Firefighters' and Rescue Squad Workers' Pension Fund
Principal Results of Actuarial Valuation
as of December 31, 2014

Board of Trustees Meeting

Larry Langer and Mike Ribble

October 22, 2015

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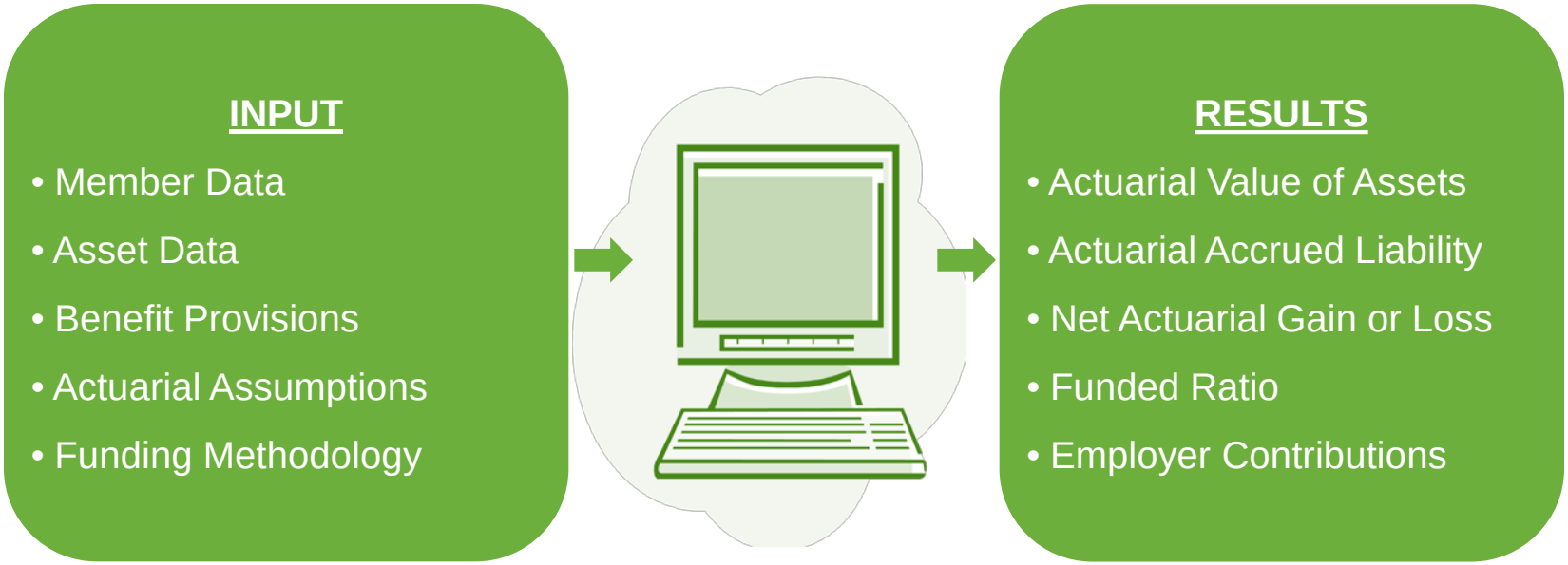
Purpose of the Annual Actuarial Valuation

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

The Valuation Process

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



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

Key Takeaways

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

- Market value returns of 6.24% compared to 7.25% assumed
- No significant legislation signed into law
- Actuarial assumptions intended to estimate the impact of a full audit of the census data for lapsed members, including the development of a select and ultimate lapse assumption based on the full audit
- No changes in assumptions or funding methodology from the prior year's valuations

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

- Higher funded ratio (90.9% in the December 31, 2014 valuation compared to 88.3% in the December 31, 2013 valuation)
- Lower employer required contribution ($12,830,706 for fiscal year ending June 30, 2017 compared to $13,240,552 for fiscal year ending June 30, 2016)

