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National Guard Pension Fund Principal Results of Actuarial Valuation as of December 31, 2017

October 25, 2018 Board of Trustees Meeting

Larry Langer, ASA, FCA, EA, MAAA
Jonathan Craven, ASA, FCA, EA, MAAA





Member Data

Inputs

Membership Data

Asset Data

Benefit Provisions

Assumptions

Funding Methodology



Results

Actuarial Value of Assets

Actuarial Accrued Liability

Net Actuarial Gain or Loss

Funded Ratio

Employer Contributions

Benefit Enhancement

Additional Disclosures

Projections

The table below provides a summary of the membership data used in this valuation compared to the prior valuation.

Number as of	12/31/2017	12/31/2016
Active Members	5,890	5,953
Terminated Members Entitled to Benefits but Not Yet Receiving	5,679	5,538
Retired Members Currently Receiving Benefits	<u>4,574</u>	<u>4,541</u>
Total	16,143	16,032

The total number of members increased by 0.7% from the previous valuation date.

A detailed summary of the membership data used in this valuation is provided in Section 3 and Appendix B.

Valuation Input

Asset Data



Inputs

Membership Data

Asset Data

Benefit Provisions

Assumptions

Funding Methodology



Results

Actuarial Value of Assets

Actuarial Accrued Liability

Net Actuarial Gain or Loss

Funded Ratio

Employer Contributions

Benefit Enhancement

Additional Disclosures

Projections

The table below provides details of the Market Value of Assets for the current and prior year's valuations.

Asset Data as of	12/31/2017	12/31/2016
Beginning of Year Market Value of Assets	\$ 113,183,427	\$ 107,064,124
Contributions	8,863,769	8,291,496
Benefit Payments	(8,687,860)	(8,648,758)
Investment Income	14,884,127	6,476,565
Net Increase/(Decrease)	15,060,036	6,119,303
End of Year Value of Assets	\$ 128,243,463	\$ 113,183,427
Estimated Net Investment Return	13.14%	6.06%

National Guard Pension Fund Assets are held in trust and are invested for the exclusive benefit of plan members.

Over the long term, benefit payments and administrative expenses not covered by contributions are expected to be covered with investment income, illustrating the benefits of following actuarial pre-funding since inception.



Net Actuarial Gain or Loss

Inputs

Membership Data
Asset Data
Benefit Provisions
Assumptions
Funding Methodology



Results

Actuarial Value of Assets
Actuarial Accrued Liability
Net Actuarial Gain or Loss
Funded Ratio
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Benefit Enhancement
Additional Disclosures
Projections

The table below provides a reconciliation of the prior year's unfunded actuarial accrued liability to the current year's unfunded actuarial accrued liability.

Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2016	\$ 54.4
Actuarial Transition	0.1
Normal Cost and Administrative Expense during 2017	0.5
Reduction due to Actual Contributions during 2017	(8.9)
Interest on UAAL, Normal Cost, and Contributions	3.6
Asset (Gain) / Loss	0.8
Actuarial Accrued Liability (Gain) / Loss	(1.9)
Impact of Assumption Changes	3.9
Impact of Legislative Changes	0.0
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2017	\$ 52.5

During 2017, there was a transition from the prior actuary to CMC, resulting in valuation programming modifications and differences in methodologies that increased the UAAL by \$0.1 million. The change in assumptions reflects the change in interest rate from 7.20% to 7.00% and increased the unfunded actuarial accrued liability (UAAL) by \$3.9 million. In addition, the loss recognized in actuarial value of assets increased the UAAL by \$0.8 million and actuarial accrued liability gains decreased the UAAL by 1.9 million.

A detailed summary of the net actuarial gain or loss is provided in Section 5.

Valuation Results

Funded Ratio



Inputs

Membership Data
Asset Data
Benefit Provisions
Assumptions
Funding Methodology



Results

Actuarial Value of Assets
Actuarial Accrued Liability
Net Actuarial Gain or Loss
Funded Ratio
Employer Contributions
Benefit Enhancement
Additional Disclosures
Projections

The table below provides a summary of the results of this valuation compared to the prior valuation.

Valuation Results as of	12/31/2017	12/31/2016
Assets		
Actuarial Value (AVA)	\$ 126,639,220	\$ 118,724,236
Market Value (MVA)	\$ 128,243,463	\$ 113,183,427
Actuarial Accrued Liability (AAL)	\$ 179,112,961	\$ 173,102,363
Unfunded Accrued Liability (AAL - AVA)	\$ 52,473,741	\$ 54,378,127
Funded Ratio (AVA / AAL)*	70.7%	68.6%

Due to a history of retroactive benefit increases, the funded status of this plan is lower than the others in the North Carolina Retirement Systems.



Employer Contributions

Inputs

Membership Data
Asset Data
Benefit Provisions
Assumptions
Funding Methodology



Results

Actuarial Value of Assets
Actuarial Accrued Liability
Net Actuarial Gain or Loss
Funded Ratio

Employer Contributions

Benefit Enhancement
Additional Disclosures
Projections

The table below provides a reconciliation of the actuarially determined employer contribution (ADEC).

Fiscal year ending June 30, 2019 Preliminary ADEC (based on December 31, 2016 valuation)	\$ 9,071,933
Impact of Legislative Changes	<u>0</u>
Fiscal year ending June 30, 2019 Final ADEC	\$ 9,071,933
Change Due to Transition	3,156
Change Due to Demographic (Gain)/Loss	(258,777)
Change Due to Investment (Gain)/Loss	109,831
Change Due to Contributions Greater than ADEC	(61,880)
Impact of Assumption Changes	502,356
Impact of Direct Rate Smoothing	<u>(334,904)</u>
Fiscal year ending June 30, 2020 Preliminary ADEC (based on December 31, 2017 valuation)	\$ 9,031,715

The change in rate due to investment loss is based on the actuarial value of assets returns, which was less than the 7.20% assumed return. The impact of the asset loss was an increase in employer contribution of 109,831. Demographic gains decreased the contribution by 258,777. The impact of the assumption change, the reduction from 7.20% assumed return to 7.00% totaled 502,356. This will be phased in over the next three years, being fully reflected for the June 30, 2022 results.

A detailed summary of the actuarially determined employer contribution rates is provided in Section 6.



