Teachers' and State Employees' Retirement System
Principal Results of Actuarial Valuation
as of December 31, 2015

Board of Trustees Meeting

Larry Langer and Mike Ribble

October 27, 2016

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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 TSERS
  - The actuary determines the amount of employer contributions to be made to TSERS during each member's career that, when combined with investment return and member contributions, such contributions are expected to be sufficient to pay for retirement benefits.
- In addition, the annual actuarial valuation is performed to:
  - Determine the progress on funding TSERS,
  - 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.

INPUT

- Member Data
- Asset Data
- Benefit Provisions
- Actuarial Assumptions
- Funding Methodology

RESULTS

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

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, 2015 valuation as compared to the December 31, 2014 valuation were:

- Market value returns of 0.36% compared to 7.25% assumed
- Increase in covered payroll of 1.7% compared to approximately 3% expected
- Recent legislation signed into law since the prior valuation
  - One-time pension supplement in the amount of 1.6% of the annualized benefit in effect on September 1, 2016 to be paid on or before October 31, 2016
- Changes in actuarial assumptions and methods in accordance with the latest experience study prepared as of December 31, 2014 and adopted by the Board of Trustees on January 21, 2016
- The Employer Contribution Rate Stabilization Policy adopted by the Board of Trustees on January 21, 2016

When compared to the December 31, 2014 baseline projections, the above resulted in:

- A lower funded ratio as of December 31, 2015 (92.5% in the valuation compared to 96.3% in the baseline projection)
- A higher actuarially determined employer contribution rate for fiscal year ending June 30, 2018 (10.08% in the valuation compared to 8.31% in the baseline projection)
  - The experience study increased the projected contribution rate of 8.31% to 9.40% for fiscal year ending June 30, 2018 (based on the projections presented at the January Board Meeting)
- Lower projected benefit amounts being accrued by active members

Valuation Input

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Valuation Input

Membership Data

Number as of	12/31/2015	12/31/2014
Active members	305,291	307,313
Members currently receiving Disability Income Plan benefits	7,531	7,643
Terminated members and survivors of deceased members entitled to benefits but not yet receiving benefits	143,214	134,871
Retired members and survivors of deceased members currently receiving benefits	201,522	194,607
Total	657,558	644,434

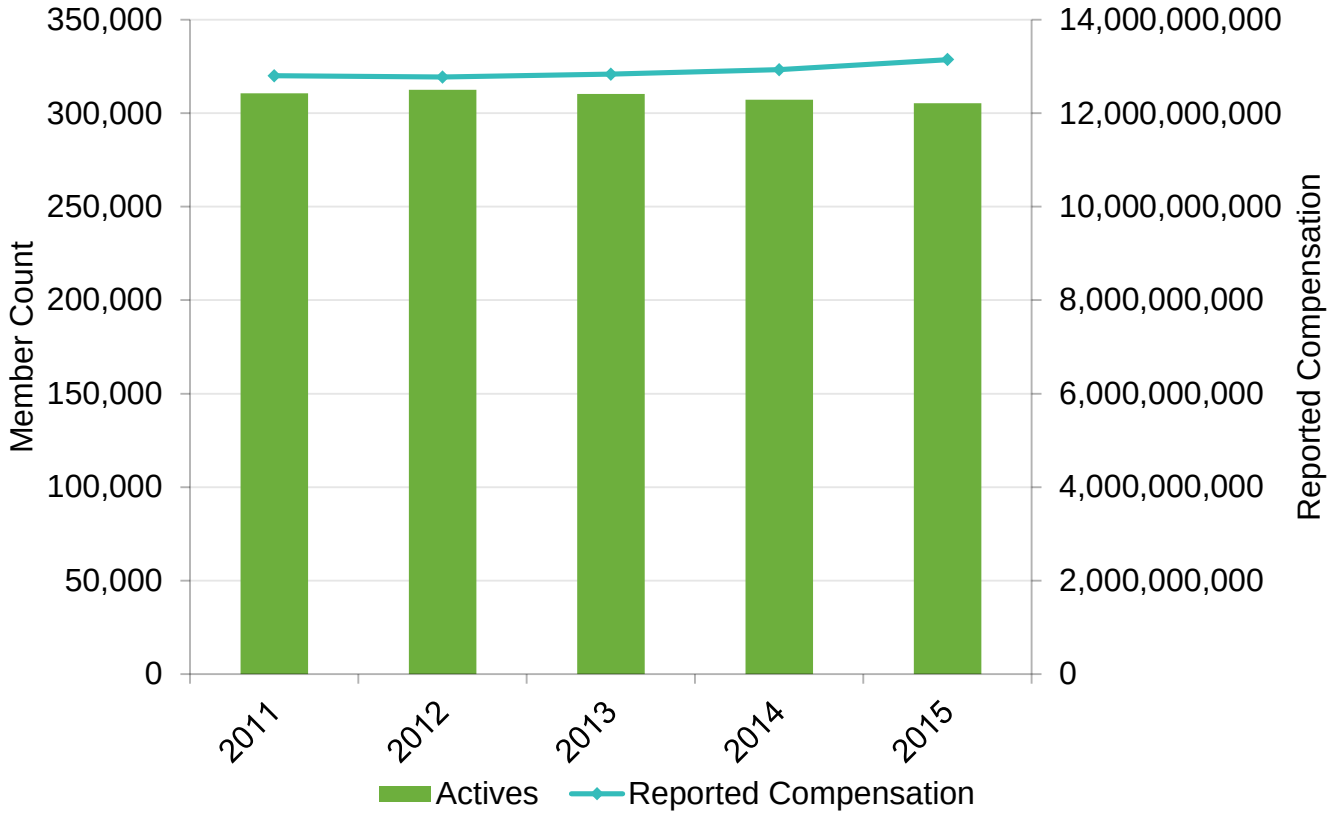
The number of active members decreased by 0.7% from the previous valuation date. The decrease in active members results in less benefits accruing, but also fewer contributions supporting the system.

The number of retired members and survivors of deceased members currently receiving benefits increased by 3.6% from the previous valuation. The increase in retiree population is consistent with expectations.

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

Membership Data: Active Members

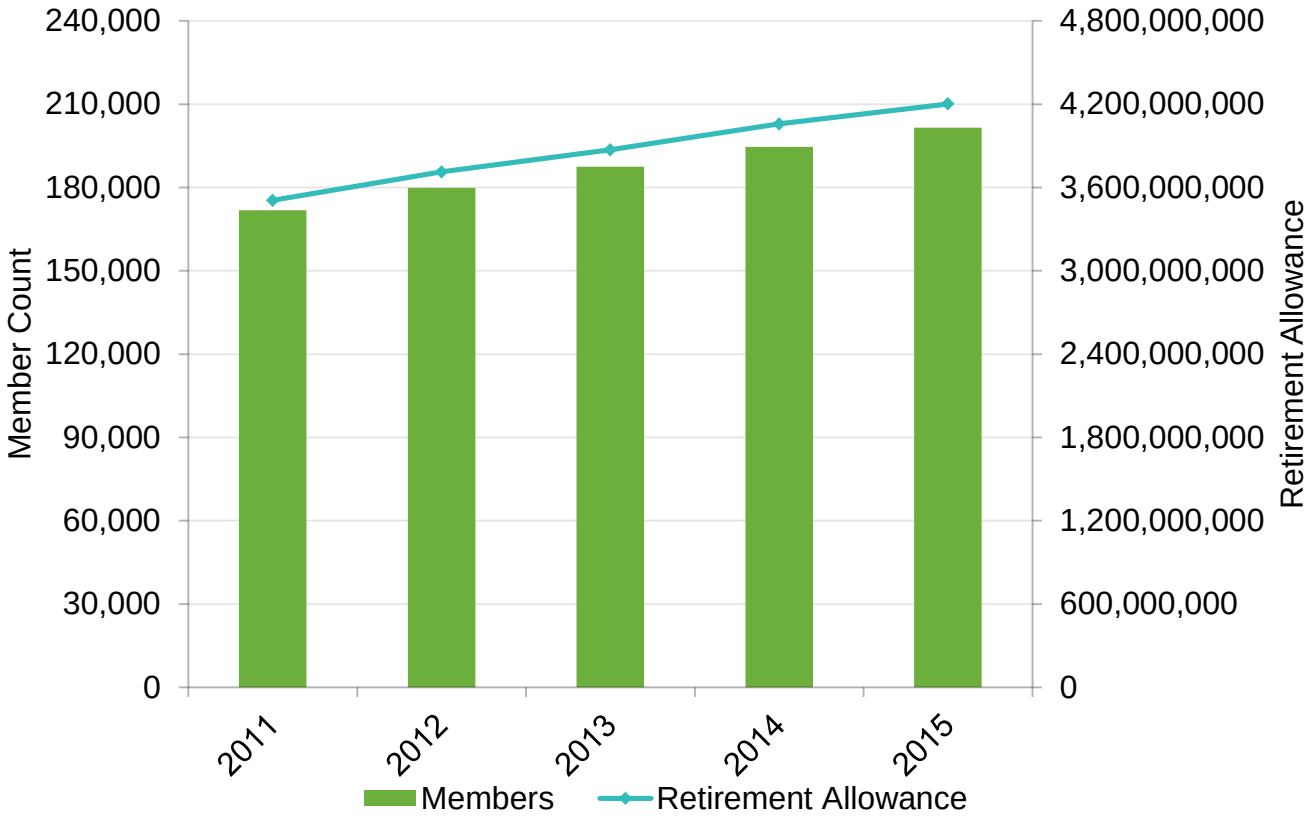


Reported compensation has increased by 1.7% and has remained relatively stable over the past five years. Covered payroll is expected to increase by approximately 3% annually in the future.

Payroll that is not increasing as fast as we assume results in less benefits accruing than we anticipate, but also fewer contributions supporting the system.

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

Membership Data: Retired Members and Survivors of Deceased Members



The number of retired members and survivors of deceased members and the benefits paid to these members has been increasing steadily, as expected based on plan assumptions.

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

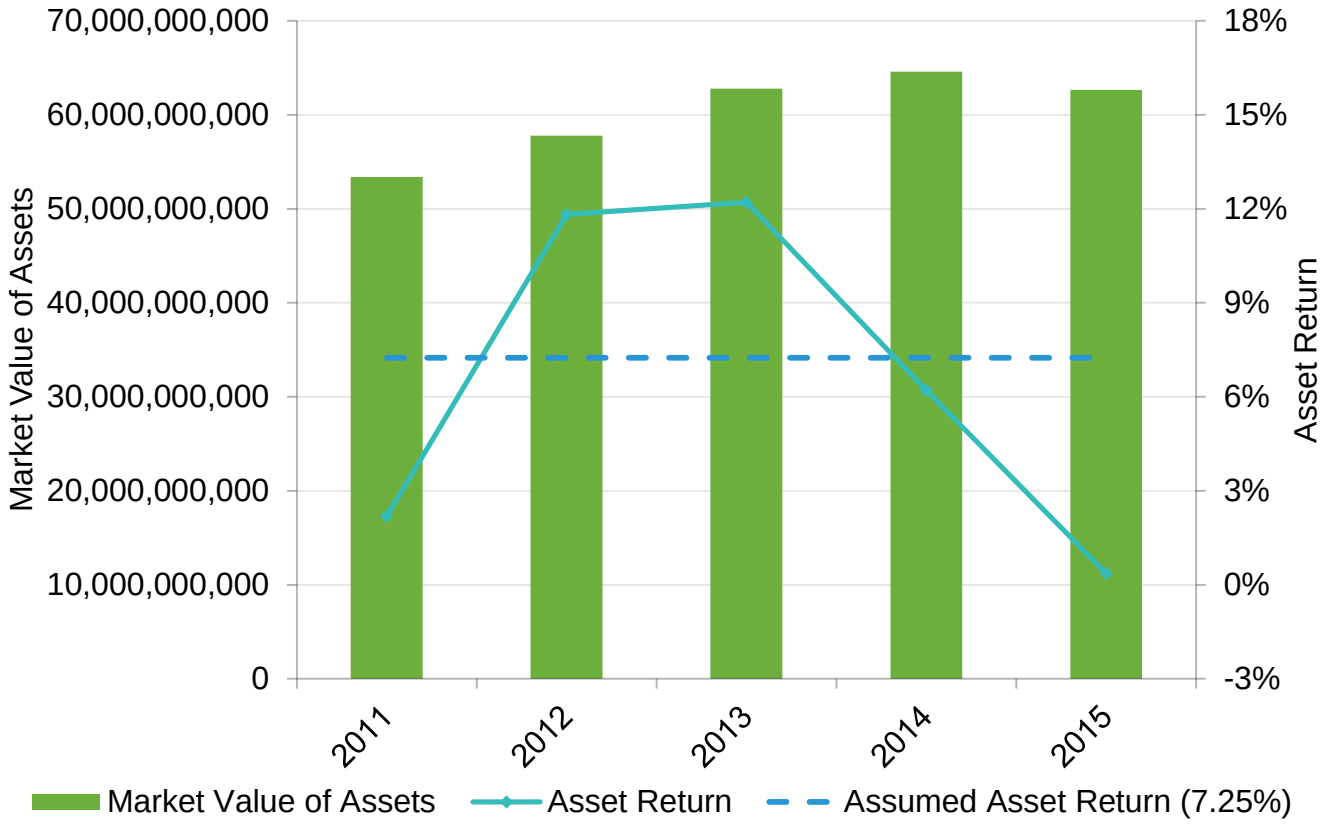
Asset Data as of	12/31/2015	12/31/2014
Beginning of Year Market Value of Assets	$ 64,587,417,979	$ 62,789,451,194
Contributions	2,124,259,141	2,057,963,297
Benefit Payments	(4,272,052,586)	(4,098,385,865)
Investment Income	229,717,182	3,838,389,353
Net Increase/(Decrease)	(1,918,076,263)	1,797,966,785
End of Year Market Value of Assets	$ 62,669,341,716	$ 64,587,417,979
Estimated Net Investment Return on Market Value	0.36%	6.21%

The Market Value of Assets is $62.7 billion as of December 31, 2015 and $64.6 billion as of December 31, 2014. The investment return for the market value of assets for calendar year 2015 was 0.36%.

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

Valuation Input

Asset Data: Market Value of Assets and Asset Returns

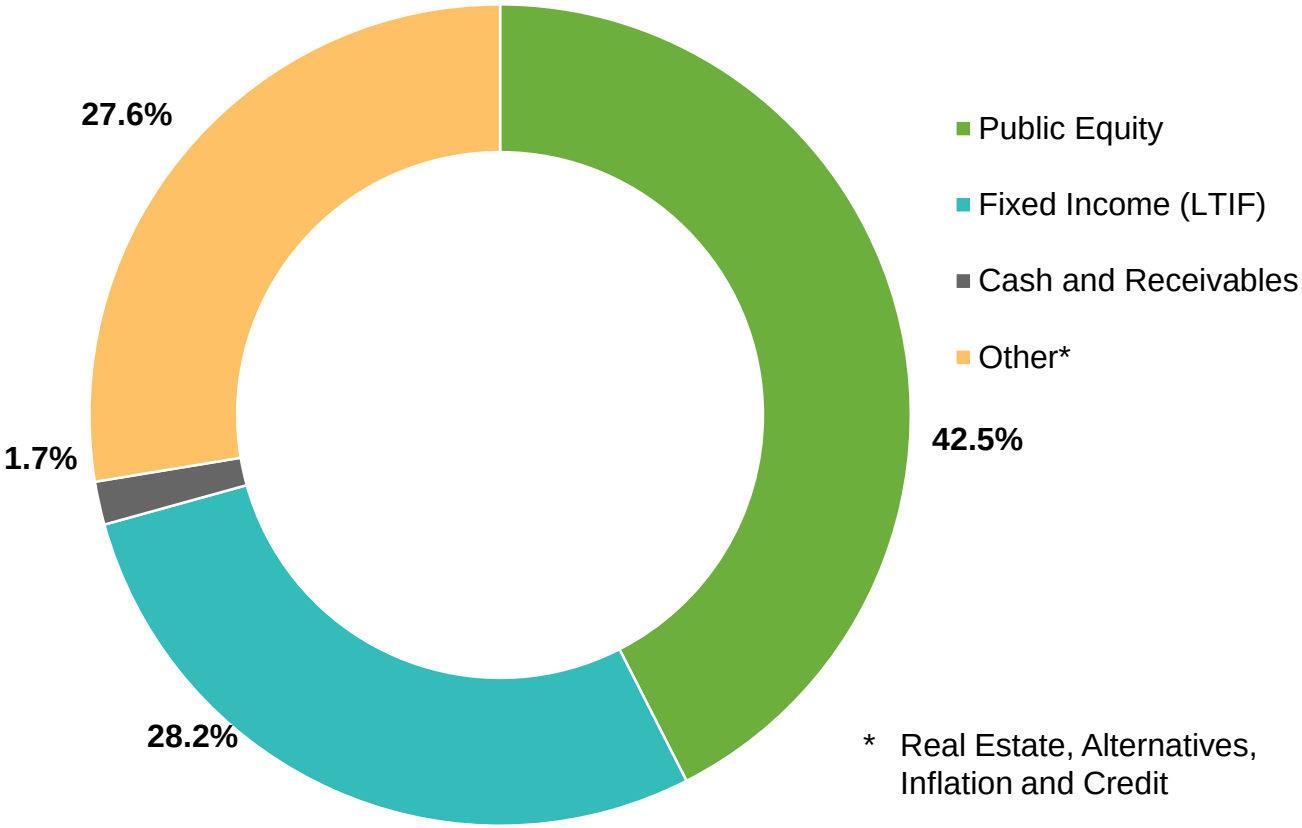


Returns were less than the 7.25% assumed rate of return, resulting in a higher required contribution than anticipated as of the December 31, 2015 baseline projections presented in the December 31, 2014 actuarial report.

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



* Real Estate, Alternatives, Inflation and Credit

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.

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 135.

The valuation reflects the following change in benefit provisions from the prior year's valuation:

- One-time pension supplement in the amount of 1.6% of the annualized benefit in effect on September 1, 2016 to be paid on or before October 31, 2016

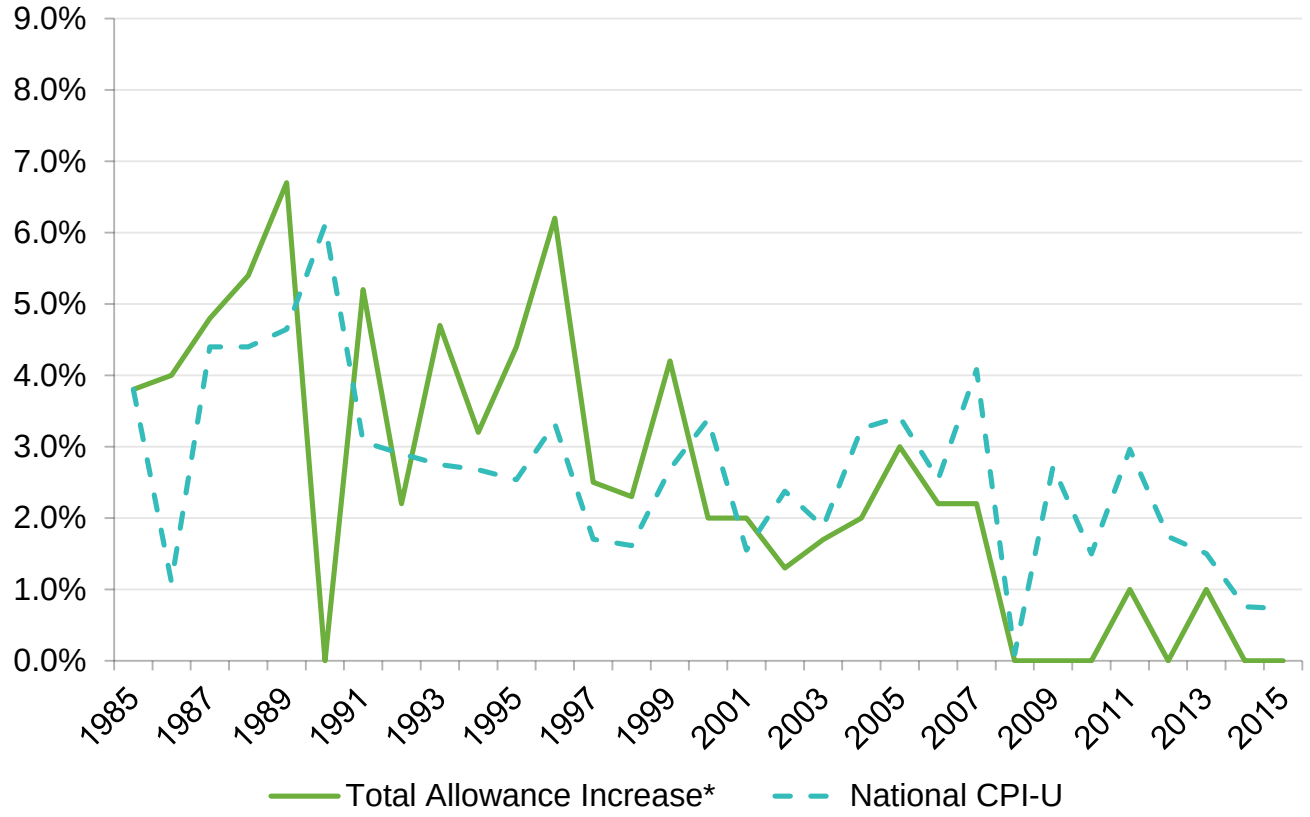
Many Public Sector Retirement Systems in the United States have undergone pension reform where the benefits of members (current retirees and active or future members) have been reduced.

Because of the well-funded status of TSERS due to the legislature contributing the actuarially determined employer contribution, 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 the actuarial report.

Valuation Input

Benefit Provisions: Cost-of-Living Allowance Increase and CPI-U History



Generally the ad-hoc retirement allowance increase policy has helped retirees maintain purchasing power while helping to moderate contribution increases during times of down markets.

* Allowance increases are effective July 1 of the following year. While the retirement allowances were not increased in 2016, a one-time supplement was granted.

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 (individual, varies by service)
  - Inflation – 3.00%
  - Real wage growth – 0.50%
- The actuarial assumptions and asset valuation method were updated since the prior year's valuation in accordance with the latest experience study prepared as of December 31, 2014 and adopted by the Board of Trustees on January 21, 2016.

The latest assumptions were adopted for use with the December 31, 2015 actuarial valuation, based on the experience study prepared as of December 31, 2014 and adopted by the Board of Trustees on January 21, 2016.

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 TSERS 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 Entry Age Normal as its actuarial cost method
  - Develops normal costs that stay level as a percent of payroll
- Asset Valuation Methods smooth or average the market value returns over time to alleviate contribution volatility that results from market returns.
  - Asset returns in excess of or less than the expected return on market value of assets reflected over a five-year period
  - Assets corridor: not greater than 120% of market value and not less than 80% of market 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: a 12-year closed amortization period was adopted for fiscal year ending 2012. A new amortization base is created each year based on the prior years' experience.

When compared to other Public Sector Retirement Systems in the United States, the funding policy for TSERS is quite aggressive in that the policy pays down the pension debt over a much shorter period of time (12 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	12/31/2015
Beginning of Year Market Value of Assets	$ 64,587,417,979
Contributions	2,124,259,141
Benefit Payments	(4,272,052,586)
Net Cash Flow	(2,147,793,445)
Expected Investment Return	4,604,730,291
Expected End of Year Market Value of Assets	67,044,354,825
End of Year Market Value of Assets	62,669,341,716
Excess of Market Value over Expected Market Value of Assets	(4,375,013,109)
80% of 2015 Asset Gain/(Loss)	(3,500,010,487)
60% of 2014 Asset Gain/(Loss)	N/A
40% of 2013 Asset Gain/(Loss)	N/A
20% of 2012 Asset Gain/(Loss)	N/A
Total Deferred Asset Gain/(Loss)	(3,500,010,487)
Preliminary End of Year Actuarial Value of Assets	66,169,352,203
Final End of Year Actuarial Value of Assets (not less than 80% and not greater than 120% of Market Value)	66,169,352,203
Estimated Net Investment Return on Actuarial Value	5.87%

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

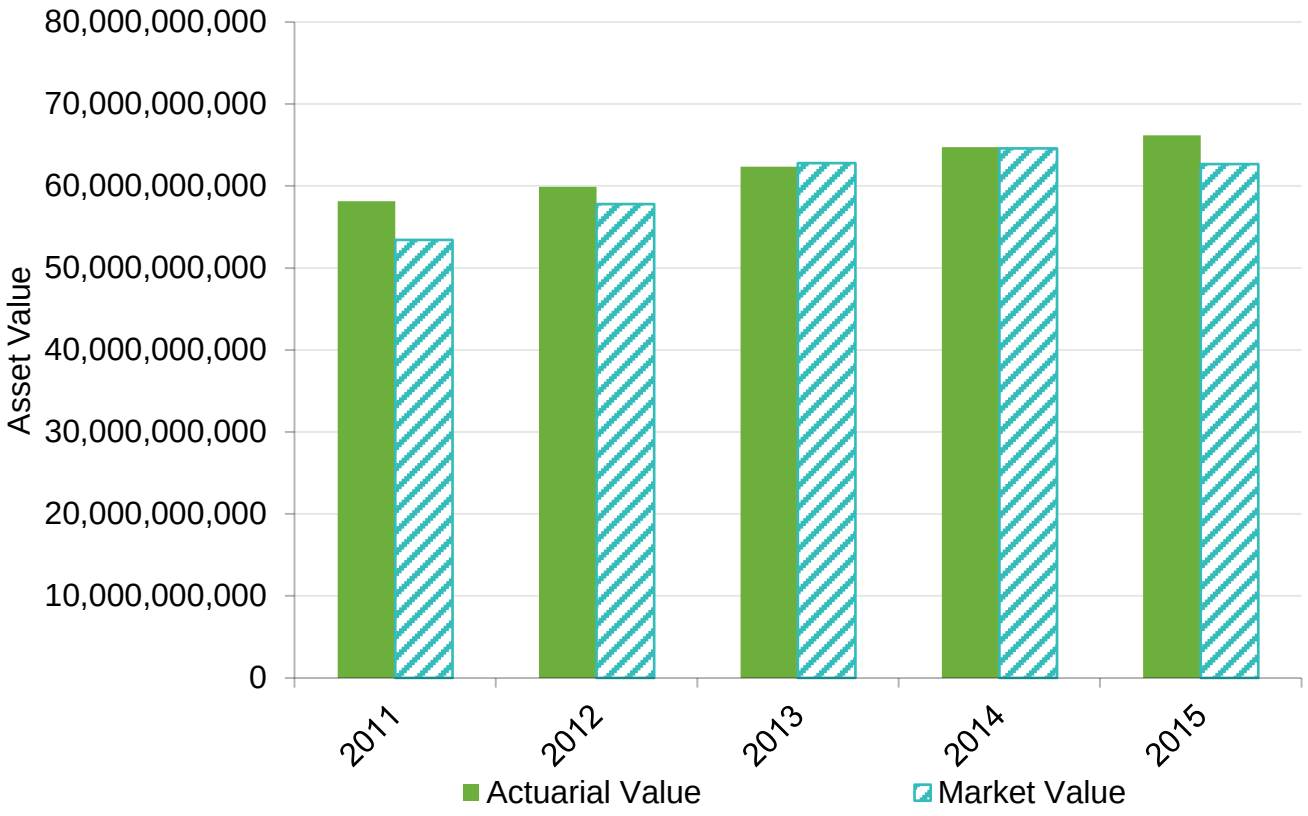
The new asset valuation method adopted with the experience study assumptions re-set the actuarial value of assets to the market value of assets at December 31, 2014, effective for the December 31, 2015 valuation.