Valuation Input

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Valuation Input

Membership Data

Number as of	12/31/2014	12/31/2013
Active members	43,134	42,464
Terminated members entitled to benefits but not yet receiving benefits	153	156
Retired members currently receiving benefits	12,730	12,445
Total	56,017	55,065

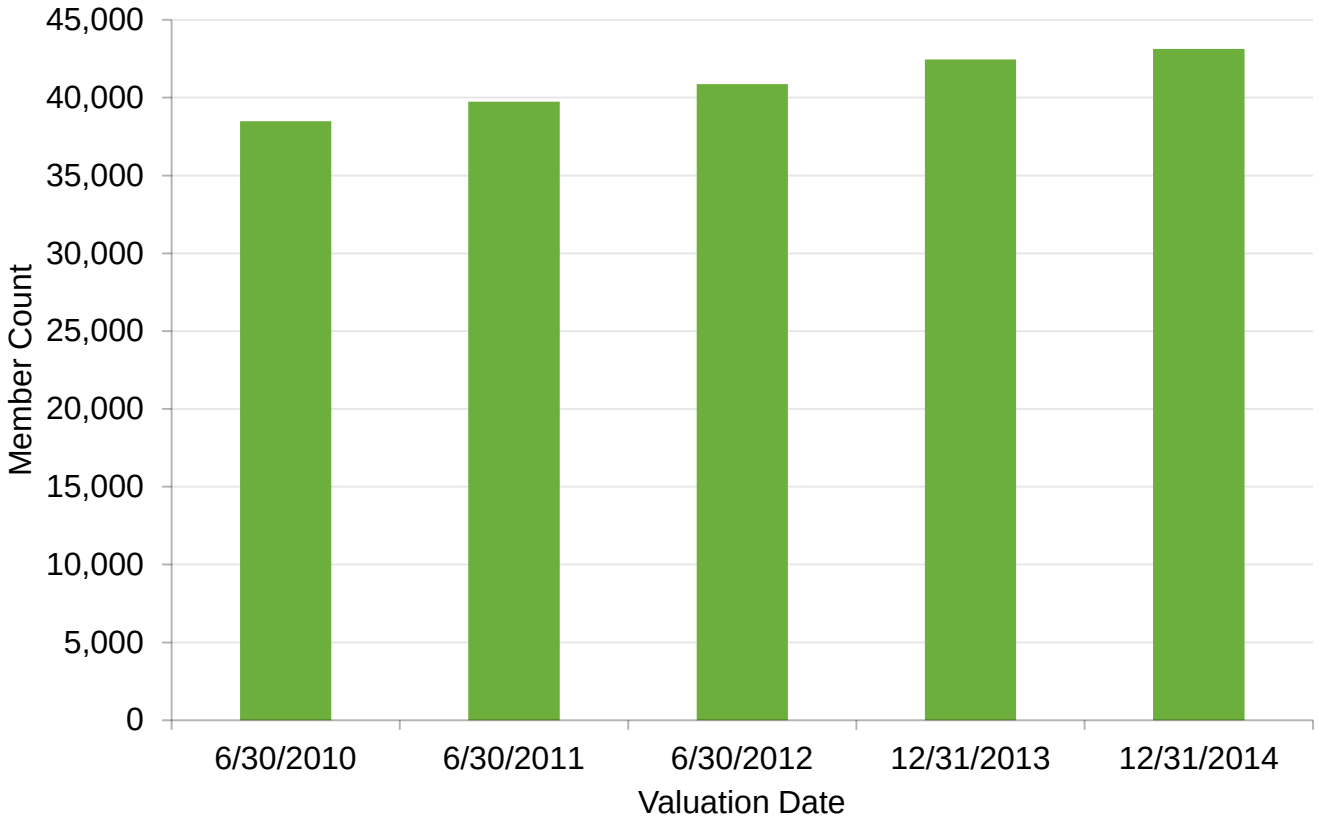
The number of active members increased by 1.6% from the previous valuation date. The increase in the active population could result in more benefits accruing, but also more contributions supporting the system.

