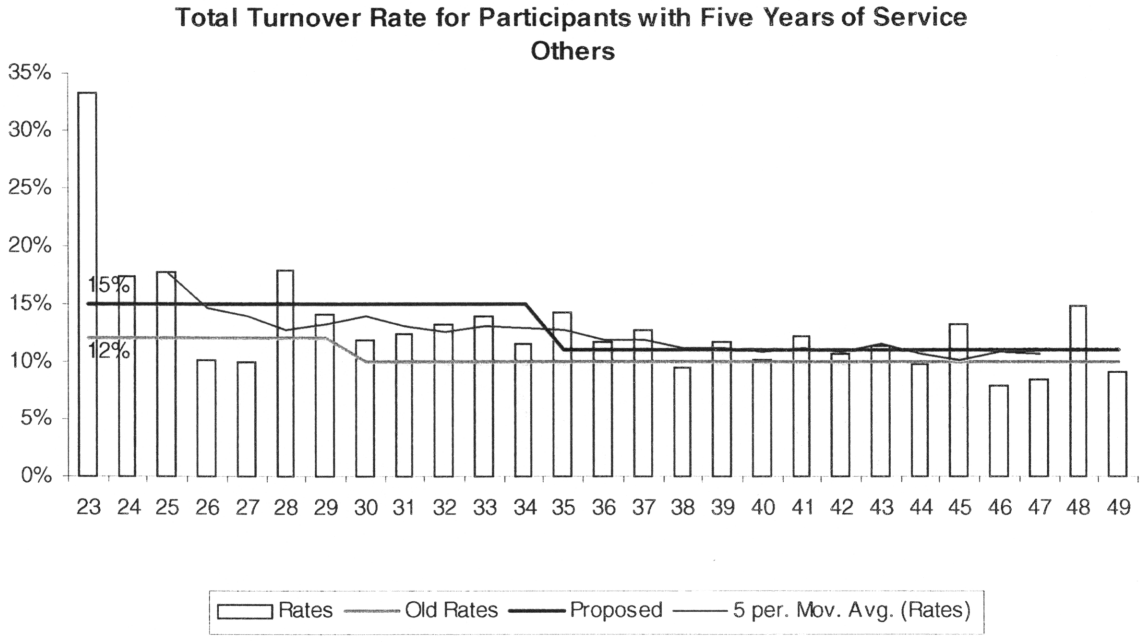
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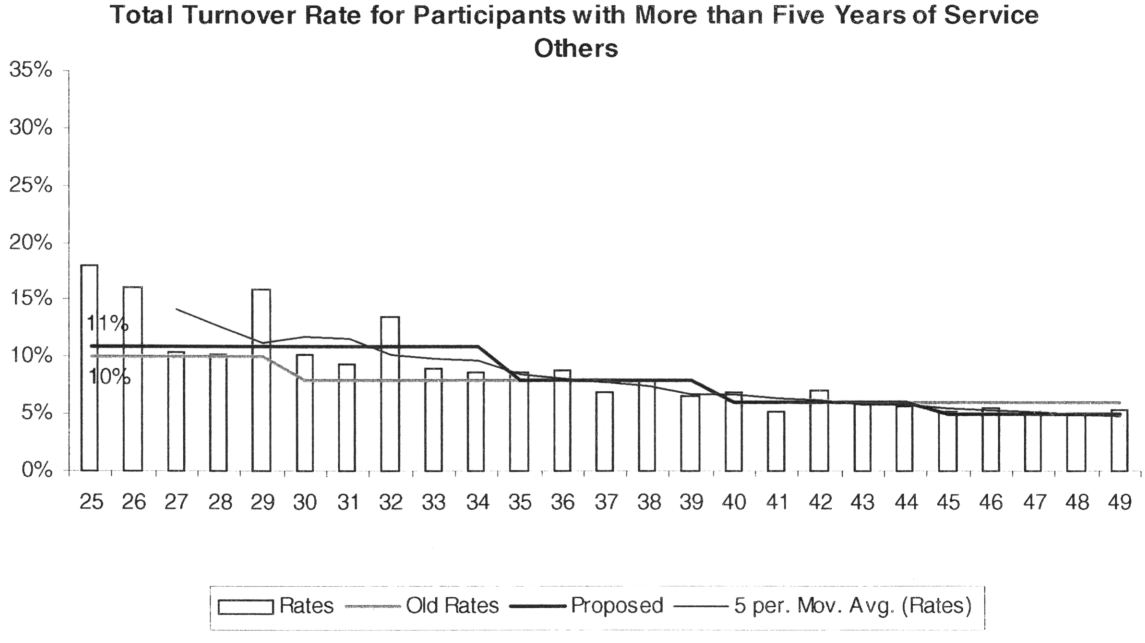
23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
Rates
Old Rates
Proposed
5 per. Mov. Avg. (Rates)