Lower than expected returns in 2015 resulted in an actuarial value of asset return for calendar year 2015 of 5.87% and an asset loss of $875 million during 2015.

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

Valuation Results

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.

Valuation Results

Historical Asset Returns

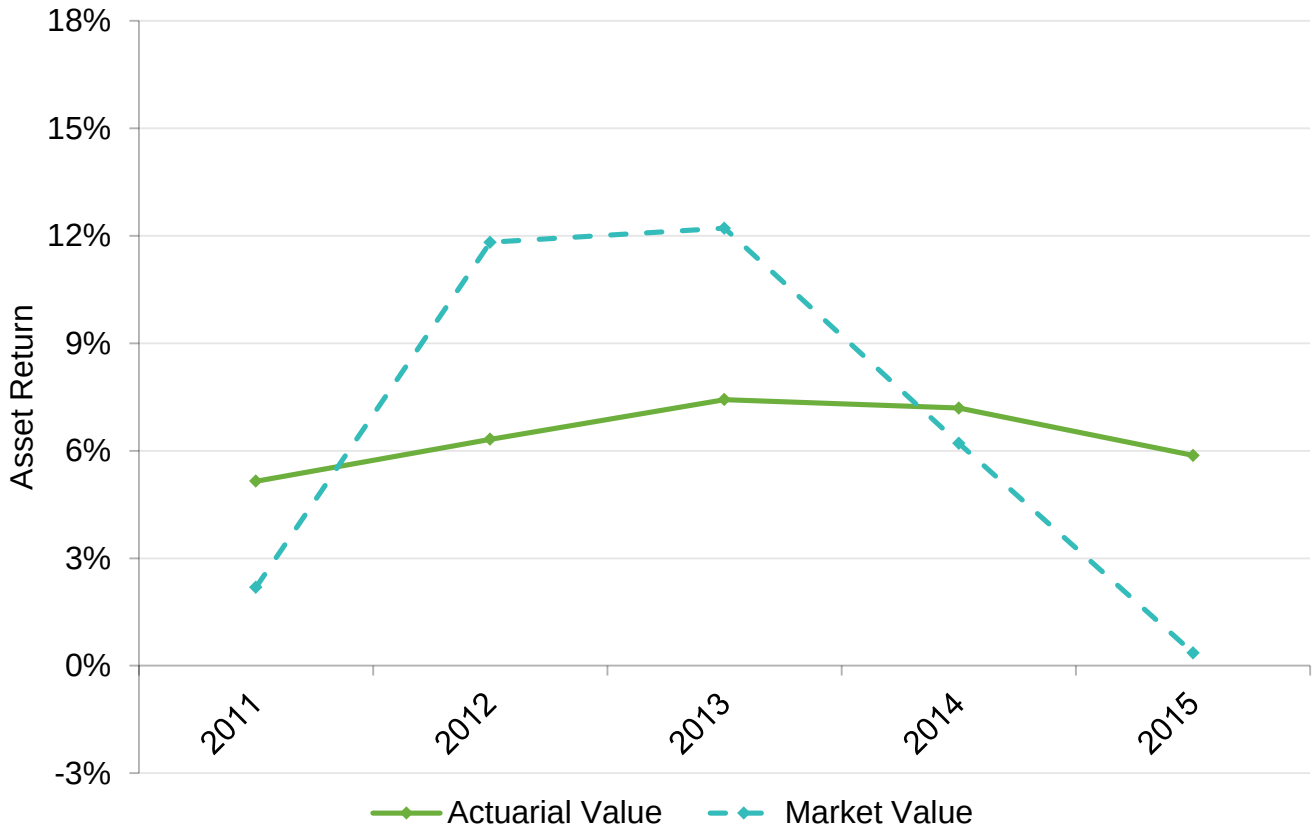
Calendar Year	Actuarial Value of Asset Return	Market Value of Asset Return
2006	8.94%	11.41%
2007	8.87%	8.38%
2008	2.89%	-19.50%
2009	4.74%	14.84%
2010	5.89%	11.47%
2011	5.15%	2.19%
2012	6.32%	11.82%
2013	7.43%	12.21%
2014	7.19%	6.21%
2015	5.87%	0.36%
Average	6.31%	5.45%
Range	6.05%	34.34%

The average investment return recognized for purposes of determining the annual change in contribution each year is the actuarial value of assets return.

Currently, the average actuarial return of 6.31% tracks average market return of 5.45% rather well. But the range of returns is markedly less – 6.05% versus 34.34%. This results in much lower employer contribution volatility using the actuarial value of assets versus market, while ensuring that the actuarial needs of TSERS are met.

The valuation assumes that the funds will earn a 7.25% asset return. This table provides a history of the actuarial value and market value of asset returns.

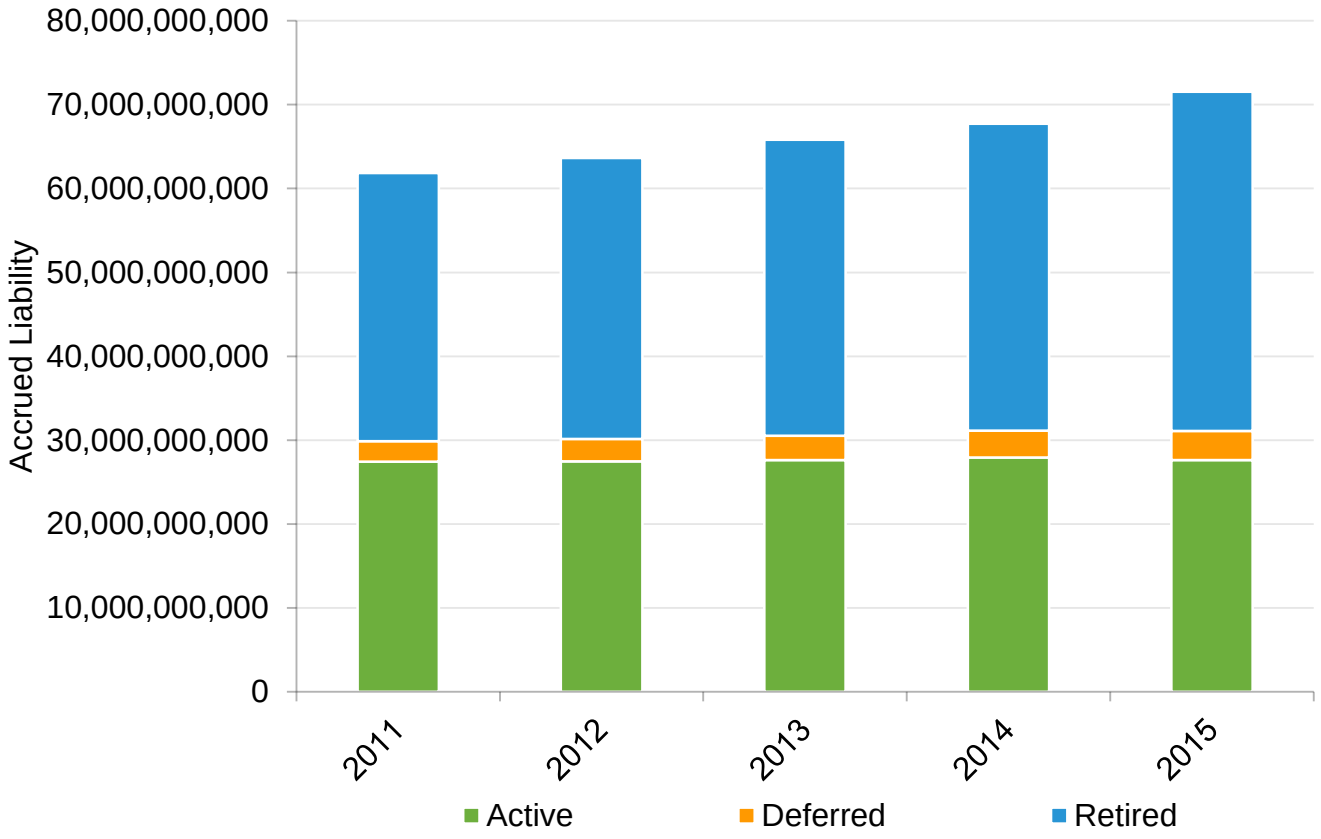
Asset Returns: Actuarial Value and Market Value



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

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

Actuarial Accrued Liability (AAL)



The AAL increased from $67.7 billion to $71.5 billion during 2015. TSERS 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.

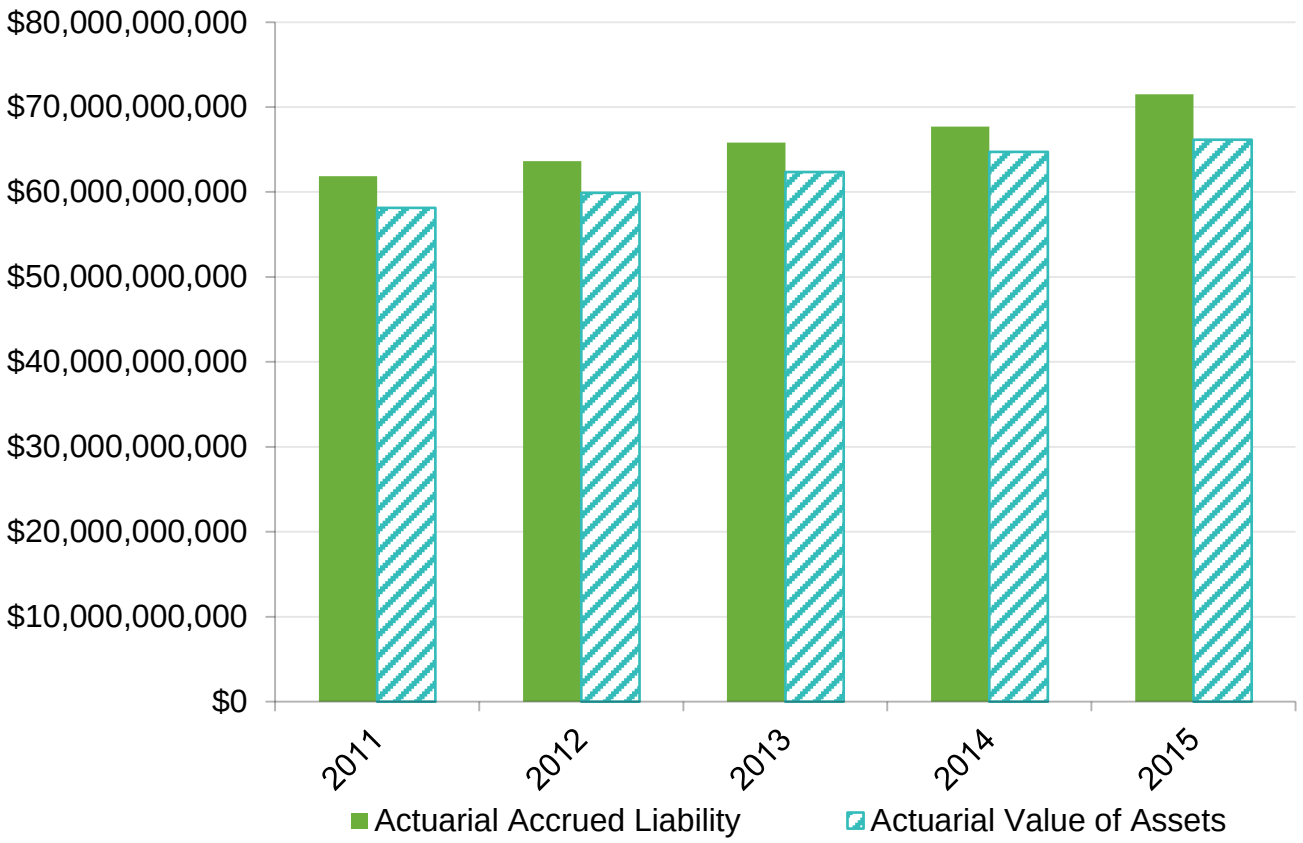
Assumption changes increased the AAL by $1,741 million at December 31, 2014.

The AAL prior to legislative changes was $135 million lower than expected, which resulted in a demographic gain of $135 million during 2015.

Legislation increased the AAL by $70 million.

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)



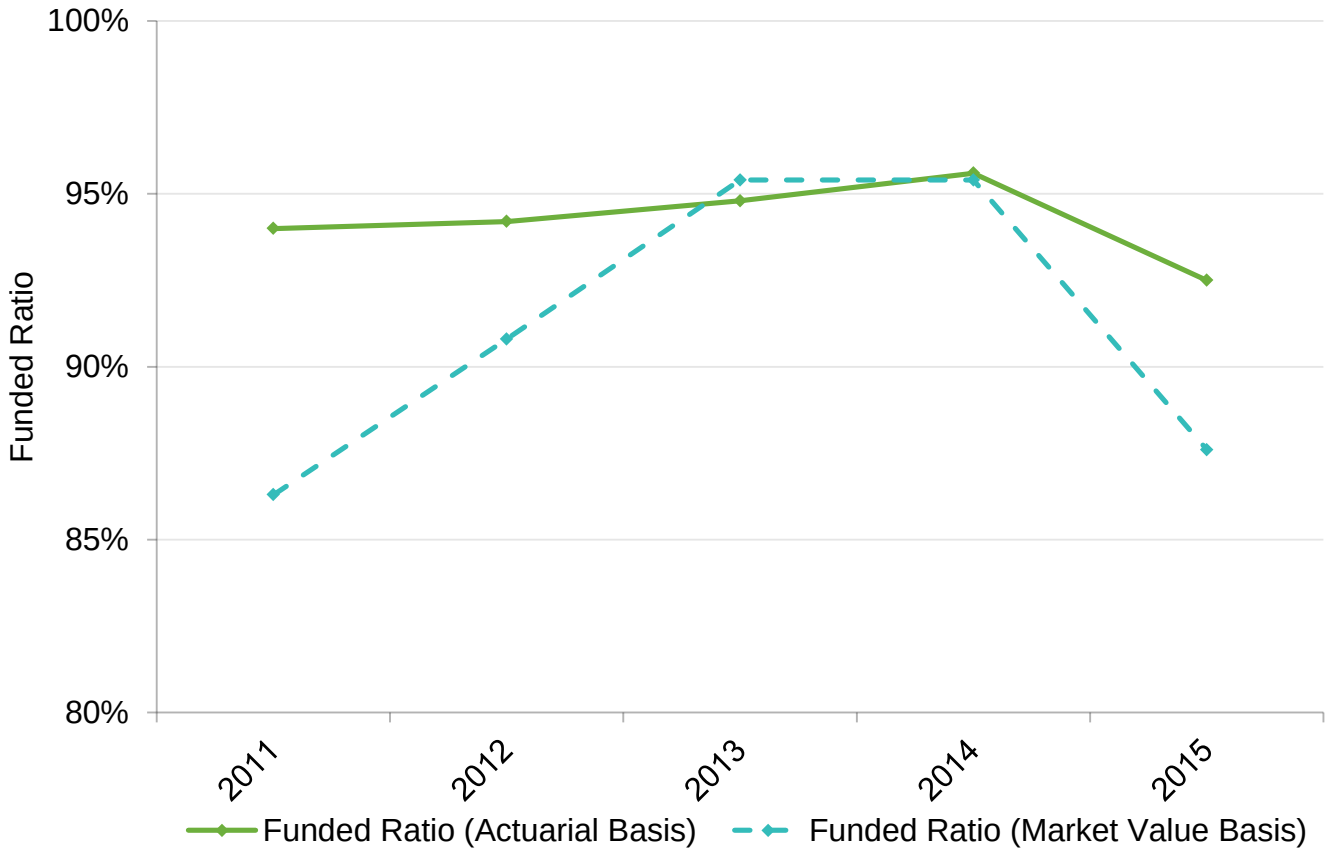
The AVA basis is used for computing contributions to alleviate contribution volatility.

The difference in the AAL and the AVA is the amount of pension debt to be paid off in 12 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.

Valuation Results

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 decreased from 95.6% at December 31, 2014 to 92.5% at December 31, 2015.

Net Actuarial Gain or Loss: Reconciliation of Unfunded Actuarial Accrued Liability

(in millions)		
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2014	$	2,981
Impact of Experience Study		1,887
Normal Cost during 2015		1,420
Reduction due to Actual Contributions during 2015		(2,124)
Interest on UAAL, Normal Cost, and Contributions		379
Asset (Gain)/Loss		875
Actuarial Accrued Liability (Gain)/Loss		(135)
Impact of Legislative Changes		70
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2015	$	5,353

The experience study increased the UAAL, or pension debt, by $1,887 million at December 31, 2014.

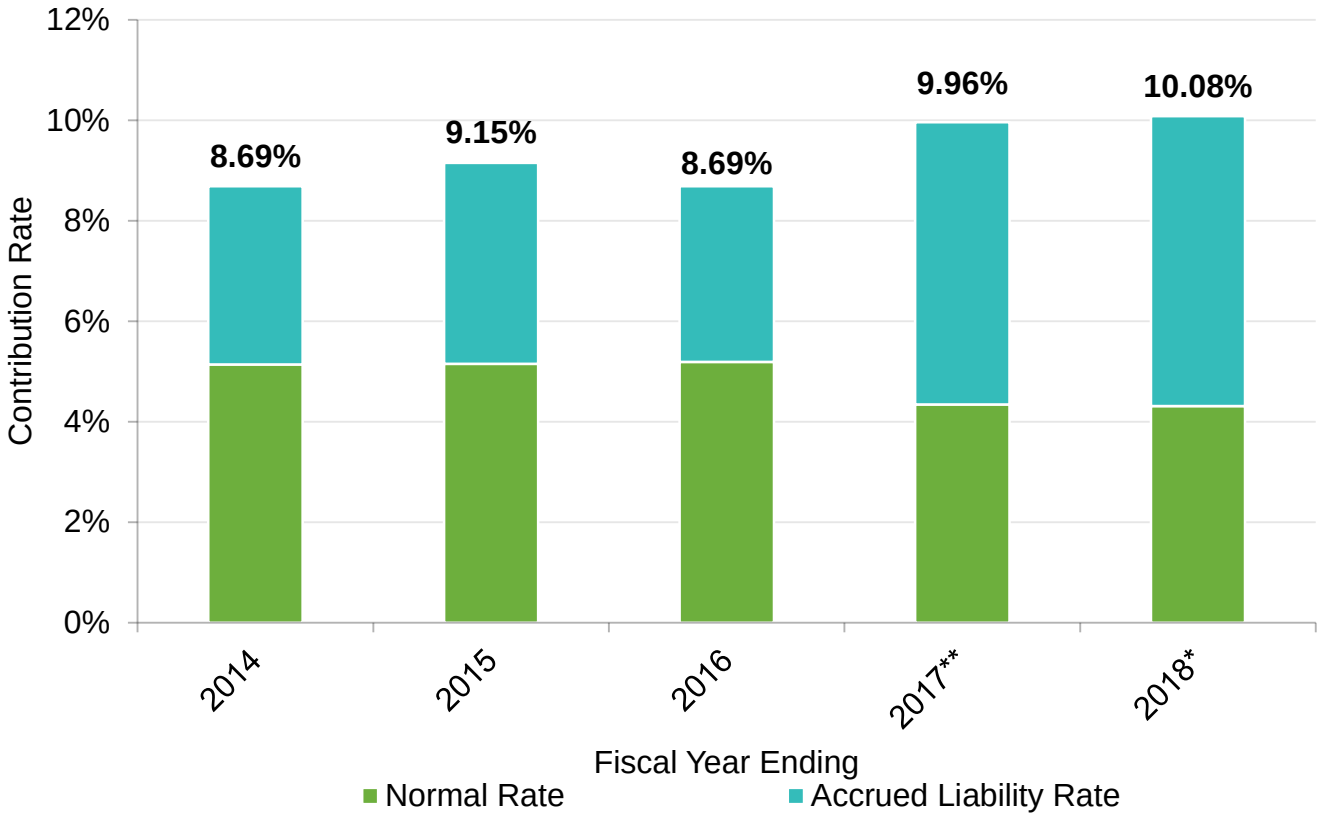
During 2015, the UAAL increased faster than expected primarily due to asset losses. These asset losses were offset by a liability gain, primarily due to lower reported compensation than assumed.

The accrued liability gain of $135 million means that the actuarial accrued liability was $135 million lower than we would have expected based on the assumptions adopted with the experience study.

The asset loss of $875 million means that the asset valuation method resulted in a recognition of $875 million of asset losses from 2015.

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

Actuarially Determined Employer Contributions



The actuarially determined employer contribution rate is the amount needed to pay for the cost of the benefits accruing and to pay off the pension debt over 12 years, offset for the 6% of pay contribution the members make.

The 12-year period is a short period for Public Sector Retirement Systems in the United States, with most Systems using a period of 30 years or more to pay off the pension debt. The shorter period results in higher contributions and more benefit security.

* Subject to the impact of future legislative changes effective during that fiscal year.
** Includes impact of the experience study.

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

Employer Contribution Rate Stabilization Policy (ECRSP)

The ECRSP was adopted by the Board of Trustees on January 21, 2016.

- The ECRSP sets recommended employer contributions equal to 0.35% of payroll greater than the appropriated contribution during the prior year, with the following bounds:
  - Contributions may not be less than the actuarially determined employer contribution (ADEC); and
  - Contributions may not be greater than the contribution determined using the same assumptions used to calculated the ADEC but using a discount rate equal to the long-term Treasury bond yield
- The preliminary ADEC for fiscal year ending 2018 is 10.08% based on this valuation.
- The ECRSP would result in a recommended contribution rate of 10.33% of payroll for fiscal year ending 2018 (the appropriated contribution from last year of 9.98% plus 0.35%).
  - Using 9.98% as the starting point for the ECRSP is based on Department staff harmonizing the budget bill and the Board's policy, as necessitated by the unforeseen circumstance of the legislature granting a 1.6% one-time pension payment.

Actuarially Determined Employer Contribution (ADEC) Rates

Valuation Date	Fiscal Year Ending	Normal Rate	Accrued Liability Rate	Change due to Legislation*	Final ADEC	Appropriated Rate
12/31/2015	6/30/2018	4.31%	5.77%	N/A	N/A	N/A
12/31/2014	6/30/2017	5.21%	3.26%	1.49%	9.96%	9.98%
12/31/2013	6/30/2016	5.19%	3.50%	0.00%	8.69%	9.15%
12/31/2012	6/30/2015	5.15%	3.61%	0.39%	9.15%	9.15%
12/31/2011	6/30/2014	5.14%	3.55%	0.00%	8.69%	8.69%

* The change due to legislation for the contribution for fiscal year ending 6/30/2017 includes a 1.01% increase in the ADEC due to the experience study and a 0.48% increase in the ADEC due to the one-time pension supplement to be paid on or before October 31, 2016.

The appropriated rate for fiscal year ending 2017 is 9.98% of payroll. The preliminary ADEC for fiscal year ending 2018 is 10.08% of payroll.

Each 1% COLA is equivalent to 0.43% of payroll and each 0.01% increase in benefit rate is equal to 0.44% of payroll.

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

Reconciliation of the Change in the Actuarially Determined Employer Contribution

Fiscal year ending June 30, 2017 Preliminary ADEC (based on December 31, 2014 valuation)	8.47%
Impact of Experience Study	1.01%
Impact of Legislative Changes*	0.00%
Fiscal year ending June 30, 2017 Final ADEC	9.48%
Change Due to Demographic (Gain)/Loss	(0.20%)
Change Due to Investment (Gain)/Loss	0.84%
Change Due to Contributions Greater than ADEC	(0.04%)
Fiscal year ending June 30, 2018 Preliminary ADEC (based on December 31, 2015 valuation)	10.08%

Demographic gain primarily due to lower reported compensation than assumed based on the assumptions adopted with the experience study.

Investment loss is a recognition of asset losses from 2015.

* The impact of the legislative changes does not reflect the cost of the one-time pension supplement to be paid in October 2016, as the entire cost of this supplement was funded in the appropriated contribution for fiscal year ending June 30, 2017 and is not reflected in the ADEC for fiscal year ending June 30, 2018.

