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EMPLOYEES' RETIREMENT SYSTEM OF GEORGIA

GEORGIA LEGISLATIVE RETIREMENT SYSTEM

EXPERIENCE INVESTIGATION FOR THE FIVE-YEAR PERIOD ENDING JUNE 30, 2014

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December 17, 2015

Board of Trustees,
Georgia Legislative Retirement System
Suite 400, Two Northside 75
Atlanta, GA 30318

Members of the Board:

We are pleased to submit the results of an investigation of the economic and demographic experience for the Georgia Legislative Retirement System. The purpose of the investigation was to assess the reasonability of the actuarial assumptions currently used by the Retirement System. This investigation covers the five-year period from July 1, 2009 to June 30, 2014. As a result of the investigation, it is recommended that revised economic assumptions and demographic tables be adopted by the Board for future use.

This investigation of the demographic experience of the members of the System includes all active and retired members as well as beneficiaries of deceased members.

The number of members expected to separate from active service, and the expected number of post-retirement deaths was obtained by use of the rates determined in the last experience investigation and adopted by the Board of Trustees. The results of the investigation indicate that the assumed rates of separation from active service due to withdrawal, disability, death and retirement, and post-retirement mortality do not accurately reflect the actual and anticipated experience of the Retirement System. As a result of the investigation, new withdrawal, disability, retirement and mortality tables have been developed which reflect more closely the actual experience of the membership.

This report shows a comparison of the actual and expected cases of separation from active service, and actual and expected number of deaths. A comparison between the rates of separation and mortality presently in use and the recommended revised rates are also shown in this report.

All new assumptions are shown in the attached tables in Appendix C of this report. In the actuary's judgment, the recommended assumptions are suitable for use until further experience indicates that modifications are desirable.

The experience investigation was performed by, and under the supervision of, independent actuaries who are members of the American Academy of Actuaries with experience in performing valuations for public retirement systems. The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,

Edward A. Macdonald, ASA, FCA, MAAA
President

Cathy Turcot
Principal and Managing Director

Edward J. Koebel, FCA, EA, MAAA
Principal and Consulting Actuary

EAM/CT:kc

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Section I
Executive Summary

The following tables summarize the findings and recommendations with regard to the assumptions utilized for the Georgia Legislative Retirement System. Detailed explanations for the recommendations are found in the sections that follow.

Recommended Economic Assumption Changes

The table below lists the two economic assumptions used in the actuarial valuations and their current and proposed rates.

Item	Current	Proposed
Price Inflation	3.00%	2.75%
Investment Return*	7.50%	7.50%

* net of investment expenses.

Recommended Demographic Assumption Changes

The table below lists the demographic assumptions that should be changed based on the experience of the last five years.

Employee Group	Assumption Changes
Legislators	Withdrawal, Pre-Retirement Mortality, Disability Retirement, Service Retirement, Post-Retirement Mortality

Recommended Other Assumption Changes

The table below lists the other assumptions that are considered in our valuations that should be reviewed during the experience study.

Assumption	Assumption Changes
Administrative Expenses	No Change to current method of determining rate
Amortization Method	No change to current method of level dollar amortization
Asset Smoothing	No change to current method of smoothing market gains and losses over 5 year period
Option Factors	Recommend change in current option factors to reflect change in mortality rate
Valuation Cost Method	No change in Entry Age Normal Cost Method
Cost of Living	No change to the current cost of living assumption.

Section II
Financial Impact

The following table highlights the impact of the recommended changes on the principal valuation results.

Impact on Principal Valuation Results		
	Valuation Results 2014	**Recommended Assumptions**
Unfunded Accrued Liability	$(5,624,763)	$(4,778,386)
Funding Ratio	122.6%	118.5%
Actuarially Determined Employer Contribution		
Normal Cost*	$244,018	$264,509
Accrued Liability	$(244,018)	$(264,509)
Total	$0	$0
Amortization Period (in years)	N/A**	N/A**

*The normal cost includes estimated administrative expenses.

**The amortization period is infinite which means that the System would be expected to remain over 100% funded.

Section III
Economic Assumptions

There are two economic assumptions used in the actuarial valuations performed for the System. They are:

- Price Inflation
- Investment Return

Actuarial Standard of Practice (ASOP) No. 27, *"Selection of Economic Assumptions for Measuring Pension Obligations"* provides guidance to actuaries in selecting economic assumptions for measuring obligations under defined benefit plans. ASOP No. 27 was revised in September, 2013 and no longer includes the concept of a "best estimate range". Instead, the revised standard now requires that each economic assumption selected by the actuary should be reasonable which means it has the following characteristics:

- It is appropriate for the purpose of the measurement;
- It reflects the actuary's professional judgment;
- It takes into account historical and current economic data that is relevant as of the measurement date;
- It reflects the actuary's estimate of future experience, the actuary's observation of the estimates inherent in market data, or a combination thereof; and
- It has no significant bias (i.e., it is not significantly optimistic or pessimistic), except when provisions for adverse deviation or plan provisions that are difficult to measure are included and disclosed, or when alternative assumptions are used for the assessment of risk.