Total Turnover Rate for Participants with More than Five Years of Service
Others
35%
30%
25%
20%
15%
10%
5%
0%
11%
10%
25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
Rates
Old Rates
Proposed
5 per. Mov. Avg. (Rates)

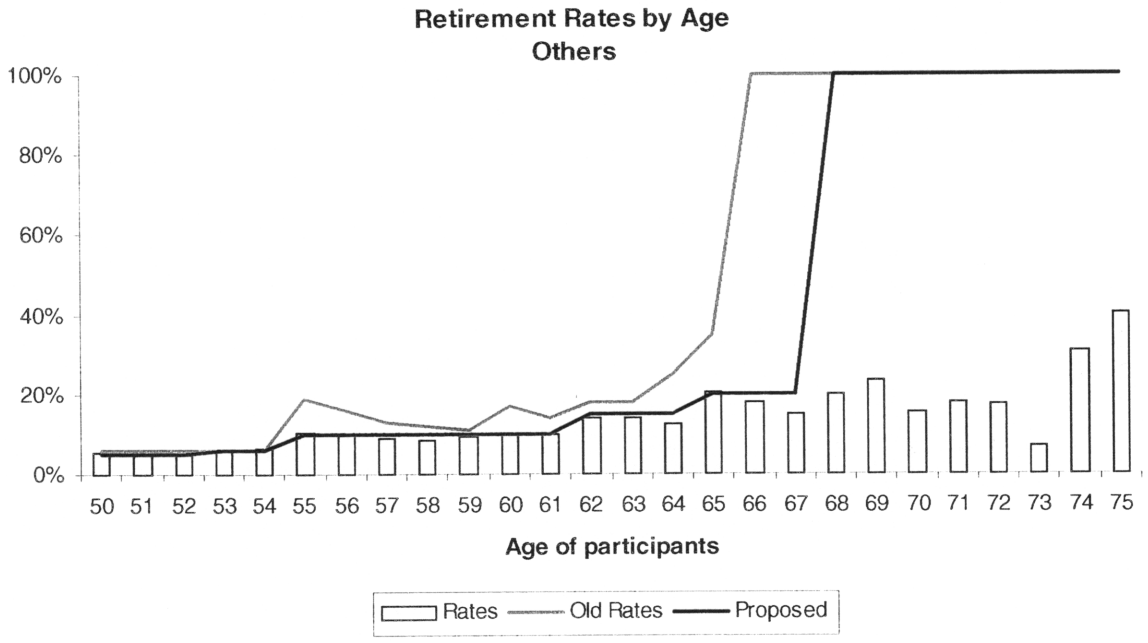
Disability Rates

Observed disability rates for PERS members were lower than assumed. Because of the relatively low incidence of disability, credibility of these observed rates is questionable. We recommend leaving the disability assumption as is, thereby having no effect on the status of the System.

Retirement Rates

Observed retirement rates were in general lower than those predicted by the current assumption. For this study, turnover under age 50 was assumed to be total turnover and after age 50 was assumed to be retirement. This is illustrated on the graph below. We propose new rates of retirement consistent with this experience which can be found in Section 4, Table 3 on page 34.

The changes in this assumption produce a decrease in liabilities and contribution rates.


Retirement Rates by Age
Others
100%
80%
60%
40%
20%
0%
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75
Age of participants
Rates
Old Rates
Proposed

Assumed Retirement Date if Under Age 50

Employees under age 50 are currently assumed to retire two years after eligibility for unreduced benefits, or at 22 years of service for Police/Fire members. Based on the data in this study, the weighted average years of service for Police/Fire members who retire before age 50 is 20.6. We have rounded this to 21 years and propose to change the assumption accordingly.

This change would increase System liabilities and costs slightly.