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

Projections

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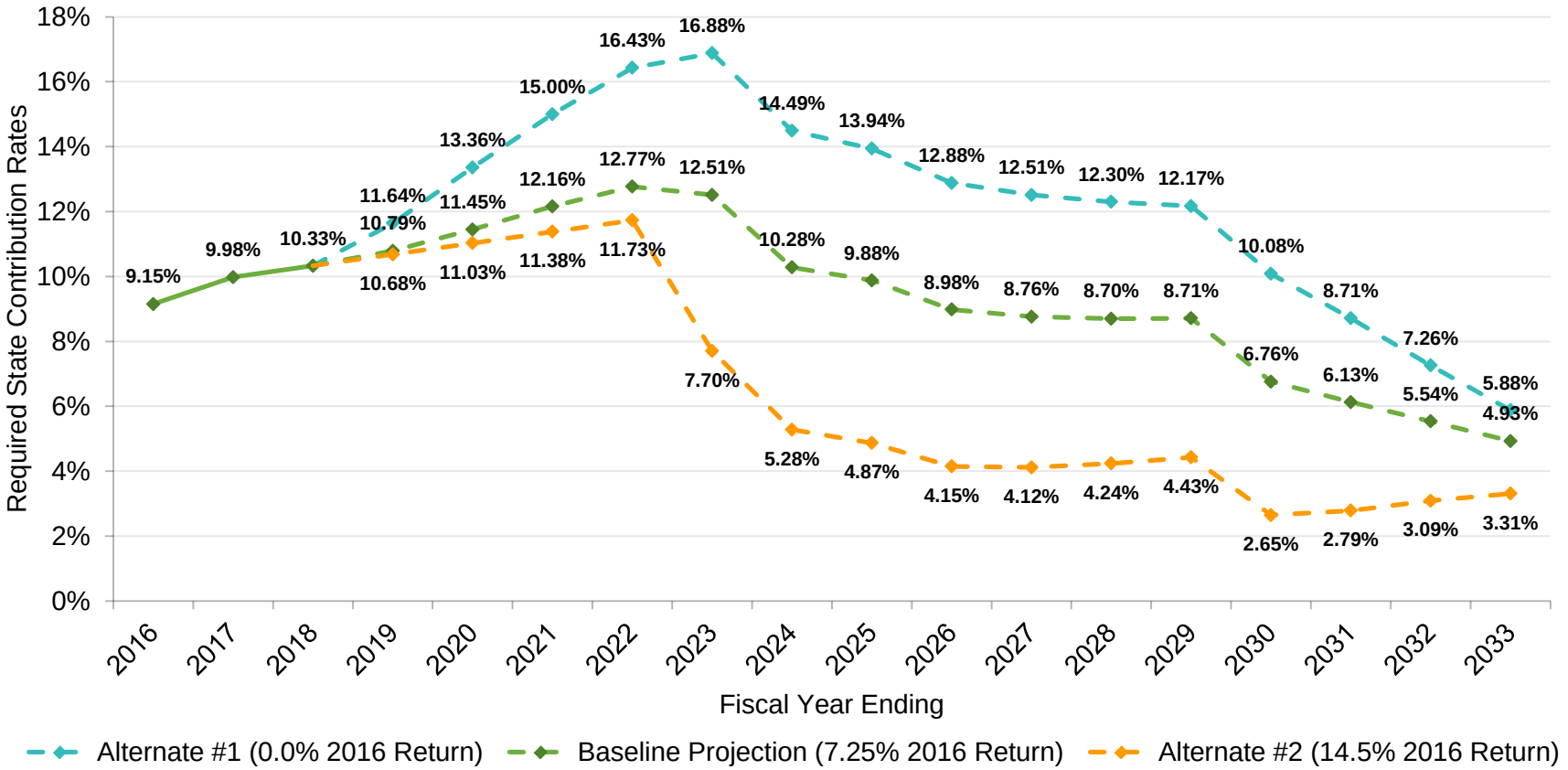
Projections: Actuarially Determined Employer Contribution Rate and Funded Status

- Projections of actuarially determined employer contribution (ADEC) rates and funded status into the future can be helpful planning tools for stakeholders.
- Projections of the actuarial valuation are known as deterministic projections. Deterministic projections are based on one scenario in the future.
- Baseline deterministic projection is based on:
  - December 31, 2015 valuation results
  - December 31, 2015 valuation assumptions and methods to project future valuation results, including:
    - Valuation interest rate of 7.25% for all years
    - Investment return of 7.25% on market value of assets
  - The contribution rate under the Employer Contribution Rate Stabilization Policy is contributed until fiscal year ending 2022.
  - The ADEC is contributed for fiscal years ending 2023 and beyond.
  - 0% increase in total active member population
  - No cost-of-living adjustments granted
  - Future pay increases based on long-term salary increase assumptions
- Two alternate deterministic projections based on the same assumptions as the baseline deterministic projection, except
  - First alternate deterministic projection assumes a 0.0% asset return for calendar year 2016.
  - Second alternate deterministic projection assumes a 14.5% asset return for calendar year 2016.

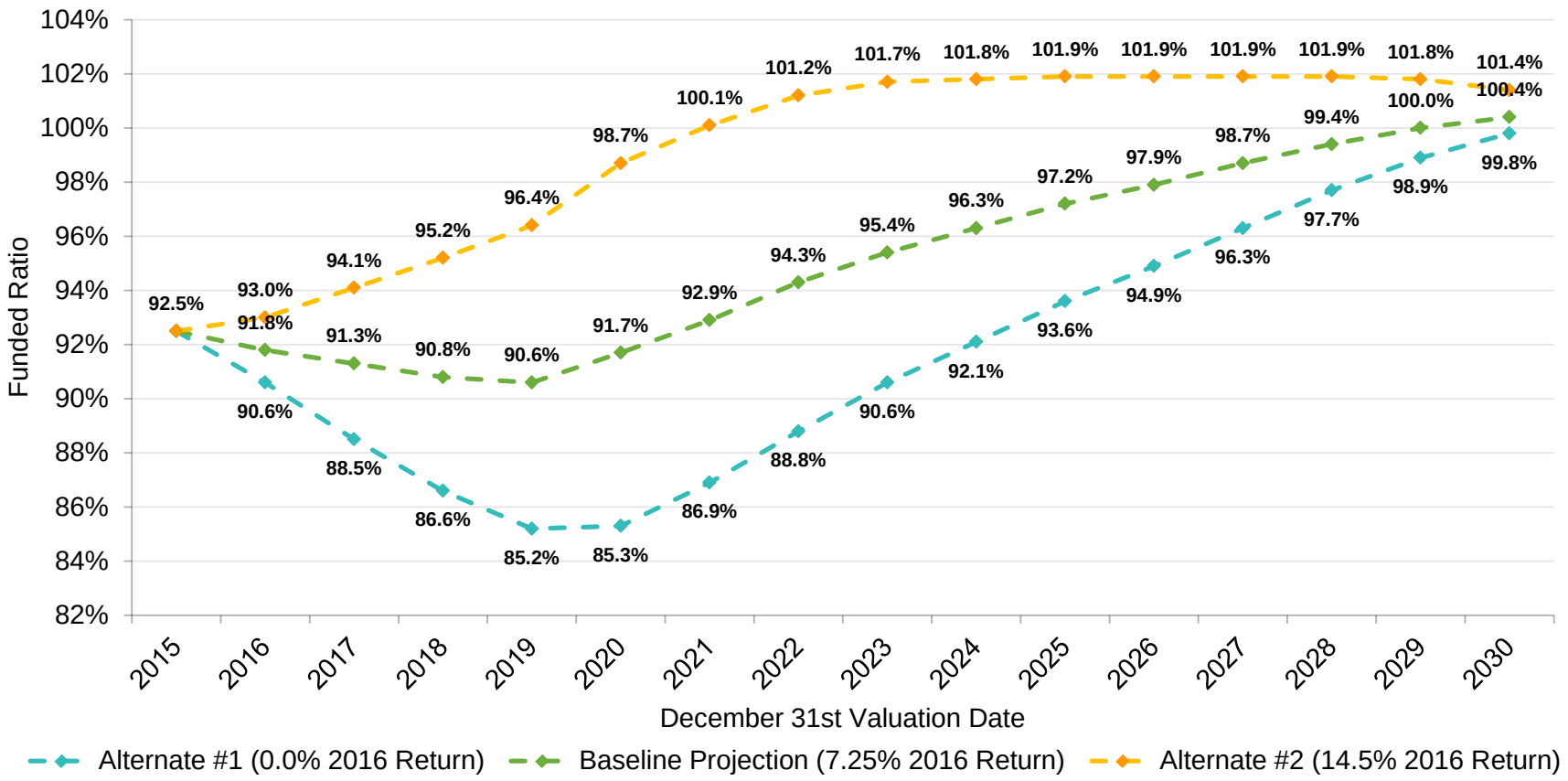
Projections: Projected Actuarially Determined Contribution Rates



The actuarially determined employer contribution rate trends to around 5%, which is the level of the cost of benefits accrued, or the long term employer cost of TSERS when there is no pension debt.

A detailed summary of the deterministic projections is provided in Section 9 of the actuarial report.

Projections: Projected Funded Ratio



Note that if the 7.25% return under the Baseline Projection is achieved, the funded ratio reaches the long term target of 100% within 15 years. This is a direct result of using a 12 year period to pay off the pension debt.

A detailed summary of the deterministic projections is provided in Section 9 of the actuarial report.

Key Takeaways

Key results of the December 31, 2015 valuation as compared to the December 31, 2014 valuation were:

- Market value returns of 0.36% compared to 7.25% assumed
- Increase in covered payroll of 1.7% compared to approximately 3% expected
- Recent legislation signed into law since the prior valuation
  - One-time pension supplement in the amount of 1.6% of the annualized benefit in effect on September 1, 2016 to be paid on or before October 31, 2016
- Changes in actuarial assumptions and methods in accordance with the latest experience study prepared as of December 31, 2014 and adopted by the Board of Trustees on January 21, 2016
- The Employer Contribution Rate Stabilization Policy adopted by the Board of Trustees on January 21, 2016

When compared to the December 31, 2014 baseline projections, the above resulted in:

- A lower funded ratio as of December 31, 2015 (92.5% in the valuation compared to 96.3% in the baseline projection)
- A higher actuarially determined employer contribution rate for fiscal year ending June 30, 2018 (10.08% in the valuation compared to 8.31% in the baseline projection)
  - The experience study increased the projected contribution rate of 8.31% to 9.40% for fiscal year ending June 30, 2018 (based on the projections presented at the January Board Meeting)
- Lower projected benefit amounts being accrued by active members

Key Takeaways

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

- Stakeholders working together to keep TSERS 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 a 12-year period
- An ad hoc cost-of-living adjustment, which typically only provides benefit increases when certain financial conditions are met, supports the health of the system
- Modest changes in benefits when compared to peers

As has been done over the past 70 years, continued focus on these measures will be needed to maintain the solid status of TSERS well into the future.

Certification

The assumptions, methods, and plan provisions used in the results presented in this presentation were provided in October 2016 in the "Report on the Seventy-Third Annual Valuation of the Teachers' and State Employees' Retirement System of North Carolina prepared as of December 31, 2015."

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.

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Principal, Consulting Actuary

Questions?

THANK YOU

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Teachers' and State Employees' Retirement System of North Carolina

Report on the Seventy-Third Annual Valuation Prepared as of December 31, 2015

October 2016

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October 12, 2016

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

Members of the Board:

We submit herewith our report on the seventy-third annual valuation of the Teachers' and State Employees' Retirement System of North Carolina (referred to as “TSERS” or the “State Plan”) prepared as of December 31, 2015. The report has been prepared in accordance with North Carolina General Statute 135-6(o).

The primary purpose of the valuation report is to determine the required member and employer contribution rates, to describe the current financial condition of TSERS, 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. Because of the risk of misinterpretation of actuarial results, you should ask Buck to review any statement you wish to make on the results contained in this report. Buck will not accept any liability for any such statement made without prior review.

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 latest assumptions were adopted for use with the December 31, 2015 actuarial valuation, based on the experience study prepared as of December 31, 2014 and adopted by the Board of Trustees on January 21, 2016. The economic assumptions with respect to investment yield, salary increase and inflation have been based upon a review of the existing portfolio structure as well as recent and anticipated experience.

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

Future actuarial 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, except for some limited analysis in financial projections or required disclosure information.

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, 2015, the Retirement Systems' defined benefit plans cover about 980,000 current and prior public servants in the state of North Carolina. During the fiscal year ending June 30, 2016, the Systems paid $5.7 billion in pensions to about 280,000 retirees. And as of June 30, 2016, the Systems' assets were valued at $87 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.

In 1941, the Teachers' and State Employees' Retirement System (referred to as "TSERS" or the "State Plan") was established. TSERS provides benefits to all full-time teachers and state employees in all public school systems, universities, departments, institutions and agencies of the state. With almost $63 billion in assets and over 650,000 members as of December 31, 2015, it is the largest pension plan within the System. This actuarial valuation report is our annual analysis of the financial health of TSERS. This report, prepared as of December 31, 2015, presents the results of the seventy-third annual valuation of TSERS.

Purpose

An actuarial valuation is performed on TSERS annually as of the end of the calendar year. The actuary determines the amount of contributions to be made to TSERS 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 TSERS,
- 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, 2015 valuation as compared to the December 31, 2014 valuation were:

- Market value returns of 0.36% compared to 7.25% assumed
- Increase in covered payroll of 1.7% compared to approximately 3% expected
- Recent legislation signed into law since the prior valuation
  - One-time pension supplement in the amount of 1.6% of the annualized benefit in effect on September 1, 2016 to be paid on or before October 31, 2016
- Changes in actuarial assumptions and methods in accordance with the latest experience study prepared as of December 31, 2014 and adopted by the Board of Trustees on January 21, 2016
- The Employer Contribution Rate Stabilization Policy (ECRSP) adopted by the Board of Trustees on January 21, 2016 requires that contributions be 0.35% of payroll greater than the appropriated contribution during the prior year, with the following bounds: (1) contributions may not be less than the actuarially determined employer contribution (ADEC) rate and (2) contributions may not be greater than a contribution determined using the same assumptions used to calculate the ADEC but using a discount rate equal to the long-term Treasury bond yield.

When compared to the December 31, 2014 projections, the above resulted in:

- A lower funded ratio as of December 31, 2015 (92.5% in the valuation compared to 96.3% in the baseline projection)
- Higher actuarially determined employer contribution rate for fiscal year ending June 30, 2018 (10.08% in the valuation compared to 8.31% in the baseline projection)
- Lower projected benefit amounts being accrued by active members

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

- Stakeholders working together to keep TSERS 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 a 12-year period
- An ad hoc cost-of-living adjustment, which typically only provides benefit increases when certain financial conditions are met, supports the health of the system
- Modest changes in benefits when compared to peers

As has been done over the past 70 years, continued focus on these measures will be needed to maintain the solid status of TSERS well into the future.

More details can be found later in this report. We encourage readers to start with Sections 1 and 2 and refer to other sections for additional details as needed.

Section 1: Principal Results

This report, prepared as of December 31, 2015, presents the results of the seventy-third annual 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	12/31/2015	12/31/2014
Active Members		
Number	305,291	307,313
Reported Compensation	$13,145,602,154	$12,932,045,817
Valuation Compensation*	$13,896,781,214	$13,737,065,885
Retired Members and Survivors of Deceased Members Currently Receiving Benefits		
Number	201,522	194,607
Annual Allowances	$ 4,202,371,724	$ 4,057,596,822
Assets		
Actuarial Value (AVA)	$66,169,352,203	$64,734,119,837
Market Value	$62,669,341,716	$64,587,417,979
Actuarial Accrued Liability (AAL)	$71,521,915,397	$67,715,066,544
Unfunded Accrued Liability (AAL-AVA)	$ 5,352,563,194	$ 2,980,946,707
Funded Ratio (AVA/AAL)**	92.5%	95.6%
Results for Fiscal Year Ending	**6/30/2018**	**6/30/2017**
Actuarially Determined Employer Contribution (ADEC), as a percentage of payroll		
Normal Cost	4.31%	5.21%
Accrued Liability	5.77%	3.26%
Total	10.08%	8.47%
Impact of Experience Study	N/A	1.01%
Impact of Legislative Changes	N/A	0.48%
Final ADEC	N/A	9.96%
Board of Trustees Recommended Contribution under the Employer Contribution Rate Stabilization Policy (ECRSP)	10.33%	9.98%
Appropriations Act for Fiscal Year Ending	**6/30/2017**	**6/30/2016**
Employer Contribution Rate as a percentage of payroll		
Normal Cost	4.31%	5.21%
Accrued Liability	5.67%	3.94%
Total	9.98%	9.15%
Preliminary Reserve for Undistributed Gains/(Losses)	(0.10)%	0.68%

* Reported compensation adjusted to reflect the assume rate of pay increase prior to the valuation date.

** The Funded Ratio on a Market Value of Assets basis is 87.6% at December 31, 2015.

Section 2: 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 TSERS 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 2: The Valuation Process

Valuation Input: Membership Data (continued)

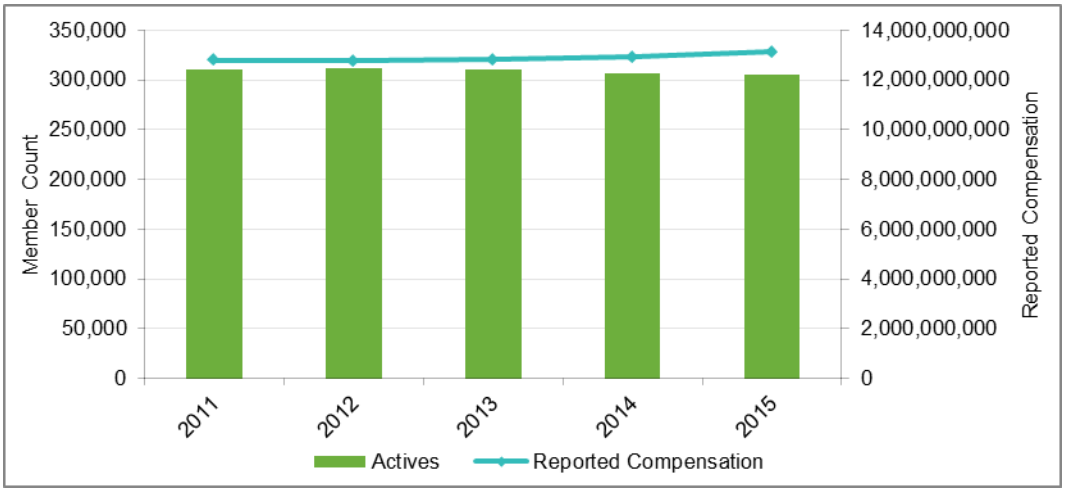
The table below provides a summary of the membership data used in this valuation compared to the prior valuation.

Number as of	12/31/2015	12/31/2014
Active members	305,291	307,313
Members currently receiving Disability Income Plan benefits	7,531	7,643
Terminated members and survivors of deceased members entitled to benefits but not yet receiving benefits	143,214	134,871
Retired members and survivors of deceased members currently receiving benefits	201,522	194,607
Total	657,558	644,434

Commentary: The number of active members decreased by 0.7% from the previous valuation date. The decrease in active members results in less benefits accruing, but also fewer contributions supporting the system. The number of retired members and survivors of deceased members currently receiving benefits increased by 3.6% from the previous valuation. The increase in retiree population is consistent with expectations.

Graph 1: Active Members

The graph below provides a history of the number of active members and reported compensation over the past five years.



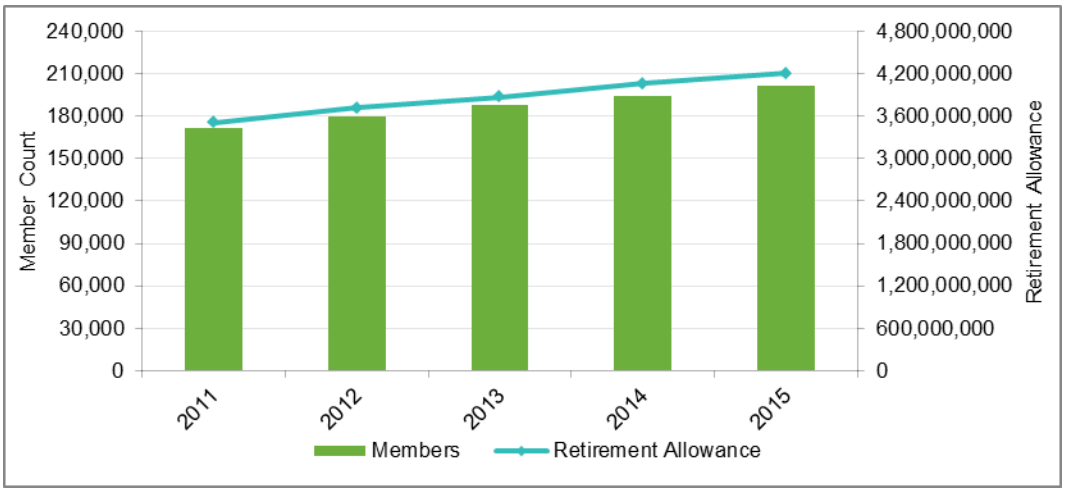
Commentary: Reported compensation has increased by 1.7% and has remained relatively stable over the past five years. Covered payroll is expected to increase by approximately 3% annually in the future. Payroll that is not increasing as fast as we assume results in less benefits accruing than we anticipate, but also fewer contributions supporting the system.

Section 2: The Valuation Process

Valuation Input: Membership Data (continued)

Graph 2: Retired Members and Survivors of Deceased Members

The graph below provides a history of the number of retired members and survivors of deceased members and benefit amounts payable over the past five years.



Commentary: The number of retired members and survivors of deceased members and the benefits paid to these members has been increasing steadily, as expected based on plan assumptions.

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

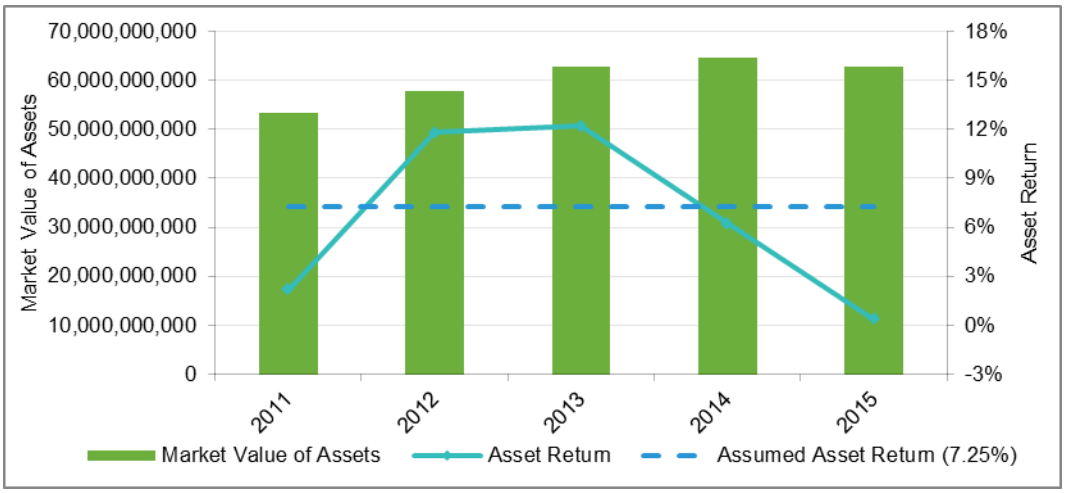
Section 2: The Valuation Process

Valuation Input: Asset Data

TSERS assets are held in trust and are invested for the exclusive benefit of plan members. The Market Value of Assets is $62.7 billion as of December 31, 2015 and $64.6 billion as of December 31, 2014. The investment return for the market value of assets for calendar year 2015 was 0.36%.

Graph 3: Market Value of Assets and Asset Returns

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



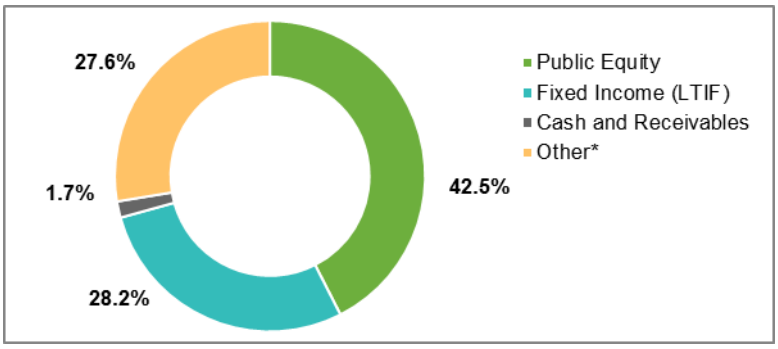
Commentary: Returns were less than the 7.25% assumed rate of return, resulting in a higher required contribution than anticipated as of the December 31, 2014 baseline projections presented in the December 31, 2014 actuarial report.

Section 2: The Valuation Process

Valuation Input: Asset Data (continued)

Graph 4: Allocation of Investments by Category

The graph below provides the breakdown of the market value of assets at December 31, 2015 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.

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

Section 2: The Valuation Process

Valuation Input: Benefit Provisions

Benefit provisions are described in North Carolina General Statues, Chapter 135.

This valuation reflects the following change in benefit provisions from the prior year's valuation:

- One-time pension supplement in the amount of 1.6% of the annualized benefit in effect on September 1, 2016 to be paid on or before October 31, 2016

Highlights of the benefit provisions are described below.

- An unreduced retirement allowance is payable to non-law enforcement members who retire from service:
  - after attaining age 65 and five years of creditable service;
  - after attaining age 60 and 25 years of creditable service; or
  - after attaining 30 years of creditable service
- An unreduced retirement allowance is payable to law enforcement members who retire from service:
  - after attaining age 55 and five years of creditable service; or
  - after attaining 30 years of creditable service
- The unreduced retirement allowance is equal to 1.82% of a member's final average compensation multiplied by the number of years of creditable service.
- A reduced retirement allowance is payable to non-law enforcement members who retire from service:
  - after attaining age 60 and five years of membership service; or
  - after attaining age 50 and 20 years of creditable service.
- A reduced retirement allowance is payable to law enforcement members who retire from service after attaining age 50 and 15 years of creditable service.
- Ancillary benefits are also payable upon the death or disability of a member.
- TSERS 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. More details on cost-of-living increases are provided in Graph 5.

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 TSERS due to the legislature contributing the actuarially required contribution, 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.

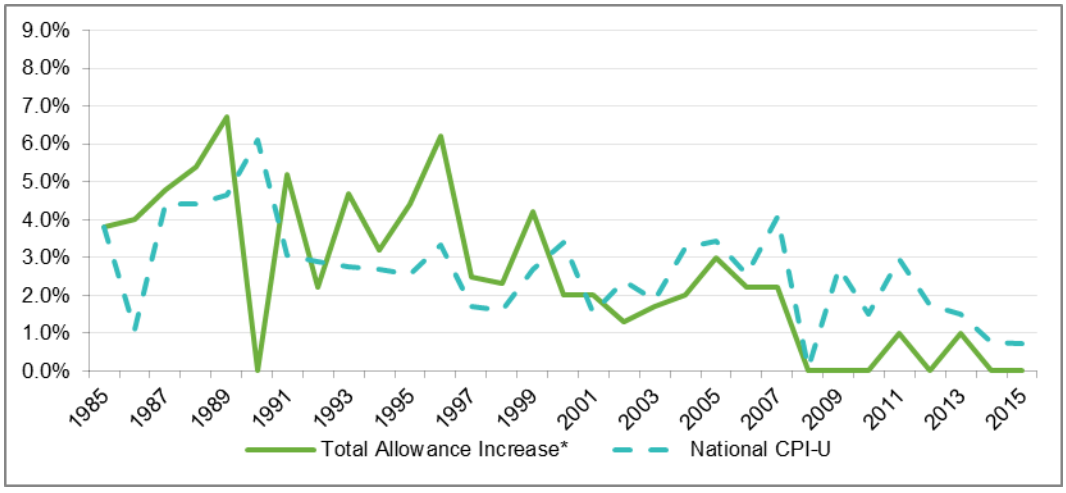
Section 2: The Valuation Process

Valuation Input: Benefit Provisions (continued)

As noted previously, cost-of-living increases are periodically considered to the extent that certain financial conditions are met and/or the legislature passes a budget that provides for a cost-of-living adjustment. Specifically, benefit allowance increases are generally considered when the employer contribution rate would not need to increase to pay for a cost-of-living adjustment (generally, limited to the lesser of the CPI increase year-over-year or 4%) Active member pay increases are also considered. In any case, the legislature makes the final decision. In addition to the legislature consistently appropriating the actuary's recommended contribution, this benefit increase policy has helped keep costs manageable when compared to other Public Sector Retirement Systems in the United States. That being said, it is important to provide a benefit in retirement that does not get eroded by inflation.