Each economic assumption should individually satisfy this standard. Furthermore, with respect to any particular valuation, each economic assumption should be consistent with every other economic assumption over the measurement period.

In our opinion, the economic assumptions recommended in this report have been developed in accordance with ASOP No. 27. The following table shows our recommendations followed by detailed discussions of each assumption.

Item	Current	Proposed
Price Inflation	3.00%	2.75%
Real Rate of Return*	4.50	4.75
Investment Return	7.50%	7.50%

* Net of investment expenses

Price Inflation

Background: As can be seen from the table above, assumed price inflation is used as the basis for the investment return assumption. This latter assumption will be discussed in detail in the following section.

It is important that the price inflation assumption be consistently applied throughout the economic assumptions utilized in an actuarial valuation. This is called for in ASOP No. 27 and is also required to meet the parameters for determining pension liabilities and expense under Governmental Accounting Standards Board (GASB) Statements No. 67 and 68.

The current price inflation assumption is 3.00% per year.

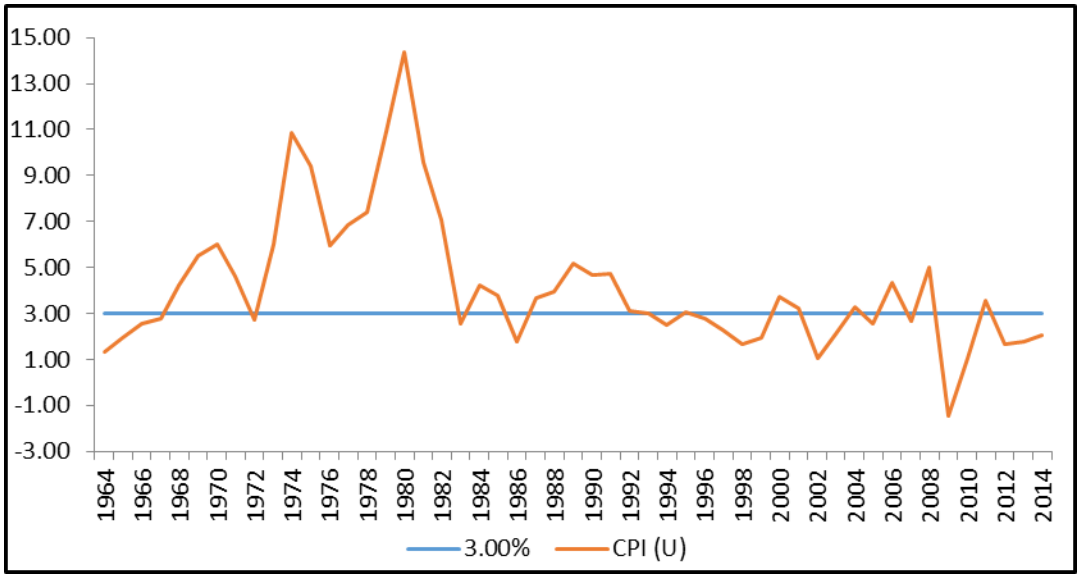
Past Experience: The Consumer Price Index, US City Average, All Urban Consumers, CPI (U), has been used as the basis for reviewing historical levels of price inflation. The level of that index in June of each of the last 50 years is provided in Appendix A.

In analyzing this data, annual rates of inflation have been determined by measuring the compound growth rate of the CPI (U) over various time periods. The results are as follows:

Period	Number of Years	Inflation	Annual Standard Deviation
2004-2014	10	2.31%	1.81%
1994-2004	10	2.51	0.83
1984-1994	10	3.62	1.06
1974-1984	10	7.78	3.39
1964-1974	10	4.68	2.63
1994-2014	20	2.41%	1.37%
1984-2014	30	2.81	1.39
1974-2014	40	4.03	2.99
1964-2014	50	4.16	2.90
1926-2014	88	2.98	4.15

The following graph illustrates the historical levels of price inflation measured as of June 30th of each of the last 50 years and compared to the current 3.00% annual rate currently assumed.