Mortality Rates

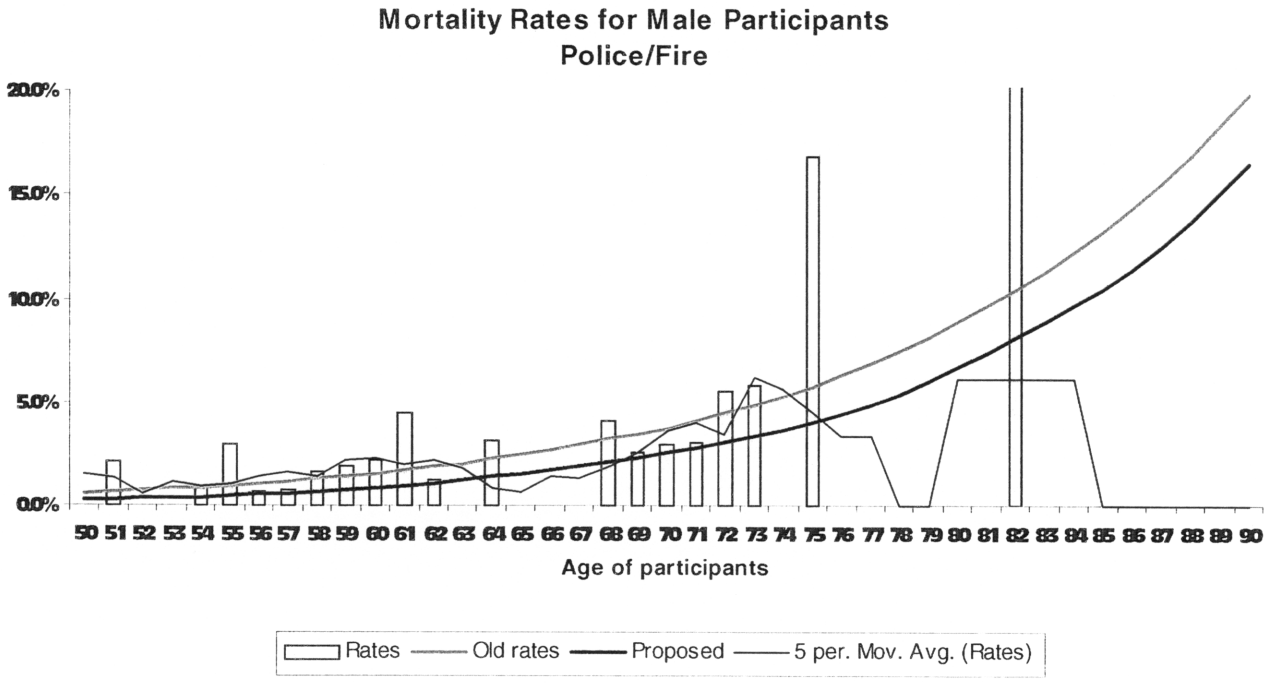
Life expectancy has been increasing this century, and this trend is expected to continue. The life expectancy increases in the first half of the century were mainly due to the availability of antibiotics and public health improvements. More recently, advances in medicine and medical technology have helped to extend life expectancy, especially in the older years. The following table contains life expectancy from the National Vital Statistics Report, Volume 47, Number 28, December 13, 1999:

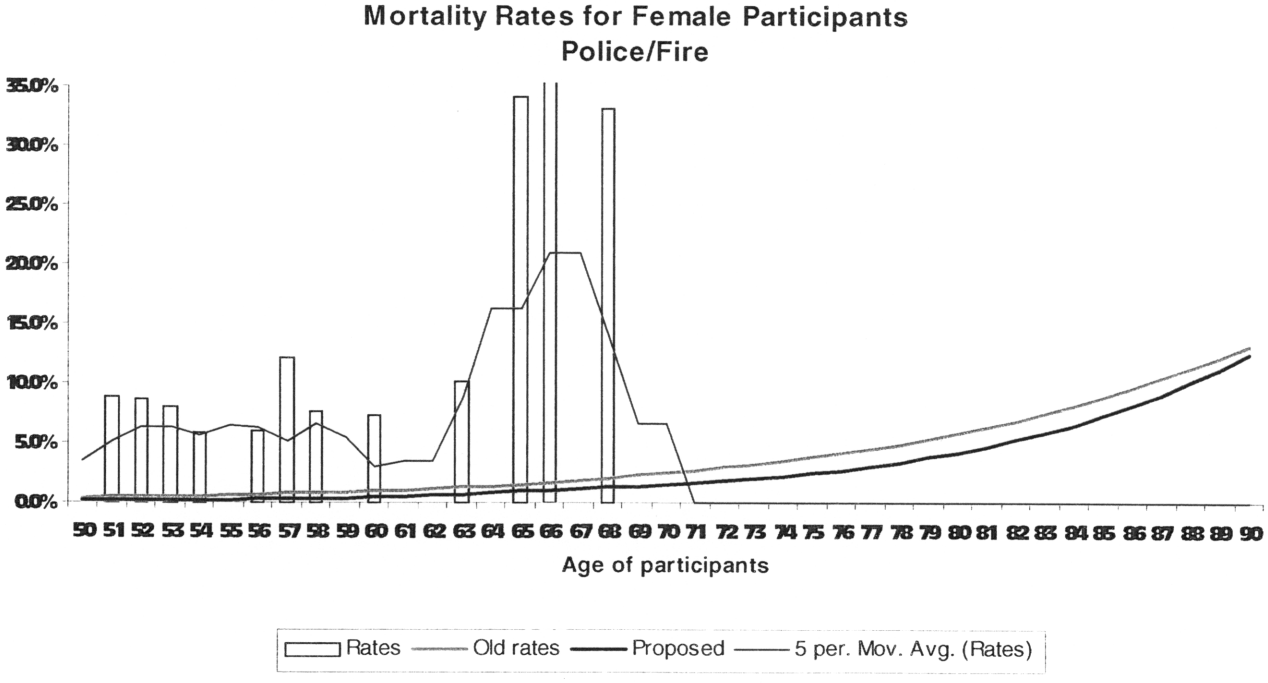
	Total Population Life Expectancy:					
	From Birth		From Age 65		From Age 80	
	Male	Female	Male	Female	Male	Female
1997	73.6	79.4	15.9	19.2	7.5	9.1
1990	71.8	78.8	15.1	19.0	7.1	9.1
1980	70.1	77.6	14.2	18.4	6.8	8.7
1970	67.0	74.6	13.0	16.8	6.3	7.7
1960	66.8	73.2	13.0	15.8	6.0	6.7
1950	65.5	71.0	12.7	15.0	5.9	6.7
1940	61.1	65.9	12.1	13.6	5.4	6.0
1930	57.7	60.9	11.7	12.8	5.3	5.7