Graph 5: Cost-of-Living Increase and CPI-U History

The graph below provides a 30-year history of allowance increases for TSERS and the national CPI-U.



* Allowance increases are effective at July 1 the following year. While the retirement allowances were not increased in 2016, a one-time supplement was granted.

Commentary: Generally the ad-hoc retirement allowance increase policy has helped retirees maintain purchasing power while helping to moderate contribution increases during times of down markets.

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

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 TSERS are reviewed at least every five years. Based on this review, the actuary will make recommendations on the demographic and economic assumptions.

Section 2: The Valuation Process

Valuation Input: Actuarial Assumptions (continued)

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 TSERS such as the interest rate, salary increases, the real return, and payroll growth.

The latest assumptions were adopted for use with the December 31, 2015 actuarial valuation, based on the experience study prepared as of December 31, 2014 and adopted by the Board of Trustees on January 21, 2016.

Valuation Input: Funding Methodology

The Funding Methodology is the payment plan for TSERS 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 Entry Age Normal as its actuarial cost method
  - Develops normal costs that stays level as a percent of payroll
- Asset Valuation Methods smooth or average the market value returns over time to alleviate contribution volatility that results from market returns.
  - Asset returns in excess of or less than the expected return on market value of assets reflected over a five-year period
  - Assets corridor: not greater than 120% of market value and not less than 80% of market 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: a 12-year closed amortization period was adopted for fiscal year ending 2012. A new amortization base is created each year based on the prior years' experience.

When compared to other Public Sector Retirement Systems in the United States, the funding policy for TSERS is quite aggressive in that the policy pays down the pension debt over a much shorter period of time (12 years) compared to the national average of around 24 years. As such it is a best practice in the industry.

The actuarial assumptions and asset valuation method were updated since the prior year's valuation in accordance with the latest experience study prepared as of December 31, 2014 and adopted by the Board of Trustees on January 21, 2016. A detailed summary of the actuarial assumptions and methods is provided in Appendix D of this report.

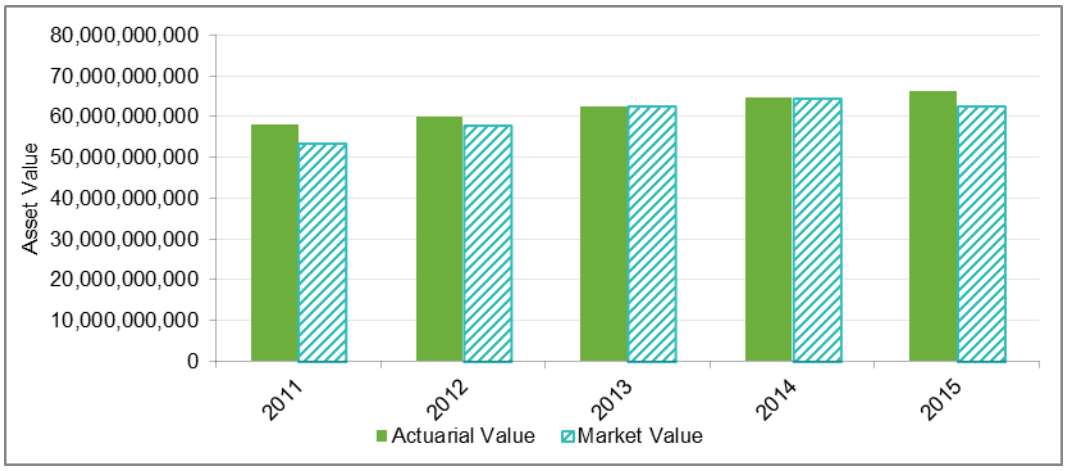
Section 2: The Valuation Process

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 TSERS, the Board adopted an asset valuation method to determine the Actuarial Value of Assets used for funding purposes. The Actuarial Value of Assets is $66.2 billion as of December 31, 2015 and $64.7 billion as of December 31, 2014.

Graph 6: 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 five 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.

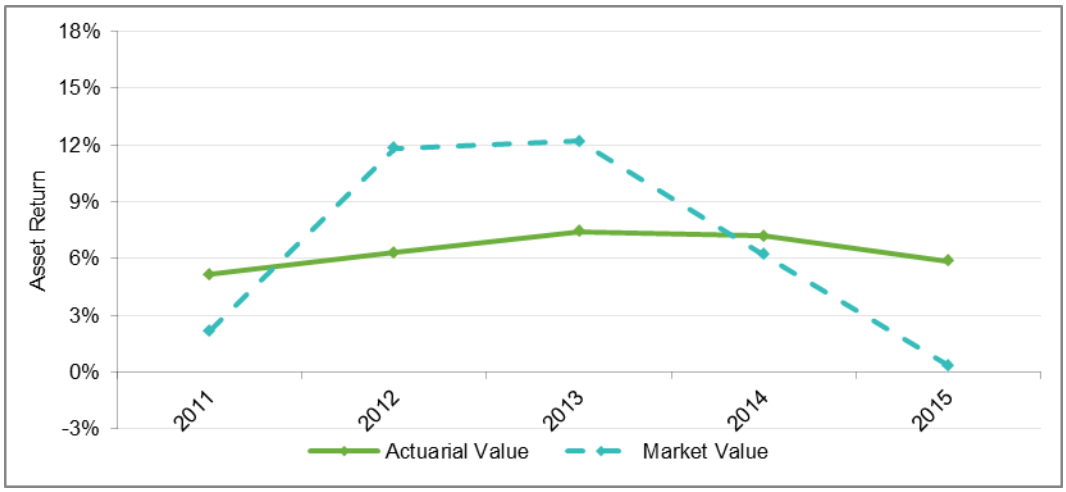
The actuarial value of assets would have been $66.3 million as of December 31, 2015 under the asset valuation method used in the prior valuation.

Section 2: The Valuation Process

Valuation Results: Actuarial Value of Assets (continued)

Graph 7: Asset Returns

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



Commentary: The investment return for the market value of assets for calendar year 2015 was 0.36%. The actuarial value of assets smooths investment gains and losses. The new asset valuation method adopted with the experience study assumptions re-set the actuarial value of assets to the market value of assets at December 31, 2014, effective for the December 31, 2015 valuation. Lower than expected market returns in 2015 resulted in an actuarial value of asset return for calendar year 2015 of 5.87% and an asset loss of $875 million during 2015.

The actuarial value of asset return for calendar year 2015 prior to the asset valuation method change was 5.83%, which would have resulted in an asset loss of $906 million during 2015.

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

Section 2: The Valuation Process

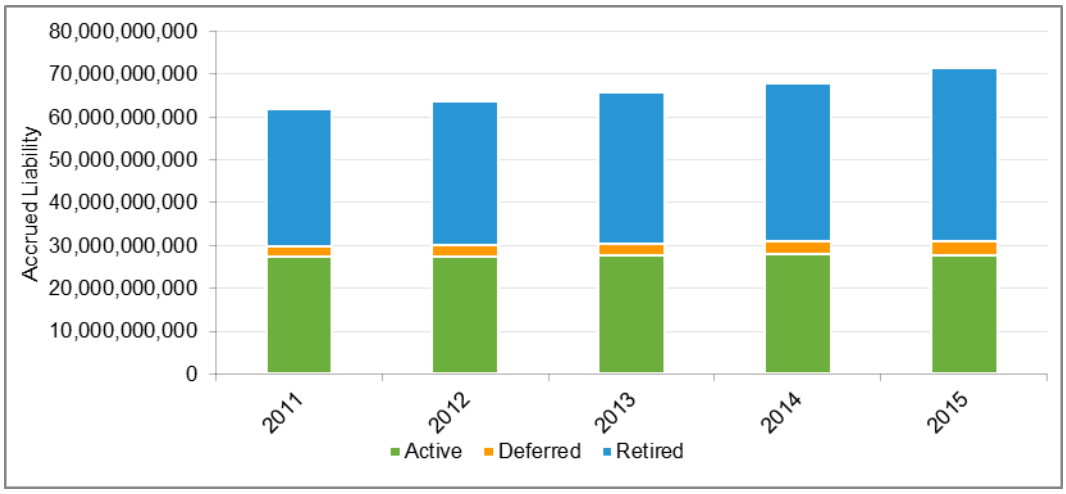
Valuation Results: Actuarial Accrued Liability

Using the provided membership data, benefit provisions, and actuarial assumptions, the future benefit payments of TSERS 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 TSERS. 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 TSERS should ideally have in the trust. The NC is also referred to as the cost of benefits accruing during the year.

Graph 8: Actuarial Accrued Liability

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



Commentary: The AAL increased from $67.7 billion to $71.5 billion during 2015. 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 the next as more benefits accrue and the membership approaches retirement. Assumption changes increased the AAL by $1,741 million at December 31, 2014. The AAL prior to assumption and legislative changes was $135 million lower than expected, which resulted in a demographic gain of $135 million during 2015. Legislation increased the AAL by $70 million.

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

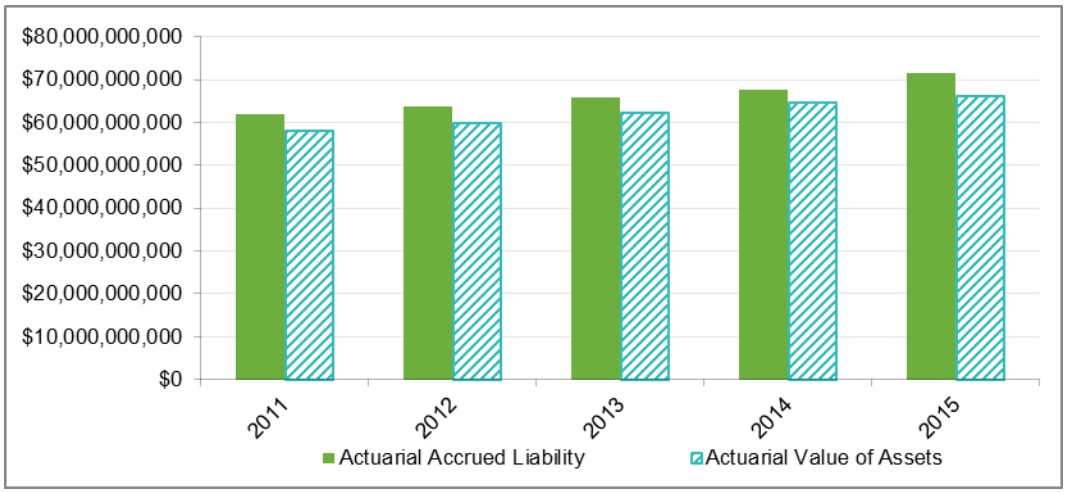
Section 2: The Valuation Process

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 TSERS actually has in the fund to the amount TSERS should have in the fund.

Graph 9: Actuarial Accrued Liability and Actuarial Value of Assets

The graph below provides a history of the actuarial accrued liability and actuarial value of assets.



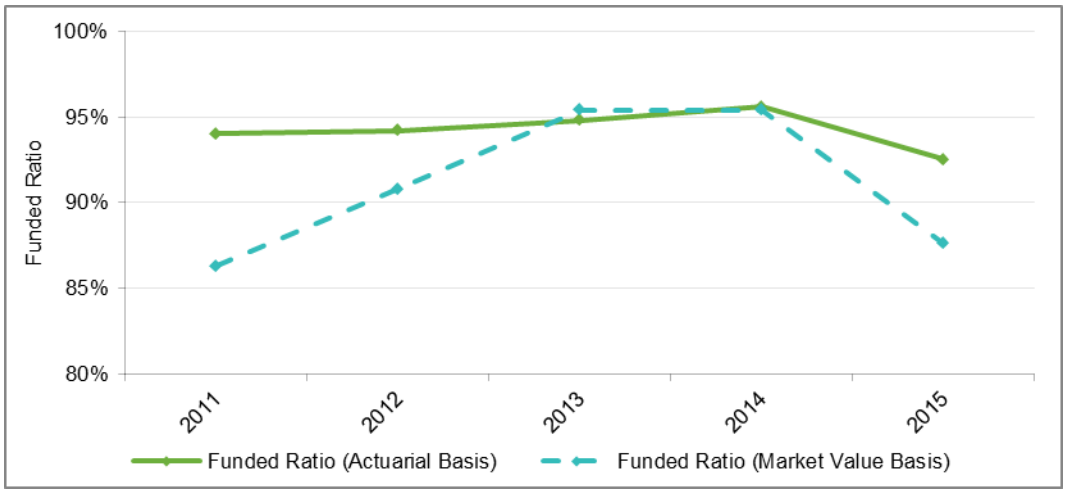
Commentary: The actuarial value of assets basis is used for computing contributions to alleviate contribution volatility. The difference in the actuarial accrued liability and the actuarial value of assets is the amount of pension debt to be paid off in 12 years.

Section 2: The Valuation Process

Valuation Results: Funded Ratio (continued)

Graph 10: Funded Ratios

The graph below provides a history of the funded ratio on a market and actuarial basis over the past five 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 decreased from 95.6% at December 31, 2014 to 92.5% at December 31, 2015.

Section 2: The Valuation Process

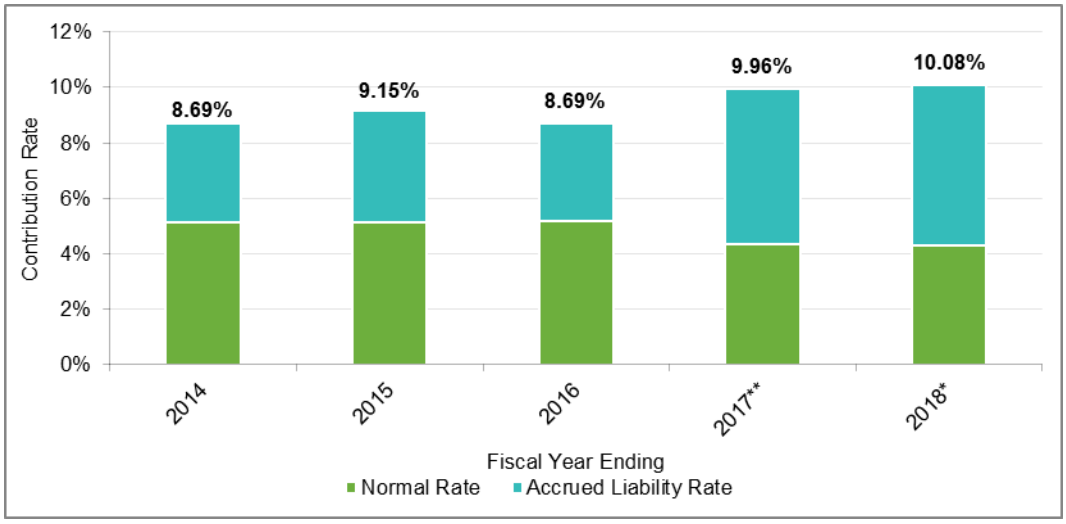
Valuation Results: Employer Contributions

The North Carolina General Statutes provide that the contributions of employers shall consist of a normal contribution and an accrued liability contribution. G.S. 135-8(g) allows for the Board of Trustees of TSERS to make changes to accounting methods and procedures that, in its opinion, are in the interest of sound and proper administration of TSERS.

The December 31, 2014 valuation suggested that the preliminary total employer contribution rate be set at 8.47% of payroll for the fiscal year ending June 30, 2017. Subsequently, the 2016 Appropriations Act (Session Laws 2016-94) set contributions at 9.98% of payroll effective for the fiscal year ending June 30, 2017, in order to account for the experience study, recent legislation passed into law, and the Employer Contribution Rate Stabilization Policy. As a result of this December 31, 2015 valuation, the preliminary actuarially determined employer contribution rate is 10.08% of payroll for the fiscal year ending June 30, 2018, subject to the impact of any future legislative changes effective during that fiscal year. On this basis, there is no preliminary reserve from undistributed gains that could be used for a cost-of-living adjustment or other benefit improvements.

Graph 11: Actuarially Determined Employer Contribution Rates

The graph below provides a history of actuarially determined employer contribution rates over the past five years. The rates are split into the normal rate and the accrued liability rate. The normal rate is the employer's portion of the cost of benefits accruing after reducing for the member contribution. The accrued liability rate is the payment toward the unfunded liability.



***** Subject to the impact of future legislative changes effective during that fiscal year.
** Includes impact of the experience study

Commentary: The actuarially determined employer contribution rate is the amount needed to pay for the cost of the benefits accruing and to pay off the pension debt over 12 years, offset for the 6% of pay contribution the members make. The 12-year period is a short period for Public Sector Retirement Systems in the United States, with most Systems using a period of 30 years or more to pay off the pension debt. The shorter period results in higher contributions and more benefit security. A detailed summary of the actuarially determined employer contribution rates is provided in Section 6 of this report.

Section 2: The Valuation Process

Valuation Results: Projections

Projections of contribution requirements and funded status into the future can be helpful planning tools for stakeholders. This section provides such projections. The projections of the actuarial valuation are known as deterministic projections. Deterministic projections are based on one scenario in the future. The baseline deterministic projection is based on December 31, 2015 valuation results as assumptions.

Key Projection Assumptions:

- Valuation interest rate of 7.25% for all years
- 7.25% investment return on market value of assets
- Actuarial assumptions and methods as described in Appendix D. All future demographic experience is assumed to be exactly realized.
- The contribution rate under the Employer Contribution Rate Stabilization Policy (ECRSP) is contributed until fiscal year ending 2022
- The actuarially determined employer contribution rate is contributed for fiscal years ending 2023 and beyond
- 0% increase in the total active member population
- No cost-of-living adjustments granted
- Future pay increases based on long-term salary increase assumptions

The ECRSP adopted by the Board of Trustees on January 21, 2016 requires that recommended contributions be 0.35% of payroll greater than the appropriated contribution during the prior year, with the following bounds: (1) contributions may not be less than the actuarially determined employer contribution (ADEC) rate and (2) contributions may not be greater than a contribution determined using the same assumptions used to calculate the ADEC but using a discount rate equal to the long-term Treasury bond yield.

In addition, we have provided two alternate deterministic projections. The first alternate deterministic projection is based on the same assumptions as the baseline deterministic projection except that it assumes a 0.0% asset return for calendar year 2016. The second alternate deterministic projection is based on the same assumptions as the baseline deterministic projection except that it assumes a 14.5% asset return for calendar year 2016.

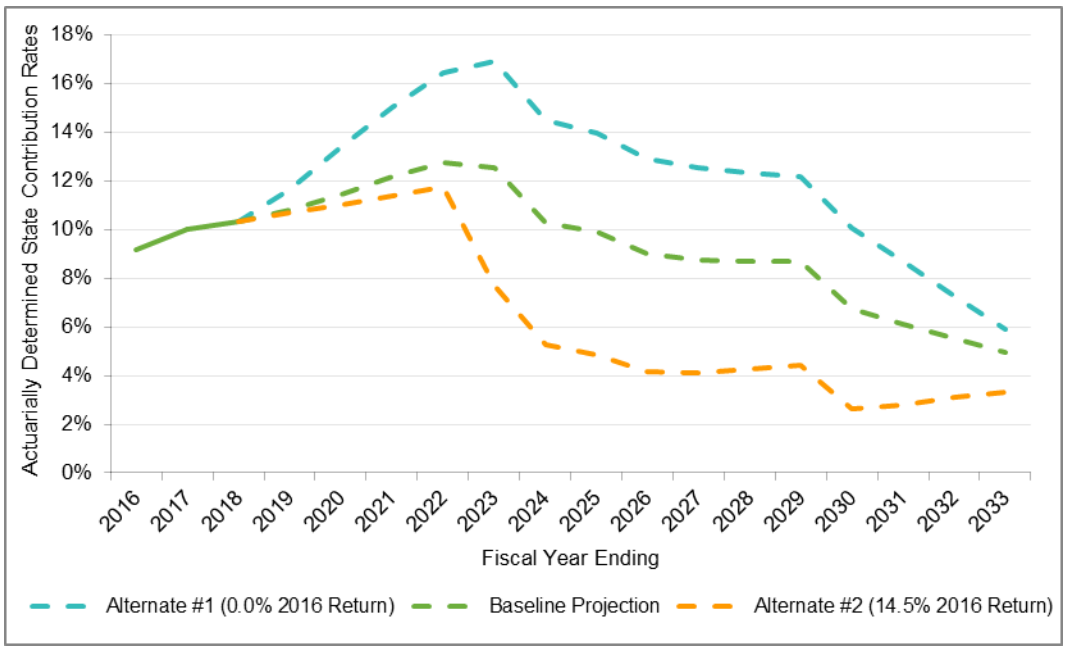
Finally, stochastic projections, where hundreds of projections based on varying rates of return are performed and results are ordered, are periodically performed by the Investment Management Division and shared with the Retirement Board and RSD staff.

Section 2: The Valuation Process

Valuation Results: Projections (continued)

Graph 12: Projected Actuarially Determined Employer Contribution Rates

The graph below provides the actuarially determined employer contribution rates projected for 15 years.



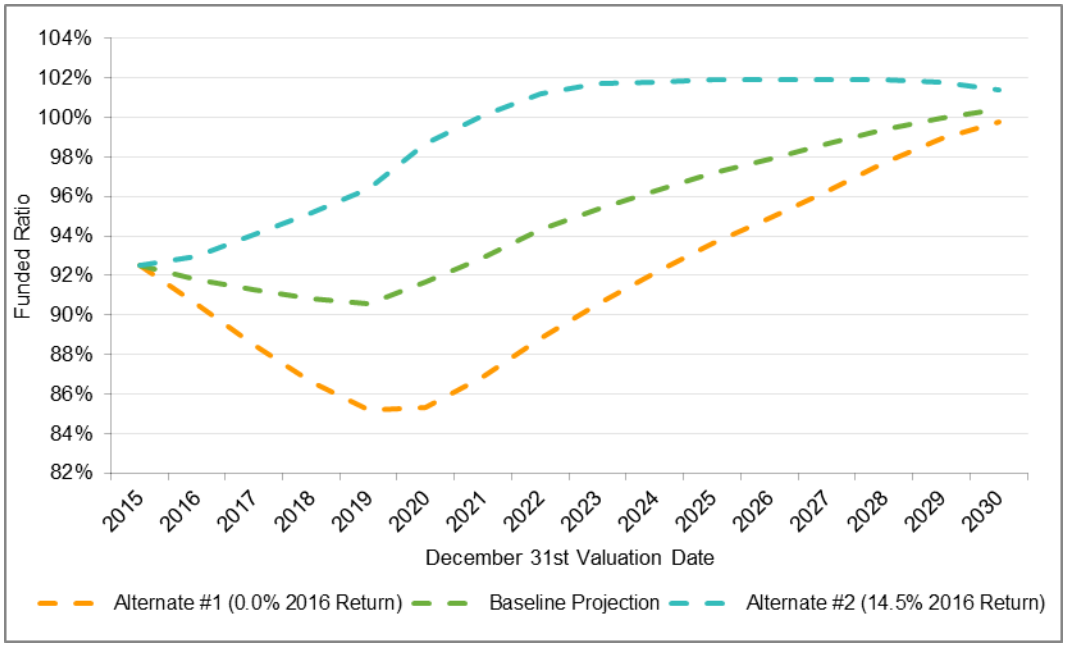
Commentary: The actuarially determined employer contribution rate trends to around 5%, which is the level of the cost of benefits accrued, or the long term employer cost of TSERS when there is no pension debt.

Section 2: The Valuation Process

Valuation Results: Projections (continued)

Graph 13: Projected Funded Ratio

The graph below provides the funded ratio projected for 15 years.



Commentary: Note that if the 7.25% return under the Baseline Projection is achieved, the funded ratio reaches the long term target of 100% within 15 years. This is a direct result of using a 12 year period to pay off the pension debt.

A detailed summary of the deterministic projections is provided in Section 9 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, 2016, is $9,191,033,000 (compared to $3,685,198,000 for fiscal year ending June 30, 2015). The required financial reporting information for TSERS under GASB No. 67 can be found in Section 8 of this report.

Section 3: Membership Data

The Retirement Systems Division provided membership data as of the valuation date for each member of TSERS. 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
Classroom Teachers	151,007	43.14	10.48	$ 6,474,720,772
Other Education	46,271	49.24	11.27	1,770,451,538
General Employees	104,622	46.51	10.76	4,713,204,505
Law Enforcement Officers	3,391	40.43	12.66	187,225,339
Total	305,291	45.19	10.72	$13,145,602,154

The table above includes members not in receipt of benefits who had reported compensation in 2015.

Table 3: Disabled Member Data

	Member Count	Average Age	Average Service	Valuation Compensation
Classroom Teachers	2,051	54.42	12.72	$ 73,380,456
Other Education	756	55.52	12.45	19,256,485
General Employees	4,677	55.55	11.53	153,963,986
Law Enforcement Officers	47	51.00	13.91	5,472,623
Total	7,531	55.21	11.96	$ 252,073,550

The table above includes members not in receipt of benefits who did not have reported compensation in 2015 and who were reported as disabled in the current or prior valuations and not subsequently reported as returned to work.

Section 3: Membership Data

Table 4: Terminated Vested Member Data

	Member Count	Average Age	Average Service	Accumulated Contributions
Classroom Teachers	50,559	40.19	4.33	$ 605,416,515
Other Education	11,456	45.75	4.35	130,198,585
General Employees	80,176	45.85	3.87	985,405,302
Law Enforcement Officers	1,023	41.81	5.75	20,300,125
Total	143,214	43.81	4.08	$ 1,741,320,527

The table above includes members not in receipt of benefits who did not have reported compensation in 2015 and who were not valued as disabled members.

Table 5: Data for Members Currently Receiving Benefits

	Member Count	Average Age	Annual Retirement Allowances
Retired Members (Healthy at Retirement)			
Classroom Teachers and Other Education	95,971	69.76	$ 2,361,702,988
General Employees	76,433	71.42	1,343,292,193
Law Enforcement Officers	2,717	65.09	85,488,396
Total	175,121	70.41	$ 3,790,483,577
Retired Members (Disabled at Retirement)*			
Classroom Teachers and Other Education	4,082	69.27	$ 82,883,941
General Employees	7,779	69.14	119,094,201
Law Enforcement Officers	181	68.19	4,416,630
Total	12,042	69.17	$ 206,394,772
Survivors of Deceased Members			
Classroom Teachers and Other Education	4,556	73.12	$ 82,321,735
General Employees	9,385	73.63	114,445,678
Law Enforcement Officers	418	71.93	8,725,962
Total	14,359	73.42	$ 205,493,375
Grand Total	201,522	70.55	$ 4,202,371,724

* Includes retired members reported as disabled in a prior valuation and not subsequently reported as returned to work.