The number of retired members increased by 2.3% from the previous valuation date. 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

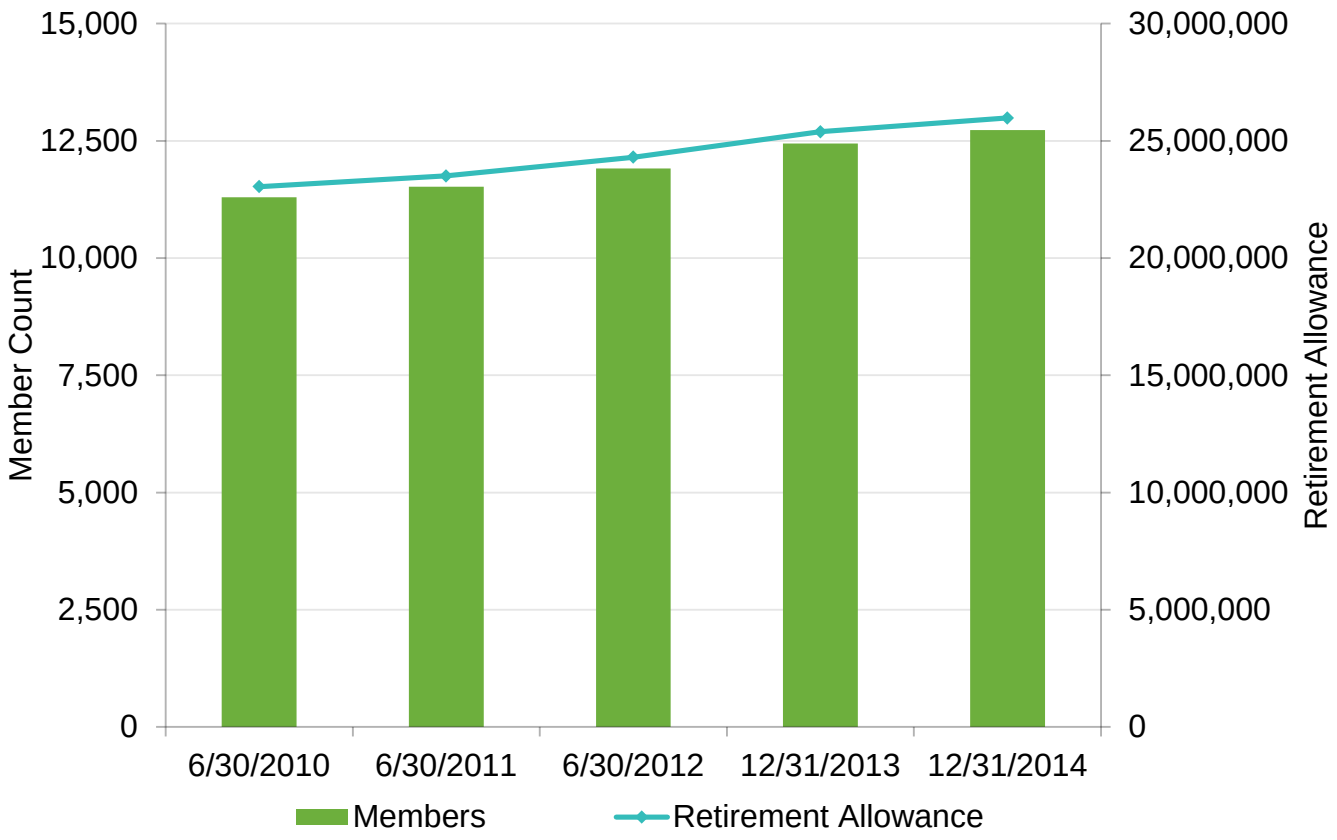
Membership Data: Active Members



While we have seen a steady increase in the number of active members submitted for the annual valuation, more and more of these members are not accruing a benefit. As a result, an audit of the census data is being conducted in order to develop a lapse assumption to reflect that some members are reported as active but are not currently accruing benefits.