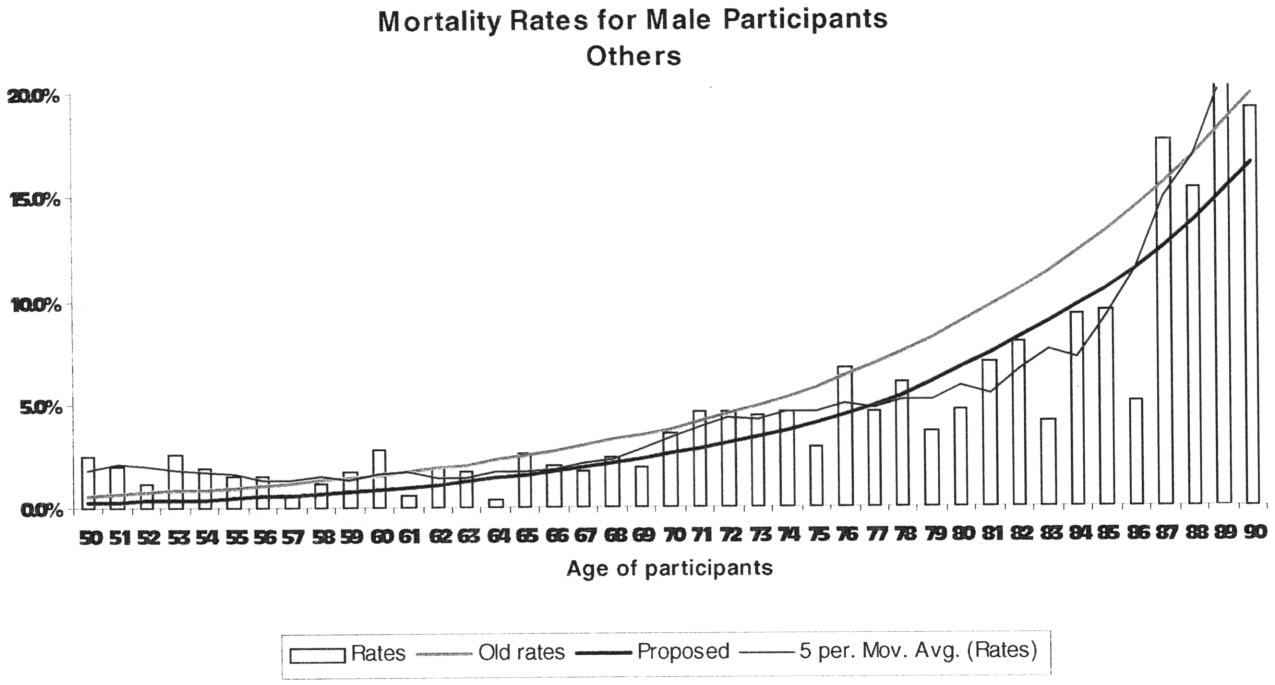
Due to the relatively low incidence of mortality, a large population is needed to generate credible experience data. For PERS, the data is not sufficient to create a mortality table based solely on experience. Therefore, one of the published mortality tables based on group annuity experience from the general population is more appropriate.