Section 4: Asset Data

Assets are held in trust and are invested for the exclusive benefit of TSERS 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	12/31/2015	12/31/2014
Beginning of Year Market Value of Assets	$ 64,587,417,979	$ 62,789,451,194
Contributions	2,124,259,141	2,057,963,297
Benefit Payments	(4,272,052,586)	(4,098,385,865)
Investment Income	229,717,182	3,838,389,353
Net Increase/(Decrease)	(1,918,076,263)	1,797,966,785
End of Year Market Value of Assets	$ 62,669,341,716	$ 64,587,417,979
Estimated Net Investment Return on Market Value	0.36%	6.21%

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

Asset Data as of	12/31/2015	12/31/2014
Allocation by Dollar Amount		
Public Equity	$ 26,656,406,177	$ 28,376,457,498
Fixed Income (LTIF)	17,660,343,988	19,243,626,779
Cash and Receivables	1,051,912,884	891,718,536
Other*	17,300,678,667	16,075,615,166
Total Market Value of Assets	$ 62,669,341,716	$ 64,587,417,979
Allocation by Percentage of Asset Value		
Public Equity	42.5%	43.9%
Fixed Income (LTIF)	28.2%	29.8%
Cash and Receivables	1.7%	1.4%
Other*	27.6%	24.9%
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 TSERS, 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	12/31/2015
Beginning of Year Market Value of Assets	$ 64,587,417,979
Contributions	2,124,259,141
Benefit Payments	(4,272,052,586)
Net Cash Flow	(2,147,793,445)
Expected Investment Return	4,604,730,291
Expected End of Year Market Value of Assets	67,044,354,825
End of Year Market Value of Assets	62,669,341,716
Excess of Market Value over Expected Market Value of Assets	(4,375,013,109)
80% of 2015 Asset Gain/(Loss)	(3,500,010,487)
60% of 2014 Asset Gain/(Loss)	N/A
40% of 2013 Asset Gain/(Loss)	N/A
20% of 2012 Asset Gain/(Loss)	N/A
Total Deferred Asset Gain/(Loss)	(3,500,010,487)
Preliminary End of Year Actuarial Value of Assets	66,169,352,203
Final End of Year Actuarial Value of Assets (not less than 80% and not greater than 120% of Market Value)	66,169,352,203
Estimated Net Investment Return on Actuarial Value	5.87%

Commentary: The actuarial value of assets smooths investment gains/losses, resulting in less volatility in the employer contribution. The asset valuation method was changed during the experience study from a method that calculated the actuarial value of assets as 20% of the market value of assets plus 80% of the expected actuarial value of assets to a method that recognizes asset returns in excess of or less than the expected return on the market value of assets over a five-year period.

The new asset valuation method re-set the actuarial value of assets to the market value of assets at December 31, 2014, effective for the December 31, 2015 valuation. Lower than expected market returns in 2015 resulted in an actuarial value of asset return for calendar year 2015 of 5.87% and an asset loss of $875 million during 2015.

The actuarial value of assets would have been $66,295,222,398 as of December 31, 2015 under the asset method used in the prior valuation.

Section 4: Asset Data

The valuation assumes that the funds will earn a 7.25% asset return. The table below provides a history of the Actuarial Value and Market Value of Asset returns.

Table 9: Historical Asset Returns

Calendar Year	Actuarial Value of Asset Return	Market Value of Asset Return
2006	8.94%	11.41%
2007	8.87%	8.38%
2008	2.89%	-19.50%
2009	4.74%	14.84%
2010	5.89%	11.47%
2011	5.15%	2.19%
2012	6.32%	11.82%
2013	7.43%	12.21%
2014	7.19%	6.21%
2015	5.87%	0.36%
Average	6.31%	5.45%
Range	6.05%	34.34%

Commentary: The average investment return recognized for purposes of determining the annual change in contribution each year is the actuarial value of assets return. Currently, the average actuarial return of 6.31% tracks average market return of 5.45% rather well. But the range of returns is markedly less – 6.05% versus 34.34%. This results in much lower employer contribution volatility using the actuarial value of assets versus market, while ensuring that the actuarial needs of TSERS are met.

Section 5: Liability Results

Using the provided membership data, benefit provisions, and actuarial assumptions, the future benefit payments of TSERS 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 10: Liability Summary

Valuation Results as of	12/31/2015	12/31/2014
(a) Present Value of Future Benefits		
(1) Active Members	$ 38,687,207,018	$ 40,655,820,416
(2) Terminated Members	3,482,641,054	3,188,560,504
(3) Members Currently Receiving Benefits	40,408,588,106	36,577,507,863
(4) Total	$ 82,578,436,178	$ 80,421,888,783
(b) Present Value of Future Normal Costs		
(1) Employee Future Normal Costs	$ 6,497,465,689	$ 6,862,370,246
(2) Employer Future Normal Costs	4,559,055,092	5,844,451,993
(3) Total	$ 11,056,520,781	$ 12,706,822,239
(c) Actuarial Accrued Liability: (a4) - (b3)	$ 71,521,915,397	$ 67,715,066,544
(d) Actuarial Value of Assets	$ 66,169,352,203	$ 64,734,119,837
(e) Unfunded Accrued Liability: (c) - (d)	$ 5,352,563,194	$ 2,980,946,707

Section 5: Liability Results

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

Table 11: Reconciliation of Unfunded Actuarial Accrued Liability

(in millions)	
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2014	$ 2,981
Impact of Experience Study	1,887
Normal Cost during 2015	1,420
Reduction due to Actual Contributions during 2015	(2,124)
Interest on UAAL, Normal Cost, and Contributions	379
Asset (Gain)/Loss	875
Actuarial Accrued Liability (Gain)/Loss	(135)
Impact of Legislative Changes	70
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2015	$ 5,353

Commentary: The changes in assumptions and methods from the experience study increased the unfunded actuarial accrued liability (UAAL), or pension debt, by $1,887 million at December 31, 2014. During 2015, the UAAL increased faster than expected primarily due to asset losses. These asset losses were offset by a liability gain, primarily due to lower reported compensation than assumed based on the assumptions adopted with the experience study. Additionally, the one-time pension supplement increased the UAAL by $70 million.

Section 6: Actuarially Determined Employer Contribution

The actuarially determined employer 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 12 years.

The table below provides the calculation of the actuarially determined employer contribution for the current and prior years' valuations.

The Employer Contribution Rate Stabilization Policy (ECRSP) adopted by the Board of Trustees on January 21, 2016 requires that recommended contributions be 0.35% of payroll greater than the appropriated contribution during the prior year, with the following bounds: (1) contributions may not be less than the actuarially determined employer contribution (ADEC) calculated below and (2) contributions may not be greater than a contribution determined using the same assumptions used to calculate the ADEC but using a discount rate equal to the long-term Treasury bond yield.

The ECRSP would result in a recommended contribution rate of 10.33% of payroll for fiscal year ending 2018 (the appropriated contribution from last year of 9.98% plus 0.35%).

Table 12: Calculation of the Actuarially Determined Employer Contribution (ADEC)

Valuation Date ADEC for Fiscal Year Ending	12/31/2015 6/30/2018	12/31/2014 6/30/2017
Normal Cost Rate Calculation		
(a) Employer Future Normal Cost	$ 4,559,055,092	$ 5,844,451,993
(b) Present Value of Future Salary	108,291,094,820	114,372,837,433
(c) Normal Cost Rate: (a) / (b)	4.21%	5.11%
(d) Expenses Rate	0.10%	0.10%
(e) Total Normal Cost Rate: (c) + (d)	4.31%	5.21%
Accrued Liability Rate Calculation		
(f) Total Annual Amortization Payments*	$ 801,521,301	$ 447,592,310
(g) Valuation Compensation	13,896,781,214	13,737,065,885
(h) Accrued Liability Rate: (f) / (g)	5.77%	3.26%
Total ADEC (e) + (h)	10.08%	8.47%
Impact of Experience Study	N/A	1.01%
Impact of Legislative Changes	N/A	0.48%
Final ADEC	N/A	9.96%

***** See Table 15 for more detail.

Section 6: Actuarially Determined Employer Contribution

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

Table 13: Reconciliation of the Change in the ADEC

Fiscal year ending June 30, 2017 Preliminary ADEC (based on December 31, 2014 valuation)	8.47%
Impact of Experience Study	1.01%
Impact of Legislative Changes*	0.00%
Fiscal year ending June 30, 2017 Final ADEC	9.48%
Change Due to Demographic (Gain)/Loss	(0.20%)
Change Due to Investment (Gain)/Loss	0.84%
Change Due to Contributions Greater than ADEC	(0.04%)
Fiscal year ending June 30, 2018 Preliminary ADEC (based on December 31, 2015 valuation)	10.08%

* The impact of legislative changes does not reflect the cost of the one-time pension supplement to be paid in October 2016, as the entire cost of this supplement was funded in the appropriated contribution for fiscal year ending June 30, 2017 and is not reflected in the ADEC for fiscal year ending June 30, 2018.

Section 6: Actuarially Determined Employer Contribution

Amortization methods determine the payment schedule for the unfunded actuarial accrued liability. TSERS adopted a 12-year closed amortization period for fiscal year ending 2012. A new amortization base is created each year based on the prior year's experience. The tables below provide the calculation of the new amortization base and the amortization schedule for the current year's valuation.

Table 14: Calculation of the New Amortization Base

Calculation as of	12/31/2015	12/31/2014
(a) Unfunded Actuarial Accrued Liability*	$ 5,282,566,938	$ 2,980,946,707
(b) Prior Years' Outstanding Balances	$ 2,695,985,915	$ 3,187,898,989
(c) New Amortization Base: (a) - (b)	$ 2,586,581,023	$ (206,952,282)
(d) New Amortization Payment	$ 353,928,991	$ (28,317,850)

* The unfunded actuarial accrued liability at December 31, 2015 does not reflect the cost of the one-time pension supplement to be paid on or before October 31, 2016, as the entire cost of this supplement was funded in the appropriated contribution for fiscal year ending June 30, 2017.

Table 15: Amortization Schedule for Unfunded Accrued Liability

Date Established	Original Balance	12/31/2015 Outstanding Balance	Annual Payment
December 31, 2009	$ 2,360,173,025	$ 1,884,062,115	$ 322,948,963
December 31, 2010	242,581,914	212,607,844	33,193,150
December 31, 2011	911,037,989	864,864,695	124,659,832
December 31, 2012	78,277,759	79,629,762	10,710,961
December 31, 2013	(114,027,863)	(123,222,179)	(15,602,746)
December 31, 2014	(206,952,282)	(221,956,322)	(28,317,850)
December 31, 2015	2,586,581,023	2,586,581,023	353,928,991
Total		$ 5,282,566,938	$ 801,521,301

Commentary: This is the payment schedule for the pension debt of TSERS.

Section 6: Actuarially Determined Employer Contribution

The table below provides a history of the actuarially determined employer contribution and the corresponding appropriated rate.

Table 16: History of Actuarially Determined Employer Contributions and Appropriated Rates

Valuation Date	Fiscal Year Ending	Normal Rate	Accrued Liability Rate	Change due to Legislation*	Final ADEC	Appropriated Rate
12/31/2015	6/30/2018	4.31%	5.77%	N/A	N/A	N/A
12/31/2014	6/30/2017	5.21%	3.26%	1.49%	9.96%	9.98%
12/31/2013	6/30/2016	5.19%	3.50%	0.00%	8.69%	9.15%
12/31/2012	6/30/2015	5.15%	3.61%	0.39%	9.15%	9.15%
12/31/2011	6/30/2014	5.14%	3.55%	0.00%	8.69%	8.69%

* The change due to legislation for the contribution for fiscal year ending 6/30/2017 includes a 1.01% increase in the ADEC due to the experience study and a 0.48% increase in the ADEC due to the one-time pension supplement to be paid on or before October 31, 2016.

Table 17: Cost of Benefit Enhancements

Calculation as of	12/31/2015	12/31/2014
Increase in ADEC for a 1% COLA*	0.43%	0.40%
Increase in ADEC for a 0.01% Increase in the Defined Benefit Formula**	0.44%	0.43%

* The 1% COLA calculated at the December 31, 2015 valuation would be effective July 1, 2017. The COLA would be paid in full to retired members and survivors of deceased members on the retirement roll on July 1, 2016 and would be prorated for retired members and survivors of deceased members who commence benefits after July 1, 2016 but before June 30, 2017.

** A corresponding increase in retirement allowances would be paid in the event of an increase in the defined benefit formula.

Section 7: Valuation Balance Sheet

The valuation balance sheet shows the assets and liabilities of TSERS. The items shown in the balance sheet are present values actuarially determined as of the relevant valuation date. The table below provides the valuation balance sheet for the current year and prior year.

Table 18: Valuation Balance Sheet

Balance Sheet as of	12/31/2015	12/31/2014
Assets		
Current Actuarial Value of Assets		
Annuity Savings Fund	$ 12,176,094,815	$ 11,810,134,073
Pension Accumulation Fund	53,993,257,388	52,923,985,764
Total	$ 66,169,352,203	$ 64,734,119,837
Future Member Contributions to the Annuity Savings Fund	$ 6,497,465,689	$ 6,862,370,246
Prospective Contributions to the Pension Accumulation Fund		
Normal Contributions	$ 4,559,055,092	$ 5,844,451,993
Unfunded Accrued Liability Contributions	5,352,563,194	2,980,946,707
Undistributed Gain/(Loss) Contributions	(89,460,295)	623,692,680
Total	$ 9,822,157,991	$ 9,449,091,380
Total Assets	$ 82,488,975,883	$ 81,045,581,463
Liabilities		
Annuity Savings Fund		
Past Member Contributions	$ 12,176,094,815	$ 11,810,134,073
Future Member Contributions	6,497,465,689	6,862,370,246
Total Contributions	$ 18,673,560,504	$ 18,672,504,319
Pension Accumulation Fund		
Benefits Currently in Payment	$ 40,338,591,850	$ 36,577,507,863
Benefits to be Paid to Current Active Members	23,496,287,568	25,171,876,601
Reserve for Increases in Retirement Allowances* effective July 1, 2016 (July 1, 2015 for December 31, 2014)	69,996,256	0
Reserve for Undistributed Gains/(Losses)	(89,460,295)	623,692,680
Total Benefits Payable	$ 63,815,415,379	$ 62,373,077,144
Total Liabilities	$ 82,488,975,883	$ 81,045,581,463

* The reserve for the increase in retirement allowances at December 31, 2015 is the cost of one-time pension supplement to be paid on or before October 31, 2016.

Section 8: Accounting Results

The section contains the accounting information for Governmental Accounting Standards Board (GASB) Statement No. 67 for fiscal year ending June 30, 2016 based on a valuation date of December 31, 2015.

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

The June 30, 2016 total pension liability presented in this section was determined by an actuarial valuation as of December 31, 2015, 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 19: Number of Active and Retired Members as of December 31, 2015

Group	Number
Retired members and survivors of deceased members currently receiving benefits	201,522
Terminated members and survivors of deceased members entitled to benefits but not yet receiving benefits	143,214
Active members*	312,822
Total	657,558

* Includes current recipients of DIP benefits.

Section 8: 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 20: Schedule of Changes in Net Pension Liability (Asset)

Calculation as of	June 30, 2016
Total Pension Liability	
Service Cost	$ 1,580,544,000
Interest	4,937,464,000
Changes of Benefit Terms	35,605,000
Difference between Expected and Actual Experience	(190,178,000)
Change of Assumptions	1,743,836,000
Benefit Payments, including Refund of Member Contributions	(4,339,637,000)
Net Change in Total Pension Liability	$ 3,767,634,000
Total Pension Liability - Beginning of Year	$ 68,692,228,000
Total Pension Liability - End of Year	$ 72,459,862,000
Plan Fiduciary Net Position	
Employer Contributions	$ 1,275,003,000
Member Contributions	864,151,000
Net Investment Income	472,174,000
Benefit Payments, including Refund of Member Contributions	(4,339,637,000)
Administrative Expenses	(10,217,000)
Other	325,000
Net Change in Fiduciary Net Position	$ (1,738,201,000)
Plan Fiduciary Net Position - Beginning of Year	$ 65,007,030,000
Plan Fiduciary Net Position - End of Year	$ 63,268,829,000

Table 21: Net Pension Liability (Asset)

Calculation as of	June 30, 2016	June 30, 2015
Total Pension Liability	$ 72,459,862,000	$ 68,692,228,000
Plan Fiduciary Net Position	63,268,829,000	65,007,030,000
Net Pension Liability (Asset)	$ 9,191,033,000	$ 3,685,198,000
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	87.32%	94.64%

Section 8: Accounting Results

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

Table 22: Sensitivity of the Net Pension Liability (Asset) at June 30, 2016 to Changes in the Discount Rate

	1% Decrease	Current	1% Increase
Discount Rate	6.25%	7.25%	8.25%
Net Pension Liability (Asset)	17,286,557,000	9,191,033,000	2,383,807,000

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 for fiscal year ending 2017 to fiscal year ending 2022, System contributions will follow the Employer Contribution Rate Stabilization Policy as adopted by the Board of Trustees on January 21, 2016, and for fiscal years ending 2023 and beyond, System contributions will be based on the actuarially determined contribution rates. Based on those policies, 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 details.

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

Table 23: Additional Information for GASB Statement No. 67

Valuation Date	12/31/2015
Actuarial Cost Method	Entry Age
Amortization Method	Level dollar closed
Amortization Period	12 years
Asset Valuation Method	Asset returns in excess of or less than the expected return on market value of assets reflected over a five-year period (not greater than 120% of market value and not less than 80% of market value)
Actuarial Assumptions	
Investment Rate of Return*	7.25%
Projected Salary Increases**	3.50% - 8.10%
*Includes Inflation of	3.00%
**Includes Inflation and Productivity of	3.50%
Cost-of-living Adjustments	N/A

Section 9: Projections

Projections of contribution requirements and funded status into the future can be helpful planning tools for stakeholders. This section provides such projections. The projections of the actuarial valuation are known as deterministic projections. Deterministic projections are based on one scenario in the future. The baseline deterministic projection is based on December 31, 2015 valuation results as assumptions.

Key Projection Assumptions

- Valuation interest rate of 7.25% for all years
- 7.25% investment return on market value of assets
- Actuarial assumptions and methods as described in Appendix D. All future demographic experience is assumed to be exactly realized.
- The contribution rate under the Employer Contribution Rate Stabilization Policy (ECRSP) is contributed until fiscal year ending 2022.
- The actuarially determined employer contribution rate is contributed for fiscal years ending 2023 and beyond.
- 0% increase in the total active member population
- No cost-of-living adjustments granted
- Future pay increases based on long-term salary increase assumptions

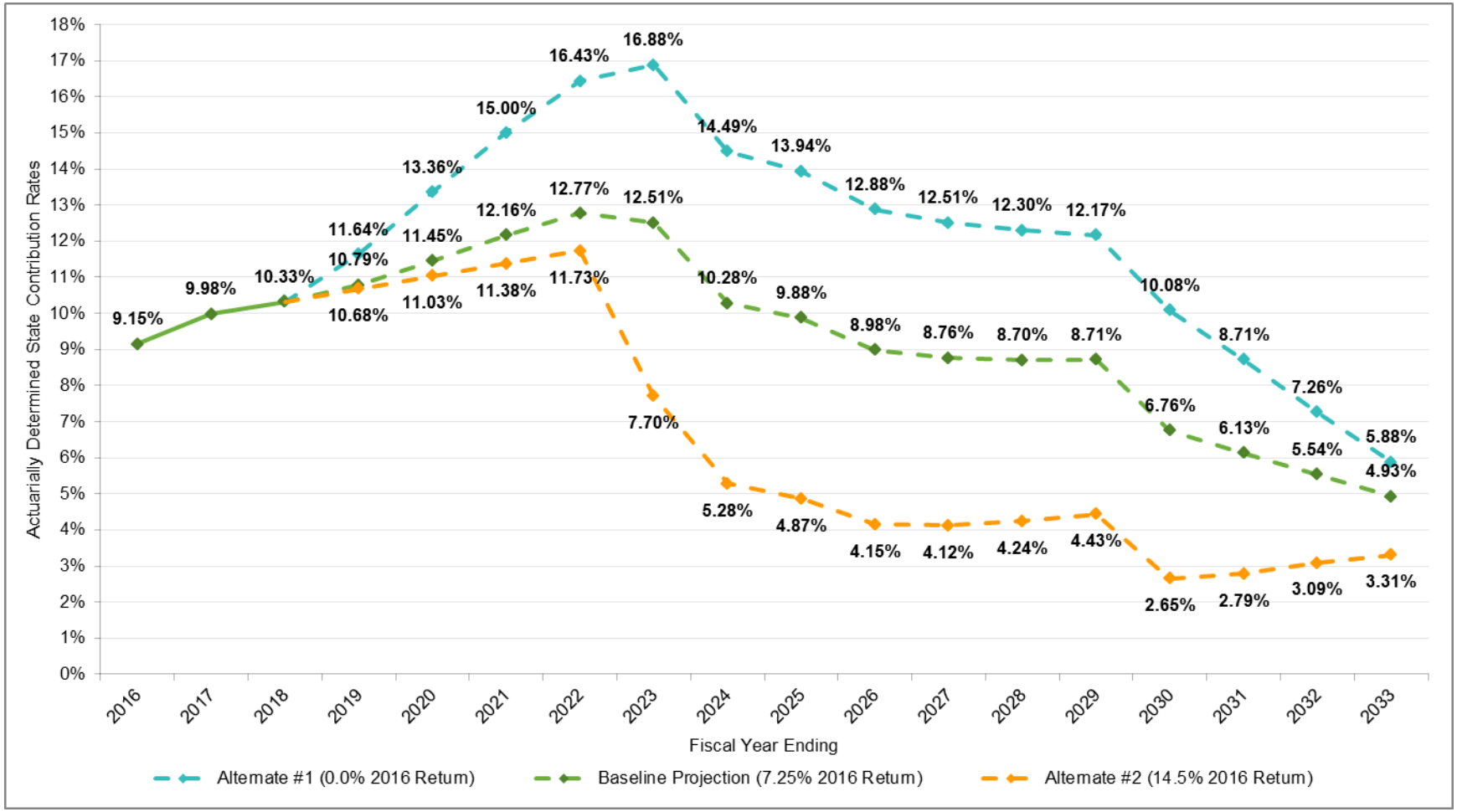
The ECRSP adopted by the Board of Trustees on January 21, 2016 requires that recommended contributions be 0.35% of payroll greater than the appropriated contribution during the prior year, with the following bounds: (1) contributions may not be less than the actuarially determined employer contribution (ADEC) rate and (2) contributions may not be greater than a contribution determined using the same assumptions used to calculate the ADEC but using a discount rate equal to the long-term Treasury bond yield.

In addition, we have provided two alternate deterministic projections. The first alternate deterministic projection is based on the same assumptions as the baseline deterministic projection except that it assumes a 0.0% asset return for calendar year 2016. The second alternate deterministic projection is based on the same assumptions as the baseline deterministic projection except that it assumes a 14.5% asset return for calendar year 2016.

Section 9: Projections

The graph below provides the actuarially determined employer contribution rates projected for 15 years.

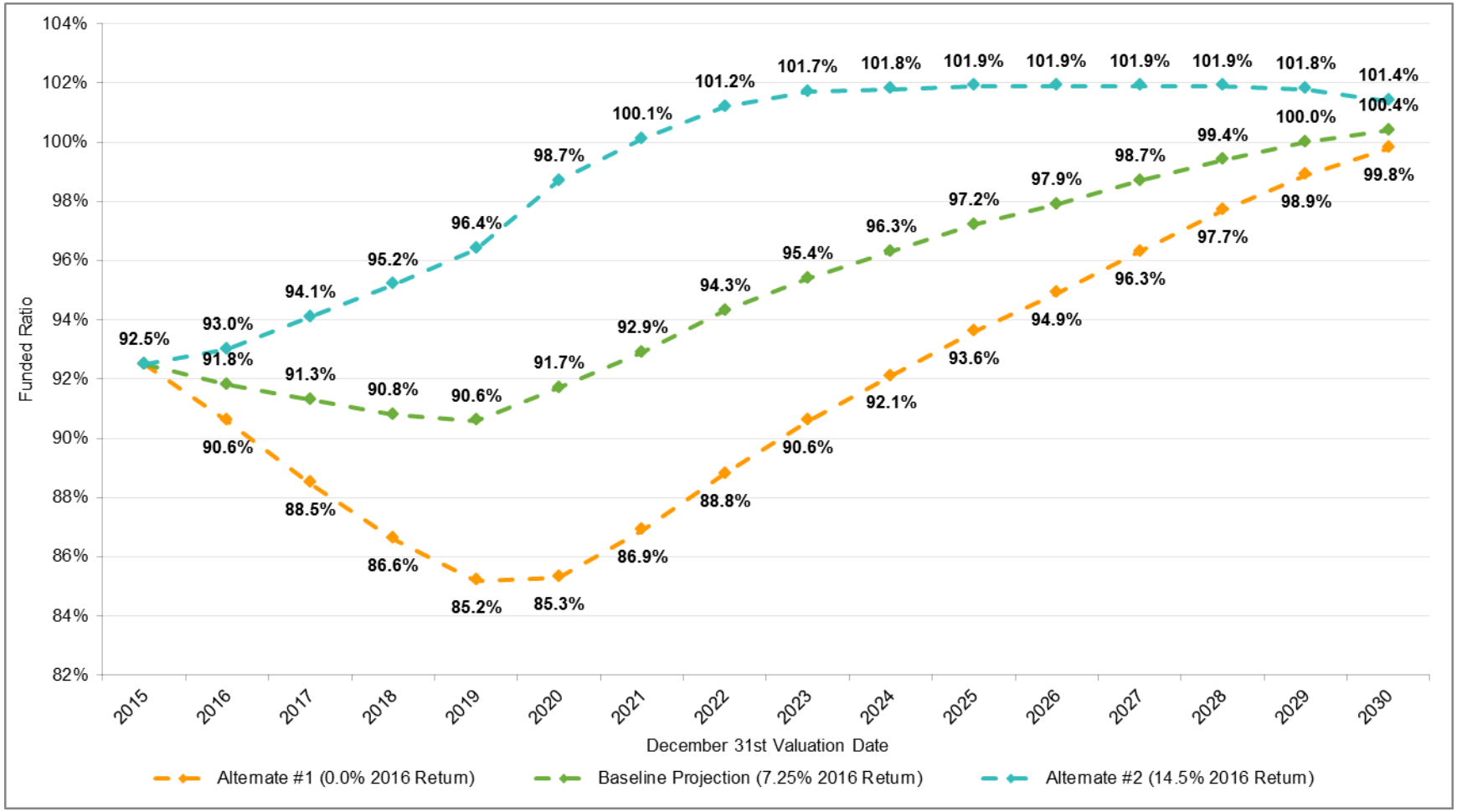
Projected Actuarially Determined Employer Contribution Rates



Section 9: Projections

The graph below provides the funded ratio projected for 15 years.

