Legislative Retirement System
Principal Results of Actuarial Valuation as of December 31, 2014

Board of Trustees Meeting

Larry Langer and Mike Ribble

October 22, 2015

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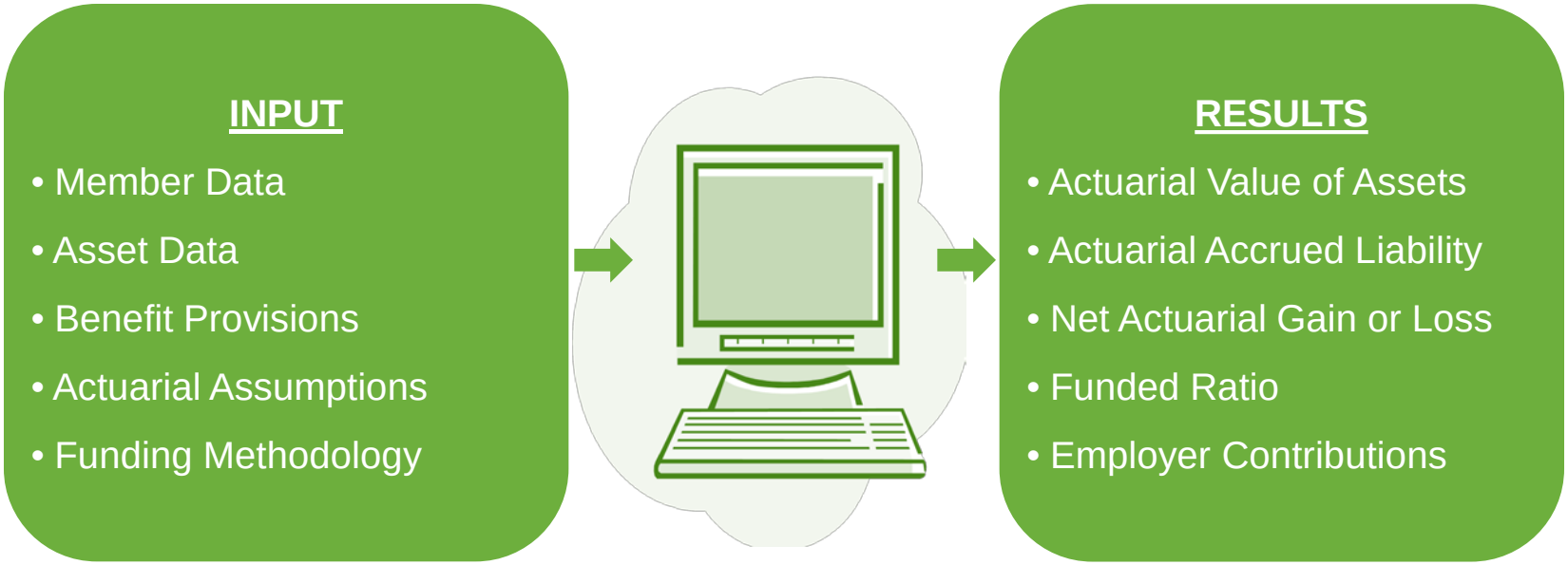
Purpose of the Annual Actuarial Valuation

- As of the end of each calendar year:
  - An annual actuarial valuation is performed on LRS
  - The actuary determines the amount of employer contributions to be made to LRS during each member's career that, when combined with investment return and member contributions, such contributions will be sufficient to pay for retirement benefits.
- In addition, the annual actuarial valuation is performed to:
  - Determine the progress on funding LRS,
  - Explore why the results of the current valuation differ from the results of the valuation of the previous year, and
  - Satisfy regulatory and accounting requirements.

The Valuation Process

The following diagram summarizes the inputs and results of the actuarial valuation process.



A detailed summary of the valuation process and a glossary of actuarial terms are provided in Appendix A of the actuarial report.

Key Takeaways

Key results of the December 31, 2014 valuation as compared to the December 31, 2013 valuation were:

- Market value returns of 6.25% compared to 7.25% assumed
- Decrease in covered payroll of 0.5% compared to approximately 3% expected
- Fewer retirements than assumed
- No significant legislation signed into law since the prior year's valuation
- No changes in actuarial assumptions or funding methodology from the prior year's valuations

When compared to the December 31, 2013 valuation, the above resulted in:

- A higher funded (120.5% in the December 31, 2014 valuation compared to 119.4% in the December 31, 2013 valuation)
- A lower employer required contribution rate (0.46% for fiscal year ending June 30, 2017 compared to 1.80% for fiscal year ending June 30, 2016)
- Lower projected benefit amounts being accrued by active members

Valuation Input

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Valuation Input

Membership Data

Number as of	December 31, 2014	December 31, 2013
Active members	170	170
Terminated members and survivors of deceased members entitled to benefits but not yet receiving benefits	93	94
Retired members and survivors of deceased members currently receiving benefits	300	311
Total	563	575
Active Reported Compensation	3,559,791	3,579,277
Active Valuation Compensation	3,758,630	3,743,644
Annual Retirement Allowances	2,347,498	2,436,106

Overall, the active membership has remained relatively stable.

The number of retired members and survivors of deceased members currently receiving benefits decreased by 3.5% from the previous valuation date. The decrease in retiree population reflects less retirements than assumed.

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

Valuation Input

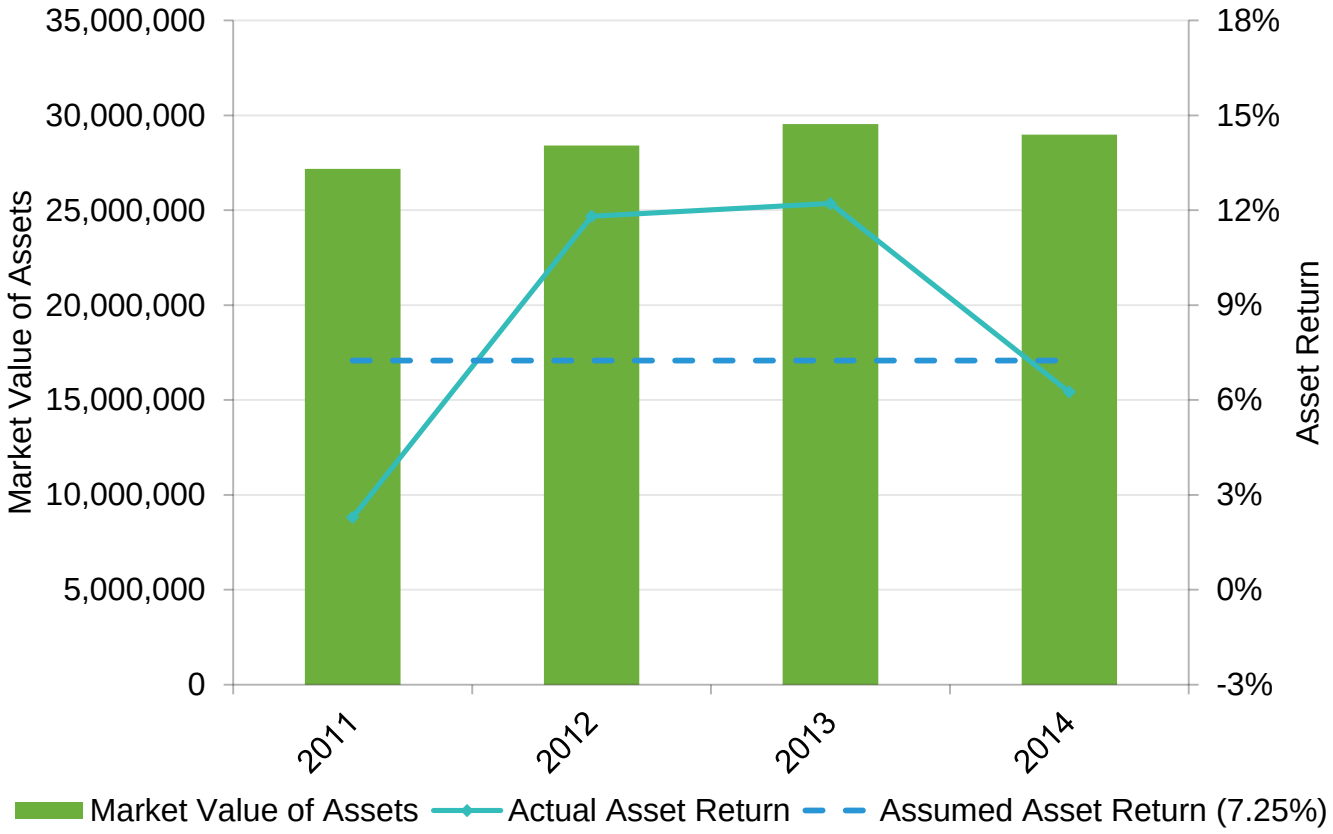
Asset Data: Market Value of Assets

Asset Data as of	December 31, 2014	December 31, 2013
Beginning of Year Market Value of Assets	$29,541,619	$28,414,270
Contributions	226,130	236,553
Benefit Payments	(2,564,190)	(2,442,691)
Investment Income	1,773,488	3,333,487
Net Increase/(Decrease)	(564,572)	1,127,349
End of Year Market Value of Assets	$28,977,047	$29,541,619
Estimated Net Investment Return on Market Value	6.25%	12.21%

The Market Value of Assets is $29.0 million as of December 31, 2014 and $29.5 million as of December 31, 2013. The investment return for the market value of assets for calendar year 2014 was 6.25%.

The market value of assets is provided in Section 4 of the actuarial report.

Asset Data: Market Value of Assets and Asset Returns

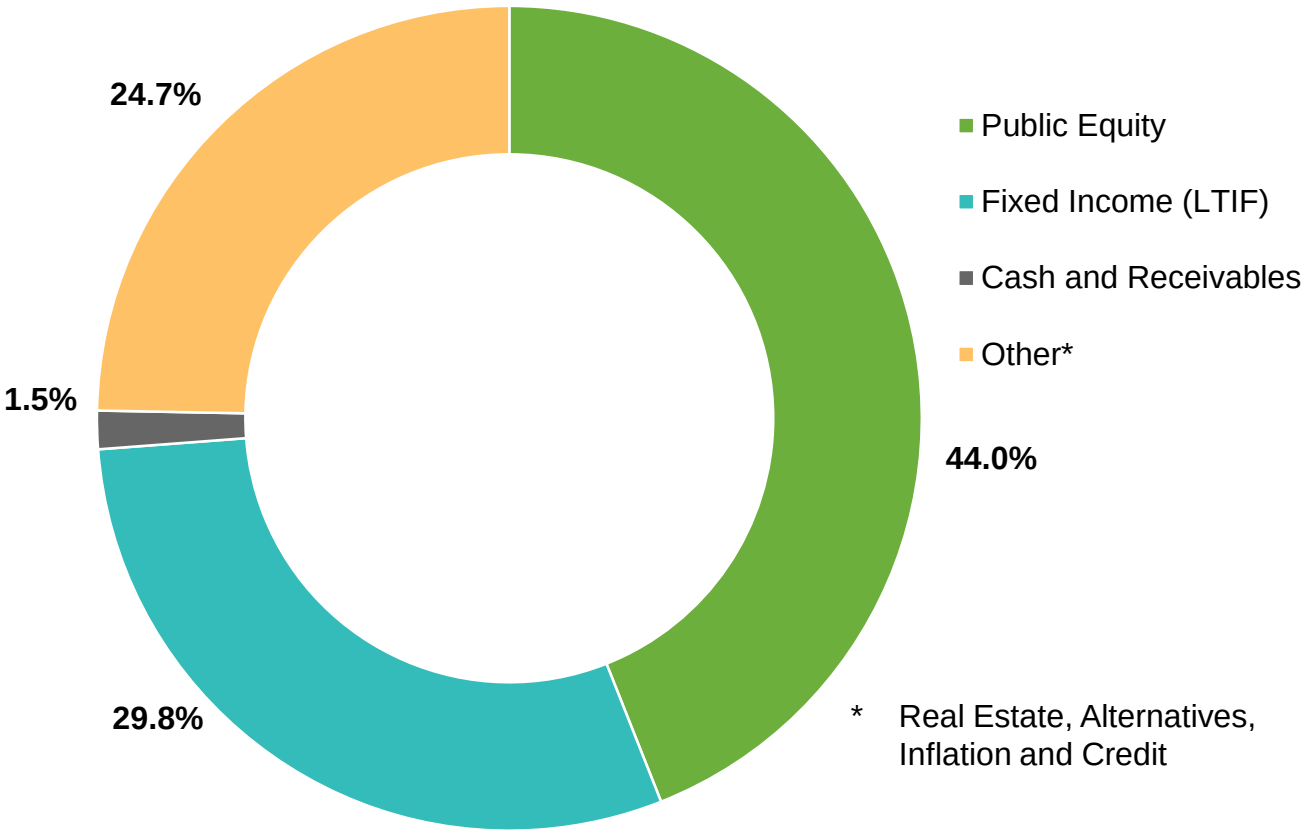


Returns were less than the 7.25% assumed rate of return, resulting in higher contributions and lower funded ratio than anticipated, all else being equal.

A detailed summary of the market value of assets is provided in Section 4 of the actuarial report.

Valuation Input

Asset Data: Allocation of Investments by Category



Based on historical market returns, the current asset allocation, the current investment policy, and the expectation of future asset returns, as reviewed in the last experience study, the 7.25% discount rate used in this valuation is reasonable and appropriate.

The discount rate will be reviewed at the next experience study to be presented to the Board in October 2015.

A detailed summary of the market value of assets is provided in Section 4 of the actuarial report.

Valuation Input

Benefit Provisions

Benefit provisions are described in North Carolina General Statues, Chapter 120.

There were no significant changes in benefit provisions from the prior year's valuation

Many Public Sector Retirement Systems in the United States have undergone pension reform where the benefits of members (current retirees and active or future members) have been reduced.

Because of the well-funded status of LRS due to the legislature contributing the actuarially required contribution when such contribution is required, benefit cuts have not been needed in North Carolina. Instead, we have seen a modest expansion of benefits this past year based on sound plan design.

A detailed summary of the benefit provisions is provided in Appendix C of the actuarial report.

Valuation Input

Actuarial Assumptions

- Demographic (future events that relate to people)
  - Retirement
  - Termination
  - Disability
  - Death
- Economic (future events that relate to money)
  - Interest rate – 7.25% per year
  - Salary increase – 7.50% per year
- There were no changes in actuarial assumptions from the prior year's valuation.

The next experience study will be prepared as of December 31, 2015 and presented to the Board in October 2015. This policy of reviewing assumptions every five years is a best practice.

A detailed summary of the actuarial assumptions and methods is provided in Appendix D of the actuarial report.

Valuation Input

Funding Methodology

The Funding Methodology is the payment plan for LRS and is composed of the following three components:

- Actuarial Cost Methods allocate costs to the actuarial accrued liability (i.e. the amount of money that should be in the fund) for past service and normal cost (i.e. the cost of benefits accruing during the year) for current service.
  - The Board of Trustees has adopted Projected Unit Credit as its actuarial cost method
- Asset Valuation Methods smooth or average the market value returns over time to alleviate contribution volatility that results from market returns.
  - 20% of market value plus 80% of the expected actuarial value

A detailed summary of the actuarial assumptions and methods is provided in Appendix D of the actuarial report.

Valuation Input

Funding Methodology (continued)

- Amortization Methods determine the payment schedule for unfunded actuarial accrued liability (i.e. the difference between the actuarial accrued liability and actuarial value of assets)
  - Payment level: the payment is determined as a level dollar amount, similar to a mortgage payment
  - Payment period: an eight-year open
- There were no changes in actuarial assumptions or funding methodology from the previous valuation.

When compared to other Public Sector Retirement Systems in the United States, the funding policy for LRS is quite aggressive in that the policy pays down the pension debt over a much shorter period of time (8 years) compared to the national average of around 24 years. As such it is a best practice in the industry.

A detailed summary of the actuarial assumptions and methods is provided in Appendix D of the actuarial report.