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



The number of retired 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

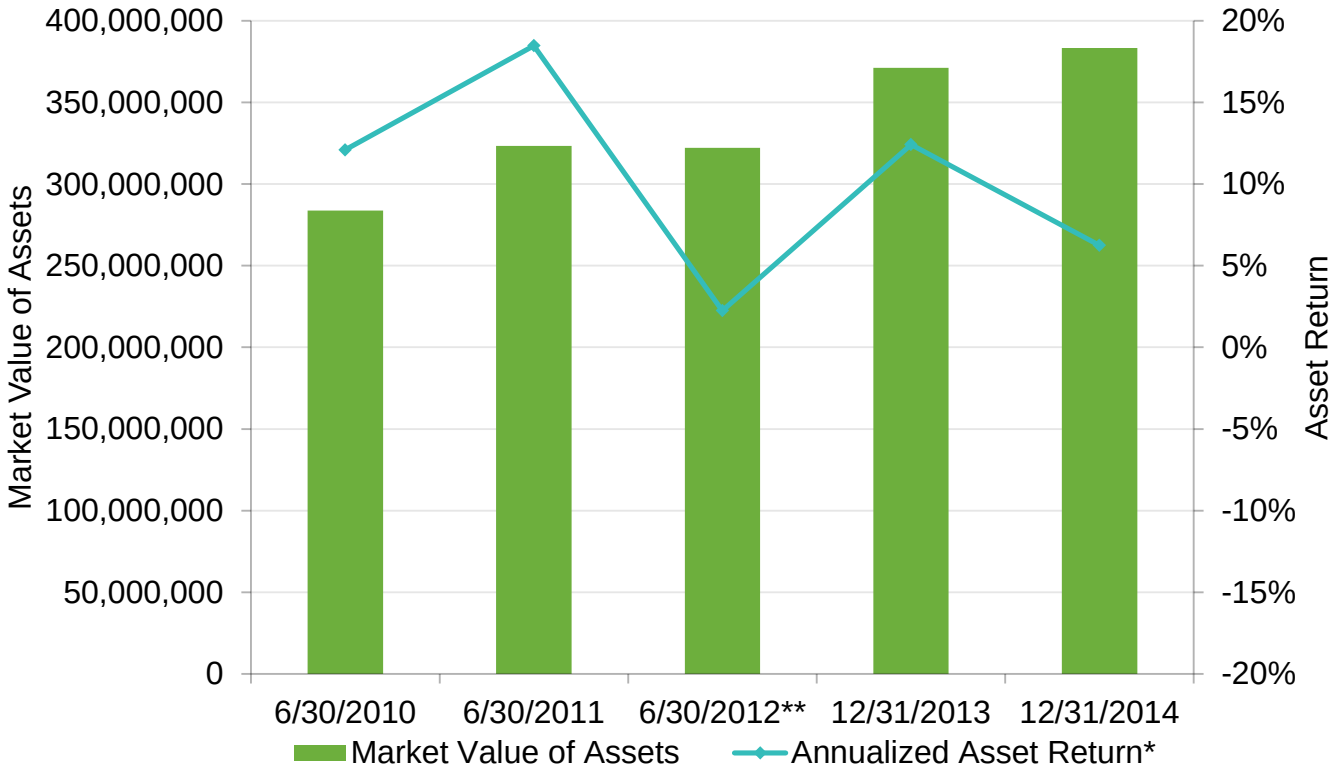
Asset Data as of	12/31/2014	12/31/2013
Beginning of Year Market Value of Assets	$ 371,122,130	$ 322,225,386
Contributions	16,648,810	27,469,616
Benefit Payments	(27,276,016)	(39,300,367)
Investment Income	22,833,056	60,727,495
Net Increase/(Decrease)	12,205,850	48,896,744
End of Year Market Value of Assets	$ 383,327,980	$ 371,122,130
Estimated Net Investment Return on Market Value (Annualized)	6.24%	12.42%

The Market Value of Assets is $383 million as of December 31, 2014 and $371 million as of December 31, 2013. The investment return for 2014 was 6.24%.