Employer Contributions

Inputs

Membership Data
Asset Data
Benefit Provisions
Assumptions
Funding Methodology



Results

Actuarial Value of Assets
Actuarial Accrued Liability
Net Actuarial Gain or Loss
Funded Ratio
Employer Contributions
Benefit Enhancement
Additional Disclosures
Projections

The table below provides a summary of the employer contribution development for this valuation compared to the prior valuation.

Results for Fiscal Year Ending	6/30/2020	6/30/2019
Actuarially Determined Employer Contribution (ADEC)		
Normal Cost	\$ 538,612	\$ 437,389
Accrued Liability	8,828,007	8,634,544
Total	\$ 9,366,619	\$ 9,071,933
Total Based on Direct Rate Smoothing	\$ 9,031,715	N/A
Impact of Legislative Changes	N/A	N/A
Final ADEC	N/A	\$ 9,071,933

As a result of unfunded liabilities created by retroactive benefit increases, 6% of the ADEC is for the cost of benefits accruing (normal cost), meaning that 94% of the ADEC pays the pension debt.

A detailed summary of the actuarially determined employer contribution rates is provided in Section 6.

Certification



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, Cavanaugh Macdonald performed no analysis of the potential range of such future differences, except for some limited analysis in financial projections or required disclosure information. Results prior to December 31, 2017 were provided by the prior consulting actuary.

We 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.

Larry Langer, ASA, EA, FCA, MAAA
Principal and Consulting Actuary

Jonathan T. Craven, ASA, EA, FCA, MAAA
Consulting Actuary



Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve

North Carolina National Guard Pension Fund

Report on the Actuarial Valuation
Prepared as of December 31, 2017

October 2018





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

October 18, 2018

Board of Trustees
Teachers' and State Employees'
Retirement System of North Carolina
3200 Atlantic Avenue
Raleigh, NC 27604

Members of the Board:

We submit herewith our report on the actuarial valuation of the National Guard Pension Fund of North Carolina (referred to as "the Fund") prepared as of December 31, 2017. The report has been prepared in accordance with Chapter 127A of the North Carolina General Statutes. Information contained in our report for plan years prior to December 31, 2017 is based upon valuations performed by the prior actuary.

The primary purpose of the valuation report is to determine the required employer contribution rates, to describe the current financial condition of the Fund, and to analyze changes in such condition. In addition, the report provides information that the Office of the State Controller (OSC) requires for its Comprehensive Annual Financial Report (CAFR) and it summarizes census data. Use of this report for any other purposes or by anyone other than OSC and its auditors, or North Carolina Retirement Systems Division and Department of State Treasurer staff may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of the report for that purpose. The attached pages should not be provided without a copy of this cover letter. Because of the risk of misinterpretation of actuarial results, you should ask Cavanaugh Macdonald Consulting (CMC) to review any statement you wish to make on the results contained in this report. CMC will not accept any liability for any such statement made without prior review.

The results of this report are based upon participant data supplied by the Retirement Systems Division (RSD) and financial data supplied by the Financial Operations Division. CMC reviewed the data for reasonableness and consistency with data for the prior valuation, but performed no audit of the data. The results of this report are dependent on the accuracy of the data. Sometimes assumptions are made by CMC to interpret membership data that is imperfect. The valuation does not include members with less than seven years of service. Furthermore, in order to be eligible to receive a benefit from the National Guard Pension Fund, members are required to have twenty years of total military service, of which at least fifteen must be North Carolina National Guard service. Since the North Carolina National Guard service amounts that we receive appear to be incomplete, the valuation liabilities for active and terminated vested members are determined based only on reported total military service. The net impact of these data issues is unclear.

The valuation is further based on the actuarial valuation assumptions, approved by the Board of Trustees, as presented in this report. We believe that these assumptions are appropriate and reasonable and also comply with the requirements of GASB Statement No. 67. We prepared this valuation in accordance with the requirements of this standard and in accordance with all applicable Actuarial Standards of Practice (ASOP).



The assumptions used for the December 31, 2017 valuation are based on experience investigation prepared as of December 31, 2015 and adopted by the Board of Trustees on January 21, 2017, as further updated to use a discount rate of 7.00% in conjunction with direct-rate smoothing of the employer contribution amount, as adopted by the Board of Trustees on April 26, 2018. The economic assumptions with respect to investment yield, salary increase and inflation have been based upon a review of the existing portfolio structure as well as recent and anticipated experience.

Where presented, references to “funded ratio” and “unfunded accrued liability” typically are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the plan if the plan were to settle (i.e. purchase annuities) for a portion or all of its liabilities. In various places in the report the results also show funded ratios and unfunded liabilities based upon varying sets of assumptions as well as market values of assets as that is required for certain disclosure information required per accounting rules or statutes. Where this has been done it has been clearly indicated.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: fund experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law. Such changes in law may include additional costs resulting from future legislated benefit improvements or cost-of-living pension increases or supplements, which are not anticipated in the actuarial valuation. Because of limited scope, CMC performed no analysis of the potential range of such future differences, except for some limited analysis in financial projections or required disclosure information.

We 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.

Respectively Submitted,

A stylized, handwritten signature in blue ink, consisting of a large 'L' followed by a series of loops and a horizontal stroke at the end.

Larry Langer, ASA, EA, FCA, MAAA
Principal and Consulting Actuary

A handwritten signature in blue ink that reads 'Jonathan T. Craven' in a cursive script.

Jonathan T. Craven, ASA, EA, FCA, MAAA
Consulting Actuary



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Section 1: Summary of Principal Results

1. This report, prepared as of December 31, 2017, presents the results of the actuarial valuation of the Fund. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized below.