Valuation Results

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Valuation Results

Actuarial Value of Assets

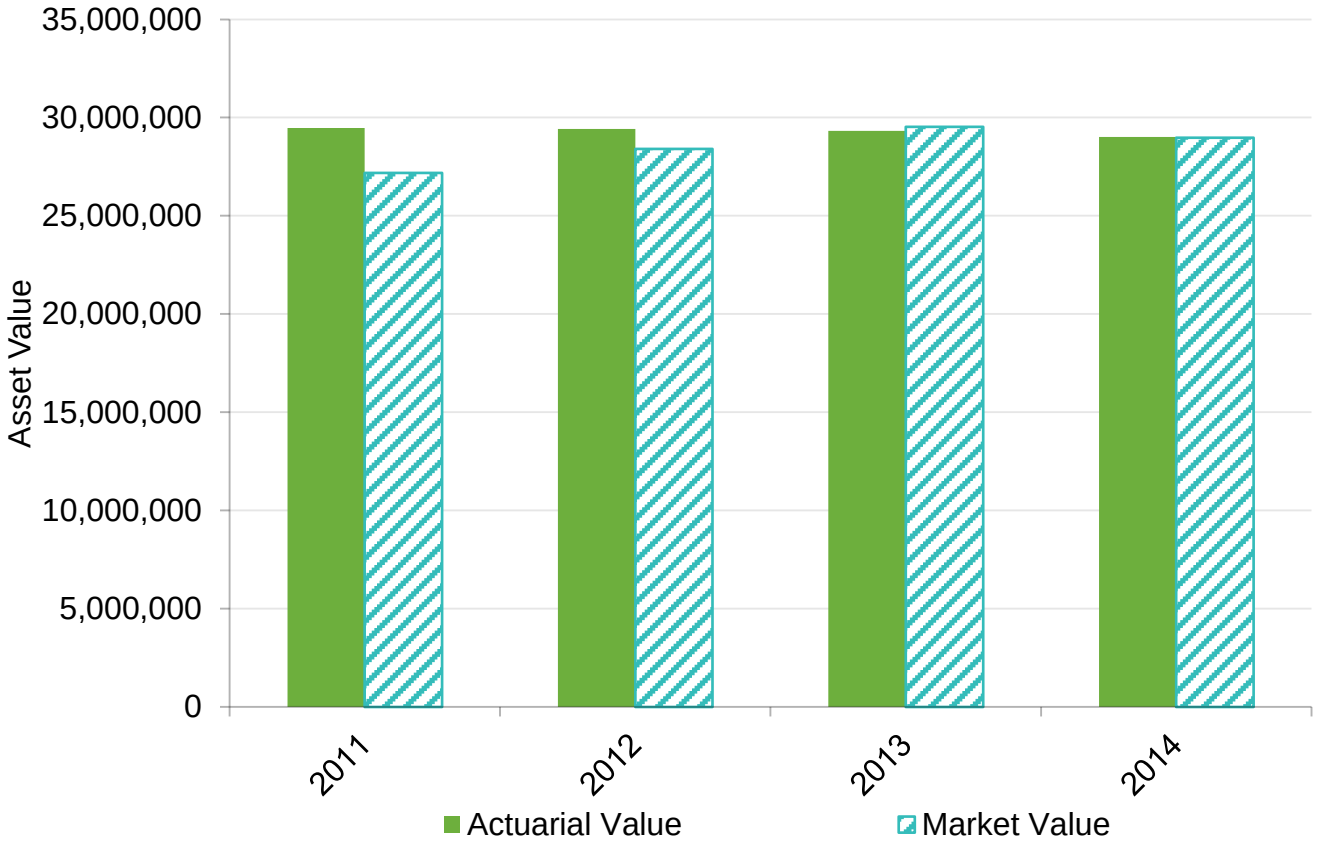
Asset Data as of	December 31, 2014
(a) Beginning of Year Actuarial Value of Assets	$29,318,253
(b) Contributions	226,130
(c) Benefit Payments	(2,564,190)
(d) Net Cash Flow: (b) + (c)	(2,338,060)
(e) Expected Investment Return: [(a) x 7.25%] + [(d) x 3.625%]	2,040,819
(f) Expected End of Year Actuarial Value of Assets: (a) + (d) + (e)	29,021,012
(g) End of Year Market Value of Assets	28,977,047
(h) Excess of Market Value over Expected Actuarial Value of Assets: (g) – (f)	(43,965)
(i) 20% Adjustment toward Market Value of Assets: (h) x 20%	(8,793)
(j) End of Year Actuarial Value of Assets: (f) + (i)	29,012,219
(k) Estimated Net Investment Return on Actuarial Value	7.22%

The actuarial value of assets smoothes investment gains/losses, resulting in less volatility in the employer contribution.

Lower than expected returns in 2011 and 2014 resulted in a $0.01 million asset loss recognition this year (item (i)).

The Actuarial Value of Assets is provided in Section 4 of the actuarial report.

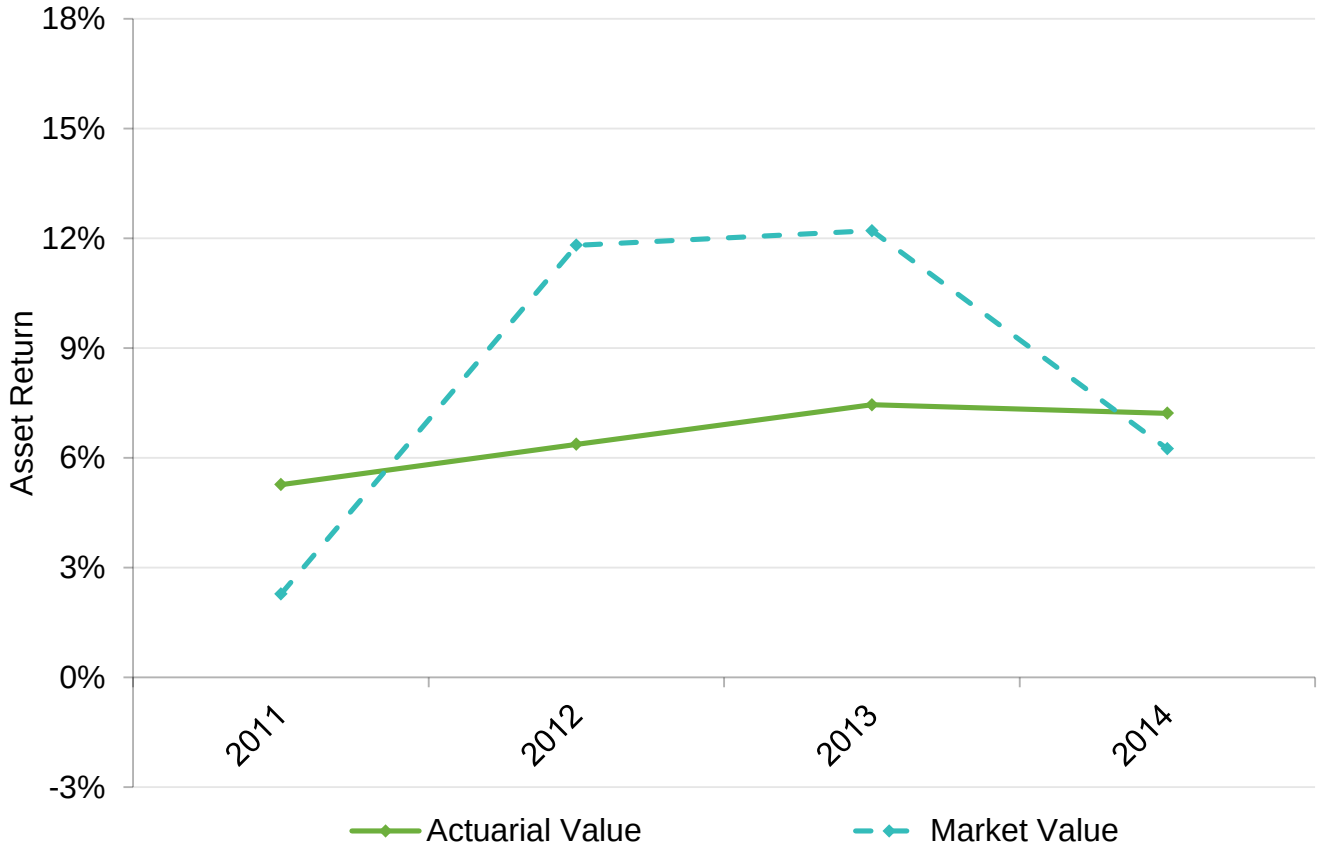
Actuarial Value of Assets: Compared to Market Value



The market value of assets is lower than the actuarial value of assets, which is used to determine employer contributions. This indicates that there are unrecognized asset losses to be recognized in future valuations.

A detailed summary of the Actuarial Value of Assets is provided in Section 4 of the actuarial report.

Asset Returns: Actuarial Value and Market Value

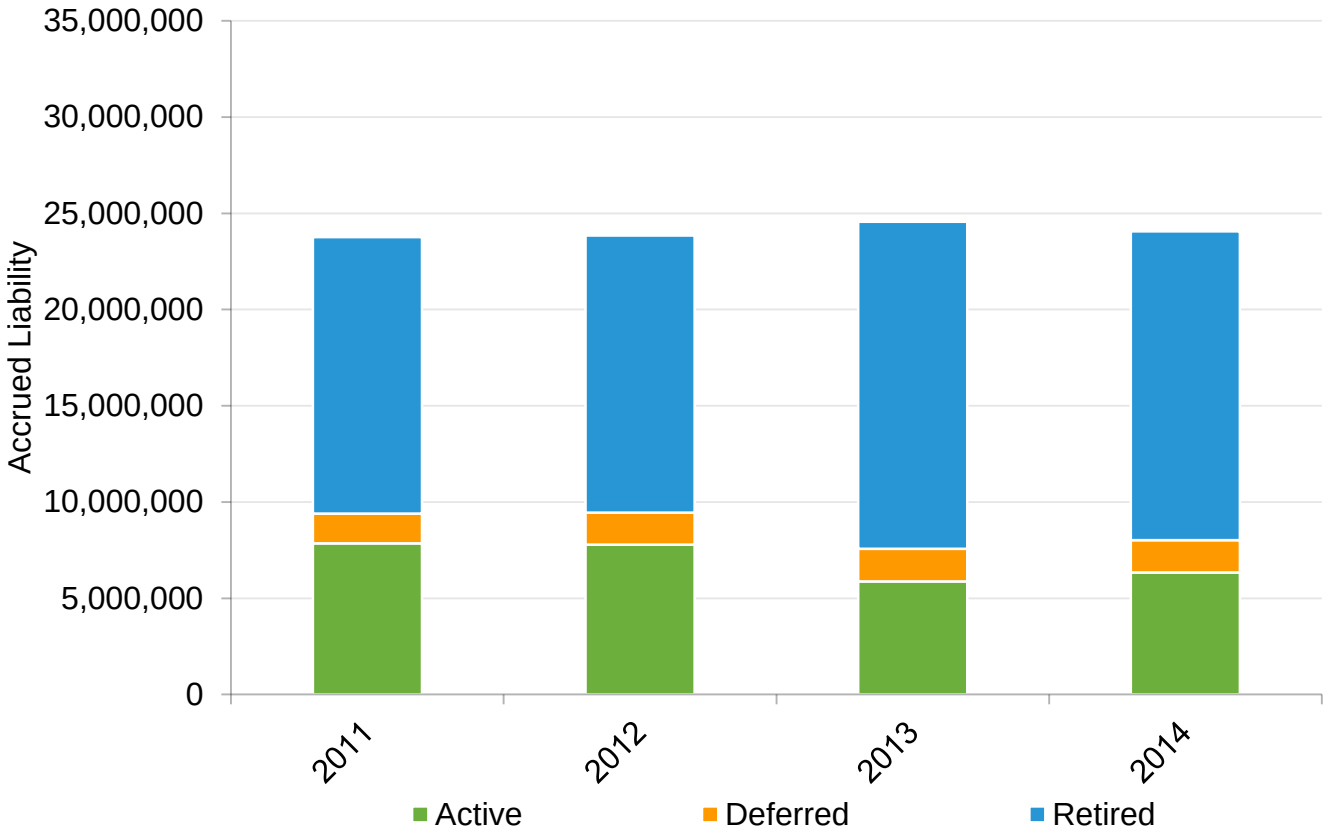


The actuarial value of assets smoothes investment gains and losses.

A detailed summary of the Actuarial Value of Assets is provided in Section 4 of the actuarial report.

Valuation Results

Actuarial Accrued Liability (AAL)

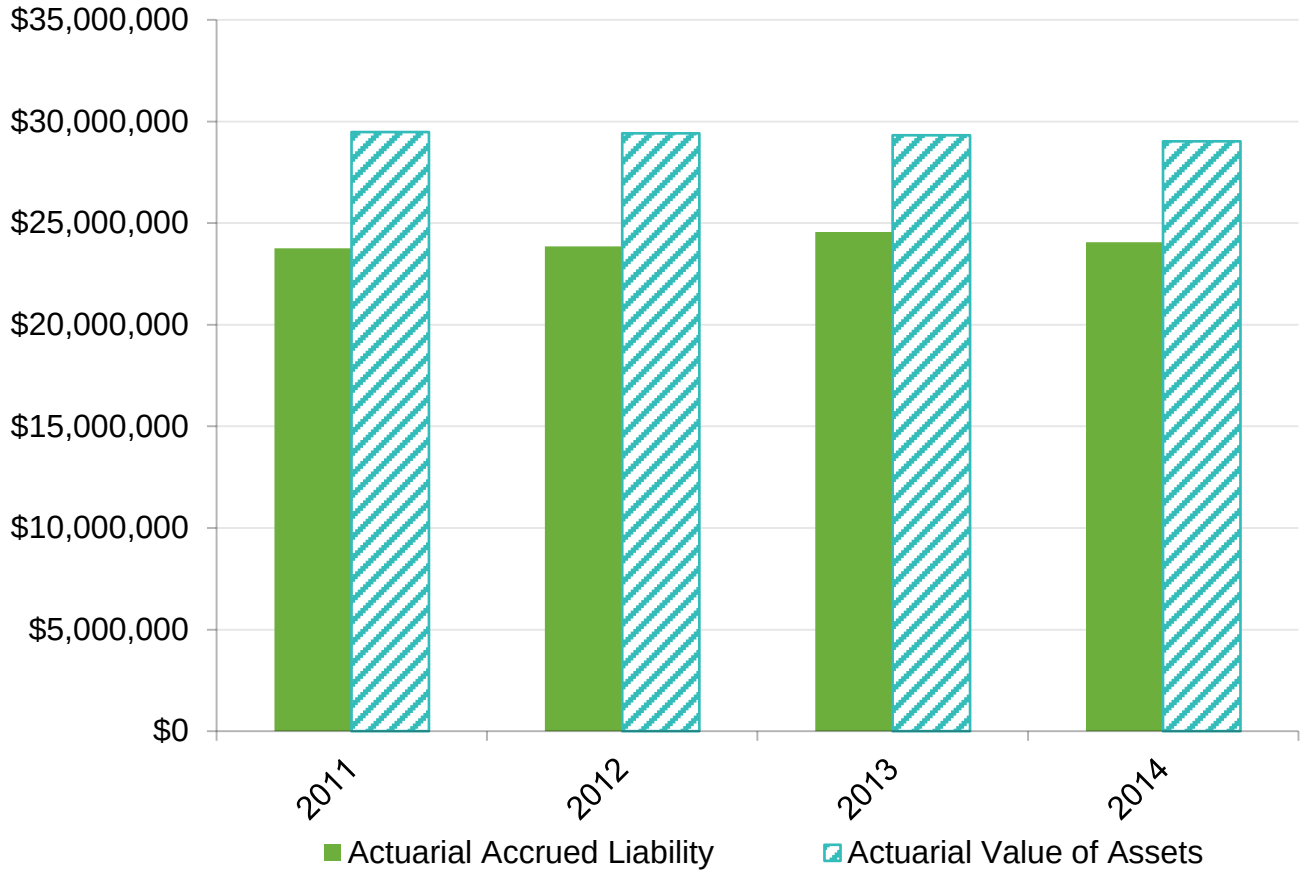


The AAL decreased from $24.6 million to $24.1 million during 2014. LRS is an open plan, which means that new members enter the plan each year. In an open plan, liabilities are expected to grow from one year to next as more benefits accrue and the membership approaches retirement.