The contributions, benefit payments, investment income, and estimated net investment return as of December 31, 2013 are for the 18-month period from June 30, 2012 to December 31, 2013. The contributions and market value of assets as of June 30, 2012 include employer contributions receivable of $4,318,042 as appropriated for fiscal year ending June 30, 2012 but received after such date.

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

Asset Data: Market Value of Assets and Annualized Asset Returns



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

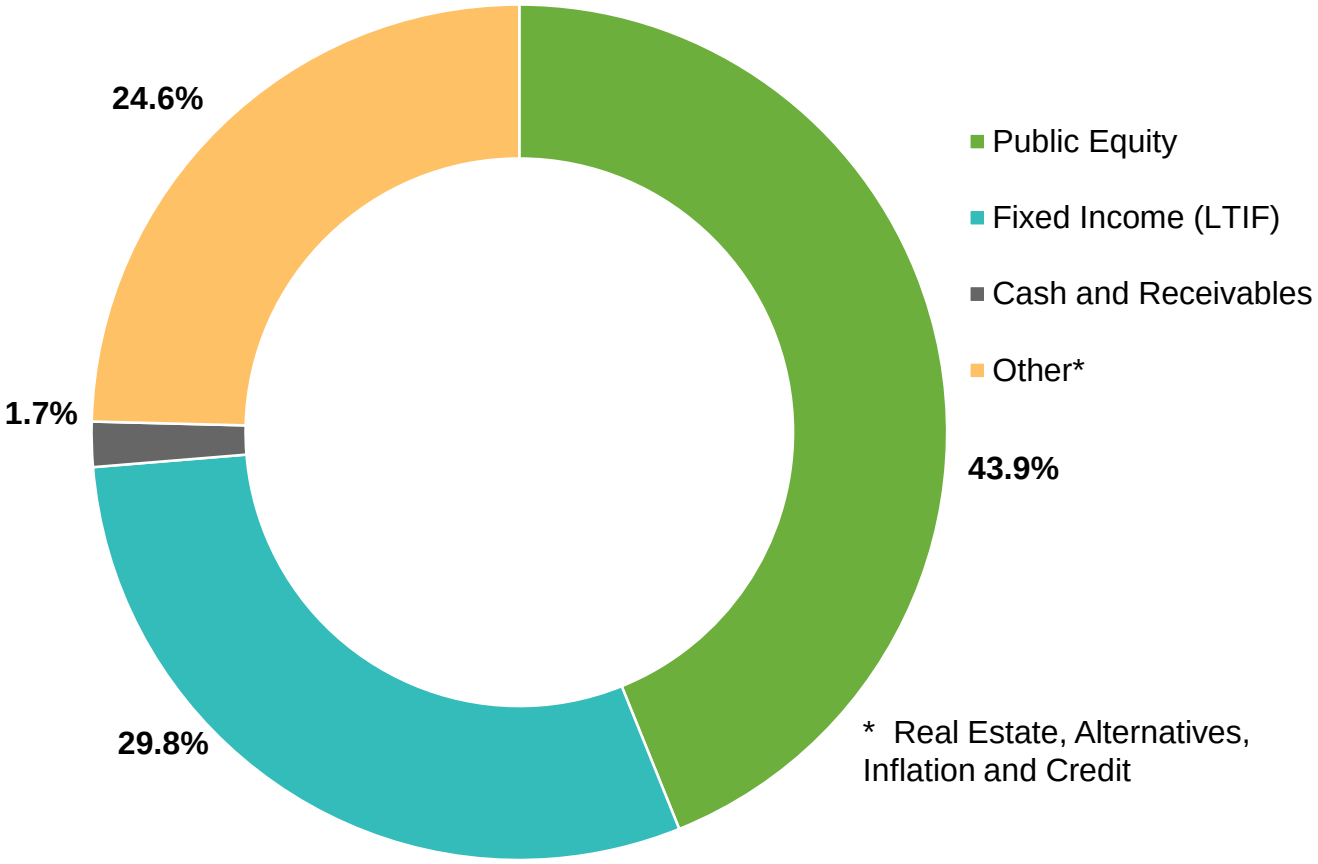
* Equals the asset return for the year preceding the valuation date except for the asset return at 12/31/2013 which equals the annualized asset return between 6/30/2012 and 12/31/2013

** The market value of assets as of June 30, 2012 includes employer contributions receivable of $4,318,042 as appropriated for fiscal year ending June 30, 2012 but received after such date.