Annual Rate of CPI (U) Increases



Over more recent historical periods, the average annual rate of increase in the CPI-U has been below 3.00%. The period of high inflation from 1973 to 1982 has a significant impact on the averages over periods which include these rates. Further, the average rate of 2.98% over the entire 88 year period is close to the average rate of 2.81% for the prior 30 years (1984 to 2014) but the volatility of the annual rates in the more recent years has been markedly lower as indicated by the significantly lower annual standard deviations. Many experts attribute the lower average annual rates and lower volatility to the increased efforts of the Federal Reserve since the early 1980's to stabilize price inflation. The severe recession of 2008-2009 resulted in a short period of deflation followed by low levels of inflation. The Federal Reserve has combated this weak environment with zero interest rates and quantitative easing. Although the quantitative easing program has ended, the Federal Reserve has disclosed an inflation target of at least 2.0% annually and will keep interest rates very low until they see progress toward the target.

Recommendation: It is difficult to accurately predict inflation. Inflation's short-term volatility is illustrated by comparing its average rate over the last 10, 30 and 50 years. Although the 10-year average of 2.31% is lower than the System's assumed rate of 3.00%, the longer 30, 40 and 50-year averages of 2.79%, 3.94% and 4.25% respectively, are at or slightly higher than the System's rate. The validity of the System's assumption is, therefore, dependent upon the emphasis one assigns to the short and long-terms.

Current economic forecasts suggest lower inflation but are generally looking at a shorter time period than appropriate for our purposes. In the 2014 OASDI Trustees Report, the Chief Actuary for Social Security bases the 75 year cost projections on an intermediate inflation assumption of 2.7% with a range of 1.7% to 3.7%. We consider that range reasonable and recommend that ERS lower the current price inflation assumption from 3.00 to 2.75%.

Price Inflation Assumption	
Current	3.00%
Recommended	2.75%

Investment Return

Background: The assumed investment return is one of the most significant assumptions in the annual actuarial valuation process as it is used to discount the expected benefit payments for all active, inactive and retired members of the System. Minor changes in this assumption can have a major impact on valuation results. The investment return assumption should reflect the asset allocation target for the funds set by the Board of Trustees.

The current assumption is 7.50%, consisting of a price inflation assumption of 3.00% and a real rate of return assumption of 4.50%. The return is net of all investment expenses.

Past Experience: The assets for the System are valued using a widely accepted asset-smoothing methodology (5-year smoothing) that fully recognizes the expected investment income and also recognizes 20% of each year's investment gain or loss (the difference between actual and expected investment income). The asset smoothing methodology from 2010 through 2012 was based on 7-year smoothing and actuarial value was set equal to market value in 2013. The recent experience over the last five years is shown in the table below.

Year Ending 6/30	Actuarial Value	Market Value Rate of Return
2010	2.32%	11.38%
2011	4.35	21.58
2012	4.59	1.99
2013	7.16	13.40
2014	9.47	17.34
Average	5.55%	12.94%

The impact of the asset smoothing method can be observed in the table. Very poor asset returns during 2008 and 2009 are reflected in the actuarial value returns through 2013. While important to review and analyze, historical returns over such a short time period are not credible for the purpose of setting the long-term assumed future rate of return.

We next include in our analysis information concerning future expectations for the investment return assumption. Because of the significant variability in past year-to-year results and the inter-play of inflation on those results in the short term, we prefer to base our investment return assumption on the capital market assumptions utilized by the Board in setting investment policy and the asset allocation established by the Board as a result of that policy. This approach is referred to as the building block method in ASOP No. 27.

Analysis: The current capital market assumptions and asset allocation as provided by the System are shown in Appendix B. We further assumed that investment returns approximately follow a lognormal distribution with no correlation between years. The results below provide an expected range of real rates of return over a 50 year time horizon. Looking at one year results produces an expected real return of 6.38% but also has a high standard deviation or measurement of volatility. By expanding the time horizon, the average return does not change much but the volatility declines significantly. The following table provides a summary of results. The geometric real rates of return are net of investment expenses.

Time Span In Years	Mean Real Return	Standard Deviation	Real Returns by Percentile				
			5th	25th	50th	75th	95th
1	6.38%	15.36%	-16.87%	-4.44%	5.29%	16.00%	33.35%
5	5.51%	6.79%	-5.27%	0.82%	5.29%	9.95%	17.02%
10	5.40%	4.79%	-2.29%	2.11%	5.29%	8.56%	13.46%
20	5.34%	3.38%	-0.13%	3.03%	5.29%	7.59%	11.00%
30	5.32%	2.76%	0.84%	3.44%	5.29%	7.17%	9.93%
40	5.32%	2.39%	1.43%	3.69%	5.29%	6.91%	9.30%
50	5.31%	2.14%	1.93%	3.86%	5.29%	6.74%	8.87%

Based on this analysis there is a 50% likelihood that the average real rate of return over a 50-year period will be 5.29%. it can also be inferred that for the 10 year time span, 5% of the resulting real rates of return were below -2.29% and 95% were above that. As the time span increases, the results begin to merge. Over a 50 year time span, the results indicate there is a 25% chance that real returns will be below 3.86% and a 25% chance they will be above 6.74%. In other words there is a 50% chance the real returns will be between 3.86% and 6.74 %.