Projected Funded Ratio



Appendix A: Valuation Process and Glossary of Actuarial Terms

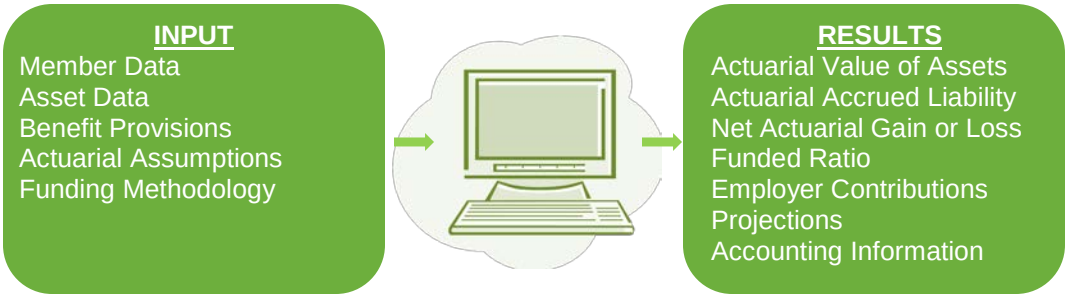
Purpose of an Actuarial Valuation

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

Appendix A: Valuation Process and Glossary of Actuarial Terms

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, 2019 and will be presented during 2020. 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.

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 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

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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.

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.

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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!!

Appendix A: Valuation Process and Glossary of Actuarial Terms

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 of up to 15 to 20 years (and certainly not longer than 25) 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, 2015

Age	Years of Service										
	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	3,133	4,463	24	0	0	0	0	0	0	0	7,620
	13,197	31,396	33,188	0	0	0	0	0	0	0	23,919
25 to 29	3,433	19,491	4,228	47	0	0	0	0	0	0	27,199
	11,972	34,951	38,849	34,271	0	0	0	0	0	0	32,655
30 to 34	1,996	11,335	12,275	5,254	44	0	0	0	0	0	30,904
	11,844	36,331	41,433	44,010	36,946	0	0	0	0	0	38,082
35 to 39	1,583	9,086	8,478	11,561	4,160	28	0	0	0	0	34,896
	11,580	37,168	43,362	47,684	49,582	41,296	0	0	0	0	42,479
40 to 44	1,457	8,263	7,955	8,565	10,108	3,204	28	0	0	0	39,580
	11,317	36,726	43,009	46,544	52,315	54,962	47,316	0	0	0	44,643
45 to 49	1,386	8,105	8,552	9,082	8,192	8,470	2,795	28	0	0	46,610
	10,989	36,827	42,136	45,079	49,222	56,824	58,018	48,339	0	0	45,731
50 to 54	1,053	6,609	7,366	8,490	7,613	5,525	5,883	1,165	12	0	43,716
	10,993	37,067	41,508	43,036	45,366	52,660	59,991	62,425	55,639	0	45,528
55 to 59	835	5,263	6,276	7,742	7,426	5,668	4,320	1,877	438	7	39,852
	11,252	38,265	41,942	43,008	44,935	50,237	57,311	66,244	64,962	48,924	45,823
60 to 64	360	2,946	4,453	5,078	4,609	3,688	2,455	1,074	562	167	25,392
	12,460	39,812	43,110	44,455	47,180	51,659	57,871	67,674	74,075	70,447	47,874
65 to 69	115	828	1,520	1,702	1,227	876	495	297	213	147	7,420
	10,206	41,638	46,084	49,316	50,306	55,555	65,985	80,804	78,630	76,983	51,853
70 & Up	42	259	383	486	364	202	137	69	59	101	2,102
	14,371	36,682	38,150	43,310	44,930	54,768	60,439	70,819	84,630	92,039	47,877
Total	15,393	76,648	61,510	58,007	43,743	27,661	16,113	4,510	1,284	422	305,291
	11,913	36,276	42,096	45,188	48,339	53,667	58,773	66,516	72,035	77,534	43,059

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, 2015

	Men		Women	
Age	Number	Compensation	Number	Compensation
18	2	$ 22,720	9	$ 129,871
19	13	85,367	7	56,954
20	60	889,578	25	246,932
21	155	2,290,858	111	1,488,716
22	298	5,494,525	594	10,185,209
23	626	13,486,514	1,853	39,230,585
24	1,076	28,994,102	2,791	79,659,324
25	1,329	39,062,411	3,455	104,109,201
26	1,551	47,624,420	3,851	123,119,499
27	1,659	53,410,995	3,902	128,642,374
28	1,570	52,480,045	4,078	137,543,623
29	1,754	60,084,357	4,050	142,113,861
30	1,799	66,248,507	4,119	148,517,174
31	1,881	70,793,136	4,125	150,993,071
32	1,853	71,901,975	4,191	157,314,346
33	1,970	78,157,003	4,382	169,796,505
34	2,022	82,602,767	4,562	180,565,353
35	2,090	88,808,182	4,677	190,559,611
36	2,193	96,549,384	4,727	191,859,674
37	2,100	95,178,750	4,799	199,274,061
38	2,188	100,093,934	4,880	205,230,052
39	2,202	103,154,750	5,040	211,646,629
40	2,179	103,613,890	4,935	210,881,021
41	2,290	110,646,948	5,382	229,179,154
42	2,377	112,813,609	5,286	228,670,717
43	2,481	121,074,977	5,705	244,107,045
44	2,789	136,325,597	6,156	269,653,227
45	3,083	151,993,932	6,811	295,940,822
46	2,884	149,020,847	6,790	297,332,951
47	2,851	146,521,543	6,481	284,682,451
48	2,742	140,547,211	6,162	263,850,084
49	2,675	137,061,370	6,131	264,554,435
50	2,683	137,817,610	6,015	257,859,970
51	2,644	132,233,892	6,153	264,984,428
52	2,713	139,327,880	6,080	263,213,279
53	2,689	138,090,467	6,031	260,585,092
54	2,593	131,916,650	6,115	264,283,495
55	2,568	129,813,193	5,902	254,638,479
56	2,411	118,769,071	5,722	251,535,232
57	2,444	121,866,803	5,490	238,635,429

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, 2015 (continued)

	Men		Women	
Age	Number	Compensation	Number	Compensation
58	2,367	$ 118,765,931	5,414	$ 240,045,841
59	2,329	119,723,609	5,205	232,336,315
60	2,197	112,429,189	4,712	210,846,254
61	1,979	103,982,292	3,966	175,261,836
62	1,826	96,336,067	3,517	159,668,417
63	1,366	74,426,087	2,609	120,063,752
64	1,157	64,156,205	2,063	98,433,001
65	963	55,433,664	1,639	77,868,952
66	670	39,484,350	1,040	47,302,129
67	543	33,923,584	701	32,809,516
68	423	26,872,853	545	25,036,175
69	403	23,886,120	493	22,132,584
70	230	13,717,221	275	12,225,328
71	174	9,166,599	208	8,630,328
72	148	7,637,385	148	6,031,756
73	126	6,898,517	135	5,207,314
74	78	4,221,437	86	3,533,355
75	77	3,895,561	62	2,537,446
76	55	3,452,103	36	1,622,596
77	47	2,045,423	29	996,755
78	28	1,261,310	24	831,753
79	21	1,025,560	15	616,806
80	18	829,088	11	499,174
81	12	813,298	8	204,621
82	10	537,331	4	159,368
83	5	394,634	9	301,659
84	6	514,708	4	144,481
85	2	259,070	1	33,107
86	2	106,387	1	45,472
87	1	30,658		
88	1	76,884		
89			3	93,598
90			1	21,235
91	1	18,399		
Total	94,752	$ 4,443,191,294	210,539	$ 8,702,410,860

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, 2015

	Men		Women	
Service	Number	Compensation	Number	Compensation
0	4,565	$ 53,733,883	10,828	$ 129,637,430
1	7,638	253,246,793	15,895	495,617,632
2	6,424	254,682,801	13,029	469,218,638
3	5,947	243,384,834	12,552	463,954,764
4	5,003	209,643,176	10,160	390,684,707
5	4,223	187,792,991	8,400	333,761,825
6	3,637	161,294,251	7,088	287,875,703
7	2,943	139,796,032	6,209	249,825,581
8	4,695	211,404,830	10,308	415,996,847
9	4,214	201,023,383	9,793	400,576,996
10	4,146	197,576,066	10,158	422,237,820
11	3,723	180,457,351	8,876	380,153,612
12	3,452	171,157,311	8,247	358,841,489
13	3,091	156,906,098	7,211	323,468,137
14	2,612	136,968,705	6,491	293,478,231
15	2,723	144,244,688	7,151	319,803,984
16	2,679	141,795,147	6,843	311,166,091
17	2,512	137,391,419	6,509	298,240,862
18	2,302	126,810,999	5,761	271,192,650
19	2,113	117,798,789	5,150	246,056,898
20	1,996	115,430,255	4,709	230,147,625
21	1,778	101,814,452	4,098	207,022,413
22	1,919	112,661,436	3,768	194,622,983
23	1,488	92,026,641	3,397	179,866,748
24	1,501	90,071,100	3,007	160,828,904
25	1,076	68,589,558	2,310	128,032,165
26	1,295	80,211,737	2,429	135,858,454
27	1,108	68,258,670	2,323	129,777,776
28	1,045	67,762,866	2,145	121,040,069
29	774	52,216,504	1,608	95,262,824
30	468	33,400,241	1,037	62,615,324
31	364	27,257,253	802	48,782,139
32	319	23,995,406	580	36,164,785
33	207	16,593,936	336	22,056,987
34	139	11,705,562	258	17,415,572
35	129	10,643,910	190	11,927,124
36	103	8,625,400	205	13,144,332
37	96	8,222,683	170	11,141,230
38	87	8,019,014	146	9,352,652
39	56	4,219,418	102	7,197,059

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, 2015 (continued)

	Men		Women	
Service	Number	Compensation	Number	Compensation
40	36	$ 3,062,694	73	$ 5,143,727
41	32	2,492,567	42	3,230,948
42	25	2,128,696	47	2,966,425
43	14	1,157,125	27	1,865,980
44	20	1,606,169	19	1,343,076
45	4	434,579	15	1,060,918
46	9	995,942	16	1,129,873
47	3	335,301	6	541,026
48	11	1,201,166	4	277,367
49	2	224,752	1	87,166
50	2	380,356		
51	1	82,210	1	63,682
52	1	101,670		
53			5	422,438
54			1	42,187
55	1	95,031	1	49,410
56	1	57,447	1	66,633
60			1	72,942
Total	94,752	$ 4,443,191,294	210,539	$ 8,702,410,860

Appendix B: Detailed Tabulations of Member Data

Table B-4: The Number and Valuation Compensation of Disabled Members Distributed by Age as of December 31, 2015

	Men		Women	
Age	Number	Compensation	Number	Compensation
27			1	$ 30,243
28	1	$ 26,230		
30	3	77,430		
31			4	85,635
32	4	93,157	12	325,068
33	2	72,419	13	275,738
34	5	128,539	17	586,731
35	7	210,169	11	335,422
36	5	158,139	18	583,215
37	12	364,183	28	847,165
38	11	385,499	31	856,778
39	14	374,908	46	1,547,089
40	18	577,730	55	1,954,454
41	22	761,276	48	1,560,380
42	27	1,040,157	43	1,323,031
43	26	924,101	60	2,036,066
44	27	817,992	82	2,646,716
45	30	969,742	103	3,189,654
46	41	1,304,090	127	4,028,059
47	56	1,847,024	117	3,902,496
48	71	2,523,508	138	4,722,065
49	63	5,231,048	146	4,793,559
50	82	3,037,813	173	5,664,910
51	88	3,006,999	204	6,665,031
52	83	3,029,718	212	6,676,260
53	114	3,884,524	215	7,344,703
54	101	3,341,322	241	7,428,261
55	93	3,076,596	297	9,070,481
56	116	4,157,459	267	8,769,614
57	140	4,633,021	290	9,317,495
58	138	4,782,096	314	10,089,080
59	169	6,072,294	307	9,855,367
60	129	4,518,348	307	10,122,585
61	114	3,991,550	270	8,691,054
62	122	4,282,137	279	9,487,380
63	116	4,047,453	242	8,012,573
64	120	4,119,467	246	8,322,656
65	84	2,730,770	124	4,433,637
66	9	276,072	21	726,825
67	14	367,162	14	406,441

Appendix B: Detailed Tabulations of Member Data

Table B-4: The Number and Valuation Compensation of Disabled Members Distributed by Age as of December 31, 2015 (continued)

	Men		Women	
Age	Number	Compensation	Number	Compensation
68	6	$ 159,392	12	$ 360,529
69	8	323,080	20	556,126
70	8	237,658	15	435,623
71	5	148,404	10	442,427
72	1	30,525	6	168,035
73	7	193,325	5	134,096
74	2	45,945	4	246,452
75	2	61,050	2	61,050
76	3	81,861	2	39,987
77			1	47,342
78	2	52,034	1	30,525
80	1	30,525		
81	2	61,050		
82	2	61,050	1	30,525
84	1	30,525	1	30,525
90			1	17,825
Total	2,327	$ 82,758,566	5,204	$ 169,314,984

Appendix B: Detailed Tabulations of Member Data

Table B-5: The Number and Accumulated Contributions of Terminated Vested Members Distributed by Age as of December 31, 2015

	Men		Women	
Age	Number	Contributions	Number	Contributions
18	3	$ 2,381	5	$ 659
19			4	2,881
20	9	18,440	7	4,448
21	28	17,918	28	20,615
22	65	91,733	45	40,066
23	148	196,067	162	203,166
24	260	434,307	467	877,712
25	391	755,124	883	2,197,096
26	544	1,462,623	1,334	4,242,581
27	682	2,005,000	1,673	6,203,026
28	819	2,797,007	1,885	8,186,217
29	931	3,691,311	2,070	9,989,145
30	1,035	4,664,566	2,506	14,390,751
31	1,174	5,827,214	2,965	18,625,134
32	1,135	6,645,241	3,213	23,272,096
33	1,357	8,675,638	3,387	26,232,565
34	1,299	9,403,394	3,588	29,999,098
35	1,290	9,953,775	3,471	32,178,699
36	1,344	11,066,506	3,560	33,654,915
37	1,298	11,820,244	3,407	34,053,973
38	1,291	12,601,744	3,349	35,534,514
39	1,291	13,274,752	3,247	36,277,497
40	1,148	13,937,373	2,969	34,005,584
41	1,260	16,027,989	3,025	35,406,425
42	1,221	16,410,111	2,864	36,309,509
43	1,281	17,435,758	2,862	37,236,978
44	1,276	18,620,668	2,881	37,947,665
45	1,396	20,293,027	3,125	44,170,272
46	1,300	20,700,349	3,037	41,319,843
47	1,178	18,940,179	2,746	40,370,083
48	1,121	19,139,885	2,535	38,156,039
49	1,098	20,174,524	2,403	36,614,363
50	1,085	18,762,486	2,270	35,065,894
51	1,039	18,079,349	2,338	33,624,192
52	971	17,654,324	2,299	35,820,420
53	984	17,467,028	2,242	35,082,466
54	916	17,369,919	2,220	35,544,534
55	942	17,426,966	2,204	37,097,915
56	874	18,329,257	1,996	34,938,892
57	830	17,937,064	2,006	36,384,093

Appendix B: Detailed Tabulations of Member Data

Table B-5: The Number and Accumulated Contributions of Terminated Vested Members Distributed by Age as of December 31, 2015 (continued)

	Men		Women	
Age	Number	Contributions	Number	Contributions
58	843	$ 16,912,221	1,986	$ 36,966,769
59	821	17,404,677	1,911	37,829,237
60	775	15,801,752	1,691	34,050,511
61	651	11,915,909	1,410	24,883,013
62	545	9,761,110	1,230	21,469,998
63	519	8,833,983	1,035	18,032,338
64	442	7,503,814	819	12,554,224
65	477	6,256,044	744	10,559,660
66	290	2,769,314	580	6,556,255
67	273	2,823,656	425	4,305,127
68	232	2,034,571	358	3,760,130
69	201	2,843,720	306	3,217,132
70	102	1,183,843	161	1,743,475
71	96	972,532	110	1,208,887
72	50	449,271	70	1,039,821
73	55	633,372	56	377,902
74	28	192,012	46	505,814
75	31	508,548	36	335,582
76	24	170,131	20	276,188
77	16	199,379	22	126,743
78	20	185,894	11	71,586
79	10	44,895	11	103,885
80	11	49,609	11	171,083
81	9	64,719	10	118,304
82	4	23,386	2	7,005
83	4	24,879	3	7,186
84	3	3,227	2	11,209
85	1	5,242	2	6,417
86	3	16,276		
87	3	16,995	1	3
88	2	97		
89	1	17,074	1	6,048
90	1	33	1	3
91	1	38		
92	1	2,078	1	5
93			1	87
94			2	242
97			2	1,095
Total	42,859	$ 539,735,542	100,355	$ 1,201,584,985

Appendix B: Detailed Tabulations of Member Data

Table B-6: The Number and Annual Retirement Allowances of Retired Members (Healthy at Retirement) and Survivors of Deceased Members Distributed by Age as of December 31, 2015

	Men		Women	
Age	Number	Allowances	Number	Allowances
18	2	$ 37,241	3	$ 17,328
19			1	15,365
20	3	36,282	2	53,948
21	3	32,765	1	9,318
22	3	19,808		
23			5	73,985
24	1	34,815	3	17,984
25	3	18,028	4	42,114
26	5	66,812	4	51,076
27	7	72,375	4	49,002
28	6	79,462	7	116,390
29	3	27,217	7	94,796
30	3	24,108	8	74,730
31	8	107,578	8	114,148
32	8	84,441	8	83,448
33	7	102,023	13	155,387
34	14	97,463	14	211,402
35	15	244,848	13	71,116
36	4	59,793	9	114,661
37	7	54,329	10	128,378
38	9	93,418	19	224,230
39	19	276,300	17	164,221
40	13	186,153	20	282,642
41	15	162,850	19	238,016
42	13	144,219	16	134,107
43	16	177,659	20	224,727
44	20	209,340	28	274,753
45	22	232,291	31	383,046
46	25	184,553	33	403,472
47	31	406,159	52	597,209
48	34	593,080	42	431,797
49	64	1,446,847	63	965,909
50	113	3,080,759	105	1,892,347
51	226	6,143,219	236	4,767,263
52	320	8,590,169	373	8,687,152

Appendix B: Detailed Tabulations of Member Data

Table B-6: The Number and Annual Retirement Allowances of Retired Members (Healthy at Retirement) and Survivors of Deceased Members Distributed by Age as of December 31, 2015 (continued)

	Men		Women	
Age	Number	Allowances	Number	Allowances
53	402	$ 11,482,356	568	$ 14,693,617
54	505	15,277,079	750	20,474,816
55	568	17,489,998	1,034	29,035,248
56	642	19,956,236	1,220	34,499,183
57	715	22,143,158	1,417	40,345,214
58	796	25,509,571	1,798	54,373,779
59	912	29,068,243	2,238	68,577,088
60	1,059	33,023,689	2,735	80,785,618
61	1,455	42,479,265	3,787	102,829,833
62	1,701	44,534,003	4,716	115,117,684
63	2,186	52,498,711	5,735	124,723,491
64	2,530	60,196,062	6,141	130,734,981
65	2,660	60,373,662	6,282	132,922,505
66	2,879	66,235,554	6,621	134,004,443
67	3,092	70,323,386	6,871	134,111,060
68	3,213	72,837,144	6,891	131,733,807
69	3,525	81,761,629	7,346	141,069,311
70	2,458	55,748,557	5,100	94,271,191
71	2,473	56,021,167	4,814	88,145,938
72	2,275	51,955,214	4,861	89,393,752
73	2,349	56,295,205	4,825	87,453,369
74	1,959	45,137,598	4,010	71,540,031
75	1,782	41,566,667	3,719	64,928,543
76	1,640	37,966,953	3,398	57,982,755
77	1,569	36,667,076	3,119	53,341,189
78	1,415	32,474,614	3,035	50,694,611
79	1,281	31,519,512	2,761	46,179,537
80	1,260	29,617,008	2,688	44,114,915
81	1,104	25,895,765	2,654	43,243,669
82	1,052	24,936,076	2,164	34,031,766
83	922	21,671,541	2,127	33,913,710
84	858	20,142,847	1,981	30,329,107
85	779	19,070,450	1,872	29,649,067
86	728	17,998,222	1,653	25,519,067
87	545	13,094,773	1,537	23,096,679

Appendix B: Detailed Tabulations of Member Data

Table B-6: The Number and Annual Retirement Allowances of Retired Members (Healthy at Retirement) and Survivors of Deceased Members Distributed by Age as of December 31, 2015 (continued)

	Men		Women	
Age	Number	Allowances	Number	Allowances
88	484	$ 11,342,693	1,359	$ 20,227,069
89	406	9,376,117	1,120	16,896,145
90	302	6,971,830	1,031	14,650,408
91	267	5,678,395	852	11,728,539
92	176	3,910,091	682	9,110,877
93	165	3,148,124	553	7,267,580
94	89	2,770,468	463	6,212,886
95	112	2,350,001	379	4,731,851
96	38	781,439	281	3,781,597
97	37	694,987	200	2,390,082
98	19	344,483	144	1,787,786
99	13	279,014	99	1,368,032
100	26	504,540	186	2,550,482
Total	58,465	$ 1,414,247,577	131,015	$ 2,581,729,375

Appendix B: Detailed Tabulations of Member Data

Table B-7: The Number and Annual Retirement Allowances of Retired Members (Healthy at Retirement) and Survivors of Deceased Members Distributed by Annuity Type as of December 31, 2015

	Men		Women	
Annuity Type	Number	Allowances	Number	Allowances
Maximum	20,102	$ 465,348,400	71,150	$ 1,370,438,175
Option 1	967	26,148,282	4,054	64,152,710
Option 2	9,527	226,735,042	5,007	79,998,893
Option 3	3,323	97,641,134	2,892	57,552,147
Option 4	8,907	226,061,198	22,556	524,168,843
Option 5-2	167	5,065,515	67	694,841
Option 5-3	108	3,641,460	112	1,936,927
Option 6-2	8,155	201,616,549	7,438	152,781,232
Option 6-3	4,070	124,032,677	6,505	162,011,475
Other	10	371,256	4	86,821
Survivors of Deceased Members	3,129	37,586,064	11,230	167,907,311
Total	58,465	$ 1,414,247,577	131,015	$ 2,581,729,375

Appendix B: Detailed Tabulations of Member Data

Table B-8: The Number and Annual Retirement Allowances of Retired Members (Disabled at Retirement) Distributed by Age of December 31, 2015

	Men		Women	
Age	Number	Allowances	Number	Allowances
49	1	$ 17,766		
50	2	34,767		
51	7	136,799	4	$ 71,528
52	9	206,643	10	212,405
53	10	213,353	18	370,437
54	29	562,185	35	733,488
55	23	504,595	43	857,103
56	27	600,614	38	791,718
57	39	821,882	70	1,385,421
58	51	1,192,825	61	1,432,741
59	59	1,324,018	88	1,843,719
60	82	1,809,281	162	3,502,380
61	118	2,424,246	242	5,045,030
62	130	2,790,781	293	6,176,765
63	153	3,110,663	369	7,642,524
64	174	3,500,265	421	8,535,767
65	206	3,949,553	559	10,249,908
66	302	4,948,149	587	9,775,905
67	293	4,863,095	580	10,308,977
68	328	5,860,920	567	9,632,793
69	299	5,553,627	576	9,793,188
70	210	3,612,550	417	6,710,214
71	171	2,794,881	412	6,485,947
72	181	2,799,667	373	5,349,474
73	171	3,010,145	377	5,940,836
74	122	2,100,827	302	4,417,614
75	125	1,818,778	237	3,191,614
76	129	1,958,210	192	2,651,472
77	66	822,751	200	2,547,871
78	86	1,239,654	189	2,504,826
79	48	717,344	93	1,267,399
80	44	807,632	84	1,040,708
81	41	643,481	57	833,362
82	29	471,230	59	813,243
83	18	379,154	46	537,183
84	20	298,567	35	481,596
85	25	368,964	42	493,251
86	17	240,790	40	551,983
87	11	200,997	37	394,717

Appendix B: Detailed Tabulations of Member Data

Table B-8: The Number and Annual Retirement Allowances of Retired Members (Disabled at Retirement) Distributed by Age of December 31, 2015 (continued)

	Men		Women	
Age	Number	Allowances	Number	Allowances
88	7	$ 84,179	30	$ 307,639
89	9	126,494	44	471,010
90	14	252,562	29	361,305
91	10	138,920	26	141,568
92	4	39,831	22	231,904
93	10	152,802	20	193,546
94	2	31,494	4	45,248
95	2	34,217	6	66,899
96			14	109,978
97	2	98,053	3	66,196
98	1	29,947	4	36,486
99			2	4,359
100			6	83,379
Total	3,917	$ 69,700,148	8,125	$ 136,694,624

Appendix B: Detailed Tabulations of Member Data

Table B-9: The Number and Annual Retirement Allowances of Retired Members (Disabled at Retirement) Distributed by Annuity Type of December 31, 2015

	Men		Women	
Annuity Type	Number	Allowances	Number	Allowances
Maximum	2,092	$ 39,498,150	5,898	$ 102,082,935
Option 1	103	1,894,126	339	4,876,428
Option 2	624	8,351,953	471	5,812,678
Option 3	241	4,442,371	225	3,396,192
Option 4	153	3,587,592	401	7,571,634
Option 5-2	3	44,311	3	9,608
Option 5-3	1	14,500	2	18,609
Option 6-2	465	7,039,603	417	6,160,956
Option 6-3	235	4,827,542	368	6,744,830
Other			1	20,754
Total	3,917	$ 69,700,148	8,125	$ 136,694,624

Appendix C: Summary of Main Benefit and Contribution Provisions

A summary of the main benefit provisions of the Retirement System and of the sources of revenue from which benefits are paid is presented in the following digest. Items in parentheses in the text are the provisions applicable to law enforcement officers.

"Average final compensation" as used in the summary means the average annual compensation during the four consecutive years of membership service which afford the highest such average. "Membership service" means service represented by regular contributions. "Creditable service" means membership service and may also include certain special purchased service.