The AAL was $0.7 million lower than expected, which resulted in a demographic gain of $0.7 million during 2014.

A detailed summary of the AAL is provided in Section 5 of the actuarial report.

Actuarial Accrued Liability (AAL) and Actuarial Value of Assets (AVA)

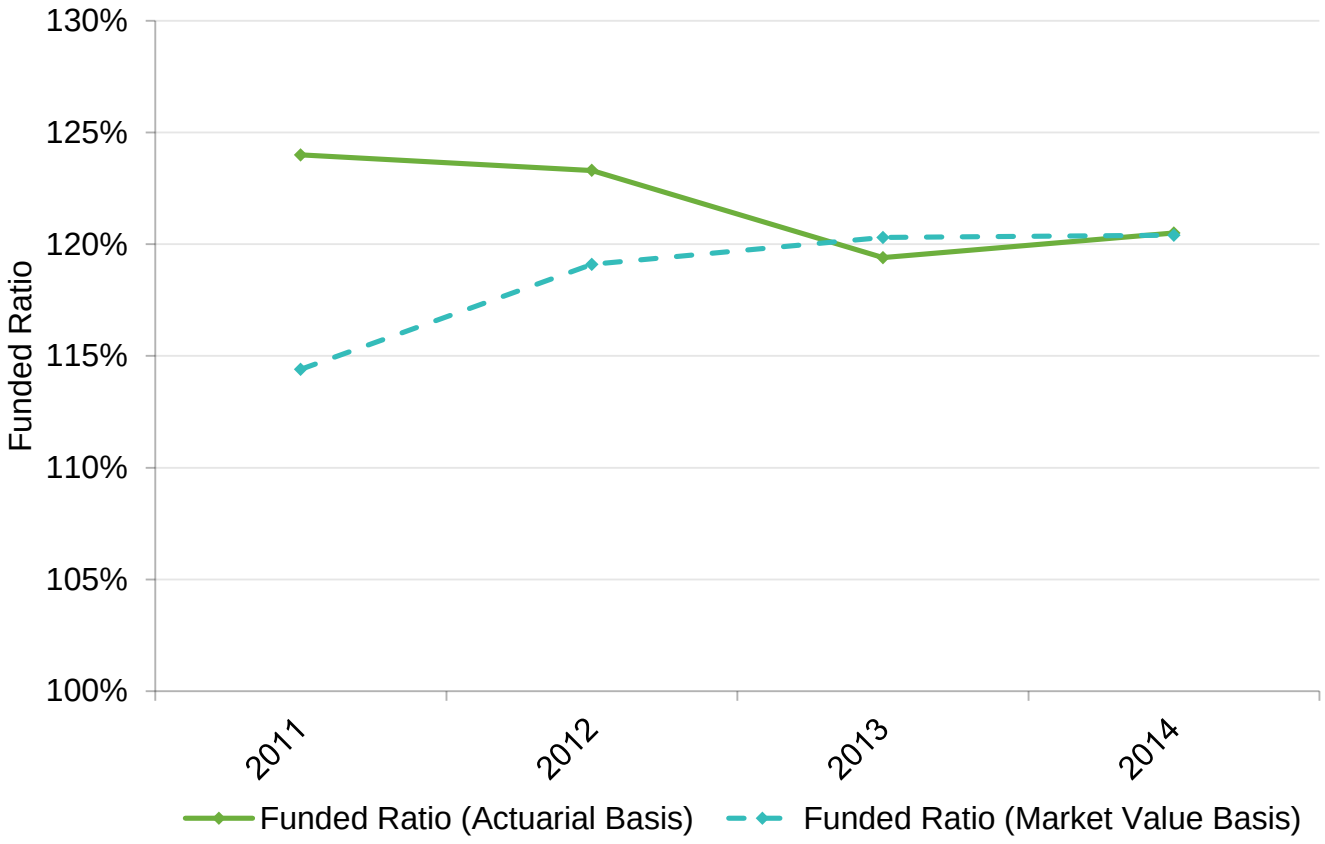


AVA is the basis used for computing contributions to alleviate contribution volatility.

The difference in the AAL and the AVA is the amount of pension debt (to be paid off in 8 years).

A detailed summary of the AVA is provided in Section 4 of the actuarial report, and a detailed summary of the AAL is provided in Section 5 of the actuarial report.

Funded Ratio: AAL Divided by AVA



The ratio of assets to liabilities shows the health of the plan on an accrued basis.

The funded ratio on an actuarial basis increased from 119.4% at December 31, 2013 to 120.5% at December 31, 2014.

Valuation Results

Net Actuarial Gain or Loss

Reconciliation of Unfunded Actuarial Accrued Liability Since the Prior Valuation

(in Millions)

Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2013	$	(4.8)
Normal Cost during 2014		1.1
Reduction due to Actual Contributions during 2014		(0.2)
Interest on UAAL, Normal Cost, and Contributions		(0.3)
Asset (Gain)/Loss		0.0
Actuarial Accrued Liability (Gain)/Loss		(0.7)
Impact of Legislative Changes		0.0
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2014	$	(4.9)

The accrued liability gain of $0.7 million means that the unfunded actuarial accrued liability was $0.7 million lower than we would have expected based on the assumptions.

The primary source of the accrued liability gain was lower reported compensation and fewer retirements in 2014 than assumed.

The asset loss of $0.01 million means that the asset valuation method resulted in a recognition of $0.01 million of deferred asset losses.

The net actuarial gain/(loss) is provided in Section 5 of the actuarial report.

Employer Required Contribution

Valuation Date Contribution for Fiscal Year Ending	December 31, 2014 June 30, 2017	December 31, 2013 June 30, 2016
Normal Cost	21.40%	22.03%
Disability Benefit	0.55%	0.55%
Accrued Liability	(21.49)%	(20.78)%
Preliminary Annual Required Contribution (ARC)	0.46%	1.80%
Impact of Legislative Changes	N/A	0.00%
Final Employer ARC	N/A	1.80%

Even though no contribution has been required in recent years, benefits are accruing at the Normal Cost rate (21.40% as a result of the December 31, 2014 valuation).

We expect that the contribution holiday is over for the foreseeable future and the contribution rate will trend towards the 21.40% Normal Cost rate. The potential for rapid increases is quite high and should be expected.

The employer required contribution rates are provided in Section 6 of the actuarial report.

Reconciliation of the Change in the Annual Required Contribution

Fiscal year ending June 30, 2016 Preliminary ARC (based on December 31, 2013 valuation)	1.80%
Impact of Legislative Changes	0.00%
Fiscal year ending June 30, 2016 Final ARC	1.80%
Change Due to Demographic (Gain)/Loss	(1.42)%
Change Due to Investment (Gain)/Loss	0.04%
Change Due to Member Contributions Less (Greater) than Expected	0.04%
Fiscal year ending June 30, 2017 Preliminary ARC (based on December 31, 2014 valuation)	0.46%

Demographic gain primarily due to lower reported compensation and more retirements in 2014 than assumed.

Investment loss is a recognition of deferred asset losses.

A detailed summary of the employer required contribution rates is provided in Section 6 of the actuarial report.

Key Takeaways

Key results of the December 31, 2014 valuation as compared to the December 31, 2013 valuation were:

- Market value returns of 6.25% compared to 7.25% assumed
- Decrease in covered payroll of 0.5% compared to approximately 3% expected
- Fewer retirements than assumed
- No significant legislation signed into law since the prior year's valuation
- No changes in actuarial assumptions or funding methodology from the prior year's valuations

When compared to the December 31, 2013 valuation, the above resulted in:

- A higher funded (120.5% in the December 31, 2014 valuation compared to 119.4% in the December 31, 2013 valuation)
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- Lower projected benefit amounts being accrued by active members

Key Takeaways

LRS is well funded compared to its peers. This is due to:

- Stakeholders working together to keep LRS well-funded since inception
- A history of appropriating and contributing the recommended contribution requirements
- Assumptions that in aggregate are more conservative than peers
- A funding policy that aggressively pays down unfunded liability over an 8-year period
- An ad hoc cost-of-living adjustment that supports the health of the system
- Modest changes in benefits when compared to peers

Continued focus on these measures will be needed to maintain the solid status of LRS well into the future.

Certification

The assumptions, methods, and plan provisions used in the results presented in this presentation were provided in October 2015 in the "Report on the Actuarial Valuation of the Legislative Retirement System of North Carolina prepared as of December 31, 2014."

The results were prepared under the direction of Michael Ribble and Larry Langer who meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. These results have been prepared in accordance with all applicable Actuarial Standards of Practice, and we are available to answer questions about them.

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.

Michael A. Ribble, FSA, EA, MAAA
Principal, Consulting Actuary

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

Questions?

THANK YOU

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Legislative Retirement System of North Carolina

Report on the Actuarial Valuation Prepared as of December 31, 2014

October 2015

Document Version: 1.0 (July 2014).

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October 7, 2015

Board of Trustees
Legislative 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 Legislative Retirement System of North Carolina (referred to as "LRS" or the "Legislative Plan") prepared as of December 31, 2014. The report has been prepared in accordance with North Carolina General Statute 120-4.

The primary purpose of the valuation report is to determine the required employer contribution rates, to describe the current financial condition of LRS, 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 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. No one may make any representations or warranties based on any statements or conclusions contained in this report without Buck Consultants' written consent.

The valuation is based upon membership data and financial information as furnished by the Retirement Systems Division and the Financial Operations Division and as summarized in this report. Although reviewed for reasonableness and consistency with the prior valuation, these elements have not been audited by Buck and we cannot certify as to the accuracy and completeness of the data supplied. The valuation is also based on benefit and contribution provisions as presented in this report. If you have reason to believe that the plan provisions are incorrectly described, that important plan provisions relevant to this valuation are not described, or that conditions have changed since the calculations were made, you should contact the authors of this actuarial report prior to relying on this information.

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 ASOPs.

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. The next experience study will be prepared as of December 31, 2014 and will be presented to the Board in October 2015. Assumptions and methods based on this experience study, as adopted by the Board, will be used with the December 31, 2015 valuation.

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,

Michael A. Ribble, FSA, EA, MAAA
Principal, Consulting Actuary

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

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Executive Summary

Overview

The North Carolina Retirement Systems Division (RSD) was established in 1941 to provide retirement benefits for public servants in the State of North Carolina. Today, under the management of the Department of State Treasurer, RSD administers eight public pension plans (defined benefit plans), three supplemental retirement plans (voluntary defined contributions plans), a health trust fund, a disability income plan, death benefit funds and a number of other benefit programs. As of December 31, 2014, the Retirement Systems defined benefit plans cover about 960,000 current and prior public servants in the state of North Carolina. During the fiscal year ending June 30, 2015, the Systems paid $5.4 billion in pensions to about 270,000 retirees. And as of June 30, 2015, the Systems' assets were valued at $89 billion.

Under the supplemental retirement plans, the amount of contributions in any given year is defined by law. The amount of benefits derived is dependent on the investment returns the individual achieves. Conversely, under the pension plans, the amount of the benefit paid to a member upon retirement, termination, death or disability is defined by law. The amount of contributions needed to fund these benefits cannot be known with certainty. In North Carolina, like other states, these contributions are paid during a public servant's career so that upon retirement, termination, death, or disability, there are funds available to pay these benefits. These amounts are determined through an actuarial valuation. Actuarial valuations are performed for each of the pension plans administered by RSD and the results are contained in actuarial valuation reports like this.

The Legislative Retirement System (referred to as "LRS" or the "Legislative Plan") provides benefits to all members of the General Assembly. LRS has almost $29 million in assets and over 560 members. This actuarial valuation report is our annual analysis of the financial health of LRS. This report, prepared as of December 31, 2014, presents the results of the actuarial valuation of LRS.

Purpose

An actuarial valuation is performed on LRS annually as of the end of the calendar year. The actuary determines the amount of contributions to be made to LRS during each member's career that, when combined with investment return, will be sufficient to pay for retirement benefits.

In addition, the annual actuarial valuation is performed to:

- Determine the progress on funding LRS,
- Explore why the results of the current valuation differ from the results of the valuation of the previous year, and
- Satisfy regulatory and accounting requirements.

A detailed summary of the valuation process and a glossary of actuarial terms are provided in Appendix A.

Executive Summary

Key Takeaways

The actuarial valuation is performed each year to replace the estimates the actuary assumed for the prior valuation with the actual events that happened. This past year, as expected, some of the assumptions used in the prior valuation were not realized. Key results of the December 31, 2014 valuation as compared to the December 31, 2013 valuation were:

- Market value returns of 6.25% compared to 7.25% assumed
- Decrease in covered payroll of 0.5% compared to approximately 3% expected
- Fewer retirements than assumed
- No significant legislation signed into law since the prior year's valuation
- No changes in actuarial assumptions or funding methodology from the prior year's valuations

When compared to the December 31, 2013 valuation, the above resulted in:

- A higher funded ratio (120.5% in the December 31, 2014 valuation compared to 119.4% in the December 31, 2013 valuation)
- A lower employer required contribution rate (0.46% for fiscal year ending June 30, 2017 compared to 1.80% for fiscal year ending June 30, 2016)
- Lower projected benefit amounts being accrued by active members

LRS is well funded compared to its peers. This is due to:

- Stakeholders working together to keep LRS well-funded since inception
- A history of appropriating and contributing the recommended contribution requirements
- Assumptions that in aggregate are more conservative than peers
- A funding policy that aggressively pays down unfunded liability over an 8-year period
- An ad hoc cost-of-living adjustment that supports the health of the system
- Modest changes in benefits when compared to peers

Continued focus on these measures will be needed to maintain the solid status of LRS well into the future.

More details can be found later in this report. We encourage readers to start with Section 1 and refer to other sections for additional details as needed.

Section 1: The Valuation Process

The following diagram summarizes the inputs and results of the actuarial valuation process.

A more detailed description of the valuation process is provided in Appendix A.

Valuation Input: Membership Data

As with any estimate, the actuary collects information that we know now. Under the actuarial valuation process, current information about LRS members is collected annually by the Retirement Systems Division staff at the direction of the actuary. Membership data will assist the actuary in estimating benefits that could be paid in the future. Information about benefit provisions and assets held in the trust as of the valuation date is also collected.

The member information the actuary collects includes data elements such as current service, salary and benefit group identifier for members that have not separated service, and actual benefit amounts and form of payment for members that have separated service. Data elements such as gender and date of birth are used to determine when a benefit might be paid and for how long.

Section 1: The Valuation Process

Valuation Input: Membership Data (continued)

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

Number as of	12/31/2014	12/31/2013
Active members	170	170
Terminated members and survivors of deceased members entitled to benefits but not yet receiving benefits	93	94
Retired members and survivors of deceased members currently receiving benefits	300	311
Total	563	575
Active Reported Compensation	3,559,791	3,579,277
Active Valuation Compensation	3,758,630	3,743,644
Annual Retirement Allowances	2,347,498	2,436,106

Commentary: Overall, the active membership has remained relatively stable. The number of retired members and survivors of deceased members currently receiving benefits decreased by 3.5% from the previous valuation date. The decrease in retiree population reflects less retirements than assumed.