Table 1: Summary of Principal Results

Valuation Results as of	12/31/2017	12/31/2016
Active Members Number	5,890	5,953
Retired Members and Survivors of Deceased Members Currently Receiving Benefits Number	4,574	4,541
Annual Pensions	\$ 8,539,983	\$ 8,531,535
Terminated Members Entitled to but Not Yet Receiving Benefits Number	5,679	5,538
Annual Deferred Pensions	\$ 9,816,786	\$ 9,532,782
Assets		
Actuarial Value (AVA)	\$ 126,639,220	\$ 118,724,236
Market Value (MVA)	\$ 128,243,463	\$ 113,183,427
Actuarial Accrued Liability (AAL)	\$ 179,112,961	\$ 173,102,363
Unfunded Accrued Liability (AAL - AVA)	\$ 52,473,741	\$ 54,378,127
Funded Ratio (AVA / AAL)*	70.7%	68.6%
Results for Fiscal Year Ending	6/30/2020	6/30/2019
Actuarially Determined Employer Contribution (ADEC)		
Normal Cost	\$ 538,612	\$ 437,389
Accrued Liability	8,828,007	8,634,544
Total	\$ 9,366,619	\$ 9,071,933
Total Based on Direct Rate Smoothing	\$ 9,031,715	N/A
Impact of Legislative Changes	N/A	N/A
Final ADEC	N/A	\$ 9,071,933

* The Funded Ratio on a Market Value of Assets basis is 71.6% at December 31, 2017.



Section 1: Summary of Principal Results

2. The following table shows a reconciliation of the change in the actuarially determined employer contribution computed to be \$9,071,933 based on the December 31, 2016 valuation and \$9,031,715 based on the December 31, 2017 valuation.

Table 2: Reconciliation of Change in Actuarially Determined Employer Contribution (ADEC)

Fiscal year ending June 30, 2019 Preliminary ADEC (based on December 31, 2016 valuation)	\$ 9,071,933
Impact of Legislative Changes	<u>0</u>
Fiscal year ending June 30, 2019 Final ADEC	\$ 9,071,933
Change Due to Transition	3,156
Change Due to Demographic (Gain)/Loss	(258,777)
Change Due to Investment (Gain)/Loss	109,831
Change Due to Contributions Greater than ADEC	(61,880)
Impact of Assumption Changes	502,356
Deferral of Assumption Changes	<u>(334,904)</u>
Fiscal year ending June 30, 2020 Preliminary ADEC (based on December 31, 2017 valuation)	\$ 9,031,715



Section 1: Summary of Principal Results

3. Tables summarizing the membership of the Fund as of the valuation date are shown in Section 2.
4. The valuation balance sheet showing the assets and liabilities of the Fund as of the current and previous valuation dates is provided in Section 3.
5. An allocation of investments by category is shown in Section 4.
6. Comments on the experience and actuarial gains/losses during the valuation year are provided in Section 5.
7. Comments on the actuarially determined employer contribution are provided in Section 6.
8. Accounting information to be disclosed in the financial statements of the Plan is provided in Section 7.
9. Appendix A of this report presents the development of the actuarial value of assets.
10. Appendix B of this report presents the development of the amortization of the unfunded accrued liability.
11. Appendix C of this report outlines the full set of actuarial assumptions and methods employed.
12. Appendix D gives a summary of the benefit provisions of the system.
13. Appendix E provides the projection of cash flows used to determine the discount rate under GASB Statement No. 67.
14. Appendix F provides detailed tabulations of the membership of the system as of the valuation date.



Section 2: Membership Data

Data regarding the membership of the Fund for use as a basis for the valuation were furnished by the Retirement Systems Division. The following table summarizes the membership of the Fund as of December 31, 2017 upon which the valuation was based. Detailed tabulations of the data are given in Appendix F.

Table 3: Membership of the Fund as of December 31, 2017

	Member Count	Average Age	Average Service	Annual Pensions
Active Members	5,890	37.67	15.13	N/A
Retired Members Currently Receiving Benefits	4,574	71.38	N/A	\$ 8,539,983
Terminated Members Entitled to Benefits but Not Yet Receiving Benefits	5,679	57.71	N/A	\$ 9,816,786



Section 3: Valuation Balance Sheet

The following valuation balance sheet shows the assets and liabilities of the Retirement Fund as of the current valuation date of December 31, 2017. Appendix A summarizes the development of the actuarial value of assets.

Table 4: Valuation Balance Sheet Showing the Present and Prospective Assets and Liabilities of the North Carolina National Guard Pension Fund Prepared as of December 31, 2017

Assets	
Current Actuarial Value of Assets	\$ 126,639,220
Present Value of Prospective Contributions Payable by State	
Normal Contributions	\$ 1,738,169
Unfunded Accrued Liability Contributions	<u>52,473,741</u>
Total Prospective Contributions by State	<u>\$ 54,211,910</u>
Total Assets	<u><u>\$ 180,851,130</u></u>
Liabilities	
Present Value of Pensions Payable to Retired Members Currently Receiving Benefits	\$ 76,138,906
Present Value of Deferred Pensions Payable to Terminated Members Entitled to Benefits but Not Yet Receiving Benefits	78,109,670
Present Value of Prospective Pensions to Active Members included in the Valuation	26,602,554
Reserve for Increases in Retirement Pensions	<u>0</u>
Total Liabilities	<u><u>\$ 180,851,130</u></u>

The valuation balance sheet shows that the total present value of the prospective benefit payments as of December 31, 2017 amounts to \$180,851,130. Of this amount, \$76,138,906 represents the present value of future pension payments to retired members currently receiving benefits, \$26,602,554 represents the present value of prospective pensions which will become payable to present active members and \$78,109,670 represents the present value of future pension payments to terminated members entitled to benefits but not yet receiving benefits. Against these liabilities, the Fund has an actuarial value of assets of \$126,639,220 leaving a balance of \$54,211,910 to be provided by future contributions of the State. Of this amount, \$1,738,169 represents the present value of prospective normal contributions, and the balance of \$52,473,741 represents the present value of unfunded accrued liability contributions.



Section 4: Asset Allocation

The following table shows an allocation of investments by category as of December 31, 2017.

Table 5: Allocation of Investments by Category for the National Guard Pension Fund as of December 31, 2017

Cash and Receivables	3.3%
Fixed Income (LTIF)	25.9%
Public Equity	39.2%
Other*	<u>31.6%</u>
Total	100.0%

* Real Estate, Alternatives, Inflation and Credit.



Section 5: Comments on Experience and Gains/Losses

The following table shows a detailed reconciliation of the change in unfunded accrued liability since the prior valuation.