Recommendation: Using the building block approach of ASOP No. 27 and the projection results outlined above, we are recommending a range for the investment return assumption of the 25th to 75th percentile real returns over the 50 year time span plus the recommended inflation assumption less the recommended expense rate. The following table details the range.

Item	25th Percentile	50th Percentile	75th Percentile
Real Rate of Return	3.86%	5.29%	6.74%
Inflation	2.75	2.75	2.75
Net Investment Return*	6.61%	8.04%	9.49%

* net of investment expenses

There is a 50% chance that the net return will be 7.94% or more over a 50-year period. A net return of 7.50% is at the 40th percentile. Although not in the center of the recommended range, in our opinion a return of 7.50% is conservative yet reasonable. In addition, the most recent Public Fund Survey indicates that the current median return assumptions for the approximately 126 large public plans in the summary is 7.75%. Further, the recent trend in the return assumption of these large plans is toward lower annual rates of return.

After review of past experience for ERS and future expectation analysis, we are recommending the real rate of return assumption can be increased from 4.50% to 4.75%. Combining this with our recommendation to lower the price inflation assumption, we recommend the long-term investment return assumption remain at 7.50%.

Investment Return Assumption		
	Current	Recommended
Real Rate of Return*	4.50%	4.75%
Inflation	3.00	2.75
Net Investment Return	7.50%	7.50%

* net of investment expenses

Section IV
Demographic Assumptions

There are several demographic assumptions used in the actuarial valuations performed for the Georgia Legislative Retirement System. They are:

- Rates of Withdrawal
- Rates of Disability Retirement
- Rates of Service Retirement
- Rate of Mortality

The Actuarial Standards Board has issued Actuarial Standard of Practice (ASOP) No. 35, *"Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations"*, which provides guidance to actuaries in selecting demographic assumptions for measuring obligations under defined benefit plans. In our opinion, the demographic assumptions recommended in this report have been developed in accordance with ASOP No. 35.

The purpose of a study of demographic experience is to compare what actually happened to the membership during the study period (July 1, 2009, through June 30, 2014) with what was expected to happen based on the assumptions used in the most recent Actuarial Valuations.

Detailed tabulations by age, service and/or gender are performed over the entire study period. These tabulations look at all active and retired members during the period as well as separately annotating those who experience a demographic event, also referred to as a decrement. In addition the tabulation of all members together with the current assumptions permits the calculation of the number of expected decrements during the study period.

If the actual experience differs significantly from the overall expected results, or if the pattern of actual decrements, or rates of decrement, by age, gender, or service does not follow the expected pattern, new assumptions are recommended. Recommended changes usually do not follow the exact actual experience during the observation period. Judgment is required to extrapolate future experience from past trends and current member behavior.

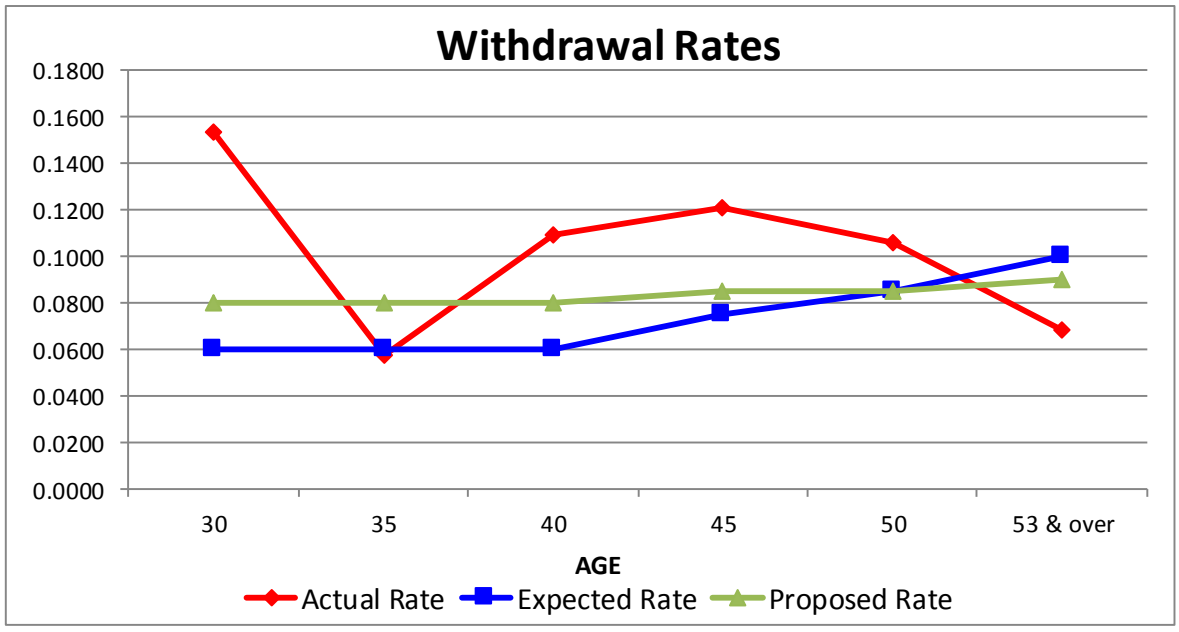
The remainder of this section presents the results of the demographic study. We have prepared tables that show a comparison of the actual and expected decrements and the overall ratio of actual to expected results (A/E Ratios) under the current assumptions. If a change is being proposed, the revised A/E Ratios are shown as well.