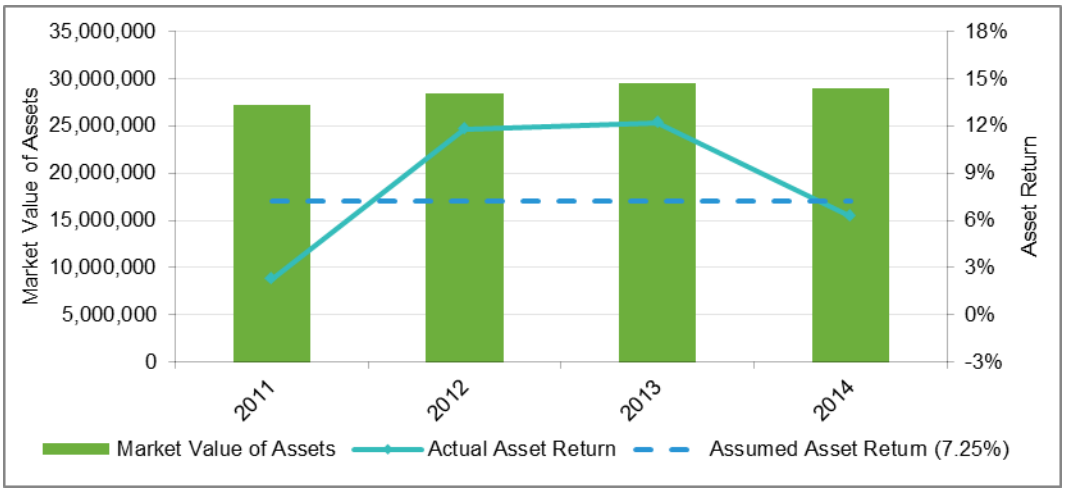
Section 1: The Valuation Process

Valuation Input: Asset Data

LRS assets are held in trust and are invested for the exclusive benefit of plan members. The Market Value of Assets is $29.0 million as of December 31, 2014 and $29.5 million as of December 31, 2013. The investment return for the market value of assets for calendar year 2014 was 6.25%.

Graph 1: Market Value of Asset and Asset Returns

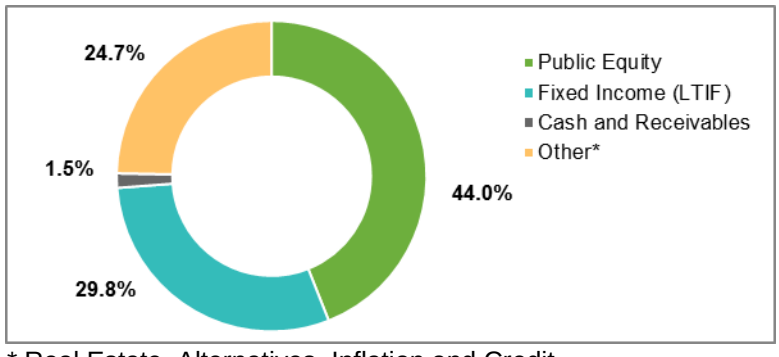
The graph below provides a history of the market value of assets and asset returns over the past four years.



Commentary: Returns were less than the 7.25% assumed rate of return, resulting in higher contributions and lower funded ratio than anticipated, all else begin equal.

Graph 2: Allocation of Investments by Category

The graph below provides the breakdown of the market value of assets at December 31, 2014 by asset category.



* Real Estate, Alternatives, Inflation and Credit

Commentary: Based on historical market returns, the current asset allocation, the current investment policy, and the expectation of future asset returns, as reviewed in the last experience study, the 7.25% discount rate used in this valuation is reasonable and appropriate. The discount rate will be reviewed at the next experience study to be presented to the Board in October 2015.

A detailed summary of the market value of assets is provided in Section 4 of this report.

Section 1: The Valuation Process

Valuation Input: Benefit Provisions

Benefit provisions are described in North Carolina General Statues, Chapter 120.

There were no significant changes in benefit provisions from the prior year's valuation.

Highlights of the benefit provisions are described below.

- An unreduced retirement allowance is payable to members who retire from service after attaining age 65 and five years of creditable service
- The unreduced retirement allowance is equal to 4.02% of a member's highest annual compensation multiplied by the number of years of creditable service
- A reduced retirement allowance is payable to members who retire from service:
  - after attaining age 50 and 20 years of creditable service; or
  - after attaining age 60 and five years of creditable service
- Ancillary benefits are also payable upon the death or disability of a member
- LRS does not provide for explicit cost of living increases as part of the benefit package. Instead, increases may be provided if certain financial conditions are met and/or the legislature passes a budget that provides for a cost-of-living adjustment

Commentary: Many Public Sector Retirement Systems in the United States have undergone pension reform where the benefits of members (current retirees and active or future members) have been reduced. Because of the well-funded status of LRS due to the legislature contributing the actuarially required contribution when such contribution is required, benefit cuts have not been needed in North Carolina. Instead, we have seen a modest expansion of benefits in recent years based on sound plan design.

A detailed summary of the benefit provisions is provided in Appendix C of this report.

Section 1: The Valuation Process

Valuation Input: Actuarial Assumptions

Actuarial assumptions bridge the gap between the information that we know with certainty as of the valuation date (age, gender, service, pay, and benefits of the members) and what may happen in the future. The actuarial assumptions of LRS are reviewed at least every five years. Based on this review, the actuary will make recommendations on the demographic and economic assumptions.

Demographic assumptions describe future events that relate to people such as retirement rates, termination rates, disability rates, and mortality rates. Economic assumptions describe future events that relate to the assets of LRS such as the interest rate, salary increases, the real return, and payroll growth.

The next experience study will be prepared as of December 31, 2014 and presented to the Board in October 2015. Assumptions and methods based on the next experience study, as adopted by the Board, will be used with the December 31, 2015 valuation. This policy of reviewing assumptions every five years is a best practice.

Valuation Input: Funding Methodology

The Funding Methodology is the payment plan for LRS and is composed of the following three components:

- Actuarial Cost Methods allocate costs to the actuarial accrued liability (i.e. the amount of money that should be in the fund) for past service and normal cost (i.e. the cost of benefits accruing during the year) for current service.
  - The Board of Trustees has adopted Projected Unit Credit as its actuarial cost method
- Asset Valuation Methods smooth or average the market value returns over time to alleviate contribution volatility that results from market returns.
  - 20% of market value plus 80% of the expected actuarial value
- Amortization Methods determine the payment schedule for unfunded actuarial accrued liability (i.e. the difference between the actuarial accrued liability and actuarial value of assets)
  - Payment level: the payment is determined as a level dollar amount, similar to a mortgage payment
  - Payment period: an eight-year open

When compared to other Public Sector Retirement Systems in the United States, the funding policy for LRS is quite aggressive in that the policy pays down the pension debt over a much shorter period of time (8 years) compared to the national average of around 24 years. As such it is a best practice in the industry.

There were no changes in actuarial assumptions or funding method from the prior year's valuation. A detailed summary of the actuarial assumptions and methods is provided in Appendix D of this report.

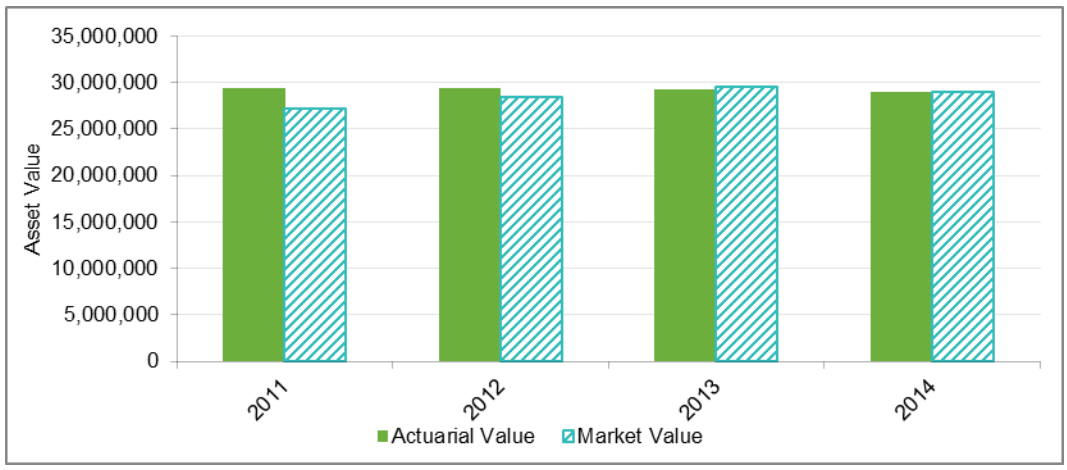
Section 1: The Valuation Process

Valuation Results: Actuarial Value of Assets

In order to reduce the volatility that investment gains and losses can have on required contributions and funded status of LRS, the Board adopted an asset valuation method to determine the Actuarial Value of Assets used for funding purposes. The Actuarial Value of Assets is $29.0 million as of December 31, 2014 and $29.3 million as of December 31, 2013.

Graph 3: Actuarial Value and Market Value of Assets

The graph below provides a history of the market value and actuarial value of assets over the past four years.



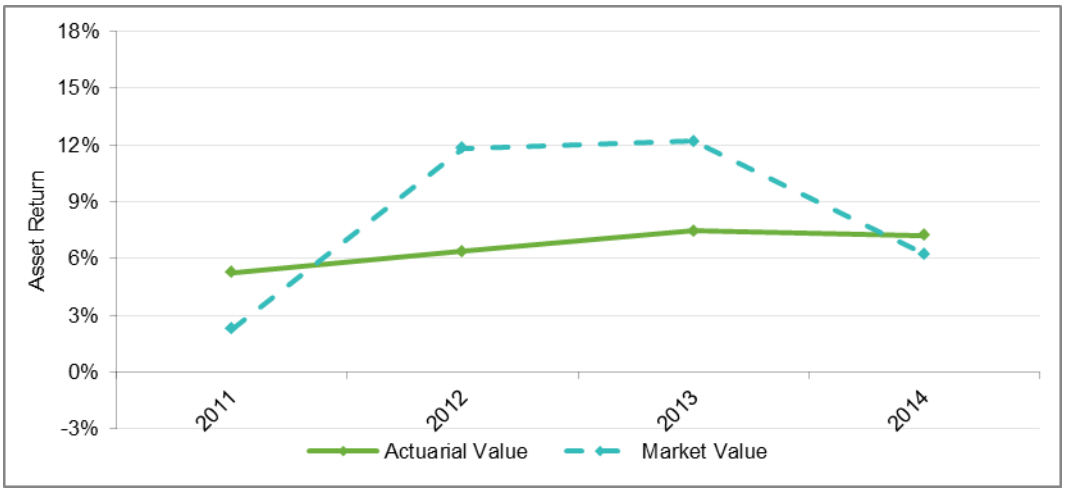
Commentary: The market value of assets is lower than the actuarial value of assets, which is used to determine employer contributions. This indicates that there are unrecognized asset losses to be recognized in future valuations.

Section 1: The Valuation Process

Valuation Results: Actuarial Value of Assets (continued)

Graph 4: Asset Returns

The graph below provides a history of the market value and actuarial value of asset returns over the past four years.



Commentary: The investment return for the market value of assets for calendar year 2014 was 6.25%. The actuarial value of assets smoothes investment gains and losses. The actuarial value of asset return for calendar year 2014 is 7.22% which is lower than the assumed rate of 7.25%. Therefore, LRS experienced an asset loss of $0.01 million during 2014.

A detailed summary of the Actuarial Value of Assets is provided in Section 4 of this report.

Section 1: The Valuation Process

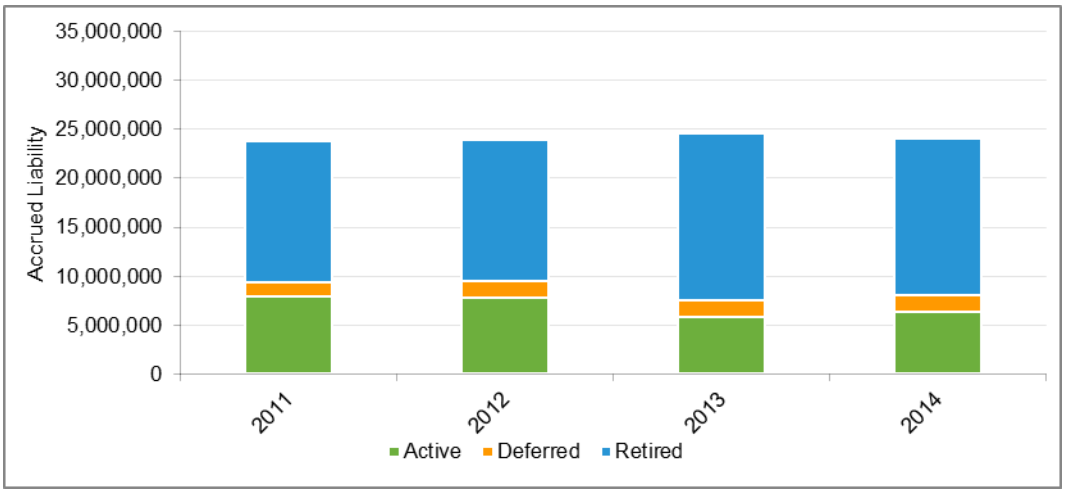
Valuation Results: Actuarial Accrued Liability

Using the provided membership data, benefit provisions, and actuarial assumptions, the future benefit payments of LRS are estimated. These projected future benefit payments are discounted into today's dollars using the assumed rate of investment return assumption to determine the Present Value of Future Benefits (PVFB) of LRS. The PVFB is an estimate of the current value of the benefits promised to all members as of a valuation date.

Once the PVFB is developed, an actuarial cost method is used to allocate the PVFB. Under the actuarial cost method, the PVFB is allocated to past, current and future service, respectively known as the actuarial accrued liability (AAL), normal cost (NC) and present value of future normal costs (PVFNC). The AAL is also referred to as the amount of money LRS should ideally have in the trust. The NC is also referred to as the cost of benefits accruing during the year.

Graph 5: Actuarial Accrued Liability

The graph below provides a history of the actuarial accrued liability over the past four years.



Commentary: The AAL decreased from $24.6 million to $24.1 million during 2014. The Retirement System is an open plan, which means that new members enter the plan each year. In an open plan, liabilities are expected to grow from one year to next as more benefits accrue and the membership approaches retirement. The AAL was $0.7 million lower than expected, which resulted in a demographic gain of $0.7 million during 2014.

A detailed summary of the AAL is provided in Section 5 of this report.

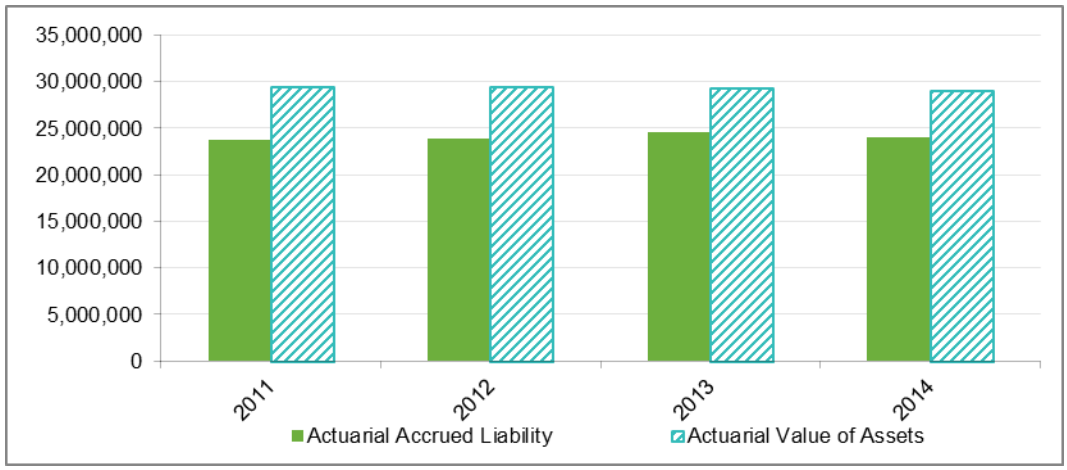
Section 1: The Valuation Process

Valuation Results: Funded Ratio

The funded ratio is a measure of the progress that has been made in funding the plan as of the valuation date. It is the ratio of how much money LRS actually has in the fund to the amount LRS should have in the fund.