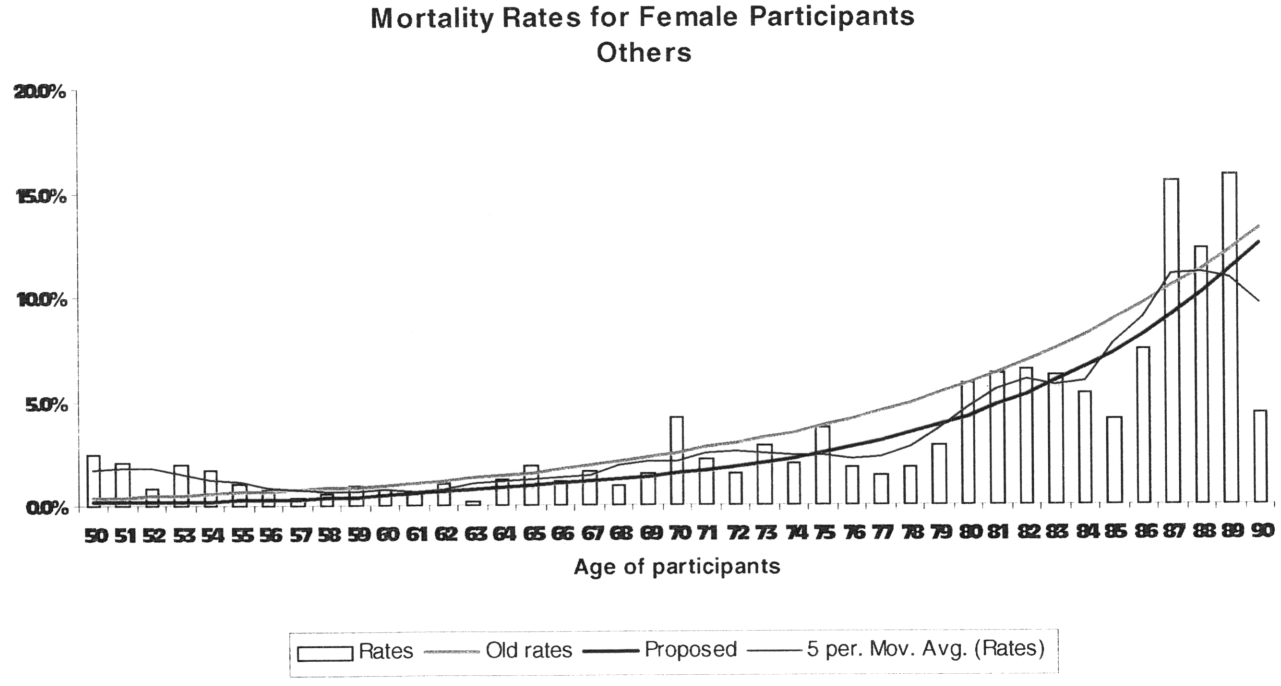
While the PERS experience is limited, it does show a mortality trend that is below the current mortality table, especially at older ages. This is illustrated in the graphs below. The current mortality table has been used since the mid-1980's.

While this will have a significant affect on system liabilities and costs, we believe that it is time to update the mortality assumption for PERS to reflect the lower experienced and anticipated mortality trends. We recommend that the mortality assumption be changed to the 1994 Group Annuity Mortality Table, 1994 Base Year for males and females.


Mortality Rates for Male Participants
Police/Fire
20.0%
15.0%
10.0%
5.0%
0.0%
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90
Age of participants
Rates
Old rates
Proposed
5 per. Mov. Avg. (Rates)


Mortality Rates for Female Participants
Police/Fire
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90
Age of participants
Rates
Old rates
Proposed
5 per. Mov. Avg. (Rates)


Mortality Rates for Male Participants
Others
20.0%
15.0%
10.0%
5.0%
0.0%
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90
Age of participants
Rates
Old rates
Proposed
5 per. Mov. Avg. (Rates)


Mortality Rates for Female Participants
Others
20.0%
15.0%
10.0%
5.0%
0.0%
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90
Age of participants
Rates
Old rates
Proposed
5 per. Mov. Avg. (Rates)

COLA (Cost-of-Living Adjustment)

In the past, we assumed that 71% of all retirees would receive COLA. The current data shows that 68% of the dollar-weighted average benefit is increased with COLA. Thus, we propose to decrease our assumption from 71% to 68%. This has a negligible effect on system liabilities and contribution rates.

Section 4
Statement of Proposed Actuarial Assumptions and Methods

Valuation of Liabilities

A. Actuarial Method - Projected Unit Credit (no change). Liabilities and contributions shown in the report are computed using the Projected Unit Credit method of funding. The unfunded accrued liability or surplus is amortized over 25 years.

The objective under this method is to fund each participant's benefits under the plan as they accrue. Thus, each participant's total pension projected to retirement with salary scale is broken down into units, each associated with a year of past or future service. The principle underlying the method is that each unit is funded in the year for which it is credited. Typically, when the method is introduced there will be an initial liability for benefits credited for service prior to that date, and to the extent that this liability is not covered by Assets of the Plan there is an Unfunded Liability to be funded over a chosen period in accordance with an amortization schedule.

An Accrued Liability is calculated at the valuation date as the present value of benefits credited with respect to service to that date.

The Unfunded Liability at the valuation date is the excess of the Accrued Liability over the Assets of the Plan. The level annual payment to be made over a stipulated number of years to amortize the Unfunded Liability is the Past Service Cost.