RATES OF WITHDRAWAL

COMPARISON OF ACTUAL AND EXPECTED WITHDRAWALS FROM ACTIVE SERVICE

CENTRAL AGE OF GROUP	NUMBER OF WITHDRAWALS CURRENT RATES		
	Actual	Expected	Ratio of Actual to Expected
25	1	0.3	3.333
30	4	1.6	2.500
35	4	4.1	0.976
40	12	6.6	1.818
45	14	8.7	1.609
50	15	12.0	1.250
53 & over	26	37.8	0.688
TOTAL	**76**	**71.1**	**1.069**

The rates of withdrawal adopted by the Board are used to determine the expected number of separations from active service which will occur as a result of resignation or dismissal. The experience indicates that during the period studied, there were slightly more withdrawals than expected in most age groups except for those 53 and over. We recommend a small adjustment in the rates to partially reflect the experience. The following graph shows a comparison of the current expected, actual, and proposed rates of withdrawal for actives.



The charts below provide our recommended changes to this assumption and the resulting A/E (actual to expected) ratio.

COMPARATIVE RATES OF WITHDRAWAL

RATES OF WITHDRAWAL		
AGE	Present	Proposed
20	6.0%	8.0%
25	6.0%	8.0%
30	6.0%	8.0%
35	6.0%	8.0%
40	6.0%	8.0%
45	7.5%	8.5%
50	8.5%	8.5%
55	10.0%	9.0%

COMPARISON OF ACTUAL AND EXPECTED WITHDRAWALS BASED ON PROPOSED RATES

CENTRAL AGE OF GROUP	NUMBER OF WITHDRAWALS PROPOSED RATE		
	Actual	Expected	Ratio of Actual to Expected
25	1	0.4	2.500
30	4	2.1	1.905
35	4	5.5	0.727
40	12	8.8	1.364
45	14	9.9	1.414
50	15	12.0	1.250
53 & over	26	34.0	0.765
TOTAL	**76**	**72.7**	**1.045**

RATES OF DISABILITY RETIREMENT

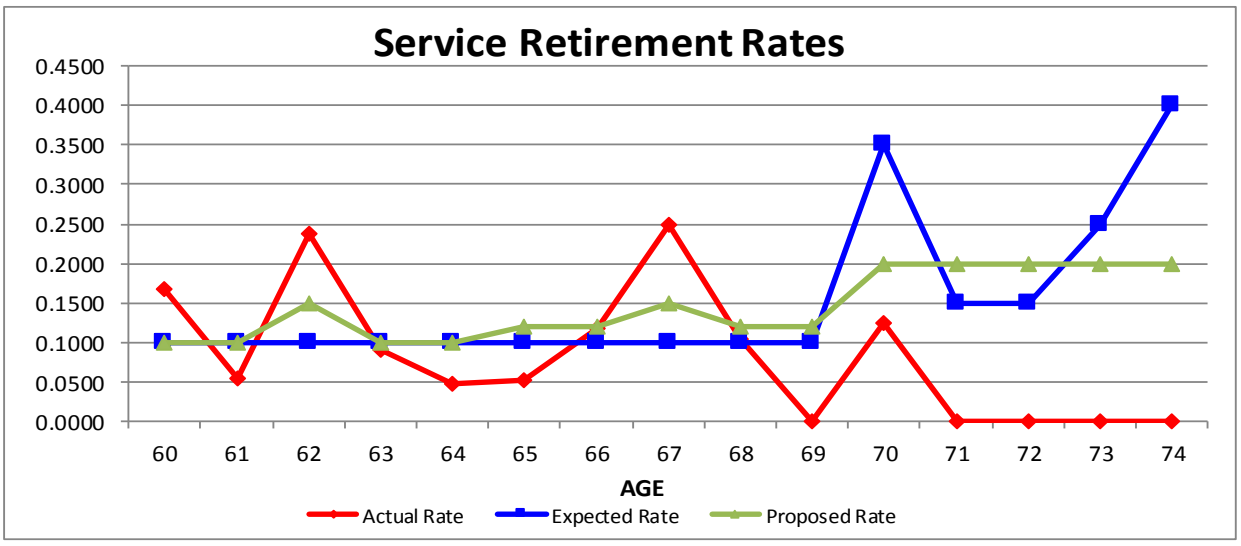
Since there are no specific disability benefits payable from the System and the experience indicates no members are classified as disabled, we recommend no disability retirement rates be utilized at this time.