Graph 6: Actuarial Accrued Liability and Actuarial Value of Assets

The graph below provides a history of the actuarial accrued liability and actuarial value of assets over the past four years.

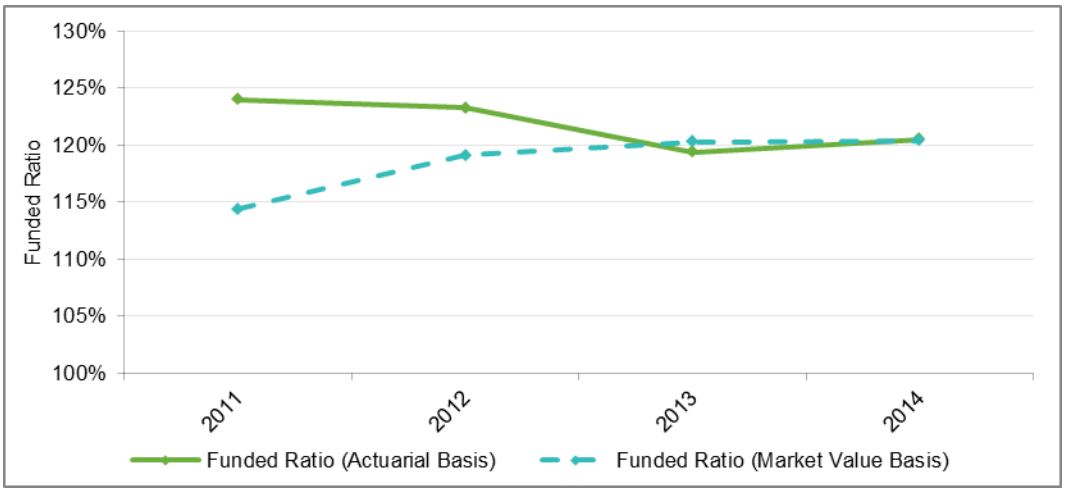


Commentary: The actuarial value of assets basis is used for computing contributions to alleviate contribution volatility. The difference in the actuarial accrued liability and the actuarial value of assets is the amount of pension debt to be paid off in eight years.

Section 1: The Valuation Process

Graph 7: Funded Ratios

The graph below provides a history of the funded ratio on a market and actuarial basis over the past four years.



Commentary: The ratio of assets to liabilities shows the health of the plan on an accrued basis. The funded ratio on an actuarial basis increased from 119.4% at December 31, 2013 to 120.5% at December 31, 2014.

Section 1: The Valuation Process

Valuation Results: Employer Contributions

G.S. 120-4.20 provides that the contributions of employers shall consist of a normal contribution and an accrued liability contribution.

The December 31, 2013 valuation suggested that the preliminary total employer contribution rate be set at 1.80% of payroll for the fiscal year ending June 30, 2016. Subsequently, the 2015 Appropriations Act (Session Laws 2015-241) set contributions at 1.80% of payroll effective for the fiscal year ending June 30, 2016. As a result of this December 31, 2014 valuation, the preliminary total employer contribution rate should be set at 0.46% of payroll for the fiscal year ending June 30, 2017, subject to the impact of any future legislative changes effective during that fiscal year. On this basis, these contributions would provide a preliminary reserve from undistributed gains equivalent to 1.34% of payroll that could be used for a cost-of-living adjustment or other benefit improvements.

Commentary: Even though no contribution has been required in recent years, benefits are accruing at the Normal Cost rate (21.40% as a result of the December 31, 2014 valuation). Accruals in excess of the required employer contribution rate are currently being paid for out of assets in excess of the actuarial accrued liability. As of the December 31, 2013 valuation, the amount of assets in excess of actuarial accrued liability has reduced to the point where they are not sufficient to reduce the contribution to zero. We expect that the contribution holiday is over for the foreseeable future and the contribution rate will trend towards the 21.40% Normal Cost rate. The potential for rapid increases is quite high and should be expected.

A detailed summary of the employer required contributions rates is provided in Section 6 of this report.

Valuation Results: Accounting Information

The Governmental Account Standards Board (GASB) issues statements which establish financial reporting standards for defined benefit pension plans and accounting for pension expenditures and expenses for governmental employers.

The valuation has been prepared in accordance with the parameters of Statement No. 67 of the GASB and all applicable Actuarial Standards of Practice. The Net Pension Liability (Asset) under GASB 67 for the fiscal year ending June 30, 2015, is $(4,504,000) (compared to $(5,633,000) for fiscal year ending June 30, 2014). The required financial reporting information for the Retirement System under GASB No. 67 can be found in Section 7 of this report.

Section 2: Principal Results

This report, prepared as of December 31, 2014, presents the results of the actuarial valuation of the system. 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	12/31/2014	12/31/2013
Active Members		
Number	170	170
Reported Compensation	$ 3,559,791	$ 3,579,277
Valuation Compensation*	$ 3,758,630	$ 3,743,644
Retired Members and Survivors of Deceased Members Currently Receiving Benefits		
Number	300	311
Annual Allowances	$ 2,347,498	$ 2,436,106
Assets		
Actuarial Value (AVA)	$ 29,012,219	$ 29,318,253
Market Value	$ 28,977,047	$ 29,541,619
Actuarial Accrued Liability (AAL)	$ 24,067,461	$ 24,557,195
Unfunded Accrued Liability (AAL-AVA)	$ (4,944,758)	$ (4,761,058)
Funded Ratio (AVA/AAL)**	120.5%	119.4%
Results for Fiscal Year Ending	**6/30/2017**	**6/30/2016**
Annual Required Contribution (ARC) of employer, as a percentage of payroll		
Normal Cost	21.40%	22.03%
Disability Benefit	0.55%	0.55%
Accrued Liability	-21.49%	-20.78%
Total	0.46%	1.80%
Impact of Legislative Changes	N/A	0.00%
Final Employer ARC	N/A	1.80%
Appropriations Act for Fiscal Year Ending	**6/30/2016**	**6/30/2015**
Employer Contribution Rate as a percentage of payroll		
Normal Cost	21.40%	N/A
Disability Benefit	0.55%	N/A
Accrued Liability	-20.15%	N/A
Total	1.80%	N/A
Preliminary Reserve for Undistributed Gains/(Losses)	1.34%	N/A

* Reported compensation adjusted to reflect the assume rate of pay increase prior to the valuation date.
** The System's Funded Ratio is not intended to measure the adequacy of funding in any analysis of a possible settlement of plan liabilities, nor is it intended to assess the need for or the amount of future contributions. Additionally, the measurement of a Funded Ratio using the Market Value of Assets would not be materially different.

Section 3: Membership Data

The Retirement Systems Division provided membership data as of the valuation date for each member of LRS. The membership data assists the actuary in estimating benefits that could be paid in the future. The tables below provide a summary of the membership data used in this valuation. Detailed tabulations of data are provided in Appendix B.

Table 2: Active Member Data

	Member Count	Average Age	Average Service	Reported Compensation
Male	133	56.67	6.27	$ 2,801,877
Female	37	62.16	6.77	757,914
Total	170	57.86	6.38	$ 3,559,791

Table 3: Vested Terminated Member Data

	Member Count	Average Age	Average Service	Deferred Retirement Allowance
Male	30	56.37	9.87	$ 250,484
Female	9	53.19	9.76	72,945
Total	39	55.64	9.84	$ 323,429

The table above includes terminated members entitled to retirement benefits but not yet receiving benefits.

Section 3: Membership Data

Table 4: Non-Vested Terminated Member Data

	Member Count	Average Age	Average Service	Accumulated Contributions
Male	46	59.98	2.84	$ 268,137
Female	8	58.89	1.82	28,214
Total	54	59.82	2.69	$ 296,351

The table above includes non-vested terminated members who have not received a refund of contributions.

Table 5: Data for Members Currently Receiving Benefits

	Member Count	Average Age	Annual Retirement Allowances
Retired Members (Healthy at Retirement)			
Male	190	76.98	$ 1,560,463
Female	48	75.49	412,813
Total	238	76.68	$ 1,973,276
Survivors of Deceased Members			
Male	3	64.79	$ 23,829
Female	59	77.21	350,393
Total	62	76.61	$ 374,222
Grand Total	300	76.67	$ 2,347,498

Section 4: Asset Data

Assets are held in trust and are invested for the exclusive benefit of LRS members. The tables below provide the details of the Market Value of Assets for the current and prior year's valuations.

Table 6: Market Value of Assets

Asset Data as of	12/31/2014	12/31/2013
Beginning of Year Market Value of Assets	$ 29,541,619	$ 28,414,270
Contributions	226,130	236,553
Benefit Payments	(2,564,190)	(2,442,691)
Investment Income	1,773,488	3,333,487
Net Increase/(Decrease)	(564,572)	1,127,349
End of Year Market Value of Assets	$ 28,977,047	$ 29,541,619
Estimated Net Investment Return on Market Value	6.25%	12.21%

Table 7: Allocation of Investments by Category of the Market Value of Assets

Asset Data as of	12/31/2014	12/31/2013
Allocation by Dollar Amount		
Public Equity	$ 12,742,571	$ 14,218,331
Fixed Income (LTIF)	8,641,356	9,049,359
Cash and Receivables	443,988	211,532
Other*	7,149,132	6,062,397
Total Market Value of Assets	$ 28,977,047	$ 29,541,619
Allocation by Percentage of Asset Value		
Public Equity	44.0%	48.1%
Fixed Income (LTIF)	29.8%	30.6%
Cash and Receivables	1.5%	0.7%
Other*	24.7%	20.6%
Total Market Value of Assets	100.0%	100.0%

* Real Estate, Alternatives, Inflation and Credit

Section 4: Asset Data

In order to reduce the volatility that investment gains and losses can have on the required contributions and funded status of LRS, the Board adopted an asset valuation method to determine the Actuarial Value of Assets used for funding purposes. The table below provides the calculation of the Actuarial Value of Assets at the valuation date.

Table 8: Actuarial Value of Assets

Asset Data as of	12/31/2014
(a) Beginning of Year Actuarial Value of Assets	$ 29,318,253
(b) Contributions	226,130
(c) Benefit Payments	(2,564,190)
(d) Net Cash Flow: (b) + (c)	(2,338,060)
(e) Expected Investment Return: [(a) x 7.25%] + [(d) x 3.625%]	2,040,819
(f) Expected End of Year Actuarial Value of Assets: (a) + (d) + (e)	29,021,012
(g) End of Year Market Value of Assets	28,977,047
(h) Excess of Market Value over Expected Actuarial Value of Assets: (g) - (f)	(43,965)
(i) 20% Adjustment toward Market Value: (h) x 20%	(8,793)
(j) End of Year Actuarial Value of Assets: (f) + (i)	29,012,219
(k) Estimated Net Investment Return on Actuarial Value	7.22%

Commentary: The actuarial value of assets smoothes investment gains/losses, resulting in less volatility in the employer contribution. Lower than expected returns in 2011 and 2014 resulted in a $0.01 million asset loss recognition this year.

Section 5: Liability Results

Using the provided membership data, benefit provisions, and actuarial assumptions, the future benefit payments of LRS are estimated. These projected future benefit payments are discounted into today's dollars using the assumed rate of investment return assumption to determine the Present Value of Future Benefits. The Present Value of Future Benefits is allocated to past, current and future service, respectively known as the actuarial accrued liability, normal cost and present value of future normal costs. The table below provides these liability numbers for the current and prior year's valuations.

Table 9: Liability Summary

Valuation Results as of	12/31/2014	12/31/2013
(a) Present Value of Future Benefits		
(1) Active Members	$ 13,546,857	$ 13,519,032
(2) Terminated Members	1,679,451	1,695,813
(3) Members Currently Receiving Benefits	16,051,662	16,981,822
(4) Total	$ 31,277,970	$ 32,196,667
(b) Present Value of Future Normal Costs	$ 7,210,509	$ 7,639,472
(c) Actuarial Accrued Liability: (a4) - (b)	$ 24,067,461	$ 24,557,195
(d) Actuarial Value of Assets	$ 29,012,219	$ 29,318,253
(e) Unfunded Accrued Liability: (c) - (d)	$ (4,944,758)	$ (4,761,058)

Section 5: Liability Results

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

Table 10: Reconciliation of Unfunded Actuarial Accrued Liability

(in millions)	
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2013	$ (4.8)
Normal Cost during 2014	1.1
Reduction due to Actual Contributions during 2014	(0.2)
Interest on UAAL, Normal Cost, and Contributions	(0.3)
Asset (Gain)/Loss	0.0
Actuarial Accrued Liability (Gain)/Loss	(0.7)
Impact of Legislative Changes	0.0
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2014	$ (4.9)

Commentary: The negative unfunded actuarial accrued liability, or "excess" pension assets, shrank faster than expected during the past year primarily due to lower reported compensation than assumed based on the prior valuation and fewer active retirements than assumed.

Section 6: Annual Required Contribution

The annual required contribution consists of a normal cost rate and an accrued liability rate. The normal cost rate is the employer's portion of the cost of benefits accruing during the year after reducing for the member contribution. The accrued liability rate is the payment toward the unfunded accrued liability in order to pay off the unfunded accrued liability over 8 years. The Disability benefit rate is the Normal Cost rate necessary to provide the disability benefit on a one-year term basis.

The table below provides the calculation of the annual required contribution for the current and prior years' valuations.

Table 11: Calculation of the Annual Required Contribution (ARC)

Valuation Date ARC for Fiscal Year Ending	12/31/2014 6/30/2017	12/31/2013 6/30/2016
Normal Cost Rate Calculation		
(a) Normal Cost	$ 1,067,629	$ 1,086,850
(b) Valuation Compensation	$ 3,758,630	$ 3,743,644
(c) Total Normal Cost Rate: (a) / (b)	28.40%	29.03%
(d) Employee Contribution Rate	7.00%	7.00%
(e) Employer Normal Cost Rate: (c) - (d)	21.40%	22.03%
Disability Benefit Rate Calculation		
(f) Disability Benefit Normal Cost	$ 20,578	$ 20,728
(g) Valuation Compensation	$ 3,758,630	$ 3,743,644
(h) Total Normal Cost Rate: (f) / (g)	0.55%	0.55%
Accrued Liability Rate Calculation		
(i) Unfunded Accrued Liability	$ (4,944,758)	$ (4,761,058)
(j) Amortization of Unfunded Accrued Liability	$ (807,868)	$ (777,855)
(k) Valuation Compensation	$ 3,758,630	$ 3,743,644
(l) Accrued Liability Rate: (j) / (k)	(21.49%)	(20.78%)
Total ARC (e) + (h) + (l)	0.46%	1.80%

Section 6: Annual Required Contribution

The table below provides a reconciliation of the annual required contribution for the current and prior years' valuations.

Table 12: Reconciliation of the Change in the ARC

Fiscal year ending June 30, 2016 Preliminary ARC (based on December 31, 2013 valuation)	1.80%
Impact of Legislative Changes	0.00%
Fiscal year ending June 30, 2016 Final ARC	1.80%
Change Due to Demographic (Gain)/Loss	(1.42%)
Change Due to Investment (Gain)/Loss	0.04%
Change Due to Member Contributions Less (Greater) than Expected	0.04%
Fiscal year ending June 30, 2017 Preliminary ARC (based on December 31, 2014 valuation)	0.46%

Table 13: Cost of Benefit Enhancements

Calculation as of	12/31/2014	12/31/2013
Increase in ARC for a 1% COLA*	0.75%	0.80%

* The 1% COLA calculated at the December 31, 2014 valuation would be effective July 1, 2016. The COLA would be paid in full to retired members and survivors of deceased members on the retirement roll on July 1, 2015 and would be prorated for retired members and survivors of deceased members who commence benefits after July 1, 2015 but before June 30, 2016.

Section 7: Accounting Results

The section contains the accounting information for Governmental Accounting Standards Board (GASB) Statement No. 67 for fiscal year ending June 30, 2015 based on a valuation date of December 31, 2014.