The Normal Cost is the present value of those benefits which are expected to be credited with respect to service during the year beginning on the valuation date.

Under this method, differences between the actual experience and that assumed in the determination of costs and liabilities will emerge as adjustments in the Unfunded Liability, subject to amortization.

B. Actuarial Assumptions -

1.	Investment Return	8.25% per year, compounded annually, net of expenses.
2.	Salary Scale	Inflation - 3.5% per year. Police/Fire Merit (first 5 years of employment) - 1.5% per year. Productivity – 1.0% per year.

		Others Merit (first 10 years of employment) – 1.5% per year. Productivity – 0.5% per year.
3.	Total Inflation	Total inflation as measured by the Consumer Price Index for urban and clerical workers for Anchorage is assumed to increase 3.5% annually.
4.	Health Cost Trend	FY00 - 8.5% FY01 - 7.5% FY02 - 6.5% FY03 - 5.5% FY04 - FY08 - 5.0% FY09 - 13 4.5% FY14 and later - 4.0%
5.	Mortality	1994 Group Annuity Mortality Basic Table for males and females, 1994 base year. Deaths are assumed to be occupational 85% of the time for Police/Fire, 35% for Others.
6.	Total Turnover	Based upon the 1997-99 actual withdrawal experience. (See Table 1).
7.	Disability	Incidence rates based upon the 1991-95 actual experience, in accordance with Table 2. Post-disability mortality in accordance with rates published by the Pension Benefit Guaranty Corporation to reflect mortality of those receiving disability benefits under Social Security.
8.	Retirement	Retirement rates based upon the 1997-99 actual experience in accordance with Table 3.
9.	Spouse's Age	Wives are assumed to be four years younger than husbands.
10.	Dependent Children	Benefits to dependent children have been valued assuming members who are not single have one dependent child.
11.	Contribution Refunds	100% of those terminating after age 35 who are vested will leave their contributions in the fund and thereby retain their deferred vested benefit. All others who terminate are assumed to have their contributions refunded.

12.	C.O.L.A.	Of those benefit recipients who are eligible for the C.O.L.A., 68% are assumed to remain in Alaska and receive the C.O.L.A.
13.	New Entrants	Growth projections are made for the active PERS population under three scenarios: Pessimistic: 0% per year Median: 1% per year Optimistic: 2% per year
14.	Post-Retirement Pension Adjustment	50% and 75% of assumed inflation is valued for the automatic Post-Retirement Pension Adjustment (PRPA) as specified in the statute.
15.	Expenses	Expenses are covered in the investment return assumption.
16.	Marital Status	75% of participants are assumed to be married.

Valuation of Assets

In the development of valuation assets, we use an expected investment return equal to the investment return assumption of 8.25%. The valuation assets, plus (minus) the outstanding balance of previously amortized amounts, are then compared to a 5% corridor around the market value of assets. Any amount outside the corridor is amortized and applied to the employer contribution rates as a level percentage of the present value of pay over 20 years under the 1% population projection scenario. Valuation assets cannot be outside the range of 80% to 120% of the market value of assets.

Determination of the Adjustment for the 102% Target Funding Ratio

The target unfunded (surplus) accrued liability is determined by first reducing the actuarial value of assets by 2.296% and calculating the resulting unfunded (surplus) accrued liability. This unfunded (surplus) liability is then loaded by 6% to account for the 2-year delay in employer contributions. Both of these factors are determined empirically from the actuarial projection valuation. This target unfunded accrued liability (surplus) is then added to the actuarial value of assets to determine the target accrued liability. This target accrued liability is the basis for the determination of the employer contribution rate before the rate is adjusted for the deferred gains or losses outside the 5% corridor as discussed above.

Valuation of Medical Benefits

Medical benefits for retirees are provided by the payment of premiums from the fund. A pre-65 cost and lower post-65 cost (due to Medicare) are assumed such that the total rate for all retirees equals the present premium rate assumption. These medical premiums are

then increased with the health inflation assumption. The actuarial cost method used for funding retirement benefits is also used to fund health benefits.

For FY00, the pre-65 monthly premium is $635.31 and the post-65 premium is $242.02, based on an assumed total blended premium of $486.00. For the time period January 1, 2000 – December 31, 2000 the actual blended premium as provided by the State of Alaska Division of Retirement and Benefits is $530.00.