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

Valuation Input

Asset Data: Allocation of Investments by Category



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

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

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

Valuation Input

Benefit Provisions

Benefit provisions are described in North Carolina General Statues, Chapter 58.

Highlights of the benefit provisions are described below:

- $170 per month is payable to members who retire from service after attaining age 55 and 20 years of service as an eligible firefighter or eligible rescue squad worker.
- In-service distributions of pensions are allowed for all members after attaining age 55 and 20 years of service as an eligible firefighter or eligible rescue squad worker.

No significant changes to the benefit provisions from the prior year's valuation.

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

Because of the well-funded status of FRSWPF due to the legislature contributing the actuarially required contribution, benefit cuts have not been needed in North Carolina.

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
  - Real return – 4.25%
- The valuation reflected adjustments intended to estimate the impact of a full audit of the census data for lapsed members, including the development of a select and ultimate lapse assumption based on the full audit.
- No changes in assumptions since the prior valuation

Other than the adjustments for lapsed members, the latest assumptions were adopted for use with the June 30, 2010 actuarial valuation, based on the experience study prepared as of December 31, 2009 and adopted by the Board of Trustees on October 21, 2010.

The next experience study will be prepared as of December 31, 2014 and presented to the Board in October 2015. This policy of reviewing assumptions every five years is a best practice.

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

Valuation Input

Funding Methodology

The Funding Methodology is the payment plan for FRSWPF 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
- Asset Valuation Methods smooth or average the market value returns over time to alleviate contribution volatility that results from market returns.
  - 20% of market value plus 80% of the expected actuarial value
  - 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.
- There were no changes in funding methodology from the previous valuation.

When compared to other Public Sector Retirement Systems in the United States, the funding policy for FRWPF 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	12/31/2014
(a) Actuarial Value of Assets at 12/31/2013	$ 364,836,260
(b) Contributions	16,648,810
(c) Benefit Payments	(27,276,016)
(d) Net Cash Flow: (b) + (c)	(10,627,206)
(e) Expected Investment Return: [(a) x 7.250%] + [(d) x 3.6250%]	26,065,393
(f) Expected End of Year Actuarial Value of Assets: (a) + (d) + (e)	380,274,447
(g) End of Year Market Value of Assets	383,327,980
(h) Excess of Market Value over Expected Actuarial Value of Assets: (g) - (f)	3,053,533
(i) 20% Adjustment toward Market Value: (h) x 20%	610,707
(j) Preliminary End of Year Actuarial Value of Assets: (f) + (i)	380,885,154
(k) Final End of Year Actuarial Value of Assets: (j) not less than 80% of (g) and not greater than 120% of (g)	380,885,154
(l) Estimated Net Investment Return	7.42%

The actuarial value of assets smoothes investment gains/losses, resulting in less volatility in the employer contribution. Higher than expected returns resulted in a $0.6 million asset gain recognition this year (item (i)).