Table 6: Reconciliation of Change in Unfunded Accrued Liability Since the Prior Valuation
(in millions)

Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2016	\$ 54.4
Actuarial Transition	0.1
Normal Cost and Administrative Expense during 2017	0.5
Reduction due to Actual Contributions during 2017	(8.9)
Interest on UAAL, Normal Cost, and Contributions	3.6
Asset (Gain) / Loss	0.8
Actuarial Accrued Liability (Gain) / Loss	(1.9)
Impact of Assumption Changes	3.9
Impact of Legislative Changes	0.0
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2017	\$ 52.5

Commentary: During 2017, there was a transition from the prior actuary to CMC, resulting in valuation programming modifications and differences in methodologies that increased the UAAL by \$0.1 million. The change in assumptions reflects the change in interest rate from 7.20% to 7.00% and increased the unfunded actuarial accrued liability (UAAL) by \$3.9 million. In addition, the loss recognized in actuarial value of assets increased the UAAL by \$0.8 million and actuarial accrued liability gains decreased the UAAL by 1.9 million.



Section 6: Actuarially Determined Employer Contribution

The normal contribution covers the cost of benefits based on current service. The valuation indicates that the annual normal contribution payable by the State is equal to \$56.98 multiplied by the number of active members. Based on 5,890 active members included in the valuation, the normal contribution is \$335,612.

The unfunded actuarial accrued liability is amortized within a 12-year period through an annual unfunded accrued liability contribution. Assuming that the unfunded accrued liability is amortized based on the amortization schedule shown in Appendix B, with the payments covering both the principal amount and the accruing interest thereon at the rate of 7.00% per annum, the annual unfunded actuarial accrued liability contribution would be \$8,828,007.

Based on the present membership and the amortization schedule described above, the following table shows the total annual contributions payable by the State for the fiscal year ending June 30, 2020.

Table 7: Actuarially Determined Employer Contribution (ADEC)

Contribution	Annual Amount
Normal Cost*	\$ 538,612
Accrued Liability	8,828,007
Total	\$ 9,366,619
Impact of Direct Rate Smoothing	(334,904)
ADEC	\$ 9,031,715

*Includes assumed administrative expenses equal to prior year's actual administrative expenses of \$203,000.



Section 7: Accounting Information

The section contains the accounting information for Governmental Accounting Standards Board (GASB) Statement No. 67 for fiscal year ending June 30, 2018 based on a valuation date of December 31, 2017.

Please note that GASB Statement No. 67 (Financial Reporting for Pension Plans) is applicable for fiscal years ending 2014 and later.

The June 30, 2018 total pension liability presented in this section was determined by an actuarial valuation as of December 31, 2017, based on the assumptions, methods and plan provisions described in this report. The actuarial cost method used to develop the total pension liability is the Entry Age Normal Cost method, as required by GASB Statement No. 67.

GASB Statement No. 67 set forth certain items of information to be disclosed in the financial statements of the Plan. The tables below provide a distribution of the number of employees by type of membership.

**Table 8: Number of Active and Retired Members
as of December 31, 2017**

Group	Number
Retired members and survivors of deceased members currently receiving benefits	4,574
Terminated members and survivors of deceased members entitled to benefits but not yet receiving benefits	5,679
Active Members	<u>5,890</u>
Total	16,143



Section 7: Accounting Information

GASB Statement No. 67 set forth certain items of information to be disclosed in the financial statements of the Plan. The tables below provide the schedule of changes in Net Pension Liability (Asset).

Table 9: Schedule of Changes in Net Pension Liability (Asset)

Schedule of Changes in Net Pension Liability as of June 30, 2018	
Total Pension Liability	
Service Cost	\$ 304,000
Interest	12,288,000
Changes of Benefit Terms	0
Difference between Expected and Actual Experience	(1,748,000)
Change of Assumptions	3,926,000
Benefit Payments, including Refund of Member Contributions	<u>(8,766,000)</u>
Net Change in Total Pension Liability	6,004,000
Total Pension Liability - Beginning of Year	\$ 174,972,000
Total Pension Liability - End of Year	\$ 180,976,000
Plan Fiduciary Net Position	
Employer Contributions	\$ 8,923,000
Member Contributions	0
Net Investment Income	8,766,000
Benefit Payments, including Refund of Member Contributions	(8,766,000)
Administrative Expenses	(249,000)
Other	<u>2,000</u>
Net Change in Plan Fiduciary Net Position	8,676,000
Plan Fiduciary Net Position - Beginning of Year	\$ 121,127,000
Plan Fiduciary Net Position - End of Year	\$ 129,803,000

Table 10: Net Pension Liability (Asset)

Net Pension Liability (Asset)		
	June 30, 2018	June 30, 2017
Total Pension Liability	\$ 180,976,000	\$ 174,972,000
Plan Fiduciary Net Position	<u>129,803,000</u>	<u>121,127,000</u>
Net Pension Liability (Asset)	\$ 51,173,000	\$ 53,845,000
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability (Asset)	71.72%	69.23%



Section 7: Accounting Information

The table below is the sensitivity of the net pension liability to changes in the discount rate.

**Table 11: Sensitivity of the Net Pension Liability (Asset)
at June 30, 2018 to Changes in the Discount Rate**

Sensitivity of the Net Pension Liability to Changes in the Discount Rate			
	1% Decrease	Current	1% Increase
Discount Rate	6.00%	7.00%	8.00%
Net Pension Liability (Asset)	\$73,340,000	\$51,173,000	\$32,963,000

The discount rate used to measure the total pension liability was 7.00%. The projection of cash flows used to determine the discount rate assumed that System contributions will continue to follow the current funding policy. Based on those assumptions, the System's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Please see Appendix E for additional detail.

The table below provides the methods and assumptions used to calculate the actuarially determined employer contribution rate.