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

The June 30, 2015 total pension liability presented in this section was determined by an actuarial valuation as of December 31, 2014, 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 14: Number of Active and Retired Members as of December 31, 2014

Group	Number
Retired members and survivors of deceased members currently receiving benefits	300
Terminated members and survivors of deceased members entitled to benefits but not yet receiving benefits	93
Active members	170
Total	563

Section 7: Accounting Results

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 15: Schedule of Changes in Net Pension Liability (Asset)

Calculation as of	June 30, 2015
Total Pension Liability	
Service Cost	$ 844,000
Interest	1,742,000
Changes of Benefit Terms	0
Difference between Expected and Actual Experience	(579,000)
Change of Assumptions	0
Benefit Payments, including Refund of Member Contributions	(2,473,000)
Net Change in Total Pension Liability	$ (466,000)
Total Pension Liability - Beginning of Year	$ 24,418,000
Total Pension Liability - End of Year	$ 23,952,000
Plan Fiduciary Net Position	
Employer Contributions	$ 0
Member Contributions	253,000
Net Investment Income	642,000
Benefit Payments, including Refund of Member Contributions	(2,473,000)
Administrative Expenses	(17,000)
Other	0
Net Change in Fiduciary Net Position	$ (1,595,000)
Plan Fiduciary Net Position - Beginning of Year	$ 30,051,000
Plan Fiduciary Net Position - End of Year	$ 28,456,000

Table 16: Net Pension Liability (Asset)

Calculation as of	June 30, 2015	June 30, 2014
Total Pension Liability	$ 23,952,000	$ 24,418,000
Plan Fiduciary Net Position	28,456,000	30,051,000
Net Pension Liability (Asset)	$ (4,504,000)	$ (5,633,000)
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	118.80%	123.07%

Section 7: Accounting Results

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

Table 17: Sensitivity of the Net Pension Liability (Asset) at June 30, 2015 to Changes in the Discount Rate

	1% Decrease	Current	1% Increase
Discount Rate	6.25%	7.25%	8.25%
Net Pension Liability (Asset)	(2,756,000)	(4,504,000)	(6,040,000)

The discount rate used to measure the total pension liability was 7.25%. 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 contribution rate.

Table 18: Additional Information for GASB Statement No. 67

Valuation Date	12/31/2014
Actuarial Cost Method	Projected Unit Credit
Amortization Method	Level dollar open
Amortization Period	8 years
Asset Valuation Method	20% of market value plus 80% of expected actuarial value
Actuarial Assumptions	
Investment Rate of Return	7.25%
Projected Salary Increases	7.50%
Cost-of-living Adjustments	N/A

Appendix A: Valuation Process and Glossary of Actuarial Terms

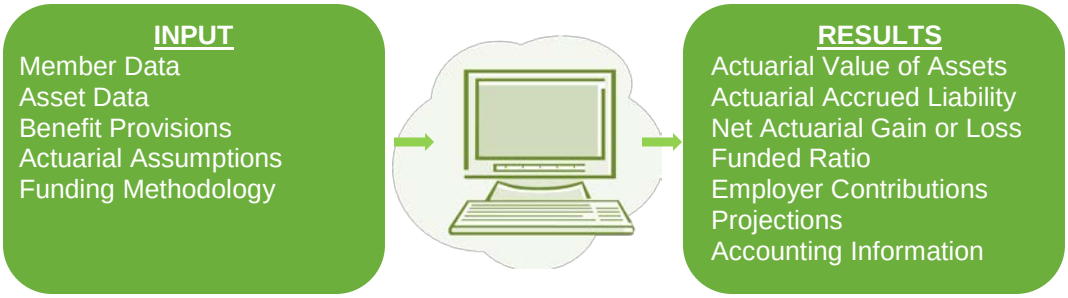
Purpose of an Actuarial Valuation

The majority of Public Sector Retirement Systems in the State of North Carolina are defined benefit (DB) retirement systems. Under a DB Retirement System, the amount of benefits payable to a member upon retirement, termination, death or disability is defined in various contracts and legal instruments and is based, in part, on the member's years of credited service and final compensation. The amount of contribution needed to fund these benefits cannot be known with certainty. A primary responsibility of the Board of Trustees of a Retirement System is to establish and monitor a funding policy for the contributions made to the Retirement System.

While somewhat uncommon, in some jurisdictions, contributions are made by the plan sponsor as benefits come due. This is known as pay-as-you-go financing. More commonly, contributions for benefits are made in advance during the course of active employment of the members. This is known as actuarial pre-funding. For example, the State of North Carolina mandates for the Teachers' and State Employees' Retirement System (the "State Plan") that "on account of each member there shall be paid into the pension accumulation fund by employers an amount equal to a certain percentage of the actual compensation of each member to be known as the 'normal contribution'…" and further "the normal rate of contribution shall be determined by the actuary after each valuation."

The Actuarial Valuation Process

The following diagram summarizes the inputs and results of the actuarial valuation process. A narrative of the process follows the diagram. The reader may find it worthwhile to refer to the diagram from time to time.



Under the actuarial valuation process, current information about Retirement System members is collected annually by staff at the direction of the actuary, namely member data, asset data and information on benefit provisions. Member data is collected for each member of the Retirement System. The member data will assist the actuary in estimating benefits that could be paid in the future. The member information the actuary collects to estimate the amount of benefit includes elements such as current service, salary and benefit group identifier for members that have not separated service; for those that have, the actual benefit amounts are collected. The actuary collects information such as gender and date of birth to determine when a benefit might be paid and for how long. The actuary collects summary information about assets as of the valuation date and information on cash flows for the year ending on the valuation date. Information about

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benefit provisions as of the valuation date is also collected. To bridge the gap between the information collected and potential benefits to be paid in the future, the actuary must make assumptions about future activities. These assumptions are recommended by the actuary to the Boards based on the results of an experience review. An experience review is a review of the Retirement System over a period of time, typically five years, where the actuary analyzes the demographic and economic assumptions of the Retirement System. Based on this review, the actuary will make recommendations on the demographic assumptions, such as when members will be projected to retire, terminate, become disabled and/or die in the future, as well as the economic assumptions, such as what rate of return is projected to be earned by the fund based on the Retirement System investment policy and what level of future salary increases is expected for members. To maintain the assumptions, the Board should adopt a prudent policy of having an experience review being performed every five years. The next experience review for the North Carolina Retirement Systems will be based on the five-year period ending on December 31, 2014 and will be presented during 2015. Using these assumptions, the actuary is able to use the member data, asset data and benefit provision information collected to project the benefits that will be paid from the Retirement System to current members. These projected future benefit payments are based not only on service and pay through the valuation date but includes future pay and service, which has not yet been earned by the members but is expected to be earned.

These projected future benefit payments are discounted into today's dollars using the assumed rate of investment return assumption to determine the Present Value of Future Benefits (PVFB) of the Retirement System. The PVFB is an estimate of the value of the benefits promised to all members as of a valuation date. If the Retirement System held assets equal to the PVFB and all the assumptions were realized, there would be sufficient funds to pay off all the benefits to be paid in the future for members in the Retirement System as of the valuation date.

The PVFB is a large sum of money, typically much larger than the amount of Retirement System assets held in the trust. The next step is for the actuary to apply the Funding Policy as adopted by the Board to determine the employer contributions to be made to the Retirement System so that the gap between the PVFB and assets is systematically paid off over time. The Funding Policy is adopted by the Board based on discussions with the actuary. When the Board develops a funding policy, a balance between contributions which are responsive to the needs of the Retirement System yet stable should be struck. There are many different funding policies for the Board to consider, and the actuary is responsible for discussing the various features of the funding policies under consideration. Funding Policies are generally reviewed during an experience review, but it is not uncommon to review a funding policy in between, particularly during period where large increases or decreases in contributions are expected. The Funding Policy is composed of three components: the actuarial cost method, the asset valuation method, and the amortization method.

Once the PVFB is developed, an actuarial cost method is used to allocate the PVFB. Under the actuarial cost method, the PVFB is allocated to past, current and future service, respectively known as the actuarial accrued liability (AAL), normal cost (NC) and present value of future normal costs (PVFNC). The actuary computes the liability components (PVFB, NC, AAL, and PVFNC) for each participant in the Retirement

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System at the valuation date. These liability components are then totaled for the Retirement System. There are many actuarial cost methods. Different actuarial methods will produce different contribution patterns, but do not change the ultimate cost of the benefits. The entry age normal cost method is the most prevalent method used for public sector plans in the United States, because the expected normal cost is calculated in such a way that it will tend to stay level as a percent of pay over a member's career. Most of the North Carolina Retirement Systems use the entry age normal cost method; LGERS uses a method known as frozen initial liability, which is similar to entry age normal but allows for the individualized payments for local employers when they enter LGERS.

The actuarial accrued liability (AAL) is also referred to as the amount of money the Retirement System should ideally have in the trust. The unfunded actuarial accrued liability (UAAL) is the portion of actuarial accrued liability that is not covered by the assets of the Retirement System. The UAAL can be a negative number, which means that the Retirement System has more assets than actuarial accrued liability. We refer to this condition as overfunded liability in this summary. Having UAAL does not indicate that the Retirement System is in failing actuarial health. UAAL is a common occurrence. Currently, many Retirement Systems in the United States have UAAL as a result of the Great Recession of 2008. Another related statistic of the Retirement System is the funded ratio. The funded ratio is the percent of the actuarial accrued liabilities covered by the actuarial value of assets. The assets used for these purposes are an actuarial value of assets (AVA), not market. The actuarial value of assets is based on the asset valuation method as recommended by the actuary and adopted by the Board. An actuarial value of assets is a smoothed, or averaged, value of assets, which is used to limit employer contribution volatility. Typically, assets are smoothed, or averaged, over a period of 3 to 5 years, although longer periods are becoming more common. By averaging returns, the UAAL is not as volatile, which we will see later results in contributions that are not as volatile as well. The North Carolina Retirement Systems use an actuarial value of assets with a smoothing period of 5 years.

While having UAAL is common, it is acceptable only if it is systematically being paid off. The method by which the UAAL is paid off is known as the amortization method. The concept is similar to that of a mortgage payment. The Board adopts the amortization method used to pay off the UAAL over a period of time. The amortization method is composed of the amortization period, the amount of payment increase, whether the period is open or closed and by the amount of amortization schedules. The amortization period is the amount of time over which the UAAL will be paid off. This is generally a period of thirty years or less, but actuaries are beginning to recommend shorter periods. The payments can be developed to stay constant from year to year like a mortgage, but often they are developed to increase each year at the same level payroll increases. Amortization type can be closed or open. Under a closed period, the UAAL is expected to be paid off over the amortization period. This is similar to a typical mortgage. Under an open period, the amortization period remains unchanged year after year. The concept is similar to re-mortgaging annually. In many instances, an amortization schedule is developed, whereby the UAAL is amortized over a closed period from the point the UAAL is incurred. Finally, some amortization methods are defined by a schedule of payments, where a new schedule of payments is added with each valuation. Regardless of the amortization type or period, the funding policy should generate a contribution that pays off the UAAL, which results in the funded ratio trending to 100% over time. Caution

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should be used when an open method is used, because typically an open amortization policy does not result in the UAAL being paid off. North Carolina pays off a much larger amount of UAAL compared to other states. While many states struggle to pay a 30-year level percent of pay UAAL contribution, which doesn't even reduce the amount of UAAL, North Carolina pays down the UAAL with level dollar payments over 12 years. This aggressive payment of UAAL results in North Carolina being home to many of the best funded Public Retirement Systems in the United States.

To satisfy the requirements of the State of North Carolina, the actuary calculates the total annual contribution to the Retirement System as the normal cost plus a contribution towards UAAL. Said another way, this contribution is sufficient to pay for the cost of benefits accruing during the year (normal cost) plus the mortgage payment (UAAL payment). The total contribution is reduced by the amount of member contributions, if any, to arrive at the employer contribution. For the aggressive North Carolina contribution policy to be effective, the amounts that Buck calculates need to be contributed. With very limited exception, North Carolina has contributed the amounts that Buck has calculated, which has resulted in the North Carolina Retirements Systems being among the best funded in the United States.

An actuarial valuation report is produced annually, which contains the contribution for the fiscal year as well as the funded ratio of the Retirement System. The primary purpose of performing an actuarial valuation annually is to replace the estimated activities from the previous valuation, which were based on assumptions, with the actual experience of the Retirement System for the prior year. The experience gain (loss) is the difference between the expected and the actual UAAL of the Retirement System. An experience loss can be thought of as the amount of additional UAAL over and above the amount that was expected from the prior year due to deviation of actual experience from the assumption. Similarly, an experience gain can be thought of as having less UAAL than that which was expected from the prior year assumptions. As an example, if the Retirement System achieves an asset return of 15% when the assumption was a 7.25% return, an actuarial gain is said to have happened, which typically results in lower contributions and higher funded ratio, all else being equal. Alternatively, a return of 2% under the same circumstances would result in an actuarial loss, requiring an increase in contributions and a funded ratio that is lower than anticipated. Experience gains and losses are common within the valuation process. Typically gains and losses offset each other over time. To the extent that does not occur, the reasons for the gains and losses should be understood, and appropriate recommendations should be made by the actuary after an experience review to adjust the assumptions.

The actuarial valuation report will contain histories of key statistics from prior actuarial valuation reports. In particular, a history of the funded ratio of the Retirement System is an important exhibit. Trustees should understand the reason for the trend of the funded ratio of the Retirement System over time. The actuary will discuss the reasons for changes in the funded ratio of the Retirement System with each valuation report. To the extent that there are unexplained changes in funded ratio corrective action should be explored and the actuary will make recommendations as to whether there should be changes in the assumptions, funding policy, or some other portion of the actuarial valuation process.

Appendix A: Valuation Process and Glossary of Actuarial Terms

In addition to historical information, projections of contributions and funded ratio based on current assumptions can sometimes be found in an actuarial valuation report. Projections of contributions can allow the employer to plan their budget accordingly. Surprises in Retirement System contributions to be paid by the employer serve no one. A one-year projection based on "bad" asset returns can provide ample time for the employer to plan, or allow for a discussion of changing the funding policy to occur. Contribution surprises are a primary contributor to employers considering pension reform. It is important to keep the employer apprised of future contribution requirements. A projection of funded ratio can serve the Trustees by illustrating the trend of the funded ratio over time. The funded ratio, under a prudent funding policy, should trend to 100% over a period of less than 30 years. (It is worthwhile to note that while 30 years has served as an industry standard for the longest period over which 100% funding should be achieved, that period is coming under scrutiny by the actuarial community and will likely be shortened.) If a projection of funded ratio does not trend to 100% over time, consideration should be given to fixing the funding policy to achieve this goal. For the North Carolina Retirement Systems, projections are generally performed for the January Board meetings. While the projection period has tended to be limited to five years, a longer projection would show the funded ratio trend to 100% much faster than other Public Retirement Systems.

The actuarial report will contain schedules of information about the census, plan and asset information submitted by Retirement System staff upon which the actuarial valuation is based. It is important that the Board of Trustees review that information and determine if the information is consistent with their understanding of the Retirement System. If after questioning staff, the Board of Trustees is not comfortable that the information provided is correct, the actuary should be notified to determine if the actuarial valuation report should be corrected.

Finally, the valuation report and/or presentation should contain sufficient information in an understandable fashion to allow the Board to take action and adopt the contribution rate for the upcoming year. It should also allow stakeholders to understand key observations over the past year that resulted in contributions increasing (or decreasing) and where contributions are headed. The actuary is always open to making the results understandable. Buck works with the North Carolina Retirement Division to make your reports and presentations understandable and actionable. If something doesn't make sense – speak up!!

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Glossary

Note that the first definitions given are the "official" definitions of the term. For some terms there is a second definition, in italics, which is the unofficial definition.

