

North Carolina National Guard Pension Fund

Statement of the Results of the Experience
Investigation and Recommended Revised
Tables for Adoption by the Board of Trustees
Prepared as of December 31, 2014





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October 8, 2015

Board of Trustees
Teachers and State Employees'
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Members of the Board:

An investigation of the mortality and service experience of members and beneficiaries of the North Carolina National Guard Pension Fund (the "Fund") has been made. This investigation covers the five-year period from January 1, 2010 to December 31, 2014. As a result of the investigation, it is recommended that revised tables be adopted by the Board for future use.

Experience for Active Members

The number of members expected to separate from active service was obtained using the rates currently used for the valuations and the members exposed to the rates. The expected separations were then compared with the actual separations. Based on the comparison of actual separations to expected separations and taking into account reasonable expectations of the future, proposed assumption changes have been made.

The results of the investigation indicate that, in our view, the rates of separation from active service due to mortality, retirement and termination do not accurately reflect the actual and anticipated experience of the Fund. As a result of the investigation, new active service tables have been developed that more closely reflect the actual experience of the membership.

Experience for Retired Members and Survivors of Deceased Members

An investigation of the experience for retired members and survivors of deceased members was prepared separately by gender and cause of retirement. The expected deaths were determined by applying the assumed rates of mortality used for valuation purposes to the number of members in each retirement category. A comparison was then made between the expected and actual deaths in each retirement category.

The results of the investigation indicate that the assumed rates of mortality do not accurately reflect the actual and expected experience of the Fund. As a result of the investigation, we are recommending new mortality tables.

Summary

This report contains tables showing a comparison of the actual and expected cases of separation from active service and actual and expected number of deaths among retired members and survivors of deceased members. A comparison between the rates presently in use and the recommended revised rates are also shown in this report. Additionally, this report contains a recommended change in administrative expenses. The table of contents outlines the material contained in this report.

The recommended rates of separation from active service and other demographic assumptions are shown in the attached tables in Schedule A of this report. In the actuary's judgment, the rates recommended are suitable for use until further experience indicates that modifications are desirable.

We have also included, in Schedule A, the economic assumptions and funding methods related to the December 31, 2014 valuation of the Fund, but such economic assumptions and funding methods are not part of the scope of this experience investigation report.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law. Because of limited scope, Buck performed no analysis of the potential range of such future differences

The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and we are available to answer questions about it.

Respectfully submitted,


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Section 1: Post-Retirement Mortality

The Fund currently uses mortality tables that vary by age, gender and health status (i.e., disabled and healthy). The current mortality rates are based on published tables and based on studies that cover significant portions of the U.S. population. The healthy mortality rates also contain a provision to reflect future mortality improvements. The following table shows that, in total, the current mortality tables result in expected mortality rates significantly higher than the actual mortality rates. In addition, recent studies of the U.S. population have determined that the rates of mortality improvement in the U.S. have differed from those predicted by the projection scale currently in use (Scale AA). Further, the current mortality tables do not provide for mortality improvements for members disabled at retirement.

Therefore, we are recommending that the Board adopt a set of mortality tables that better reflect the experience of the Fund. The recommended mortality tables are also based on recent studies that cover significant portions of the U.S. population, allow for future mortality improvements based on recent studies (Scale MP-2014) and apply mortality improvement to all members, including those disabled at retirement. Scale MP-2014 includes a two-dimensional improvement assumption that is a function of both age and calendar year. The recommended mortality tables continue to vary by age, gender, and health status (i.e., disabled and healthy).

Post-Retirement Mortality						
	<u>Exposed</u>	<u>Actual</u>	<u>Expected</u>	<u>Actual to Expected Ratio</u>	<u>Proposed</u>	<u>Actual to Proposed Ratio</u>
Total	21,230	533	731	73%	561	95%

Section 2: Active Mortality

The Fund currently uses mortality tables that vary by age and gender. The current mortality rates are based on published tables and based on recent studies that cover significant portions of the U.S. population. The mortality rates also contain a provision to reflect future mortality improvements.

Therefore, we are recommending that the Board adopt a set of mortality tables consistent with the mortality experience of retirees. The recommended mortality tables are the corresponding active employee table to the post-retirement rates recommended. The recommended mortality tables continue to vary by age and gender.

Section 3: Rates of Retirement

The Fund currently uses retirement rates that vary by age. The following table shows that, in total, the retirement rates result in expected retirements much greater than actual retirements.

Therefore, we are recommending that the Board adopt a set of retirement rates that better reflect the experience of the Fund and the expectations for future retirements.