Table 1

Alaska PERS
Total Turnover Assumptions

Select Rates of Total Turnover During the First 5 Years of Employment

Ultimate Rates of Total Turnover After the First 5 Years of Employment

Police and Fire:

Year of Employment	Rate
1	.12
2	.10
3	.08
4	.07
5	.06

Age	Rate
20+	.03

"Other":

Year of Employment	–Age at Hire– 20-34	34+
1	.25	.15
2	.23	.15
3	.20	.13
4	.16	.12
5	.15	.11

Age	Rate
20-34	.11
35-39	.08
40-44	.06
45+	.05

Table 2
Alaska PERS
Disability Rates
Annual Rates Per 1,000 Employees

Age	Police & Fire Rate	"Other" Member Rate
20	.88	.28
21	.89	.28
22	.90	.29
23	.91	.29
24	.93	.30
25	.94	.30
26	.95	.30
27	.98	.31
28	1.00	.32
29	1.03	.33
30	1.05	.34
31	1.08	.34
32	1.10	.35
33	1.13	.36
34	1.16	.37
35	1.20	.38
36	1.24	.40
37	1.29	.41
38	1.34	.43
39	1.39	.44
40	1.44	.46
41	1.50	.48
42	1.59	.51
43	1.70	.54
44	1.85	.59
45	2.03	.65
46	2.20	.70
47	2.39	.76
48	2.59	.83
49	2.79	.89
50	3.00	.96
51	3.25	1.04
52	3.58	1.14
53	3.98	1.27
54	4.44	1.42
55	5.00	1.60
56	5.74	1.84
57	6.68	2.14
58	7.63	2.44
59	9.00	2.88
60	10.54	3.37
61	12.19	3.90
62	14.13	4.52
63	16.31	5.22
64	18.63	5.96

Table 3

Alaska PERS
Retirement Rates

Age	Police & Fire Rate	"Other" Member Rate
50	.10	.05
51	.10	.05
52	.10	.05
53	.05	.06
54	.05	.06
55	.20	.10
56	.13	.10
57	.13	.10
58	.13	.10
59	.13	.10
60	.20	.10
61	.25	.10
62	.25	.15
63	.25	.15
64	.25	.15
65	1.00	.20
66	1.00	.20
67	1.00	.20
68 & Up	1.00	1.00

For ages under 50, Police/Fire members are assumed to retire immediately upon attaining 21 years of service.

Section 5

Statement of Current Actuarial Assumptions and Methods

Valuation of Liabilities

A. **Actuarial Method** - Projected Unit Credit (no change). Liabilities and contributions shown in the report are computed using the Projected Unit Credit method of funding. Any funding surpluses or unfunded accrued liability is amortized over a rolling 25 years.

The objective under this method is to fund each participant's benefits under the plan as they accrue. Thus, each participant's total pension projected to retirement with salary scale is broken down into units, each associated with a year of past or future service. The principle underlying the method is that each unit is funded in the year for which it is credited. Typically, when the method is introduced there will be an initial liability for benefits credited for service prior to that date, and to the extent that this liability is not covered by Assets of the Plan there is an Unfunded Liability to be funded over a chosen period in accordance with an amortization schedule.

An Accrued Liability is calculated at the valuation date as the present value of benefits credited with respect to service to that date.

The Unfunded Liability at the valuation date is the excess of the Accrued Liability over the Assets of the Plan. The level annual payment to be made over a stipulated number of years to amortize the Unfunded Liability is the Past Service Cost.

The Normal Cost is the present value of those benefits which are expected to be credited with respect to service during the year beginning on the valuation date.

Under this method, differences between the actual experience and that assumed in the determination of costs and liabilities will emerge as adjustments in the Unfunded Liability, subject to amortization.

B. Actuarial Assumptions -

1.	Investment Return	8.25% per year, compounded annually, net of expenses.
2.	Salary Scale	Inflation - 4.0% per year Productivity - 0.5% per year Merit (first 5 years of employment) - 1.0% per year

3.	Total Inflation	Total inflation as measured by the Consumer Price Index for urban and clerical workers for Anchorage is assumed to increase 4% annually.
4.	Health Cost Trend	FY00 - 8.5% FY01 - 7.5% FY02 - 6.5% FY03 - 5.5% FY04 – FY08 - 5.0% FY09 & later - 4.5%
5.	Mortality	1984 Unisex Pension Mortality Table, set forward one year for male and police/fire members, and set backward four years for female members. Deaths are assumed to be occupational 85% of the time for Police/Fire, 35% for "Other".
6.	Turnover	Based upon the 1991-95 actual total turnover experience. (See Table 1).
7.	Disability	Incidence rates, based upon the 1991-95 actual experience, in accordance with Table 2. Post-disability mortality in accordance with rates published by the Pension Benefit Guaranty Corporation to reflect mortality of those receiving disability benefits under Social Security. Disabilities are assumed to be occupational 85% of the time for Police/Fire, 35% for "Other".
8.	Retirement	Retirement rates based upon the 1991-95 actual experience in accordance with Table 3.
9.	Spouse's Age	Wives are assumed to be four years younger than husbands.
10.	Dependent Children	Benefits to dependent children have been valued assuming members who are not single have one dependent child.
11.	Contribution Refunds	100% of those terminating after age 35 with five or more years of service will leave their contributions in the fund and thereby retain their deferred vested benefit. All others who terminate are assumed to have their contributions refunded.