Table 12: Additional Information for GASB Statement No. 67

Valuation Date	12/31/2017
Actuarial Cost Method	Entry Age
Amortization Method	Level dollar closed
Amortization Period	12 year closed periods
Asset Valuation Method	Asset returns in excess of or less than the expected return on market value of assets reflected over a five-year period (not greater than 120% of market value and not less than 80% of market value)
Actuarial Assumptions:	
Investment Rate of Return*	7.00%
Projected Salary Increases	N/A
*Includes Inflation of	3.00%
Cost-of-living Adjustments	N/A



Appendix A: Development of Actuarial Value of Assets

Asset Data as of	12/31/2017
Beginning of Year Market Value of Assets	\$ 113,183,427
Contributions	8,863,769
Benefit Payments	<u>(8,687,860)</u>
Net Cash Flow	175,909
Expected Investment Return	8,155,429
Expected End of Year Market Value of Assets	121,514,765
End of Year Market Value of Assets	128,243,463
Excess of Market Value over Expected Market Value of Assets	6,728,698
80% of 2017 Asset Gain/(Loss)	5,382,958
60% of 2016 Asset Gain/(Loss)	(763,580)
40% of 2015 Asset Gain/(Loss)	(3,015,135)
20% of 2014 Asset Gain/(Loss)	<u>N/A</u>
Total Deferred Asset Gain/(Loss)	1,604,243
Preliminary End of Year Actuarial Value of Assets	126,639,220
Final End of Year Actuarial Value of Asset (not less than 80% and not greater than 120% of Market Value)	126,639,220
Estimated Net Investment Return on Actuarial Value	6.51%
Estimated Net Investment Return on Market Value	13.14%

Commentary: The actuarial value of assets smooths investment gains/losses, resulting in less volatility in the employer contribution. The asset valuation method recognizes asset returns in excess of or less than the expected return on the market value of assets over a five-year period.

Lower than expected market returns in 2015 and 2016, partially offset by greater than expected market returns in 2017, resulted in an actuarial value of asset return for calendar year 2017 of 6.51% and an actuarial asset loss of \$0.8 million during 2017.



Appendix B: Amortization Schedule for Unfunded Actuarial Accrued Liability

Date Established	Original Balance	12/31/2017 Outstanding Balance	Annual Payment
December 31, 2009	\$ 40,483,684	\$ 25,278,293	\$ 5,505,105
December 31, 2010	(2,911,753)	(2,079,872)	(395,553)
December 31, 2011	(2,233,724)	(1,782,784)	(303,149)
December 31, 2012	(515,855)	(452,030)	(69,942)
December 31, 2013	4,219,347	4,004,782	571,555
December 31, 2014	7,361,464	7,487,301	996,293
December 31, 2015	16,021,040	17,307,339	2,166,057
December 31, 2016	796,884	854,262	107,552
December 31, 2017	<u>1,856,450</u>	<u>1,856,450</u>	<u>250,089</u>
Total		\$ 52,473,741	\$ 8,828,007



Appendix C: Actuarial Assumptions and Methods

Assumptions are based on the experience investigation prepared as of December 31, 2014 and adopted by the Board of Trustees on January 21, 2016 for use beginning with the December 31, 2015 annual actuarial valuation. The discount rate of 7.00% was adopted by the Board of Trustees on April 26, 2018.

Interest Rate: 7.00% per annum, compounded annually.

Active Members: The valuation excludes all active members with less than 7 years of service.

Separations From Active Service: Representative values of the assumed annual rates of separation from active service are as follows:

Annual Rates of Withdrawal*

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

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

Annual Rates of

<u>Age</u>	<u>Male</u>	<u>Female</u>	
	<u>Mortality*</u>	<u>Mortality*</u>	<u>Disability*</u>
25	.0005	.0002	.0001
30	.0005	.0002	.0004
35	.0005	.0003	.0010
40	.0006	.0004	.0029
45	.0010	.0007	.0049
50	.0017	.0011	.0084
55	.0028	.0017	.0144
60	.0047	.0024	.0240

*Base mortality rates as of 2014.



Appendix C: Actuarial Assumptions and Methods

Annual Rates of Retirement

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

Deaths After Retirement: Representative values of the assumed post-retirement mortality rates in 2014 prior to any mortality improvements are as follows:

Annual Rates of Death After Retirement

<u>Age</u>	<u>Male Retirees (Healthy at Retirement)</u>	<u>Female Retirees (Healthy at Retirement)</u>	<u>Male Retirees (Disabled at Retirement)</u>	<u>Female Retirees (Disabled at Retirement)</u>
55	.0057	.0036	.0234	.0145
60	.0078	.0052	.0266	.0170
65	.0110	.0080	.0317	.0209
70	.0168	.0129	.0403	.0282
75	.0268	.0209	.0543	.0410
80	.0447	.0348	.0766	.0610

Deaths After Retirement (Healthy at Retirement): Mortality rates are based on the RP-2014 Total Data Set for Healthy Annuitants Mortality Table.

Death After Retirement (Disabled at Retirement): Mortality rates are based on the RP-2014 Total Data Set for Disabled Annuitants Mortality Table.

Deaths Prior to Retirement: Mortality Rates are based on the RP-2014 Total Data Set Employee Mortality Table.

Mortality Projection: All mortality rates are projected from 2014 using generational improvement with Scale MP-2015.

Timing of Assumptions: All deaths, disabilities and retirements are assumed to occur on July 1 of each year.



Appendix C: Actuarial Assumptions and Methods

Administrative Expenses: Prior year's actual administrative expenses.

Actuarial Cost Method: Entry age normal cost method. Entry age is established on an individual basis.

Normal Cost: Normal cost rate reflects the impact of new entrants during the year.

Asset Valuation Method: Actuarial value, as developed in Appendix A. Actuarial value of assets is based upon a smoothed market value method. Under this method, asset returns in excess of or less than the expected return on market value of assets will be reflected in the actuarial value of assets over a five-year period. The calculation of the Actuarial Value of Assets is based on the following formula:

$$MV - 80\% \times G/(L)_1 - 60\% \times G/(L)_2 - 40\% \times G/(L)_3 - 20\% \times G/(L)_4$$

MV = the market value of assets as of the valuation date

$G/(L)_i$ = the asset gain or (loss) for the i-th year preceding the valuation date

Changes Since Prior Valuation: The interest rate was changed from 7.20% to 7.00%, with this change phased into the contribution amount using direct rate smoothing over a three year period.



Appendix D: Summary of Main Plan Provisions

Membership

All members of the North Carolina National Guard with seven years of service are eligible to be members of the Fund.