RATES OF RETIREMENT

COMPARISON OF ACTUAL AND EXPECTED RETIREMENTS

NUMBER OF SERVICE RETIREMENTS			
AGE	CURRENT RATES		
	Actual	Expected	Ratio of Actual to Expected
60	3	1.8	1.667
61	1	1.8	0.556
62	5	2.1	2.381
63	2	2.2	0.909
64	1	2.1	0.476
65	1	1.9	0.526
66	2	1.7	1.176
67	5	2.0	2.500
68	2	1.9	1.053
69	0	1.8	0.000
70	2	5.6	0.357
71	0	1.8	0.000
72	0	1.4	0.000
73	0	1.0	0.000
74	0	0.8	0.000
SUBTOTAL	**24**	**29.9**	**0.803**
75+	4	13.0	0.308
TOTAL	**28**	**42.9**	**0.653**

The analysis of the experience reflects that the current assumed rates of retirement over-anticipate retirements at some ages and under-anticipate retirements at other ages and in total over the five year period. We recommend small adjustments to the rates to reflect the experience as well as maintain a reasonable degree of margin. The following graph shows a comparison of the present and actual rates of service retirements.



The charts below provide our recommended changes to this assumption and the resulting A/E (actual to expected) ratio.

COMPARITIVE RATES OF RETIREMENT

RATES OF SERVICE RETIREMENT		
AGE	Present	Proposed
60	10.0%	10.0%
61	10.0%	10.0%
62	10.0%	15.0%
63	10.0%	10.0%
64	10.0%	10.0%
65	10.0%	12.0%
66	10.0%	12.0%
67	10.0%	15.0%
68	10.0%	12.0%
69	10.0%	12.0%
70	35.0%	20.0%
71	15.0%	20.0%
72	15.0%	20.0%
73	25.0%	20.0%
74	40.0%	20.0%
75+	100.0%	100.0%

COMPARISON OF ACTUAL AND EXPECTED RETIREMENTS BASED ON PROPOSED RATES

NUMBER OF SERVICE RETIREMENTS			
AGE	PROPOSED RATES		
	Actual	Expected	Ratio of Actual to Expected
60	3	1.8	1.667
61	1	1.8	0.556
62	5	3.2	1.563
63	2	2.2	0.909
64	1	2.1	0.476
65	1	2.3	0.435
66	2	2.0	1.000
67	5	3.0	1.667
68	2	2.3	0.870
69	0	2.2	0.000
70	2	3.2	0.625
71	0	2.4	0.000
72	0	1.8	0.000
73	0	0.8	0.000
74	0	0.4	0.000
SUBTOTAL	**24**	**31.5**	**0.762**
75+	4	13.0	0.308
TOTAL	**28**	**44.5**	**0.629**

RATES OF MORTALITY

Post-Retirement Mortality Rates

Since the Retirement System has minimal post-retirement mortality experience, we recommend that the rates of post-retirement mortality be revised to the same mortality tables used for the Employees' Retirement System of Georgia. The recommended table for service retirements and beneficiaries of deceased members is the RP-2000 Combined Mortality Table with projection scale BB projected to 2025 set forward 2 years for both males and females.

Since there are no disability retirements in the System, we recommend no disability mortality rates be utilized at this time.

Pre-Retirement Mortality

Since the Retirement System has minimal pre-retirement mortality experience, we recommend that the rates of mortality in active service for both males and females be changed to the same mortality table that is used for the Employees' Retirement System of Georgia. The recommended table is the RP-2000 Employee Mortality Table projected to 2025 with projection scale BB.

Section V
Other Assumptions and Methods

ADMINISTRATIVE EXPENSES: We recommend no change to the assumption for administrative expenses.

AMORTIZATION METHOD: Currently, the valuation uses a level dollar amortization method. We recommend no change to this method.

ASSETS: Currently, the actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected actuarial value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected actuarial value. We recommend maintaining the current smoothing method.

COST OF LIVING: Currently, we assume cost of living increases of 1.5% semi-annually. We recommend maintaining this assumption.