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

Historical Annualized Asset Returns

Year*	Actuarial Value of Asset Return	Market Value of Asset Return
2006	8.63%	7.24%
2007	9.98%	14.85%
2008	7.43%	(1.92%)
2009	3.09%	(14.15%)
2010	4.47%	12.09%
2011	6.88%	18.47%
2012	5.96%	2.25%
2013	7.43%	12.42%
2014	7.42%	6.24%
Average	6.79%	5.95%
Range	6.89%	32.62%

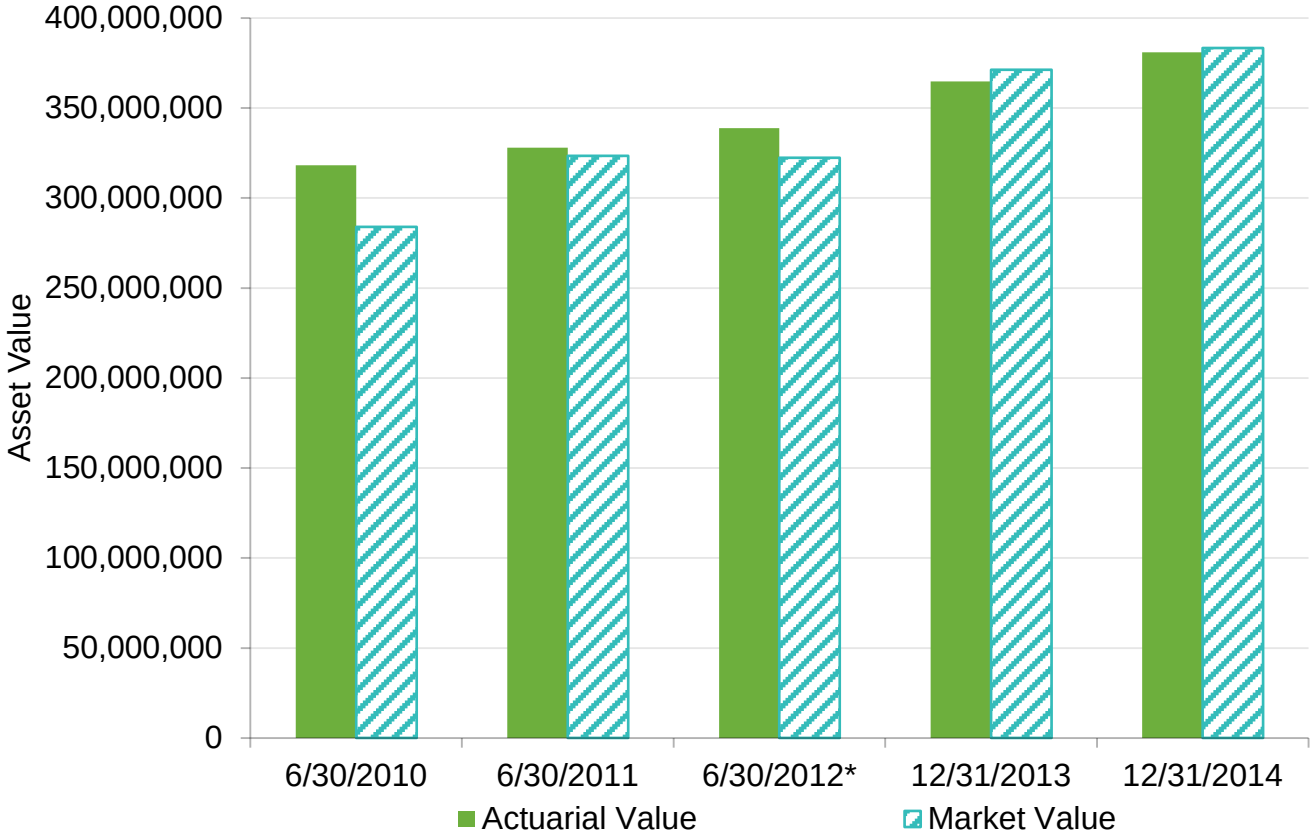
The average investment return recognized for purposes of determining the annual change in contribution each year is the actuarial value of assets return.

Currently, the average actuarial return of 6.79% tracks average market return of 5.95% rather well. But the range of returns is markedly less – 6.89% versus 32.62%. This results in much lower employer contribution volatility using the actuarial value of assets versus market, while ensuring that the actuarial needs of FRSWPF are met.