BENEFITS

Unreduced Retirement Allowance

Condition for Allowance	An unreduced retirement allowance is payable to any member who retires from service: (a) after age 65 (55) and completion of five years of creditable service; (b) after age 60 and completion of 25 years of creditable service (not applicable to law enforcement officers); or (c) after completion of 30 years of creditable service.
Amount of Allowance	1.82% of average final compensation multiplied by the number of years of creditable service. In no event will a member whose creditable service commenced on or before June 30, 1963 receive a smaller retirement allowance than he would have received under the benefit provisions of the system in effect on that date.

Appendix C: Summary of Main Benefit and Contribution Provisions

Reduced Retirement Allowance

Condition for Allowance	A reduced retirement allowance is payable to any member who retires from service prior to becoming eligible for an unreduced retirement allowance but after age 60 and completion of five years of membership service (age 55 and five years of creditable service).
Amount of Allowance	The member's reduced retirement allowance is equal to 1.82% of average final compensation multiplied by the number of years of creditable service at date of retirement reduced by 1/4 of 1% for each month by which the member's age at retirement is less than age 65. In no event will a member whose creditable service commenced on or before June 30, 1963 receive a smaller retirement allowance than he would have received under the benefit provisions of the system in effect on that date.
	OR
Condition for Allowance	A reduced retirement allowance is payable to any member who retires from service after age 50 and completion of 20 (15) years of creditable service but prior to becoming eligible for a reduced or unreduced retirement allowance.
Amount of Allowance	The member's reduced retirement allowance is equal to 1.82% of average final compensation multiplied by the number of years of creditable service at date of retirement reduced by the lesser of: (i) 5/12 (1/3) of 1% for each month by which his age is less than 60 (55), plus, if the member is not a law enforcement officer, 1/4 of 1% for each month by which his age is less than 65. (ii) 5% times the difference between 30 years and his creditable service at retirement.

Appendix C: Summary of Main Benefit and Contribution Provisions

Deferred Retirement Allowance	Any member who separates from service after completing five or more years of membership service prior to becoming eligible for an unreduced or reduced retirement allowance and who leaves his total accumulated contributions in the system may receive a deferred retirement allowance, beginning at age 60 (55), computed in the same way as a reduced retirement allowance, or, if the member has 20 or more years of service, at age 50 computed in the same way as a reduced 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%.
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.

Appendix C: Summary of Main Benefit and Contribution Provisions

	(a) age 60 (55) and completion five years of membership (creditable) service; or (b) completion of 20 years of creditable service. Members receiving a benefit from the Disability Income Plan are eligible for this benefit.
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. Upon the death of a beneficiary, a benefit may be provided by the Retirees' Contributory Death Benefit Plan.
Other Death Benefits	Upon the death of a member in service, other benefits may be provided by the Death Benefit Plan or Separate Insurance Benefit Plan for Law Enforcement Officers.
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 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

Appendix C: Summary of Main Benefit and Contribution Provisions

	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. Option 4 - A member may elect to receive a retirement allowance in such amount that, together with his Social Security benefit, he will receive approximately the same income per annum before and after the earliest age at which he becomes eligible to receive the Social Security benefit. Option 5 - A member retiring prior to July 1, 1993 may elect to receive a reduced retirement allowance under the provisions of Option 2 or Option 3 in conjunction with the provisions of Option 1. Option 6 - A member may elect either Option 2 or Option 3 with the added provision that in the event the designated beneficiary predeceases the member, the retirement allowance payable to the member after the designated beneficiary's death shall be equal to the retirement allowance which would have been payable had the member not elected the option.
Post-Retirement Increases in Allowances	Future increases in allowances may be granted at the discretion of the State.
Service Reciprocity	For the purpose of determining eligibility for a deferred, reduced or unreduced service retirement allowance, the membership and creditable service of a member shall include such prior service earned as a member of the Local Governmental Employees' Retirement System (LGERS), the Consolidated Judicial Retirement System (CJRS), or the Legislative Retirement System (LRS). In addition, if the member's accumulated contributions and reserves are transferred from the prior System to this System, the creditable service earned as a member of the prior System may be included for purposes of determining the amount of benefits payable under this System.

Appendix C: Summary of Main Benefit and Contribution Provisions

Military Service	For periods of active duty in the United States military may be counted as creditable service if the member was an employee upon entering the military and returned to employment within two years of discharge or for a period of 10 additional years.
Service Purchases	Additional creditable service may include service that the member purchased to restore a period of service for which the member (1) received a refund of contributions, (2) had a leave of absence for educational purposes, extended illness or parental or maternity reasons, (3) had full-time temporary or part-time local or State government employment, (4) was in a probationary or waiting period with a unit of the LGERS, (5) had a leave of absence under Workers' Compensation, (6) performed service with a unit of local government not covered by LGERS, (7) performed service with the federal government not covered by any other retirement system, (8) performed service with a public community service entity funded entirely with federal funds, (9) performed service as a member of the General Assembly, (10) performed service as a member of a charter school not participating in the system, (11) was employed by The University of North Carolina and participated in the Optional Retirement Program but not eligible to receive any benefits from that program, or (12) performed service which was omitted by reason of error.
Unused Sick Leave	Unused sick leave counts as creditable service at retirement. Sick leave which was converted from unused vacation leave is also creditable. One month of credit is allowed for each 20 days of unused sick leave, plus an additional month for any part of 20 days left over.
Transfer of Defined Contribution Balances (Special Retirement Allowances)	A member may make a one-time election to transfer any portion of their eligible accumulated contributions to this plan on or after retirement. Eligible accumulated contributions are those from the Supplemental Retirement Income Plan or Public Employee Deferred Compensation Plan, not including Roth after-tax contributions. A member who became a member of the Supplemental Retirement Income Plan prior to

Appendix C: Summary of Main Benefit and Contribution Provisions

retirement and who remains a member of the Supplemental Retirement Income Plan may also make a one-time election to transfer eligible balances, not including any Roth after-tax contributions, from any of the following plans to the Supplemental Retirement Income Plan, subject to the applicable requirements of the Supplemental Retirement Income Plan, and then through the Supplemental Retirement Income Plan to this Retirement System:

(1) A plan participating in the North Carolina Public School Teachers' and Professional Educators' Investment Plan.

(2) A plan described in section 403(b) of the Internal Revenue Code.

(3) A plan described in section 457(b) of the Internal Revenue Code that is maintained by a state, political subdivision of a state, or any agency or instrumentality of a state or political subdivision of a state.

(4) An individual retirement account or annuity described in Section 408(a) or 408(b) of the Internal Revenue Code that is eligible to be rolled over and would otherwise be includible in gross income.

(5) A tax-qualified plan described in section 401(a) or 403(a) of the Internal Revenue Code.

The member may elect to convert the accumulated contributions to a life annuity with or without annual increases equal to the annual increase in the U.S. Consumer Price Index. Any ad-hoc COLA increases granted will not apply to benefits under this section. A member may elect Options 2, 3, or 6 under the Plan and may also elect either a guaranteed number of months of payments or a guarantee of total payments at least equal to the amount of contributions transferred to the Plan.

Appendix C: Summary of Main Benefit and Contribution Provisions

Contributions

Member Contributions	Each member contributes 6% of his compensation.
Employer Contributions	Employers make 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	A one-time pension supplement in the amount of 1.6% of the annualized benefit in effect on September 1, 2016 was granted to be paid on or before October 31, 2016.

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Appendix D: Actuarial Assumptions and Methods

Assumptions are based on the experience investigation prepared as of December 31, 2014 and adopted by the Board of Trustees on January 21, 2016 for use with the December 31, 2015 annual actuarial valuation.

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.

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

Annual Rates of Withdrawal

	General Employees		Classroom Teachers		Law Enforcement Officers		Other Education	
Service	Male	Female	Male	Female	Male	Female	Male	Female
0	.180	.195	.190	.170	.130	.130	0.190	0.165
1	.155	.170	.160	.145	.100	.100	0.160	0.135
2	.130	.145	.140	.135	.090	.090	0.130	0.120
3	.110	.115	.120	.120	.060	.060	0.115	0.100
4	.090	.100	.095	.100	.060	.060	0.100	0.085

General Employees

	Annual Rates of					
	Withdrawal and Vesting*		Base Mortality**		Disability	
Age	Male	Female	Male	Female	Male	Female
25	.0800	.1100	.0005	.0002	.0002	.0002
30	.0700	.0850	.0005	.0002	.0004	.0004
35	.0525	.0600	.0005	.0003	.0010	.0010
40	.0400	.0450	.0006	.0004	.0030	.0018
45	.0350	.0375	.0010	.0007	.0050	.0032
50	.0350	.0375	.0017	.0011	.0084	.0050
55	.0350	.0375	.0028	.0017	.0144	.0088
60	.0350	.0375	.0047	.0024	.0240	.0138
65			.0083	.0037		
69			.0125	.0057		

* These rates apply only after five years of membership in the system.
** Base mortality rates as of 2014.

Appendix D: Actuarial Assumptions and Methods

Classroom Teachers

Age	Annual Rates of Withdrawal and Vesting*		Base Mortality**		Disability	
	Male	Female	Male	Female	Male	Female
25	.0800	.0900	.0003	.0001	.0001	.0002
30	.0700	.0750	.0003	.0002	.0001	.0003
35	.0450	.0450	.0004	.0002	.0003	.0006
40	.0350	.0340	.0004	.0003	.0007	.0010
45	.0325	.0325	.0007	.0006	.0014	.0018
50	.0325	.0325	.0012	.0009	.0023	.0032
55	.0325	.0325	.0020	.0014	.0047	.0055
60	.0325	.0325	.0033	.0021	.0077	.0102
65			.0058	.0031		
69			.0092	.0049		

* These rates apply only after five years of membership in the system.
** Base mortality rates as of 2014.

Other Education Employees

Age	Annual Rates of Withdrawal and Vesting*		Base Mortality**		Disability	
	Male	Female	Male	Female	Male	Female
25	.0800	.1200	.0003	.0001	.0002	.0002
30	.0600	.0700	.0003	.0002	.0004	.0004
35	.0450	.0450	.0004	.0002	.0010	.0010
40	.0400	.0400	.0004	.0003	.0030	.0018
45	.0400	.0375	.0007	.0006	.0050	.0032
50	.0400	.0375	.0012	.0009	.0084	.0050
55	.0400	.0375	.0020	.0014	.0144	.0088
60	.0400	.0375	.0033	.0021	.0240	.0138
65			.0058	.0031		
69			.0092	.0049		

* These rates apply only after five years of membership in the system.
** Base mortality rates as of 2014.

Appendix D: Actuarial Assumptions and Methods

Law Enforcement Officers

Age	Annual Rates of Withdrawal and Vesting*		Base Mortality**		Disability	
	Male	Female	Male	Female	Male	Female
25	.0400	.0400	.0005	.0002	.0033	.0033
30	.0350	.0350	.0005	.0002	.0043	.0043
35	.0300	.0300	.0005	.0003	.0060	.0060
40	.0300	.0300	.0006	.0004	.0079	.0079
45	.0400	.0400	.0010	.0007	.0110	.0110
50	.0400	.0400	.0017	.0011	.0176	.0176
55	.0400	.0400	.0028	.0017		
60	.0400	.0400	.0047	.0024		
65			.0083	.0037		
69			.0125	.0057		

* These rates apply only after five years of membership in the system.
** Base mortality rates as of 2014.

RETIREMENTS: Representative values of the assumed rates of retirement from active service are as follows:

General Employees - Males

Age	Service 5	10	15	20	25	30	35
50				0.0350	0.0800	0.3500	0.2000
55				0.0500	0.1000	0.3500	0.2000
60	0.0850	0.0850	0.0850	0.0850	0.2750	0.3000	0.2250
65	0.2500	0.2750	0.2750	0.2750	0.2750	0.2750	0.2750
70	0.3250	0.2250	0.2250	0.2250	0.2250	0.2250	0.2250
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

General Employees - Females

Age	Service 5	10	15	20	25	30	35
50				0.0350	0.0600	0.4000	0.3000
55				0.0500	0.0800	0.3250	0.2250
60	0.0950	0.0950	0.0950	0.0950	0.2500	0.3000	0.2000
65	0.4000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
70	0.2000	0.2000	0.2000	0.2000	0.2000	0.2000	0.2000
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Appendix D: Actuarial Assumptions and Methods

Classroom Teachers - Males

	Service						
Age	5	10	15	20	25	30	35
50				0.0250	0.0650	0.3000	0.3000
55				0.0450	0.0900	0.3250	0.2500
60	0.1200	0.1200	0.1200	0.1200	0.3000	0.2500	0.2500
65	0.3000	0.3250	0.3250	0.3250	0.2000	0.2000	0.2000
70	0.2250	0.2250	0.2250	0.2250	0.2250	0.2250	0.2250
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Classroom Teachers - Females

	Service						
Age	5	10	15	20	25	30	35
50				0.0350	0.0550	0.2750	0.2750
55				0.0600	0.0950	0.4000	0.3000
60	0.1350	0.1350	0.1350	0.1350	0.4500	0.5000	0.3250
65	0.3500	0.3750	0.3750	0.3750	0.3500	0.3500	0.3500
70	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Other Education Employees - Males

	Service						
Age	5	10	15	20	25	30	35
50				0.0350	0.0800	0.3000	0.1500
55				0.0400	0.1000	0.2500	0.2000
60	0.0900	0.0900	0.0900	0.0900	0.2250	0.2500	0.2500
65	0.2750	0.3000	0.3000	0.3000	0.2750	0.2750	0.2750
70	0.2250	0.2250	0.2250	0.2250	0.2250	0.2250	0.2250
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Other Education Employees - Females

	Service						
Age	5	10	15	20	25	30	35
50				0.0400	0.0550	0.3250	0.2250
55				0.0500	0.0900	0.2250	0.2250
60	0.1100	0.1100	0.1100	0.1100	0.2500	0.2500	0.2500
65	0.2500	0.2750	0.2750	0.2750	0.3500	0.3500	0.3500
70	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Appendix D: Actuarial Assumptions and Methods

Law Enforcement Officers

	Service						
Age	5	10	15	20	25	30	35
50			0.0900	0.0900	0.0900	0.6000	0.6000
55	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
60	0.2000	0.2000	0.2000	0.2000	0.2000	0.5000	0.5000
65	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500
70	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Salary Increases: Representative values of the assumed annual rates of salary increases are as follows:

	Annual Rate of Salary Increase			
Service	Classroom Teachers	Other Education Employees	General Employees	Law Enforcement Officers
0	7.55%	7.00%	5.50%	8.10%
5	6.05	6.25	4.50	6.10
10	5.10	5.50	4.00	4.40
15	4.35	4.75	3.50	3.95
20	3.65	4.00	3.50	3.65
25	3.50	3.50	3.50	3.50
30	3.50	3.50	3.50	3.50
35	3.50	3.50	3.50	3.50
40	3.50	3.50	3.50	3.50
45	3.50	3.50	3.50	3.50
50	3.50	3.50	3.50	3.50

Appendix D: Actuarial Assumptions and Methods

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

Annual Rate of Death after Retirement
(Members Healthy at Retirement)

Age	Classroom Teachers & Other Education		General Employees		Law Enforcement Officers	
	Male	Female	Male	Female	Male	Female
55	.0036	.0021	0062	.0029	.0057	.0036
60	.0048	.0030	.0084	.0042	.0078	.0052
65	.0070	.0051	.0119	.0065	.0110	.0080
70	.0114	.0082	.0181	.0104	.0168	.0129
75	.0196	.0137	.0290	.0170	.0268	.0209
80	.0448	.0329	.0555	.0394	.0447	.0348

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

Age	Male Survivors of Deceased Members	Female Survivors of Deceased Members	Male Retired Members Disabled at Retirement	Female Retired Members Disabled at Retirement
55	.0071	.0045	.0241	.0143
60	.0096	.0064	.0274	.0168
65	.0135	.0099	.0326	.0207
70	.0206	.0158	.0416	.0279
75	.0330	.0258	.0559	.0406
80	.0550	.0429	.0789	.0604

Deaths After Retirement (General Employees): Mortality rates are based on the RP-2014 Total Data Set for Healthy Annuitants Mortality Table. Rates for male members are multiplied by 108% for ages 50-78 and by 124% for ages greater than 78. Rates for female members are multiplied by 81% for ages 50-78 and by 113% for ages greater than 78. The RP-2014 annuitant tables have no rates prior to age 50. The RP-2014 Total Data Set Employee Mortality Table (with no adjustments) is used for ages less than 50.

Deaths After Retirement (Teachers and Other Education Employees): Mortality rates are based on the RP-2014 Total Data Set for Healthy Annuitants Mortality Table (with White-Collar Adjustment). Rates for male members are multiplied by 92% for ages 50-78 and by 120% for ages greater than 78. Rates for female members are multiplied by 78% for ages 50-78 and by 108% for ages greater than 78. The RP-2014 annuitant tables have no rates prior to age 50. The RP-2014 Total Data Set Employee Mortality Table (with White Collar Adjustment) is used for ages less than 50.

Appendix D: Actuarial Assumptions and Methods

Deaths After Retirement (Law Enforcement Officers): Mortality rates are based on the RP-2014 Total Data Set for Healthy Annuitants Mortality Table. The RP-2014 annuitant tables have no rates prior to age 50. The RP-2014 Total Data Set Employee Mortality Table (with no adjustments) is used for ages less than 50.

Deaths After Retirement (Survivors of Deceased Members): Mortality rates are based on the RP-2014 Total Data Set for Healthy Annuitants Mortality Table. Rates for all members are multiplied by 123% for ages greater than 50. The RP-2014 annuitant tables have no rates prior to age 50. The RP-2014 Total Data Set Employee Mortality Table (with no adjustments) is used for ages less than 50.

Death After Retirement (Disabled Members at Retirement): Mortality rates are based on the RP-2014 Total Data Set for Disabled Annuitants Mortality Table. Rates for male members are multiplied by 103% for all ages. Rates for female members are multiplied by 99% for all ages.

Deaths Prior to Retirement: Mortality Rates are based on the RP-2014 Total Data Set Employee Mortality Table for general employees and law enforcement officers. Mortality rates are based on the RP-2014 White Collar Employee Mortality Table for teachers and other education employees.

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

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

Leave Conversions: Sick leave can be converted to increase creditable service and used to meet the eligibility requirements for retirement. Unused vacation leave can be converted to increase creditable service or compensation, but does not add to the eligibility service. The assumed impact of these conversions is shown in the table below.

	Classroom Teachers		General		Law Enforcement		Other Education	
	Males	Females	Males	Females	Males	Females	Males	Females
Increase in AFC	2.00%	2.00%	2.50%	2.50%	1.75%	1.75%	1.75%	1.75%
Increase in Creditable Service (years)								
Credited	1.10	0.85	1.00	0.70	1.50	1.50	1.30	1.00
Eligibility	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Appendix D: Actuarial Assumptions and Methods

Liability for Inactive Members: The data provided for inactive members does not contain all the elements to calculate the member's deferred benefit. The liability for these members is estimated to be 200% of the member's accumulated contributions. The actuary is collecting data so that future members' deferred benefits can be estimated.

Administrative Expenses: 0.10% of payroll.

Marriage Assumption: 100% married with male spouses four years older than female spouses.

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

Amortization Period: 12-year closed, level-dollar amount. The first amortization base was created for the contribution payable for fiscal year ending 2012.

Asset Valuation Method: Actuarial value, as developed in Table 8. Actuarial value of assets is based upon a smoothed market value method. Under this method, asset returns in excess of or less than the expected return on market value of assets will be reflected in the actuarial value of assets over a five-year period. The calculation of the Actuarial Value of Assets is based on the following formula:

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

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

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

Changes Since Prior Valuation: The withdrawal rates, the retirement rates, the mortality assumption, the annual rate of salary increase, the leave conversion assumption, and the asset valuation method were changed based on the experience study prepared as of December 31, 2014 and adopted by the Board of Trustees on January 21, 2016.

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
2016	$ 62,669,342	$ 833,807	$ 1,062,408	$ 4,606,798	$ 14,392	$ 4,446,725	$ 64,391,092
2017	64,391,092	789,257	1,189,633	4,659,992	13,623	4,569,350	66,265,717
2018	66,265,717	751,168	1,410,216	4,784,797	12,965	4,709,004	68,338,343
2019	68,338,343	716,864	1,534,084	4,912,004	12,373	4,858,027	70,522,941
2020	70,522,941	685,124	1,650,827	5,041,654	11,825	5,014,916	72,820,329
2021	72,820,329	655,551	1,759,269	5,182,384	11,315	5,179,369	75,220,819
2022	75,220,819	626,648	1,798,745	5,338,838	10,816	5,349,360	77,645,918
2023	77,645,918	597,522	1,612,820	5,498,643	10,313	5,514,697	79,862,001
2024	79,862,001	568,198	1,410,341	5,661,469	9,807	5,658,768	81,828,032
2025	81,828,032	538,873	1,307,165	5,825,587	9,301	5,791,566	83,630,748
2026	83,630,748	509,507	1,215,192	5,992,291	8,794	5,911,017	85,265,379
2027	85,265,379	479,948	1,193,847	6,160,415	8,284	6,021,514	86,791,989
2028	86,791,989	450,575	1,192,274	6,330,338	7,777	6,124,943	88,221,666
2029	88,221,666	421,173	1,011,454	6,501,934	7,270	6,218,296	89,363,385
2030	89,363,385	391,764	739,613	6,672,270	6,762	6,282,624	90,098,354
2031	90,098,354	362,429	567,059	6,839,217	6,256	6,322,715	90,505,084
2032	90,505,084	333,475	403,630	6,999,053	5,756	6,339,599	90,576,979
2033	90,576,979	304,848	249,751	7,149,624	5,262	6,332,890	90,309,582
2034	90,309,582	276,805	165,600	7,289,802	4,778	6,303,400	89,760,807
2035	89,760,807	249,813	146,577	7,418,934	4,312	6,257,392	88,991,343
2036	88,991,343	223,658	128,645	7,519,530	3,860	6,196,468	88,016,724
2037	88,016,724	198,616	111,659	7,592,976	3,428	6,121,711	86,852,306
2038	86,852,306	174,570	96,629	7,647,612	3,013	6,033,968	85,506,848
2039	85,506,848	152,879	82,525	7,681,699	2,639	5,933,947	83,991,861
2040	83,991,861	132,600	69,082	7,702,783	2,289	5,822,171	82,310,642
2041	82,310,642	113,072	56,755	7,712,943	1,952	5,698,799	80,464,373
2042	80,464,373	94,667	45,256	7,711,036	1,634	5,563,957	78,455,583
2043	78,455,583	77,102	34,749	7,696,925	1,331	5,417,834	76,287,012
2044	76,287,012	60,656	25,243	7,667,291	1,047	5,260,753	73,965,326
2045	73,965,326	45,499	17,540	7,617,309	785	5,093,407	71,503,678
2046	71,503,678	32,707	12,584	7,534,780	565	4,917,253	68,930,877
2047	68,930,877	23,823	9,214	7,417,281	411	4,734,478	66,280,700
2048	66,280,700	17,651	6,669	7,276,669	305	4,547,042	63,575,088
2049	63,575,088	13,032	4,808	7,120,927	225	4,356,204	60,827,980
2050	60,827,980	9,592	3,432	6,952,846	166	4,162,857	58,050,849
2051	58,050,849	7,026	2,449	6,770,647	121	3,967,877	55,257,433
2052	55,257,433	5,127	1,721	6,575,810	88	3,772,203	52,460,586
2053	52,460,586	3,721	1,209	6,365,543	64	3,576,852	49,676,761
2054	49,676,761	2,692	846	6,139,853	46	3,383,014	46,923,414
2055	46,923,414	1,944	578	5,907,524	34	3,191,635	44,210,013
2056	44,210,013	1,396	402	5,496,750	24	3,009,518	41,724,555
2057	41,724,555	1,004	273	5,269,404	17	2,837,401	39,293,812
2058	39,293,812	719	180	5,042,613	12	2,669,236	36,921,322
2059	36,921,322	509	119	4,816,867	9	2,505,262	34,610,336
2060	34,610,336	358	73	4,592,451	6	2,345,702	32,364,012
2061	32,364,012	248	42	4,369,758	4	2,190,769	30,185,309
2062	30,185,309	168	22	4,149,134	3	2,040,667	28,077,029
2063	28,077,029	111	10	3,930,918	2	1,895,586	26,041,816
2064	26,041,816	69	4	3,715,493	1	1,755,704	24,082,099
2065	24,082,099	38	2	3,503,196	1	1,621,185	22,200,127

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
2066	$ 22,200,127	$ 19	$ 1	$ 3,294,396	$ 0	$ 1,492,177	$ 20,397,928
2067	20,397,928	7	1	3,089,470	0	1,368,816	18,677,282
2068	18,677,282	2	0	2,888,795	0	1,251,217	17,039,706
2069	17,039,706	1	0	2,692,808	0	1,139,472	15,486,371
2070	15,486,371	0	0	2,501,978	0	1,033,652	14,018,045
2071	14,018,045	0	0	2,316,763	0	933,795	12,635,077
2072	12,635,077	0	0	2,137,602	0	839,911	11,337,386
2073	11,337,386	0	0	1,964,882	0	751,980	10,124,484
2074	10,124,484	0	0	1,798,920	0	669,956	8,995,520
2075	8,995,520	0	0	1,639,985	0	593,766	7,949,301
2076	7,949,301	0	0	1,488,307	0	523,317	6,984,311
2077	6,984,311	0	0	1,344,075	0	458,492	6,098,728
2078	6,098,728	0	0	1,207,454	0	399,153	5,290,427
2079	5,290,427	0	0	1,078,585	0	345,142	4,556,984
2080	4,556,984	0	0	957,593	0	296,276	3,895,667
2081	3,895,667	0	0	844,581	0	252,355	3,303,441
2082	3,303,441	0	0	739,618	0	213,158	2,776,981
2083	2,776,981	0	0	642,733	0	178,440	2,312,688
2084	2,312,688	0	0	553,907	0	147,942	1,906,723
2085	1,906,723	0	0	473,066	0	121,389	1,555,046
2086	1,555,046	0	0	400,072	0	98,492	1,253,466
2087	1,253,466	0	0	334,728	0	78,955	997,693
2088	997,693	0	0	276,781	0	62,475	783,387
2089	783,387	0	0	225,936	0	48,748	606,199
2090	606,199	0	0	181,862	0	37,472	461,809
2091	461,809	0	0	144,178	0	28,347	345,978
2092	345,978	0	0	112,445	0	21,078	254,611
2093	254,611	0	0	86,167	0	15,391	183,835
2094	183,835	0	0	64,792	0	11,020	130,063
2095	130,063	0	0	47,740	0	7,729	90,052
2096	90,052	0	0	34,419	0	5,303	60,936
2097	60,936	0	0	24,245	0	3,554	40,245
2098	40,245	0	0	16,660	0	2,324	25,909
2099	25,909	0	0	11,150	0	1,482	16,241
2100	16,241	0	0	7,257	0	918	9,902
2101	9,902	0	0	4,588	0	555	5,869
2102	5,869	0	0	2,814	0	326	3,381
2103	3,381	0	0	1,673	0	185	1,893
2104	1,893	0	0	964	0	104	1,033
2105	1,033	0	0	539	0	55	549
2106	549	0	0	293	0	29	285
2107	285	0	0	156	0	16	145
2108	145	0	0	81	0	8	72
2109	72	0	0	41	0	3	34
2110	34	0	0	20	0	2	16
2111	16	0	0	10	0	1	7
2112	7	0	0	4	0	0	3
2113	3	0	0	2	0	0	1
2114	1	0	0	1	0	1	1
2115	1	0	0	0	0	0	1