OPTION FACTORS: The option factors currently used by the Retirement System are based on the mortality tables used in the valuation. We recommend that the factors be revised if the mortality table recommended for the valuation is adopted.

PERCENT MARRIED: Currently, 90% of active members are assumed to be married with the male three years older than his spouse. We recommend maintaining this assumption.

VALUATION COST METHOD: Currently, the valuation uses the entry age actuarial cost method. This is the most widely used cost method of large public sector plans and has demonstrated the highest degree of stability as compared to alternative methods. We recommend no change to this assumption.

APPENDIX A

Historical June CPI (U) Index

Year	CPI (U)	Year	CPI (U)
1961	29.8	1988	118.0
1962	30.2	1989	124.1
1963	30.6	1990	129.9
1964	31.0	1991	136.0
1965	31.6	1992	140.2
1966	32.4	1993	144.4
1967	33.3	1994	148.0
1968	35.7	1995	152.5
1969	34.7	1996	156.7
1970	38.8	1997	160.3
1971	40.6	1998	163.0
1972	41.7	1999	166.2
1973	44.2	2000	172.4
1974	49.0	2001	178.0
1975	53.6	2002	179.9
1976	56.8	2003	183.7
1977	60.7	2004	189.7
1978	65.2	2005	194.5
1979	72.3	2006	202.9
1980	82.7	2007	208.352
1981	90.6	2008	218.815
1982	97.0	2009	215.693
1983	99.5	2010	217.965
1984	103.7	2011	225.722
1985	107.6	2012	229.478
1986	109.5	2013	233.504
1987	113.5	2014	238.343

APPENDIX B

Capital Market Assumptions and Asset Allocation

Real Rates of Return and Standard Deviations by Asset Class

Asset Class	Expected Real Rate of Return	Standard Deviation
Fixed Income	0.0%	9.0%
Domestic Stocks – Large Cap	9.0%	21.5%
Domestic Stocks – Mid Cap	12.0%	24.5%
Domestic Stocks – Small Cap	13.5%	34.0%
Int'l Stocks - Developed Mkt	8.0%	19.0%
Int'l Stocks - Emerging Mkt	12.0%	27.0%
Alternatives	10.5%	27.5%

Asset Class Correlation Coefficients

Asset Class	Fixed Income	Domestic Stocks – Large Cap	Domestic Stocks – Mid Cap	Domestic Stocks – Small Cap	Int'l Stocks - Developed Mkt	Int'l Stocks - Emerging Mkt	Alts
Fixed Income	1.00						
Domestic Stocks – Large Cap	0.18	1.00					
Domestic Stocks – Mid Cap	0.18	0.94	1.00				
Domestic Stocks – Small Cap	0.14	0.83	0.90	1.00			
Int'l Stocks - Developed Mkt	0.15	0.63	0.65	0.51	1.00		
Int'l Stocks - Emerging Mkt	0.08	0.67	0.70	0.65	0.69	1.00	
Alternatives	0.32	0.75	0.80	0.83	0.65	0.63	1.00

Asset Allocation Targets

Asset Class	Asset Allocation
Fixed Income	30.0%
Domestic Stocks – Large Cap	37.2%
Domestic Stocks – Mid Cap	3.4%
Domestic Stocks – Small Cap	1.4%
Int'l Stocks - Developed Mkt	17.8%
Int'l Stocks - Emerging Mkt	5.2%
Alternatives	5.0%