Benefits

Service Retirement Pension

Condition for Pension	A member who retires after he or she has attained age 60 and has credit for 20 years of military service, including at least 15 years of North Carolina national guard duty, both reserve and active, and who has received an honorable discharge, is entitled to a monthly pension.
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Amount of Pension	The amount of the pension is equal to \$105 per month for 20 years of creditable service with an additional \$10.50 per month for each additional year of such service, provided that the total pension shall not exceed \$210 per month.
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Deferred Early Retirement Pension

Condition for Pension	A member whose service is terminated after he or she has credit for 20 years of military service, including at least 15 years of North Carolina national guard duty, both reserve and active, and who has received an honorable discharge, is eligible to receive a deferred retirement pension commencing at age 60.
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Amount of Pension	The amount is the same as that for a service retirement.
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Normal Form	Life Annuity.
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Optional Form	None.
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Contributions

The State makes annual contributions sufficient to meet the cost of the benefits under the Fund.

Changes Since Prior Valuation	None.
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Appendix E: GASB 67 Fiduciary Net Position Projection

Table E-1: Projection of Fiduciary Net Positions
(in thousands)

Calendar Year	Beginning Fiduciary Position	Member Contributions	Employer Contributions	Benefit Payments	Administrative Expenses	Investment Earnings	Ending Fiduciary Position
2018	\$ 128,243	\$ 0	\$ 9,202	\$ 11,625	\$ 203	\$ 8,887	\$ 134,504
2019	134,504	0	9,498	11,811	180	9,329	141,340
2020	141,340	0	9,560	12,105	160	9,801	148,435
2021	148,435	0	9,272	12,408	143	10,278	155,434
2022	155,434	0	6,398	12,724	129	10,658	159,637
2023	159,637	0	4,064	13,060	115	10,861	161,388
2024	161,388	0	4,638	13,346	102	10,994	163,572
2025	163,572	0	4,796	13,637	91	11,143	165,782
2026	165,782	0	4,519	13,809	81	11,282	167,694
2027	167,694	0	3,710	13,983	72	11,383	168,732
2028	168,732	0	2,106	14,120	63	11,396	168,051
2029	168,051	0	948	14,236	54	11,305	166,014
2030	166,014	0	749	14,345	46	11,152	163,523
2031	163,523	0	605	14,418	39	10,970	160,641
2032	160,641	0	588	14,378	32	10,769	157,588
2033	157,588	0	575	14,232	26	10,560	154,465
2034	154,465	0	564	14,090	22	10,346	151,263
2035	151,263	0	298	13,906	18	10,120	147,756
2036	147,756	0	35	13,683	15	9,873	143,967
2037	143,967	0	28	13,431	12	9,616	140,168
2038	140,168	0	23	13,201	10	9,358	136,337
2039	136,337	0	18	12,967	8	9,098	132,478
2040	132,478	0	15	12,747	6	8,835	128,575
2041	128,575	0	12	12,536	5	8,569	124,615
2042	124,615	0	9	12,336	4	8,299	120,583
2043	120,583	0	7	12,162	3	8,022	116,447
2044	116,447	0	5	11,966	2	7,740	112,224
2045	112,224	0	4	11,757	2	7,451	107,920
2046	107,920	0	3	11,510	1	7,158	103,571
2047	103,571	0	2	11,286	1	6,862	99,147
2048	99,147	0	1	11,103	1	6,558	94,602
2049	94,602	0	1	10,888	0	6,248	89,962
2050	89,962	0	0	10,633	0	5,931	85,260
2051	85,260	0	0	10,331	0	5,613	80,542
2052	80,542	0	0	9,936	0	5,296	75,902
2053	75,902	0	0	9,503	0	4,986	71,385
2054	71,385	0	0	9,055	0	4,685	67,016
2055	67,016	0	0	8,610	0	4,395	62,801
2056	62,801	0	0	8,173	0	4,115	58,743
2057	58,743	0	0	7,745	0	3,846	54,844
2058	54,844	0	0	7,327	0	3,587	51,104
2059	51,104	0	0	6,919	0	3,339	47,525
2060	47,525	0	0	6,521	0	3,102	44,106
2061	44,106	0	0	6,136	0	2,876	40,847
2062	40,847	0	0	5,762	0	2,661	37,746
2063	37,746	0	0	5,401	0	2,456	34,800
2064	34,800	0	0	5,054	0	2,262	32,008
2065	32,008	0	0	4,721	0	2,078	29,366
2066	29,366	0	0	4,401	0	1,904	26,869
2067	26,869	0	0	4,095	0	1,740	24,515



Appendix E: GASB 67 Fiduciary Net Position Projection

Table E-1: Projection of Fiduciary Net Positions (continued)
(in thousands)

Calendar Year	Beginning Fiduciary Position	Member Contributions	Employer Contributions	Benefit Payments	Administrative Expenses	Investment Earnings	Ending Fiduciary Position
2068	\$ 24,515	\$ 0	\$ 0	\$ 3,802	\$ 0	\$ 1,585	\$ 22,298
2069	22,298	0	0	3,523	0	1,440	20,215
2070	20,215	0	0	3,256	0	1,303	18,261
2071	18,261	0	0	3,002	0	1,175	16,434
2072	16,434	0	0	2,760	0	1,055	14,729
2073	14,729	0	0	2,530	0	944	13,144
2074	13,144	0	0	2,310	0	841	11,674
2075	11,674	0	0	2,101	0	745	10,318
2076	10,318	0	0	1,903	0	657	9,072
2077	9,072	0	0	1,715	0	576	7,933
2078	7,933	0	0	1,537	0	502	6,898
2079	6,898	0	0	1,369	0	436	5,965
2080	5,965	0	0	1,211	0	376	5,130
2081	5,130	0	0	1,063	0	322	4,389
2082	4,389	0	0	926	0	275	3,738
2083	3,738	0	0	800	0	234	3,172
2084	3,172	0	0	684	0	199	2,687
2085	2,687	0	0	579	0	168	2,276
2086	2,276	0	0	484	0	143	1,935
2087	1,935	0	0	400	0	122	1,657
2088	1,657	0	0	326	0	105	1,435
2089	1,435	0	0	262	0	91	1,265
2090	1,265	0	0	207	0	81	1,140
2091	1,140	0	0	161	0	74	1,053
2092	1,053	0	0	122	0	70	1,001
2093	1,001	0	0	91	0	67	976
2094	976	0	0	67	0	66	975
2095	975	0	0	48	0	67	994
2096	994	0	0	33	0	68	1,029
2097	1,029	0	0	23	0	71	1,078
2098	1,078	0	0	15	0	75	1,138
2099	1,138	0	0	10	0	79	1,208
2100	1,208	0	0	6	0	84	1,286
2101	1,286	0	0	4	0	90	1,372
2102	1,372	0	0	2	0	96	1,466
2103	1,466	0	0	1	0	103	1,567
2104	1,567	0	0	1	0	110	1,676
2105	1,676	0	0	0	0	117	1,793
2106	1,793	0	0	0	0	126	1,919
2107	1,919	0	0	0	0	134	2,053
2108	2,053	0	0	0	0	144	2,197
2109	2,197	0	0	0	0	154	2,350
2110	2,350	0	0	0	0	165	2,515
2111	2,515	0	0	0	0	176	2,691
2112	2,691	0	0	0	0	188	2,879
2113	2,879	0	0	0	0	202	3,081
2114	3,081	0	0	0	0	216	3,297
2115	3,297	0	0	0	0	231	3,527
2116	3,527	0	0	0	0	247	3,774
2117	3,774	0	0	0	0	264	4,038