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 2.71%	Present Value of Benefit Payments: Using Single Discount Rate of 7.25%
2016	$ 62,669,342	$ 4,606,798	$ 4,606,798	$ 0	$ 4,448,366	$ 0	$ 4,448,366
2017	64,391,092	4,659,992	4,659,992	0	4,195,553	0	4,195,553
2018	66,265,717	4,784,797	4,784,797	0	4,016,708	0	4,016,708
2019	68,338,343	4,912,004	4,912,004	0	3,844,750	0	3,844,750
2020	70,522,941	5,041,654	5,041,654	0	3,679,469	0	3,679,469
2021	72,820,329	5,182,384	5,182,384	0	3,526,504	0	3,526,504
2022	75,220,819	5,338,838	5,338,838	0	3,387,383	0	3,387,383
2023	77,645,918	5,498,643	5,498,643	0	3,252,938	0	3,252,938
2024	79,862,001	5,661,469	5,661,469	0	3,122,857	0	3,122,857
2025	81,828,032	5,825,587	5,825,587	0	2,996,162	0	2,996,162
2026	83,630,748	5,992,291	5,992,291	0	2,873,566	0	2,873,566
2027	85,265,379	6,160,415	6,160,415	0	2,754,489	0	2,754,489
2028	86,791,989	6,330,338	6,330,338	0	2,639,129	0	2,639,129
2029	88,221,666	6,501,934	6,501,934	0	2,527,429	0	2,527,429
2030	89,363,385	6,672,270	6,672,270	0	2,418,314	0	2,418,314
2031	90,098,354	6,839,217	6,839,217	0	2,311,257	0	2,311,257
2032	90,505,084	6,999,053	6,999,053	0	2,205,382	0	2,205,382
2033	90,576,979	7,149,624	7,149,624	0	2,100,537	0	2,100,537
2034	90,309,582	7,289,802	7,289,802	0	1,996,943	0	1,996,943
2035	89,760,807	7,418,934	7,418,934	0	1,894,934	0	1,894,934
2036	88,991,343	7,519,530	7,519,530	0	1,790,796	0	1,790,796
2037	88,016,724	7,592,976	7,592,976	0	1,686,048	0	1,686,048
2038	86,852,306	7,647,612	7,647,612	0	1,583,385	0	1,583,385
2039	85,506,848	7,681,699	7,681,699	0	1,482,930	0	1,482,930
2040	83,991,861	7,702,783	7,702,783	0	1,386,481	0	1,386,481
2041	82,310,642	7,712,943	7,712,943	0	1,294,461	0	1,294,461
2042	80,464,373	7,711,036	7,711,036	0	1,206,658	0	1,206,658
2043	78,455,583	7,696,925	7,696,925	0	1,123,030	0	1,123,030
2044	76,287,012	7,667,291	7,667,291	0	1,043,083	0	1,043,083
2045	73,965,326	7,617,309	7,617,309	0	966,232	0	966,232
2046	71,503,678	7,534,780	7,534,780	0	891,154	0	891,154
2047	68,930,877	7,417,281	7,417,281	0	817,956	0	817,956
2048	66,280,700	7,276,669	7,276,669	0	748,205	0	748,205
2049	63,575,088	7,120,927	7,120,927	0	682,695	0	682,695
2050	60,827,980	6,952,846	6,952,846	0	621,521	0	621,521
2051	58,050,849	6,770,647	6,770,647	0	564,321	0	564,321
2052	55,257,433	6,575,810	6,575,810	0	511,032	0	511,032
2053	52,460,586	6,365,543	6,365,543	0	461,250	0	461,250
2054	49,676,761	6,139,853	6,139,853	0	414,822	0	414,822
2055	46,923,414	5,907,524	5,907,524	0	372,145	0	372,145
2056	44,210,013	5,496,750	5,496,750	0	322,861	0	322,861
2057	41,724,555	5,269,404	5,269,404	0	288,585	0	288,585
2058	39,293,812	5,042,613	5,042,613	0	257,496	0	257,496
2059	36,921,322	4,816,867	4,816,867	0	229,341	0	229,341
2060	34,610,336	4,592,451	4,592,451	0	203,875	0	203,875
2061	32,364,012	4,369,758	4,369,758	0	180,876	0	180,876
2062	30,185,309	4,149,134	4,149,134	0	160,134	0	160,134
2063	28,077,029	3,930,918	3,930,918	0	141,456	0	141,456
2064	26,041,816	3,715,493	3,715,493	0	124,666	0	124,666
2065	24,082,099	3,503,196	3,503,196	0	109,597	0	109,597

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 2.71%	Using Single Discount Rate of 7.25%
2066	$ 22,200,127	$ 3,294,396	$ 3,294,396	$ 0	$ 96,098	$ 0	$ 96,098
2067	20,397,928	3,089,470	3,089,470	0	84,028	0	84,028
2068	18,677,282	2,888,795	2,888,795	0	73,259	0	73,259
2069	17,039,706	2,692,808	2,692,808	0	63,672	0	63,672
2070	15,486,371	2,501,978	2,501,978	0	55,161	0	55,161
2071	14,018,045	2,316,763	2,316,763	0	47,625	0	47,625
2072	12,635,077	2,137,602	2,137,602	0	40,971	0	40,971
2073	11,337,386	1,964,882	1,964,882	0	35,115	0	35,115
2074	10,124,484	1,798,920	1,798,920	0	29,976	0	29,976
2075	8,995,520	1,639,985	1,639,985	0	25,480	0	25,480
2076	7,949,301	1,488,307	1,488,307	0	21,560	0	21,560
2077	6,984,311	1,344,075	1,344,075	0	18,155	0	18,155
2078	6,098,728	1,207,454	1,207,454	0	15,207	0	15,207
2079	5,290,427	1,078,585	1,078,585	0	12,666	0	12,666
2080	4,556,984	957,593	957,593	0	10,485	0	10,485
2081	3,895,667	844,581	844,581	0	8,622	0	8,622
2082	3,303,441	739,618	739,618	0	7,040	0	7,040
2083	2,776,981	642,733	642,733	0	5,704	0	5,704
2084	2,312,688	553,907	553,907	0	4,584	0	4,584
2085	1,906,723	473,066	473,066	0	3,650	0	3,650
2086	1,555,046	400,072	400,072	0	2,878	0	2,878
2087	1,253,466	334,728	334,728	0	2,245	0	2,245
2088	997,693	276,781	276,781	0	1,731	0	1,731
2089	783,387	225,936	225,936	0	1,318	0	1,318
2090	606,199	181,862	181,862	0	989	0	989
2091	461,809	144,178	144,178	0	731	0	731
2092	345,978	112,445	112,445	0	532	0	532
2093	254,611	86,167	86,167	0	380	0	380
2094	183,835	64,792	64,792	0	266	0	266
2095	130,063	47,740	47,740	0	183	0	183
2096	90,052	34,419	34,419	0	123	0	123
2097	60,936	24,245	24,245	0	81	0	81
2098	40,245	16,660	16,660	0	52	0	52
2099	25,909	11,150	11,150	0	32	0	32
2100	16,241	7,257	7,257	0	20	0	20
2101	9,902	4,588	4,588	0	12	0	12
2102	5,869	2,814	2,814	0	7	0	7
2103	3,381	1,673	1,673	0	4	0	4
2104	1,893	964	964	0	2	0	2
2105	1,033	539	539	0	1	0	1
2106	549	293	293	0	1	0	1
2107	285	156	156	0	0	0	0
2108	145	81	81	0	0	0	0
2109	72	41	41	0	0	0	0
2110	34	20	20	0	0	0	0
2111	16	10	10	0	0	0	0
2112	7	4	4	0	0	0	0
2113	3	2	2	0	0	0	0
2114	1	1	1	0	0	0	0
2115	1	0	0	0	0	0	0

Appendix F: Additional Disclosures

Table F-1 illustrates the sensitivity of certain valuation results to changes in the discount rate on a market value of assets basis. Table F-2 summarizes historical actuarial value and market value asset returns. Table F-3 provides an estimate of future market value of asset returns based on the current portfolio structure and summarized in our "TSERS Asset-Liability and Investment Strategy Project" report dated April 19th, 2016.

Section 6(c) of Session Law 2016-108 requires that the actuarial valuation report provide the valuation results using a 30-year treasury rate as of December 31 of the year of the valuation as the discount rate. This is 3.01% at December 31, 2015 and has been used as the lower bound of the sensitivity analysis presented. The range between the current discount rate (7.25%) and the 30-year treasury rate (3.01%) was used to establish an upper bound for sensitivity analysis (11.49%). The remaining rates illustrated represent mid-points between the selected rates. Table F-3 illustrates our best estimate of the plausibility of such rates. The lower bound of 3.01% falls below the 5th percentile of estimated future 30-year returns while the upper bound of 11.49% falls between the 75th and 95th percentiles of estimated future 30-year returns.

Table F-1: Sensitivity of Valuation Results as of December 31, 2015

Discount Rate	3.01%	5.13%	7.25%	9.37%	11.49%
Market Value of Assets	$ 62,669,341,716	$ 62,669,341,716	$ 62,669,341,716	$ 62,669,341,716	$ 62,669,341,716
Actuarial Accrued Liability	$ 118,761,223,817	$ 90,398,996,810	$ 71,521,915,397	$ 58,485,683,106	$ 49,182,511,508
Unfunded Accrued Liability (UAL)	$ 56,091,882,101	$ 27,729,655,094	$ 8,852,573,681	$ (4,183,658,610)	$ (13,486,830,208)
Funded Ratio	52.8%	69.3%	87.6%	107.2%	127.4%
20-Year Amortization of UAL	$ 3,887,326,217	$ 2,365,090,917	$ 913,682,676	N/A	N/A
(as % of general state revenue)	13.9%	8.5%	3.3%	N/A	N/A

Table F-2: Historical Asset Returns

Calendar Year	Actuarial Value of Asset Return	Market Value of Asset Return	Calendar Year	Actuarial Value of Asset Return	Market Value of Asset Return	Calendar Year	Actuarial Value of Asset Return	Market Value of Asset Return
1996	10.18%	9.39%	2003	7.98%	18.23%	2010	5.89%	11.47%
1997	10.18%	18.16%	2004	8.56%	10.73%	2011	5.15%	2.19%
1998	9.92%	16.66%	2005	8.26%	6.97%	2012	6.32%	11.82%
1999	10.60%	10.15%	2006	8.94%	11.41%	2013	7.43%	12.21%
2000	11.55%	2.50%	2007	8.87%	8.38%	2014	7.19%	6.21%
2001	8.51%	-1.87%	2008	2.89%	-19.50%	2015	5.87%	0.36%
2002	5.66%	-5.21%	2009	4.74%	14.84%			

The average investment return recognized for the purposes of determining the annual change in contribution each year is the Actuarial Value of Asset Return. The Actuarial Value of Assets smooths investment gains and losses over a five-year period and is used to reduce volatility that investment gains and losses can have on required contributions and the funded status of the Plan.

Table F-3: Estimate of Future Asset Returns

Horizon	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
10 Years	0.2%	4.0%	5.9%	8.0%	11.5%
20 Years	2.2%	4.8%	6.7%	8.5%	11.8%
30 Years	3.1%	5.3%	7.1%	8.7%	12.0%

Appendix F: Additional Disclosures

Other than the discount rate, these results are based on the other economic and demographic assumptions presented in the report. For purposes of simplicity in this disclosure, no adjustments to the valuation assumption for inflation were reflected in the sensitivities above. The statute also requires that the actuarial valuation report show the results using a market value of assets basis. The "funded ratio" and "unfunded accrued liability" in Table F-1 are based upon the market value of assets. In order to alleviate volatility, future employer contributions are determined based on the actuarial value of assets, which smooths market value returns.

None of the liability amounts shown are intended to imply the amount that might represent the cost of any settlement of the plan's obligations. The various caveats, constraints, and discussions presented earlier in the report apply to these results as well.

Appendix G: Data for Section 2 Graphs

The tables below provide the numbers associated with the graphs in Section 2 of this report.

Graph 1: Active Members

	Active Member Count	Reported Compensation
2011	310,627	$ 12,801,045,514
2012	312,512	12,774,187,282
2013	310,370	12,834,121,020
2014	307,313	12,932,045,817
2015	305,291	13,145,602,154

Graph 2: Retired Members and Survivors of Deceased Members

	Retired and Survivors of Deceased Member Count	Retirement Allowance
2011	171,786	$ 3,507,222,609
2012	179,908	3,712,698,650
2013	187,448	3,870,867,895
2014	194,607	4,057,596,822
2015	201,522	4,202,371,724

Graph 3: Market Value of Assets and Asset Returns

	Market Value of Assets	Asset Return
2011	$ 53,402,204,951	2.19%
2012	57,780,471,482	11.82%
2013	62,789,451,194	12.21%
2014	64,587,417,979	6.21%
2015	62,669,341,716	0.36%

Appendix G: Data for Section 2 Graphs

Graph 5: Cost-of-Living Increase and CPI-U History

	Total Allowance Increase*	National CPI-U
1985	3.8%	3.8%
1986	4.0%	1.1%
1987	4.8%	4.4%
1988	5.4%	4.4%
1989	6.7%	4.6%
1990	0.0%	6.1%
1991	5.2%	3.1%
1992	2.2%	2.9%
1993	4.7%	2.7%
1994	3.2%	2.7%
1995	4.4%	2.5%
1996	6.2%	3.3%
1997	2.5%	1.7%
1998	2.3%	1.6%
1999	4.2%	2.7%
2000	2.0%	3.4%
2001	2.0%	1.6%
2002	1.3%	2.4%
2003	1.7%	1.9%
2004	2.0%	3.3%
2005	3.0%	3.4%
2006	2.2%	2.5%
2007	2.2%	4.1%
2008	0.0%	0.1%
2009	0.0%	2.7%
2010	0.0%	1.5%
2011	1.0%	3.0%
2012	0.0%	1.7%
2013	1.0%	1.5%
2014	0.0%	0.8%
2015	0.0%	0.7%

* Allowance increases are effective at July 1 the following year. While the retirement allowances were not increased in 2016, a one-time supplement was granted.

Appendix G: Data for Section 2 Graphs

Graph 6: Actuarial Value and Market Value of Assets

	Actuarial Value of Assets	Market Value of Assets
2011	$ 58,125,010,880	$ 53,402,204,951
2012	59,911,833,028	57,780,471,482
2013	62,363,807,168	62,789,451,194
2014	64,734,119,837	64,587,417,979
2015	66,169,352,203	62,669,341,716

Graph 7: Asset Returns

	Actuarial Value	Market Value
2011	5.15%	2.19%
2012	6.32%	11.82%
2013	7.43%	12.21%
2014	7.19%	6.21%
2015	5.87%	0.36%

Graph 8: Actuarial Accrued Liability

	Liability for Active Members	Liability for Deferred Members	Liability for Retired Members	Total Liability
2011	$ 27,427,269,653	$ 2,430,609,432	$ 31,988,817,818	$ 61,846,696,903
2012	27,488,175,179	2,637,640,588	33,504,462,705	63,630,278,472
2013	27,623,752,029	2,890,559,796	35,291,243,666	65,805,555,491
2014	27,948,998,177	3,188,560,504	36,577,507,863	67,715,066,544
2015	27,630,686,237	3,482,641,054	40,408,588,106	71,521,915,397

Appendix G: Data for Section 2 Graphs

Graph 9: Actuarial Accrued Liability and Actuarial Value of Assets

	Actuarial Accrued Liability	Actuarial Value of Assets
2011	$ 61,846,696,903	$ 58,125,010,880
2012	63,630,278,472	59,911,833,028
2013	65,805,555,491	62,363,807,168
2014	67,715,066,544	64,734,119,837
2015	71,521,915,397	66,169,352,203

Graph 10: Funded Ratios

	Funded Ratio (Actuarial Basis)	Funded Ratio (Market Value Basis)
2011	94.0%	86.3%
2012	94.2%	90.8%
2013	94.8%	95.4%
2014	95.6%	95.4%
2015	92.5%	87.6%

Graph 11: Actuarially Determined Employer Contribution Rates

Fiscal Year Ending	Normal Rate	Accrued Liability Rate	Total Rate
2014	5.14%	3.55%	8.69%
2015	5.15%	4.00%	9.15%
2016	5.19%	3.50%	8.69%
2017	4.34%	5.62%	9.96%
2018*	4.31%	5.77%	10.08%

* Subject to the impact of future legislative changes during that fiscal year

Appendix H: Participating Employers

Employer	Employer Code
A Childs Garden Charter (Aka Cross Creek Charter)	33501
Academy Of Moore County	36301
Administrative Office Of The Courts	10800
Alamance Community College	30105
Alamance County Schools	30100
Alexander County Schools	30200
Alleghany County Schools	30300
American Renaissance Middle Sch	34901
Anson County Schools	30400
Appalachian State University	20100
Arapahoe Charter School	36901
Arts Based Elementary Charter	33402
Ashe County Schools	30500
Asheboro City Schools	37610
Asheville City Schools	31110
Asheville-Buncombe Technical College	31105
Avery County Schools	30600
Barber Examiners, State Board Of	18600
Bear Grass Charter School	33206
Beaufort County Community College	30705
Beaufort County Schools	30700
Bertie County Schools	30800
Bethany Community Middle School	37901
Bladen Community College	30905
Bladen County Schools	30900
Blue Ridge Community College	34505
Brevard Academy Charter School	38801
Bridges Charter Schools	38601
Brunswick Community College	31005
Brunswick County Schools	31000
Buncombe County Schools	31100
Burke County Schools	31200
Cabarrus County Schools	31300
Caldwell Community College	31405
Caldwell County Schools	31400
Camden County Schools	31500
Cape Fear Community College	36505
Cape Fear Ctr For Inquiry	36501
Carolina International School	31301
Carteret Community College	31605
Carteret County Schools	31600
Casa Esperanza Montessori	39209
Caswell County Schools	31700
Catawba County Schools	31800
Catawba Valley Community College	31805
Central Carolina Community College	35305
Central Park Sch For Children	33202
Central Piedmont Community College	36005
Chapel Hill - Carboro City Schools	36810
Charlotte Secondary Charter	36009
Charlotte-Mecklenburg County Schools	36000
Chatham County Schools	31900
Cherokee County Schools	32000
Childrens Village Academy	35401
Clay County Schools	32200
Cleveland County Schools	32300
Cleveland Technical College	32305
Clinton City Schools	38210
Clover Garden Charter School	30102
Coastal Carolina Community College	36705
College Of The Albemarle	37005
Columbus County Schools	32400
Community Charter School	36001
Community Colleges Administration	19005
Community School Of Davidson	36003
Cornerstone Academy	33027
Corvian Community School	36004
Craven Community College	32505
Cumberland County Schools	32600
Currituck County Schools	32700
Dare County Schools	32800
Davidson County Community College	32905
Davidson County Schools	32900
Davie County Schools	33000
Department Of Administration	10900
Department Of Agriculture	18400
Department Of Commerce	12510
Department Of Cultural Resources	10700
Department Of Justice	10400
Department Of Public Instruction	22000

Appendix H: Participating Employers

Employer	Employer Code
Department Of Public Safety	19100
Duplin County Schools	33100
Durham Public Schools	33200
Durham Technical Institute	33205
East Carolina University	20300
East Wake Academy	39208
Edenton-Chowan County Schools	32100
Edgecombe County Schools	33300
Edgecombe Technical College	33305
Elizabeth City And Pasquotank County Schools	37000
Elizabeth City State University	20400
Elkin City Schools	38620
Endeavor Charter School	39201
Environment And Natural Resources	11300
Evergreen Community Charter School	31102
F Delany New School For Children	31101
Fayetteville State University	20600
Fayetteville Technical Community College	32605
Forsyth Technical Institute	33405
Franklin County Schools	33500
Gaston College	33605
Gaston College Preparatory Charter	36601
Gaston County Schools	33600
Gates County Schools	33700
General Assembly	12160
Governor'S Office	12100
Graham County Schools	33800
Grandfather Academy	30601
Granville County Schools And Oxford Orphanage	33900
Gray Stone Day School	38402
Greene County Schools	34000
Guilford County Schools	34100
Guilford Technical Community College	34105
Halifax Community College	34205
Halifax County Schools	34200
Haliwa-Saponi Tribal Charter	39301
Harnett County Schools	34300
Haywood County Schools	34400
Haywood Technical College	34405
Health & Human Svcs	12220

Employer	Employer Code
Healthy Start Academy	33203
Henderson Collegiate Charter School	39401
Henderson County Schools	34500
Hertford County Schools	34600
Hickory City Schools	31810
Highway - Administrative	51000
Hoke County Schools	34700
Hyde County Schools	34800
Information Technology Services	10930
Insurance Department	12600
Invest Collegiate Charter (Buncombe)	33207
Invest Collegiate Charter School	32901
Iredell County Schools	34900
Isothermal Community College	38105
Jackson County Schools	35000
James Sprunt Technical College	33105
Johnston County Schools	35100
Johnston Technical College	35105
Jones County Schools	35200
Kannapolis City Schools	31320
Kennedy Charter	36002
Kipp Charlotte Charter	36102
Kipp Halifax College Prep Charter	33208
Labor Department	12700
Lake Norman Charter School	36006
Lenoir County Community College	35405
Lenoir County Schools	35400
Lexington City Schools	32910
Lincoln County Schools	35500
Lt Governor'S Office	12150
Macon County Schools	35600
Madison County Schools	35700
Martin Community College	35805
Martin County Schools	35800
Mayland Technical College	36105
Mcdowell County Schools	35900
Mcdowell Technical College	35905
Millennium Charter Academy	38602
Mitchell Community College	34905
Mitchell County Schools	36100

Appendix H: Participating Employers

Employer	Employer Code
Montgomery Community College	36205
Montgomery County Schools	36200
Moore County Schools	36300
Mooresville City Schools	34910
Mount Airy City Schools	38610
Mountain Community School	34501
Mtn Discovery Charter	38701
N C Auctioneers Licensing Board	18740
N C Central University	20800
N C Real Estate Commission	18690
N C School Of Science & Mathematics	10950
N C School Of The Arts	20200
N C State Board Of Examiners Of Practicing Psychol	18780
N C State University	21300
N.E. Academy Of Aerospace & Adv.Tech	37001
N.E. Regional School For Biotechnology	33001
Nash Technical College	36405
Nash-Rocky Mount Schools	36400
Nc A&T University	20700
Nc Housing Finance Agency	11310
Neuse Charter School	35106
New Bern/Craven County Board Of Education	32500
New Hanover County Schools	36500
Newton-Conover City Schools	31820
North Carolina Education Lottery	10200
Northampton County Schools	36600
Office Of Administrative Hearing	10850
Office Of State Budget & Management	10910
Office Of State Controller	10940
Onslow County Schools	36700
Orange Charter School	36802
Orange County Schools	36800
Pamlico Community College	36905
Pamlico County Schools	36900
Pender County Schools	37100
Perquimans County Schools	37200
Person County Schools	37300
Piedmont Community College	37305
Pine Lake Prep Charter	36008
Pinnacle Classical Academy	39703

Employer	Employer Code
Pioneer Springs Community Charter	33209
Pitt Community College	37405
Pitt County Schools	37400
Polk County Schools	37500
Randolph Community College	37605
Randolph County Schools	37600
Revenue Department	13500
Richmond County Schools	37700
Richmond Technical College	37705
River Mill Academy Charter	30103
Roanoke Rapids City Schools	34220
Roanoke-Chowan Community College	34605
Robeson Community College	37805
Robeson County Schools	37800
Rockingham Community College	37905
Rockingham County Schools	37900
Rowan-Cabarrus Community College	38005
Rowan-Salisbury School System	38000
Roxboro Community School	37301
Rutherford County Schools	38100
Sampson Community College	38205
Sampson County Schools	38200
Sandhills Community College	36305
Sanford-Lee County Board Of Education	35300
Scotland County Schools	38300
Secretary Of State	13700
Socrates Academy	36007
South Piedmont Community College	30405
Southeastern Academy Charter School	37801
Southeastern Community College	32405
Southern Wake Academy	39204
Southwestern Community College	35005
Stanly Community College	38405
Stanly County Schools	38400
Stars Charter School	36302
State Auditor	10500
State Board Of Elections	11900
State Treasurer	14300
Stokes County Schools	38500
Success Institute	34903

Appendix H: Participating Employers

Employer	Employer Code
Surry Community College	38605
Surry County Schools	38600
Swain County Schools	38700
The Hawbridge School	30104
Thomasville City Schools	32920
Transylvania County Schools	38800
Tri-County Community College	32005
Two Rivers Comm School	39501
Tyrrell County Schools	38900
Unc - Pembroke	21200
Unc Health Care System	21550
Unc-Ch Cb 1260	21520
Unc-General Administration	21525
Union County Schools	39000
University Of North Carolina At Asheville	23000
University Of North Carolina At Charlotte	23100
University Of North Carolina At Greensboro	20900
University Of North Carolina At Wilmington	23200
University Of North Carolina Press	21570
Uwharrie Charter Academy	37601
Vance Charter School	39101
Vance County Schools	39100
Vance-Granville Community College	39105
Voyager Academy	33204
Wake County Schools	39200
Wake Technical College	39205
Warren County Schools	39300
Washington County Schools	39400
Watauga County Schools	39500
Wayne Community College	39605
Wayne County Schools	39600
Weldon City Schools	34230
Western Carolina University	21800
Western Piedmont Comm College	31205
Whiteville City Schools	32410
Wildlife Resources Commission	11600
Wilkes Community College	39705
Wilkes County Schools	39700
Wilmington Prep Academy	36502
Wilson Community College	39805
Wilson County Schools	39800
Winston-Salem State University	21900
Winston-Salem-Forsyth County Schools	33400
Yadkin County Schools	39900
Yancey County Schools	30000
Zeca School Of The Arts And Technology	36701