APPENDIX C

TABLE 1 -RATES OF SEPARATION FROM ACTIVE SERVICE

AGE	RATES OF WITHDRAWAL	RATES OF DEATH		RATES OF SERVICE RETIREMENT
		MALES	FEMALES	
20	0.080	0.000320	0.000177	
21	0.080	0.000331	0.000178	
22	0.080	0.000340	0.000180	
23	0.080	0.000346	0.000183	
24	0.080	0.000349	0.000186	
25	0.080	0.000349	0.000192	
26	0.080	0.000351	0.000199	
27	0.080	0.000354	0.000207	
28	0.080	0.000365	0.000218	
29	0.080	0.000382	0.000230	
30	0.080	0.000412	0.000245	
31	0.080	0.000463	0.000285	
32	0.080	0.000521	0.000325	
33	0.080	0.000585	0.000365	
34	0.080	0.000651	0.000404	
35	0.080	0.000717	0.000441	
36	0.080	0.000780	0.000477	
37	0.080	0.000839	0.000514	
38	0.080	0.000894	0.000555	
39	0.080	0.000947	0.000601	
40	0.080	0.001001	0.000655	
41	0.080	0.001059	0.000718	
42	0.080	0.001127	0.000790	
43	0.085	0.001205	0.000869	
44	0.085	0.001296	0.000955	
45	0.085	0.001399	0.001043	
46	0.085	0.001499	0.001135	
47	0.085	0.001609	0.001230	
48	0.085	0.001725	0.001330	
49	0.085	0.001851	0.001438	
50	0.085	0.001983	0.001555	
51	0.085	0.002122	0.001683	
52	0.085	0.002271	0.001825	
53	0.090	0.002431	0.001981	
54	0.090	0.002609	0.002100	
55	0.090	0.002810	0.002228	
56	0.090	0.003067	0.002371	
57	0.090	0.003282	0.002525	
58	0.090	0.003526	0.002692	
59	0.090	0.003797	0.002871	
60	0.090	0.004092	0.003058	0.1000
61	0.090	0.004403	0.003250	0.1000
62	0.090	0.004721	0.003443	0.1500
63	0.090	0.005034	0.003726	0.1000
64	0.090	0.005330	0.004015	0.1000
65	0.090	0.005600	0.004304	0.1200
66	0.090	0.005839	0.004590	0.1200
67	0.090	0.006044	0.004868	0.1500
68	0.090	0.006215	0.005136	0.1200
69	0.090	0.006518	0.005390	0.1200
70	0.090	0.006800	0.005630	0.2000
71	0.090	0.016839	0.013739	0.2000
72	0.090	0.018697	0.015281	0.2000
73	0.090	0.020825	0.016986	0.2000
74	0.090	0.023233	0.018826	0.2000
75	0.090	0.025929	0.020784	1.0000

TABLE 2

RATES OF MORTALITY FOR MEMBERS RETIRED ON ACCOUNT OF SERVICE AND BENEFICIARIES OF DECEASED MEMBERS

AGE	MALES	FEMALES	AGE	MALES	FEMALES
19	0.000331	0.000178	70	0.018697	0.015281
20	0.000340	0.000180	71	0.020825	0.016986
21	0.000346	0.000183	72	0.023233	0.018826
22	0.000349	0.000186	73	0.025929	0.020784
23	0.000349	0.000192	74	0.028900	0.022899
24	0.000351	0.000199	75	0.032147	0.025220
25	0.000354	0.000207	76	0.035722	0.027801
26	0.000365	0.000218	77	0.039700	0.030693
27	0.000382	0.000230	78	0.044114	0.033926
28	0.000412	0.000245	79	0.049373	0.037551
29	0.000463	0.000285	80	0.055160	0.041628
30	0.000521	0.000325	81	0.061487	0.046222
31	0.000585	0.000365	82	0.068382	0.051406
32	0.000651	0.000404	83	0.075906	0.057269
33	0.000717	0.000441	84	0.084158	0.063873
34	0.000780	0.000477	85	0.095631	0.071239
35	0.000839	0.000514	86	0.108574	0.079348
36	0.000894	0.000555	87	0.123063	0.088111
37	0.000947	0.000601	88	0.139099	0.099870
38	0.001001	0.000655	89	0.155385	0.112476
39	0.001059	0.000718	90	0.172787	0.125732
40	0.001127	0.000790	91	0.191152	0.139427
41	0.001205	0.000869	92	0.210317	0.153358
42	0.001296	0.000955	93	0.230128	0.167340
43	0.001399	0.001043	94	0.250467	0.181190
44	0.001499	0.001135	95	0.271263	0.194718
45	0.001609	0.001230	96	0.285234	0.202595
46	0.001725	0.001330	97	0.306313	0.214644
47	0.001851	0.001438	98	0.319624	0.220284
48	0.001983	0.001555	99	0.341120	0.232882
49	0.002272	0.001718	100	0.353540	0.242074
50	0.002474	0.001872	101	0.373578	0.259472
51	0.002705	0.002047	102	0.382320	0.272162
52	0.002965	0.002193	103	0.397886	0.293116
53	0.003362	0.002397	104	0.400000	0.307811
54	0.003896	0.002658	105	0.400000	0.322725
55	0.004246	0.002918	106	0.400000	0.337441
56	0.004652	0.003209	107	0.400000	0.351544
57	0.005115	0.003543	108	0.400000	0.364617
58	0.005660	0.003932	109	0.400000	0.376246
59	0.006280	0.004409	110	0.400000	0.386015
60	0.006985	0.004923	111	0.400000	0.393507
61	0.007788	0.005656	112	0.400000	0.398308
62	0.008555	0.006374	113	0.400000	0.400000
63	0.009419	0.007177	114	0.400000	0.400000
64	0.010389	0.008100	115	0.400000	0.400000
65	0.011300	0.008994	116	0.400000	0.400000
66	0.012248	0.009942	117	0.400000	0.400000
67	0.013571	0.010989	118	1.000000	1.000000
68	0.015219	0.012380	119	1.000000	1.000000
69	0.016839	0.013739	120	1.000000	1.000000