Appendix E: GASB 67 Fiduciary Net Position Projection

**Table E-2: Actuarial Present Value of Projected
Benefit Payments**
(in thousands)

Calendar Year	Beginning Fiduciary Position	Benefit Payments	Funded Benefit Payments	Unfunded Benefit Payments	Present Value of Benefit Payments		
					Funded Payments at 7.00%	Unfunded Payments at 3.87%	Using Single Discount Rate of 7.00%
2018	\$ 128,243	\$ 11,625	\$ 11,625	\$ 0	\$ 11,238	\$ 0	\$ 11,238
2019	134,504	11,811	11,811	0	10,672	0	10,672
2020	141,340	12,105	12,105	0	10,222	0	10,222
2021	148,435	12,408	12,408	0	9,792	0	9,792
2022	155,434	12,724	12,724	0	9,384	0	9,384
2023	159,637	13,060	13,060	0	9,002	0	9,002
2024	161,388	13,346	13,346	0	8,597	0	8,597
2025	163,572	13,637	13,637	0	8,210	0	8,210
2026	165,782	13,809	13,809	0	7,769	0	7,769
2027	167,694	13,983	13,983	0	7,353	0	7,353
2028	168,732	14,120	14,120	0	6,939	0	6,939
2029	168,051	14,236	14,236	0	6,539	0	6,539
2030	166,014	14,345	14,345	0	6,158	0	6,158
2031	163,523	14,418	14,418	0	5,784	0	5,784
2032	160,641	14,378	14,378	0	5,391	0	5,391
2033	157,588	14,232	14,232	0	4,987	0	4,987
2034	154,465	14,090	14,090	0	4,614	0	4,614
2035	151,263	13,906	13,906	0	4,256	0	4,256
2036	147,756	13,683	13,683	0	3,914	0	3,914
2037	143,967	13,431	13,431	0	3,590	0	3,590
2038	140,168	13,201	13,201	0	3,298	0	3,298
2039	136,337	12,967	12,967	0	3,027	0	3,027
2040	132,478	12,747	12,747	0	2,782	0	2,782
2041	128,575	12,536	12,536	0	2,557	0	2,557
2042	124,615	12,336	12,336	0	2,351	0	2,351
2043	120,583	12,162	12,162	0	2,166	0	2,166
2044	116,447	11,966	11,966	0	1,992	0	1,992
2045	112,224	11,757	11,757	0	1,829	0	1,829
2046	107,920	11,510	11,510	0	1,674	0	1,674
2047	103,571	11,286	11,286	0	1,534	0	1,534
2048	99,147	11,103	11,103	0	1,410	0	1,410
2049	94,602	10,888	10,888	0	1,292	0	1,292
2050	89,962	10,633	10,633	0	1,180	0	1,180
2051	85,260	10,331	10,331	0	1,071	0	1,071
2052	80,542	9,936	9,936	0	963	0	963
2053	75,902	9,503	9,503	0	860	0	860
2054	71,385	9,055	9,055	0	766	0	766
2055	67,016	8,610	8,610	0	681	0	681
2056	62,801	8,173	8,173	0	604	0	604
2057	58,743	7,745	7,745	0	535	0	535
2058	54,844	7,327	7,327	0	473	0	473
2059	51,104	6,919	6,919	0	417	0	417
2060	47,525	6,521	6,521	0	368	0	368
2061	44,106	6,136	6,136	0	323	0	323
2062	40,847	5,762	5,762	0	284	0	284
2063	37,746	5,401	5,401	0	249	0	249
2064	34,800	5,054	5,054	0	217	0	217
2065	32,008	4,721	4,721	0	190	0	190
2066	29,366	4,401	4,401	0	165	0	165
2067	26,869	4,095	4,095	0	144	0	144



Appendix E: GASB 67 Fiduciary Net Position Projection

**Table E-2: Actuarial Present Value of Projected
Benefit Payments (continued)**
(in thousands)

Calendar Year	Beginning Fiduciary Position	Benefit Payments	Funded Benefit Payments	Unfunded Benefit Payments	Present Value of Benefit Payments		
					Funded Payments at 7.00%	Unfunded Payments at 3.87%	Using Single Discount Rate of 7.00%
2068	\$ 24,515	\$ 3,802	\$ 3,802	\$ 0	\$ 125	\$ 0	\$ 125
2069	22,298	3,523	3,523	0	108	0	108
2070	20,215	3,256	3,256	0	93	0	93
2071	18,261	3,002	3,002	0	80	0	80
2072	16,434	2,760	2,760	0	69	0	69
2073	14,729	2,530	2,530	0	59	0	59
2074	13,144	2,310	2,310	0	51	0	51
2075	11,674	2,101	2,101	0	43	0	43
2076	10,318	1,903	1,903	0	36	0	36
2077	9,072	1,715	1,715	0	31	0	31
2078	7,933	1,537	1,537	0	26	0	26
2079	6,898	1,369	1,369	0	21	0	21
2080	5,965	1,211	1,211	0	18	0	18
2081	5,130	1,063	1,063	0	14	0	14
2082	4,389	926	926	0	12	0	12
2083	3,738	800	800	0	10	0	10
2084	3,172	684	684	0	8	0	8
2085	2,687	579	579	0	6	0	6
2086	2,276	484	484	0	5	0	5
2087	1,935	400	400	0	4	0	4
2088	1,657	326	326	0	3	0	3
2089	1,435	262	262	0	2	0	2
2090	1,265	207	207	0	2	0	2
2091	1,140	161	161	0	1	0	1
2092	1,053	122	122	0	1	0	1
2093	1,001	91	91	0	1	0	1
2094	976	67	67	0	0	0	0
2095	975	48	48	0	0	0	0
2096	994	33	33	0	0	0	0
2097	1,029	23	23	0	0	0	0
2098	1,078	15	15	0	0	0	0
2099	1,138	10	10	0	0	0	0
2100	1,208	6	6	0	0	0	0
2101	1,286	4	4	0	0	0	0
2102	1,372	2	2	0	0	0	0
2103	1,466	1	1	0	0	0	0
2104	1,567	1	1	0	0	0	0
2105	1,676	0	0	0	0	0	0
2106	1,793	0	0	0	0	0	0
2107	1,919	0	0	0	0	0	0
2108	2,053	0	0	0	0	0	0
2109	2,197	0	0	0	0	0	0
2110	2,350	0	0	0	0	0	0
2111	2,515	0	0	0	0	0	0
2112	2,691	0	0	0	0	0	0
2113	2,879	0	0	0	0	0	0
2114	3,081	0	0	0	0	0	0
2115	3,297	0	0	0	0	0	0
2116	3,527	0	0	0	0	0	0
2117	3,774	0	0	0	0	0	0