Unreduced Retirement						
	<u>Exposed</u>	<u>Actual</u>	<u>Expected</u>	Actual to <u>Expected Ratio</u>	<u>Proposed</u>	Actual to <u>Proposed Ratio</u>
Total	9,537	1,432	4,859	29%	1,584	90%

Section 4: Termination Rates

The Fund currently uses no termination rates. The following table shows that, in total, the actual terminations are high enough to warrant implementing termination rates.

Therefore, we are recommending that the Board adopt a set of termination rates that better reflect the experience of the Fund and the expectations for future terminations.

Termination						
	<u>Exposed</u>	<u>Actual</u>	<u>Expected</u>	Actual to <u>Expected Ratio</u>	<u>Proposed</u>	Actual to <u>Proposed Ratio</u>
Total	18,820	2,099	0	N/A	1,646	128%

Section 5: Disability Rates

Disability rates measure the probability that a member will become disabled and receive a disability retirement benefit. The Fund currently uses disability rates that vary by age. As the disability retirement benefit has little impact on the liability for active members, we are recommending no change in the disability rates.

Section 6: Other Assumptions

The Fund currently has no provision for assumed administrative expenses. We are recommending adding a provision for assumed administrative expenses equal to the prior year's actual administrative expenses.

Section 7: Summary and Cost of Changes

As a result of the experience investigation, we are recommending revised rates of mortality, retirement and termination for active members, revised rates of mortality for retired members and survivors of deceased members and a provision for assumed administrative expenses.

Based on the results of the December 31, 2014 valuation, and these proposed demographic assumptions, the accrued liability of the Fund will increase from \$151,066,064 to \$164,798,075 and the required contribution will increase from \$6,922,083 to \$8,477,489. However, it is our understanding that such assumptions, if adopted, would be applied to the December 31, 2015 valuation.

Note: The cost impacts listed above only apply to demographic-type assumptions. Economic assumptions including investment return, real rate of return, general and wage inflation and real wage growth are not included in this report. Additionally, funding methods such as asset valuation method, actuarial cost method and amortization method are not included in this report.

Appendix A: Statement of Actuarial Assumptions and Methods

INTEREST RATE: 7.25% per annum, compounded annually.

INFLATION: General inflation assumed to be 3.00% per annum.

ADMINISTRATIVE EXPENSES: Prior year's actual administrative expenses added to normal cost

SEPARATIONS BEFORE RETIREMENT: Representative values of the assumed annual rates of separation due to disability are as follows:

Annual Rate of	
<u>Age</u>	<u>Disability*</u>
25	.0001
30	.0004
35	.0010
40	.0029
45	.0049
50	.0084
55	.0144
60	.0240

*Applied only to members with less than 20 years of service.

ACTUARIAL COST METHOD: Entry age normal cost method. Entry age is established on an individual basis. Gains and losses are reflected in the unfunded actuarial cost method.

ASSET VALUATION METHOD: Actuarial value. 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. The actuarial value of assets is not allowed to be greater than 120% of the market value of assets or less than 80% of the market value of assets.

TIMING OF ASSUMPTIONS: All withdrawals, deaths, disabilities, retirements and salary increases are assumed to occur July 1 of each year.

DEATHS AFTER RETIREMENT (NON-DISABLED): According to the RP-2014 Mortality tables for retirees. The active employee rates of RP-2014 are used for ages less than 50.

DEATH AFTER DISABILITY: RP-2014 Mortality tables for disabled annuitants.

DEATHS PRIOR TO RETIREMENT: According to the RP-2014 Mortality tables for active employees.

MORTALITY PROJECTION (NON-DISABLED): All mortality rates are projected from 2014 using Scale MP-2014.

Appendix A: Statement of Actuarial Assumptions and Methods

National Guard Retirement Rates

Age	Service	
	<u><= 19</u>	<u>>= 20</u>
<=54	0.000	0.150
55 to 59	0.000	0.200
60 to 64	0.000	0.750
>=65	0.000	1.000

Appendix A: Statement of Actuarial Assumptions and Methods

National Guard Termination Rates

Age	Service			
	<u><= 6</u>	<u>7 to 9</u>	<u>10 to 14</u>	<u>15 to 19</u>
<=24	0.000	0.150	0.080	0.050
25 to 29	0.000	0.150	0.080	0.050
30 to 34	0.000	0.150	0.080	0.050
35 to 39	0.000	0.150	0.080	0.050
40 to 44	0.000	0.150	0.080	0.050
45 to 49	0.000	0.150	0.080	0.050
>=50	0.000	0.150	0.080	0.050