12.	C.O.L.A.	Of those benefit recipients who are eligible for the C.O.L.A., 71% are assumed to remain in Alaska and receive the C.O.L.A.
13.	New Entrants	Growth projections are made for the active PERS population under three scenarios: Pessimistic: 0% per year Median: 1% per year Optimistic: 2% per year
14.	Post-Retirement Pension Adjustment	50% and 75% of assumed inflation is valued for the automatic Post-Retirement Pension Adjustment (PRPA) as specified in the statute.
15.	Expenses	Expenses are covered in the investment return assumption.
16.	Marital Status	75% of participants are assumed to be married.

Valuation of Assets

In the development of valuation assets, we use an expected investment return equal to the investment return assumption of 8.25%. The valuation assets, plus (minus) the outstanding balance of previously amortized amounts, are then compared to a 5% corridor around the market value of assets. Any amount outside the corridor is amortized and applied to the employer contribution rates as a level percentage of pay over 20 years under the 1% population projection scenario. Valuation assets cannot be outside the range of 80% to 120% of the market value of assets.

Determination of the Adjustment for the 102% Target Funding Ratio

The target unfunded (surplus) accrued liability is determined by first reducing the actuarial value of assets by 2.296% and calculating the resulting unfunded (surplus) accrued liability. This unfunded (surplus) liability is then loaded by 6% to account for the 2-year delay in employer contributions. Both of these factors are determined empirically from the actuarial projection valuation. This target unfunded accrued liability (surplus) is then added to the actuarial value of assets to determine the target accrued liability. This target accrued liability is the basis for the determination of the employer contribution rate before the rate is adjusted for the deferred gains or losses outside the 5% corridor as discussed above.

Valuation of Medical Benefits

Medical benefits for retirees are provided by the payment of premiums from the fund. A pre-65 cost and lower post-65 cost (due to Medicare) are assumed such that the total rate for all retirees equals the present premium rate assumption. These medical premiums are then increased with the health inflation assumption. The actuarial cost method used for funding retirement benefits is also used to fund health benefits.

For FY00, the pre-65 monthly premium is $633.47 and the post-65 premium is $241.30, based on an assumed total blended premium of $484.39. For the time period January 1, 2000 to December 31, 2000, the actual blended premium as provided by the State of Alaska Division of Retirement and Benefits is $530.00.

Table 4

Alaska PERS
Total Turnover Assumptions

Select Rates of Turnover During the First 5 Years of Employment

Ultimate Rates of Turnover After the First 5 Years of Employment

Police and Fire:

Year of Employment	–Age at Hire– 20-29	30+
1	.22	.22
2	.15	.14
3	.15	.12
4	.10	.08
5	.07	.06

Age	Rate
20-29	.06
30+	.04

"Other":

Year of Employment	–Age at Hire– 20-29	30+
1	.30	.20
2	.20	.15
3	.15	.12
4	.12	.10
5	.12	.10

Age	Rate
20-29	.10
30-39	.08

Table 5
Alaska PERS
Disability Rates
Annual Rates Per 1,000 Employees

Age	Police & Fire Rate	"Other" Member Rate
20	.88	.28
21	.89	.28
22	.90	.29
23	.91	.29
24	.93	.30
25	.94	.30
26	.95	.30
27	.98	.31
28	1.00	.32
29	1.03	.33
30	1.05	.34
31	1.08	.34
32	1.10	.35
33	1.13	.36
34	1.16	.37
35	1.20	.38
36	1.24	.40
37	1.29	.41
38	1.34	.43
39	1.39	.44
40	1.44	.46
41	1.50	.48
42	1.59	.51
43	1.70	.54
44	1.85	.59
45	2.03	.65
46	2.20	.70
47	2.39	.76
48	2.59	.83
49	2.79	.89
50	3.00	.96
51	3.25	1.04
52	3.58	1.14
53	3.98	1.27
54	4.44	1.42
55	5.00	1.60
56	5.74	1.84
57	6.68	2.14
58	7.63	2.44
59	9.00	2.88
60	10.54	3.37
61	12.19	3.90
62	14.13	4.52
63	16.31	5.22
64	18.63	5.96

Table 6

Alaska PERS
Retirement Rates

Age	Police & Fire Rate	"Other" Member Rate
50	.10	.06
51	.10	.06
52	.10	.06
53	.12	.06
54	.12	.06
55	.25	.19
56	.25	.16
57	.10	.13
58	.10	.12
59	.10	.11
60	.40	.17
61	.40	.14
62	1.00	.18
63	1.00	.18
64	1.00	.25
65	1.00	.35
66 & Up	1.00	1.00

For ages under 50, Members are assumed to retire two years after the earliest age they are eligible to retire.

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