Actuarial Accrued Liability (AAL). The portion of the Present Value of Projected Benefits (PVFB) allocated to past service. Also difference between (i) the actuarial present value of future benefits, and (ii) the present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability." *The amount of money that should be in the Fund. The funding target.*

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, retirement, investment income and salary increases. Demographic ("people") assumptions (rates of mortality, separation, and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic ("money") assumptions (salary increases and investment income) consist of an underlying rate appropriate in an inflation-free environment plus a provision for a long-term average rate of inflation. *Estimates of future events used to project what we know now- current member data, assets, and benefit provisions – into an estimate of future benefits.*

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the Present Value of Projected Benefits (PVFB) between the normal costs to be paid in the future and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

Actuarial Methods. The collective term for the Actuarial Cost Method, the Amortization Payment for UAAL Method, and the Asset Valuation Method used to develop the contribution requirements for the Retirement System. *The Funding Policy*.

Actuarial Equivalent. Benefits whose actuarial present values are equal.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Actuarial Value of Assets (AVA). A smoothed value of assets which is used to limit contribution volatility. Also known as the funding value of assets. *Smoothed value of assets.*

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Amortization Payment for UAAL. Payment of the unfunded actuarial accrued liability by means of periodic contributions of interest and principal, as opposed to a lump sum payment. The components of the amortization payment for UAAL includes:

- Amortization Period Length – Generally amortization periods up to 30 years are allowed. Similar to a mortgage, the shorter the amortization period, the higher the payment and the faster the UAAL is paid off.
- Amortization payment increases – Future payments can be level dollar, like a mortgage, or as a level percent of pay. Most Retirement Systems amortize UAAL as a level percent of pay which when combined with the employer normal cost that is developed as a level percent of pay can result in contributions that are easier to budget.
- Amortization type Amortization schedule can be closed or open. A closed amortization schedule is similar to a mortgage – at the end of the amortization period the UAAL is designed to be paid off. An open amortization period is similar to refinancing the UAAL year after year.
- Amortization schedule UAAL can be amortized over a single amortization period, or it can be amortized over a schedule.

The amortization payment for UAAL can be thought of as the UAAL mortgage payment.

Asset Valuation Method. The components of how the actuarial value of assets is to be developed.

Experience Gain Loss. A measure of the difference between actual experience and experience anticipated by a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used. *The experience Gain (Loss) represents how much the actuary missed the mark in a given year.*

Funded Ratio. The percent of the actuarial accrued liabilities covered by the actuarial value of assets. Also known as the funded status. *The ratio of how much money you actually have in the fund to the amount you should have in the fund.*

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” An amortization payment toward the unfunded actuarial accrued liability is paid in addition to the normal cost to arrive at the total contribution in a given year. *The cost of benefits accruing during the year*.

Present Value of Future Normal Cost (PVFNC). The portion of the Present Value of Projected Benefits (PVFB) allocated to future service. *The value in today’s dollars of the amount of contribution to be made in the future for benefits accruing for members in the Retirement System as of the valuation date. Note that in practice, this number is rarely discussed.*

Appendix A: Valuation Process and Glossary of Actuarial Terms

Present Value of Future Benefits (PVFB). The projected future benefit payments of the plan are discounted into today's dollars using an assumed rate of investment return assumption to determine the Present Value of Future Benefits (PVFB) of the Retirement System. The PVFB is the discounted value of the projected benefits promised to all members as of a valuation date, including future pay and service for members which has not yet been earned. *If the Retirement System held assets equal to the PVFB and all the assumptions were realized, there would be sufficient funds to pay off all the benefits to be paid in the future for members in the Retirement System as of the valuation date.*

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability (UAAL). The difference between the actuarial accrued liability (AAL) and actuarial value of assets (AVA). The UAAL is sometimes referred to as "unfunded accrued liability." *Funding shortfall, or prefunded amount if negative.*

Valuation Date. The date that the actuarial valuation calculations are performed as of. *Also known as the "snapshot date".*

Appendix B: Detailed Tabulations of Member Data

Table B-1: The Number and Average Reported Compensation of Active Members Distributed by Age and Service as of December 31, 2014

	Years of Service										
Age	**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**	**Total**
Under 25	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	1	0	0	0	0	0	0	0	1
	0	0	20,659	0	0	0	0	0	0	0	20,659
30 to 34	1	7	0	0	0	0	0	0	0	0	8
	13,495	20,659	0	0	0	0	0	0	0	0	19,764
35 to 39	0	6	1	1	0	0	0	0	0	0	8
	0	20,659	20,659	20,659	0	0	0	0	0	0	20,659
40 to 44	1	9	1	3	0	0	0	0	0	0	14
	19,104	20,659	20,659	20,659	0	0	0	0	0	0	20,548
45 to 49	1	10	2	1	1	0	0	0	0	0	15
	7,664	20,659	20,659	20,659	20,659	0	0	0	0	0	19,793
50 to 54	0	7	3	2	0	0	0	0	0	0	12
	0	20,659	32,142	20,659	0	0	0	0	0	0	23,530
55 to 59	0	15	4	5	1	0	0	0	0	0	25
	0	20,659	21,754	21,535	25,040	0	0	0	0	0	21,185
60 to 64	2	25	3	4	0	0	0	1	0	0	35
	8,206	20,659	20,659	32,049	0	0	0	20,659	0	0	21,249
65 to 69	1	11	5	5	1	2	0	0	0	0	25
	7,664	20,614	21,382	20,659	20,659	20,659	0	0	0	0	20,264
70 & Up	0	6	6	9	2	1	2	1	0	0	27
	0	22,511	20,659	20,659	20,659	20,659	20,659	20,659	0	0	21,071
Total	6	96	26	30	5	3	2	2	0	0	170
	10,723	20,770	22,291	22,324	21,535	20,659	20,659	20,659	0	0	20,940

Appendix B: Detailed Tabulations of Member Data

Table B-2: The Number and Reported Compensation of Active Members Distributed by Age as of December 31, 2014

	Men		Women	
Age	Number	Compensation	Number	Compensation
29	1	$ 20,659		
31	3	61,977		
32	2	34,154		
33	2	41,318	1	$ 20,659
35	2	41,318		
36	1	20,659	1	20,659
37	2	41,318		
38	1	20,659		
39	1	20,659		
40	2	41,318		
41	3	61,977		
42			1	20,659
43	4	82,636		
44	4	81,081		
45	2	41,318		
46	7	131,618		
47	2	41,318	1	20,659
48	2	41,318		
49	1	20,659		
50	1	20,659		
51	3	61,977		
52	2	41,318	1	20,659
53	3	61,977		
54	1	55,107	1	20,659
55	2	41,318	1	20,659
56	2	41,318	3	61,977
57	4	82,636		
58	6	128,332	1	20,658
59	5	112,057	1	20,659
60	7	144,613		
61	4	63,698		
62	2	75,766	2	41,318
63	7	144,613	6	117,986
64	6	135,066	1	20,659
65	3	65,594	3	61,977
66	5	103,295		
67	5	90,300	2	41,318
68	2	41,318		
69	3	61,977	2	40,818
70	3	61,977	2	41,318

Appendix B: Detailed Tabulations of Member Data

Table B-2: The Number and Reported Compensation of Active Members Distributed by Age as of December 31, 2014 (continued)

	Men		Women	
Age	Number	Compensation	Number	Compensation
71	1	$ 20,659	4	$ 82,636
72	2	41,318	1	20,659
73	3	61,977		
74	2	41,318		
75	3	61,977	1	20,659
76	1	20,659		
78	1	31,771	1	20,659
82	1	20,659		
84	1	20,659		
Total	133	$ 2,801,877	37	$ 757,914

Appendix B: Detailed Tabulations of Member Data

Table B-3: The Number and Reported Compensation of Active Members Distributed by Service as of December 31, 2014

	Men		Women	
Service	Number	Compensation	Number	Compensation
0	5	$ 49,649	1	$ 14,691
1	3	61,977	1	20,159
2	40	826,358	12	247,908
3	2	41,318		
4	34	713,517	4	82,636
5	2	41,318	1	20,659
6	8	165,270	2	41,317
7	1	20,659	1	20,659
8	4	125,083	6	123,954
9	1	20,659		
10	10	210,971	2	41,318
12	7	144,613	3	61,977
13	1	20,659		
14	6	169,514	1	20,659
16	2	41,318		
18	2	45,699	1	20,659
20			1	20,659
24	2	41,318		
26	1	20,659	1	20,659
34	2	41,318		
Total	133	$ 2,801,877	37	$ 757,914

Appendix B: Detailed Tabulations of Member Data

Table B-4: The Number and Deferred Retirement Allowance of Terminated Vested Members Distributed by Age as of December 31, 2014

	Men		Women	
Age	Number	Allowance	Number	Allowance
40	1	$ 4,983		
44			1	$ 4,983
47	1	6,644		
48	1	9,966	1	4,983
49	1	10,234	1	4,983
50	2	13,288		
51	2	11,350	1	8,651
52	2	16,311		
54	3	18,963		
55	2	16,333	3	36,057
56	1	10,218		
57	2	19,378	1	4,983
58	4	27,129		
59	2	18,824		
61	1	6,644	1	8,305
62	1	4,983		
64	1	15,494		
66	1	4,983		
68	1	15,979		
75	1	18,780		
Total	30	$ 250,484	9	$ 72,945

Appendix B: Detailed Tabulations of Member Data

Table B-5: The Number and Accumulated Contributions of Non-Vested Terminated Members Distributed by Age as of December 31, 2014

	Men		Women	
Age	Number	Contributions	Number	Contributions
39	1	$ 4,367		
41	1	3,191		
42	2	10,375		
43	1	1,669		
44	1	5,003		
46			1	$ 7,770
47	2	13,244		
48	1	6,642		
49			1	534
50	1	3,191		
51	1	4,213		
52	1	7,184		
53	2	9,606		
55	1	6,642		
56	1	10,358		
57	2	15,222	1	5,031
58	1	4,213	2	4,874
59	3	20,799		
61	2	9,665		
62	3	17,989		
63	1	7,184		
64	4	11,189	1	4,723
65	2	11,855		
66	3	17,996		
68	1	3,081	2	5,282
69	1	3,515		
70	1	5,109		
71	2	15,613		
75	2	16,977		
81	1	10,556		
92	1	11,489		
Total	46	$ 268,137	8	$ 28,214

Appendix B: Detailed Tabulations of Member Data

Table B-6: The Number and Annual Retirement Allowances of Retired Members and Survivors of Deceased Members Distributed by Age as of December 31, 2014

	Men		Women	
Age	Number	Allowances	Number	Allowances
44	1	$ 10,236		
47			2	$ 14,964
52			3	11,796
58			1	1,908
60			1	7,164
61	2	20,568		
62	4	37,020	2	6,564
63	2	5,568		
64	3	28,812		
65	4	32,004	6	29,280
66	7	52,788	1	20,952
67	4	62,244	4	16,248
68	7	75,456	5	47,760
69	9	80,124	5	34,980
70	7	57,012	4	26,316
71	8	47,052	5	40,764
72	10	80,604	4	21,180
73	10	78,600	2	9,792
74	6	28,236	3	16,368
75	3	20,232	5	45,960
76	7	49,116	2	20,028
77	6	56,188	6	52,686
78	13	111,060	3	31,428
79	7	59,484	3	20,352
80	9	113,220	2	17,736
81	6	48,252	4	25,860
82	10	53,928	4	37,344
83	4	32,304	5	42,660
84	7	54,948	2	21,504
85	6	60,528	3	17,004
86	3	7,128	2	4,680
87	7	58,860	3	12,156
88	8	50,832	2	4,032
89	6	37,620	2	9,900
90	1	23,652	4	27,444

Appendix B: Detailed Tabulations of Member Data

Table B-6: The Number and Annual Retirement Allowances of Retired Members and Survivors of Deceased Members Distributed by Age as of December 31, 2014 (continued)

	Men		Women	
Age	Number	Allowances	Number	Allowances
91	3	$ 26,196		
92	2	23,964	3	$ 44,520
93	1	456		
94			1	7,620
95			1	8,412
96			1	5,364
99			1	480
Total	193	$ 1,584,292	107	$ 763,206

Appendix B: Detailed Tabulations of Member Data

Table B-7: The Number and Annual Retirement Allowances of Retired Members and Survivors of Deceased Members Distributed by Annuity Type as of December 31, 2014

	Men		Women	
Annuity Type	Number	Allowances	Number	Allowances
Maximum	81	$ 702,503	43	$ 385,709
Option 1	3	13,068		
Option 2	95	730,175	5	27,104
Option 3	11	114,717		
Option 4				
Option 5-2				
Option 5-3				
Option 6-2				
Option 6-3				
Other				
Survivors of Deceased Members	3	23,829	59	350,393
Total	193	$ 1,584,292	107	$ 763,206

Appendix C: Summary of Main Benefit and Contribution Provisions

All members of the General Assembly are eligible for membership.

"Compensation" means salary and expense allowance paid for service as a legislator in the General Assembly, exclusive of travel and per diem. "Highest annual compensation" means the 12 consecutive calendar months of compensation during a member's final legislative term for the highest position that a member held as a member of the General Assembly. "Creditable service" includes all service rendered as a member of the General Assembly.

BENEFITS

Service Retirement Allowance

Conditions for Allowance	A service retirement allowance is payable to any member who retires from service and: (a) has attained age 50 and completed 20 or more years of creditable service; or (b) has attained age 60 and completed five or more years of creditable service.
Unreduced Allowance	An unreduced annual service retirement allowance is payable to a member who has attained age 65 and completed five years of creditable service. The Service Retirement Allowance is equal to 4.02% of a member's highest annual compensation multiplied by the number of years of creditable service.
Reduced Allowance	A reduced annual service retirement allowance is payable to a member who retires from service after attaining age 60 and completing five years of creditable service. The reduced amount is an allowance as computed above reduced by 1/4% for each month that the member's retirement date precedes the date upon which the member would have attained age 65 had he remained in service. OR A reduced annual service retirement allowance is payable to a member who retires from service after attaining age 50 and completing 20 years of creditable service.

Appendix C: Summary of Main Benefit and Contribution Provisions

	The reduced amount is an allowance as computed above reduced by 5/12 of 1% for each month that the member's retirement date precedes the date upon which the member would have attained age 60, plus 1/4% for each month that the member's retirement date precedes the date upon which the member would have attained age 65.
Maximum Amount	The maximum annual service retirement allowance (on an unreduced basis) is 75% of the member's highest annual compensation.
Disability Retirement Allowance	
Condition for Allowance	Any member who becomes permanently and totally disabled prior to the attainment of age 60 and who has completed at least five years of creditable service may be retired by the Board of Trustees on a disability retirement allowance.
Amount of Allowance	The disability retirement allowance is computed as an unreduced service retirement allowance based on the number of years of creditable service the member would have had had he remained in service to age 60.
Deferred Allowance	Any member who separates from service after completing five years of creditable service and who leaves his total accumulated contributions in the system may receive a deferred allowance, beginning at age 50, computed in the same way as a service retirement allowance on the basis of his creditable service and compensation to the date of separation.
Return of Contributions	Upon the withdrawal of a member without a retirement allowance and upon his request, the member's contributions are returned, together with accumulated regular interest. Upon the death of a member before retirement, his contributions, together with the full accumulated regular interest thereon, are paid to his estate or to person(s) designated by the member unless the designated beneficiary, if eligible, elects the survivor's alternate benefit described below. The current interest rate on member contributions is 4%.