Appendix F: Detailed Tabulations of Member Data

Table F-1: The Number of Active Members Distributed by Age and Service as of December 31, 2017

Age	Years of Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	
Under 25	0	0	7	0	0	0	0	0	0	0	7
25 to 29	0	0	786	259	0	0	0	0	0	0	1,045
30 to 34	0	0	426	883	169	0	0	0	0	0	1,478
35 to 39	0	0	149	331	653	71	0	0	0	0	1,204
40 to 44	0	0	74	126	240	307	44	0	0	0	791
45 to 49	0	0	39	90	134	195	244	35	0	0	737
50 to 54	0	0	1	37	82	81	89	143	15	0	448
55 to 59	0	0	0	2	24	24	26	41	44	1	162
60 to 64	0	0	0	0	2	3	2	5	5	0	17
65 to 69	0	0	0	0	0	0	0	0	0	1	1
70 & Over	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1,482	1,728	1,304	681	405	224	64	2	5,890



Appendix F: Detailed Tabulations of Member Data

**Table F-2: The Number of Active Members Distributed by Age
as of December 31, 2017**

Age	Number
24	7
25	49
26	116
27	250
28	299
29	331
30	349
31	305
32	259
33	281
34	284
35	292
36	258
37	237
38	223
39	194
40	188
41	159
42	145
43	144
44	155
45	122
46	131
47	177
48	167
49	140
50	109
51	101
52	95
53	77
54	66
55	45
56	47
57	34
58	19
59	17
60	13
61	2
62	1
63	1
66	1
Total	5,890



Appendix F: Detailed Tabulations of Member Data

Table F-3: The Number of Active Members Distributed by Service as of December 31, 2017

Service	Number
7	499
8	470
9	513
10	460
11	437
12	309
13	256
14	266
15	302
16	311
17	261
18	226
19	204
20	189
21	143
22	125
23	119
24	105
25	96
26	81
27	84
28	83
29	61
30	60
31	50
32	38
33	42
34	34
35	19
36	17
37	20
38	6
39	2
40	1
41	1
Total	5,890



Appendix F: Detailed Tabulations of Member Data

Table F-4: The Number and Deferred Annual Retirement Pensions of Terminated Vested Members Distributed by Age as of December 31, 2017

Age	Number	Pensions
26	1	\$ 2,520
27	4	10,080
28	3	7,560
29	4	10,080
30	5	12,600
31	4	10,080
32	5	12,600
33	7	17,640
34	2	5,040
35	2	3,780
36	1	2,520
37	4	10,080
38	5	7,560
39	15	20,916
40	14	19,656
41	31	42,840
42	41	58,464
43	57	82,908
44	68	99,792
45	85	129,780
46	132	210,294
47	149	234,360
48	167	266,868
49	189	313,362
50	216	369,432
51	230	396,648
52	241	413,028
53	305	538,020
54	306	526,302
55	335	601,650
56	322	579,348
57	310	558,432
58	324	577,584



Appendix F: Detailed Tabulations of Member Data

Table F-4: The Number and Deferred Annual Retirement Pensions of Terminated Vested Members Distributed by Age as of December 31, 2017 (continued)

Age	Number	Pensions
59	256	\$ 448,686
60	214	375,984
61	118	200,214
62	98	175,392
63	91	155,358
64	85	145,026
65	63	100,422
66	74	120,834
67	72	130,914
68	110	191,142
69	113	191,394
70	110	181,692
71	105	181,062
72	77	132,678
73	86	149,184
74	53	92,736
75	63	112,518
76	45	77,112
77	39	70,938
78	31	57,078
79	25	44,730
80	17	28,098
81	26	48,510
82	20	41,958
83	18	34,146
84	8	16,632
85	16	33,012
86	20	42,714
87	18	36,666
88	16	30,492
89	5	11,466
90	2	3,654
91	1	2,520
Total	5,679	\$ 9,816,786



Appendix F: Detailed Tabulations of Member Data

Table F-5: The Number and Annual Retirement Pensions of Retired Members Distributed by Age as of December 31, 2017

Age	Number	Pensions
42	1	\$ 1,890
60	43	83,668
61	158	291,060
62	146	273,913
63	163	299,840
64	164	297,215
65	217	389,362
66	270	487,900
67	282	507,769
68	293	533,875
69	326	589,806
70	329	591,899
71	323	578,682
72	221	415,044
73	204	376,197
74	196	365,400
75	168	320,910
76	122	219,420
77	85	161,910
78	92	187,992
79	113	223,662
80	97	192,135
81	89	179,856
82	73	150,822
83	69	143,136
84	60	127,575
85	52	101,052
86	43	87,066
87	42	89,712
88	41	78,687
89	38	74,718
90	16	33,768
91	13	31,248
92	6	13,860
93	2	3,654
94	5	11,466
95	2	4,914
96	4	6,804
97	4	8,316
99	1	2,520
101	1	1,260
Total	4,574	\$ 8,539,983