Appendix C: Summary of Main Benefit and Contribution Provisions

Survivor's Alternate Benefit	Upon the death of a member in service who has met conditions (a) or (b) below, his designated beneficiary may elect to receive a benefit equal to that which would have been payable under the provisions of Option 2 had the member retired on the first day of the month following his death and elected such option, in lieu of the member's accumulated contributions, provided the member had not instructed the Board of Trustees in writing that he did not wish the alternate benefit to apply. (a) attainment of age 60 and completion of five years of creditable service; (b) completion of 12 years of creditable service.
Lump Sum Death Benefit	Upon the death of a member in active service after completing one year of creditable service, a lump sum payment equal to the deceased members highest annual compensation to a maximum of $15,000 is made to his designated beneficiary or estate.
Death After Retirement	Upon the death of a beneficiary who did not retire under an effective election of Option 2 or Option 3, an amount equal to the excess if any, of his accumulated contributions at retirement over the retirement allowance payments received is paid to a designated person or to the beneficiary's estate. Upon the death of the survivor of a beneficiary who retired under an effective election of Option 2 or Option 3, an amount equal to the excess, if any, of the beneficiary's accumulated contributions at retirement over the total retirement allowance payments received is paid to such other person designated by the beneficiary or to the beneficiary's estate.
Optional Arrangements at Retirement	In lieu of the full retirement allowance, any member may elect to receive a reduced retirement allowance equal in value to the full allowance, with the provision that: Option 1 - A member retiring prior to July 1, 1993, may elect that at his death within 10 years from his retirement date, an amount equal to his accumulated contributions at retirement, less 1/120 for each month he has received a retirement

Appendix C: Summary of Main Benefit and Contribution Provisions

	allowance, is paid to his estate, or to a person(s) designated by the member, or Option 2 - At the death of the member his allowance shall be continued throughout the life of such other person as the member shall have designated at the time of his retirement, or Option 3 - At the death of the member one-half of his allowance shall be continued throughout the life of such other person as the member shall have designated at the time of his retirement.
Post-Retirement Increases in Allowance	Future increases in allowances may be granted at the discretion of the State.
Contributions	
Member Contributions	Each member contributes 7% of his annual compensation.
Employer Contributions	The State makes annual contributions consisting of a normal contribution and an accrued liability contribution. The normal contribution covers the liability on account of current service and is determined by the actuary after each valuation. The accrued liability contribution covers the liability on account of service rendered before the establishment of the retirement system and the liability on account of increases in benefits for service rendered prior to the effective date of any amendment.
Changes Since Prior Valuation	None.

Appendix D: Actuarial Assumptions and Methods

The next experience investigation will be based on the five-year period ending December 31, 2014. The actuary will present this investigation during the fall of 2015 for adoption by the Board of Trustees. New actuarial standards indicate that the impact of possible future mortality improvements should be incorporated in actuarial valuations. It was beyond the scope of this project to evaluate the impact that such a modification in assumptions might have.

Interest Rate: 7.25% per annum compounded annually.

Inflation: Both general and wage inflation are assumed to be 3.00% per annum.

Real Wage Growth: 0.50% per annum.

Withdrawal: No termination of employment is assumed to occur prior to retirement, other than death or disability.

Annual Rate of Salary Increase: 7.50%.

Separations Before Retirement: Representative values of the assumed annual rates of separation are as follows:

	Annual Rate of		
Age	Disability	Mortality	
		Male	Female
25	.0001	.0006	.0006
30	.0004	.0008	.0008
35	.0010	.0011	.0011
40	.0029	.0016	.0016
45	.0049	.0029	.0029
50	.0084	.0053	.0053
55	.0144	.0085	.0085
60		.0131	.0131
64		.0192	.0192

Service Retirement: 100% of members are assumed to retire at the later of age 65 and five years of service.

Appendix D: Actuarial Assumptions and Methods

Representative values of the assumed post-retirement mortality rates are as follows:

Annual Rate of Death after Retirement
(Retired Members and Survivors of Deceased Members)

	Retirees (Healthy at Retirement)		Survivors of Deceased Members		Retirees (Disabled at Retirement)	
Age	Male	Female	Male	Female	Male	Female
55	.0085	.0085	.0085	.0085	.0531	.0531
60	.0131	.0131	.0131	.0131	.0643	.0643
65	.0213	.0213	.0213	.0213	.0697	.0697
70	.0361	.0361	.0361	.0361	.0361	.0361
75	.0553	.0553	.0553	.0553	.0553	.0553
80	.0874	.0874	.0874	.0874	.0874	.0874

Deaths After Retirement (Non-Disabled): According to the 1971 Group Annuity Mortality Table for males.

Deaths Prior to Retirement: According to the 1971 Group Annuity Mortality Table for males.

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

Liability for Inactive Members: The liability for members who terminated prior to five years of creditable service is estimated to be 100% of the member's accumulated contributions. The liability for members who terminated after completing five years of creditable service is estimated based on the member's current age and the service and reported compensation at termination of employment.

Administrative Expenses: None.

Reported Compensation: Calendar year compensation as furnished by the system's office.

Valuation Compensation: Reported compensation adjusted to reflect the assumed rate of pay as of the valuation date.

Actuarial Cost Method: Projected unit credit. Projected benefits and the corresponding liabilities are allocated based on proration by creditable service.

Amortization Period: 8-year open. The use of the 8-year open amortization period for this plan has no meaningful impact on the expected future funded position and requisite contributions for the plan as there currently exists a surplus when comparing the accrued liability with the assets and the expected future working lifetime of the active employees is approximately 8 years.

Appendix D: Actuarial Assumptions and Methods

Asset Valuation Method: 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.

Changes Since Prior Valuation: None.

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
2015	$ 28,977	$ 263	$ 17	$ 2,727	$ 34	$ 2,048	$ 28,544
2016	28,544	224	0	2,669	30	2,013	28,082
2017	28,082	213	0	2,571	28	1,980	27,676
2018	27,676	215	0	2,553	23	1,946	27,261
2019	27,261	188	0	2,447	22	1,918	26,898
2020	26,898	191	0	2,379	19	1,891	26,582
2021	26,582	181	0	2,346	18	1,869	26,268
2022	26,268	178	0	2,316	16	1,845	25,959
2023	25,959	172	0	2,249	15	1,823	25,690
2024	25,690	173	0	2,204	14	1,804	25,449
2025	25,449	170	0	2,162	13	1,788	25,232
2026	25,232	172	0	2,135	12	1,771	25,028
2027	25,028	172	0	2,078	11	1,758	24,869
2028	24,869	173	0	2,038	11	1,747	24,740
2029	24,740	173	0	2,019	10	1,738	24,622
2030	24,622	173	0	1,939	9	1,732	24,579
2031	24,579	179	31	1,868	9	1,732	24,644
2032	24,644	185	83	1,841	9	1,740	24,802
2033	24,802	188	112	1,856	8	1,751	24,989
2034	24,989	186	126	2,049	7	1,757	25,002
2035	25,002	165	80	2,026	6	1,755	24,970
2036	24,970	164	95	2,110	5	1,748	24,862
2037	24,862	153	84	2,201	5	1,737	24,630
2038	24,630	140	67	2,140	4	1,722	24,415
2039	24,415	141	86	2,201	4	1,703	24,140
2040	24,140	130	72	2,215	3	1,682	23,806
2041	23,806	124	73	2,165	3	1,658	23,493
2042	23,493	123	84	2,122	3	1,638	23,213
2043	23,213	122	92	2,163	2	1,615	22,877
2044	22,877	112	89	2,214	2	1,588	22,450
2045	22,450	101	78	2,275	2	1,556	21,908
2046	21,908	88	62	2,155	2	1,519	21,420
2047	21,420	93	77	2,345	1	1,477	20,721
2048	20,721	66	38	2,438	1	1,420	19,806
2049	19,806	47	11	2,661	0	1,343	18,546
2050	18,546	13	0	2,517	0	1,255	17,297
2051	17,297	13	0	2,511	0	1,165	15,964
2052	15,964	0	0	2,365	0	1,074	14,673
2053	14,673	0	0	2,220	0	984	13,437
2054	13,437	0	0	2,076	0	901	12,262
2055	12,262	0	0	1,920	0	820	11,162
2056	11,162	0	0	1,782	0	747	10,127
2057	10,127	0	0	1,647	0	675	9,155
2058	9,155	0	0	1,515	0	610	8,250
2059	8,250	0	0	1,388	0	548	7,410
2060	7,410	0	0	1,266	0	493	6,637
2061	6,637	0	0	1,147	0	439	5,929
2062	5,929	0	0	1,034	0	393	5,288
2063	5,288	0	0	926	0	350	4,712
2064	4,712	0	0	824	0	313	4,201

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
2065	$ 4,201	$ 0	$ 0	$ 728	$ 0	$ 279	$ 3,752
2066	3,752	0	0	638	0	249	3,363
2067	3,363	0	0	555	0	225	3,033
2068	3,033	0	0	478	0	202	2,757
2069	2,757	0	0	409	0	185	2,533
2070	2,533	0	0	346	0	171	2,358
2071	2,358	0	0	291	0	161	2,228
2072	2,228	0	0	242	0	153	2,139
2073	2,139	0	0	199	0	149	2,089
2074	2,089	0	0	162	0	146	2,073
2075	2,073	0	0	130	0	145	2,088
2076	2,088	0	0	103	0	148	2,133
2077	2,133	0	0	81	0	152	2,204
2078	2,204	0	0	63	0	157	2,298
2079	2,298	0	0	48	0	166	2,416
2080	2,416	0	0	36	0	174	2,554
2081	2,554	0	0	26	0	184	2,712
2082	2,712	0	0	19	0	196	2,889
2083	2,889	0	0	13	0	208	3,084
2084	3,084	0	0	9	0	223	3,298
2085	3,298	0	0	6	0	238	3,530
2086	3,530	0	0	4	0	256	3,782
2087	3,782	0	0	3	0	275	4,054
2088	4,054	0	0	2	0	294	4,346
2089	4,346	0	0	1	0	315	4,660
2090	4,660	0	0	1	0	338	4,997
2091	4,997	0	0	0	0	362	5,359
2092	5,359	0	0	0	0	388	5,747
2093	5,747	0	0	0	0	417	6,164
2094	6,164	0	0	0	0	447	6,611
2095	6,611	0	0	0	0	479	7,090
2096	7,090	0	0	0	0	514	7,604
2097	7,604	0	0	0	0	551	8,155
2098	8,155	0	0	0	0	592	8,747
2099	8,747	0	0	0	0	634	9,381
2100	9,381	0	0	0	0	680	10,061
2101	10,061	0	0	0	0	729	10,790
2102	10,790	0	0	0	0	782	11,572
2103	11,572	0	0	0	0	839	12,411
2104	12,411	0	0	0	0	900	13,311
2105	13,311	0	0	0	0	965	14,276
2106	14,276	0	0	0	0	1,035	15,311
2107	15,311	0	0	0	0	1,110	16,421
2108	16,421	0	0	0	0	1,191	17,612
2109	17,612	0	0	0	0	1,277	18,889
2110	18,889	0	0	0	0	1,369	20,258
2111	20,258	0	0	0	0	1,469	21,727
2112	21,727	0	0	0	0	1,575	23,302
2113	23,302	0	0	0	0	1,690	24,992
2114	24,992	0	0	0	0	1,812	26,804

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 7.25%	Present Value of Benefit Payments: Unfunded Payments at 3.73%	Present Value of Benefit Payments: Using Single Discount Rate of 7.25%
2015	$ 28,977	$ 2,727	$ 2,727	$ 0	$ 2,633	$ 0	$ 2,633
2016	28,544	2,669	2,669	0	2,403	0	2,403
2017	28,082	2,571	2,571	0	2,158	0	2,158
2018	27,676	2,553	2,553	0	1,998	0	1,998
2019	27,261	2,447	2,447	0	1,786	0	1,786
2020	26,898	2,379	2,379	0	1,619	0	1,619
2021	26,582	2,346	2,346	0	1,488	0	1,488
2022	26,268	2,316	2,316	0	1,370	0	1,370
2023	25,959	2,249	2,249	0	1,241	0	1,241
2024	25,690	2,204	2,204	0	1,134	0	1,134
2025	25,449	2,162	2,162	0	1,037	0	1,037
2026	25,232	2,135	2,135	0	955	0	955
2027	25,028	2,078	2,078	0	866	0	866
2028	24,869	2,038	2,038	0	792	0	792
2029	24,740	2,019	2,019	0	732	0	732
2030	24,622	1,939	1,939	0	655	0	655
2031	24,579	1,868	1,868	0	589	0	589
2032	24,644	1,841	1,841	0	541	0	541
2033	24,802	1,856	1,856	0	508	0	508
2034	24,989	2,049	2,049	0	523	0	523
2035	25,002	2,026	2,026	0	482	0	482
2036	24,970	2,110	2,110	0	469	0	469
2037	24,862	2,201	2,201	0	456	0	456
2038	24,630	2,140	2,140	0	413	0	413
2039	24,415	2,201	2,201	0	396	0	396
2040	24,140	2,215	2,215	0	372	0	372
2041	23,806	2,165	2,165	0	339	0	339
2042	23,493	2,122	2,122	0	310	0	310
2043	23,213	2,163	2,163	0	294	0	294
2044	22,877	2,214	2,214	0	281	0	281
2045	22,450	2,275	2,275	0	269	0	269
2046	21,908	2,155	2,155	0	238	0	238
2047	21,420	2,345	2,345	0	241	0	241
2048	20,721	2,438	2,438	0	234	0	234
2049	19,806	2,661	2,661	0	238	0	238
2050	18,546	2,517	2,517	0	210	0	210
2051	17,297	2,511	2,511	0	195	0	195
2052	15,964	2,365	2,365	0	171	0	171
2053	14,673	2,220	2,220	0	150	0	150
2054	13,437	2,076	2,076	0	131	0	131
2055	12,262	1,920	1,920	0	113	0	113
2056	11,162	1,782	1,782	0	98	0	98
2057	10,127	1,647	1,647	0	84	0	84
2058	9,155	1,515	1,515	0	72	0	72
2059	8,250	1,388	1,388	0	62	0	62
2060	7,410	1,266	1,266	0	52	0	52
2061	6,637	1,147	1,147	0	44	0	44
2062	5,929	1,034	1,034	0	37	0	37
2063	5,288	926	926	0	31	0	31
2064	4,712	824	824	0	26	0	26

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 7.25%	Unfunded Payments at 3.73%	Using Single Discount Rate of 7.25%
2065	$ 4,201	$ 728	$ 728	$ 0	$ 21	$ 0	$ 21
2066	3,752	638	638	0	17	0	17
2067	3,363	555	555	0	14	0	14
2068	3,033	478	478	0	11	0	11
2069	2,757	409	409	0	9	0	9
2070	2,533	346	346	0	7	0	7
2071	2,358	291	291	0	6	0	6
2072	2,228	242	242	0	4	0	4
2073	2,139	199	199	0	3	0	3
2074	2,089	162	162	0	3	0	3
2075	2,073	130	130	0	2	0	2
2076	2,088	103	103	0	1	0	1
2077	2,133	81	81	0	1	0	1
2078	2,204	63	63	0	1	0	1
2079	2,298	48	48	0	1	0	1
2080	2,416	36	36	0	0	0	0
2081	2,554	26	26	0	0	0	0
2082	2,712	19	19	0	0	0	0
2083	2,889	13	13	0	0	0	0
2084	3,084	9	9	0	0	0	0
2085	3,298	6	6	0	0	0	0
2086	3,530	4	4	0	0	0	0
2087	3,782	3	3	0	0	0	0
2088	4,054	2	2	0	0	0	0
2089	4,346	1	1	0	0	0	0
2090	4,660	1	1	0	0	0	0
2091	4,997	0	0	0	0	0	0
2092	5,359	0	0	0	0	0	0
2093	5,747	0	0	0	0	0	0
2094	6,164	0	0	0	0	0	0
2095	6,611	0	0	0	0	0	0
2096	7,090	0	0	0	0	0	0
2097	7,604	0	0	0	0	0	0
2098	8,155	0	0	0	0	0	0
2099	8,747	0	0	0	0	0	0
2100	9,381	0	0	0	0	0	0
2101	10,061	0	0	0	0	0	0
2102	10,790	0	0	0	0	0	0
2103	11,572	0	0	0	0	0	0
2104	12,411	0	0	0	0	0	0
2105	13,311	0	0	0	0	0	0
2106	14,276	0	0	0	0	0	0
2107	15,311	0	0	0	0	0	0
2108	16,421	0	0	0	0	0	0
2109	17,612	0	0	0	0	0	0
2110	18,889	0	0	0	0	0	0
2111	20,258	0	0	0	0	0	0
2112	21,727	0	0	0	0	0	0
2113	23,302	0	0	0	0	0	0
2114	24,992	0	0	0	0	0	0