* Asset returns for years prior to 2013 are the returns for the year ending on June 30 of the applicable year. The 2013 asset return is the annualized return for the 18-month period from June 30, 2012 to December 31, 2013. Asset returns for years after 2013 are for the calendar year.

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 annualized returns.

Actuarial Value of Assets: Compared to Market Value

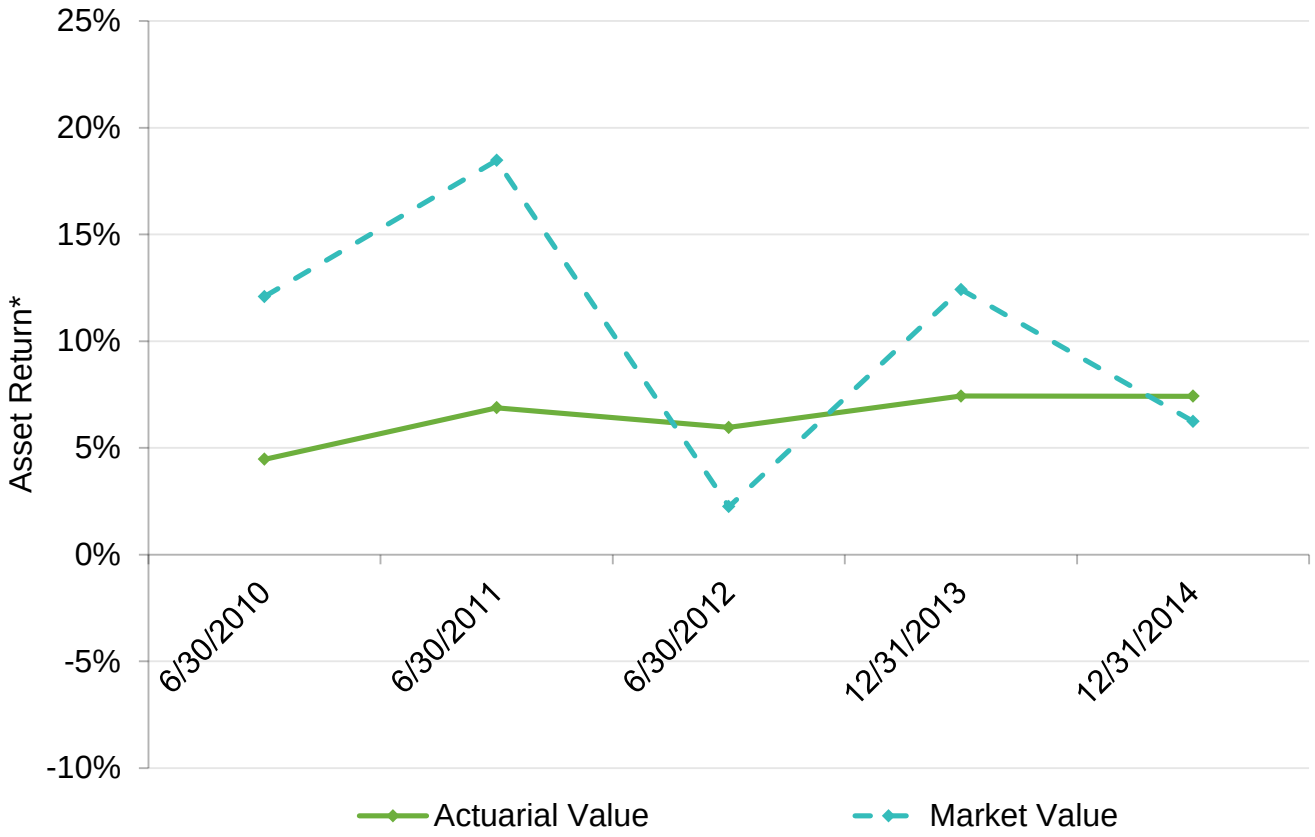


The market value of assets is higher than the actuarial value of assets, which is used to determine employer contributions. This indicates that there are unrecognized asset returns to be recognized in future valuations, which will mitigate the impact of asset returns that are less than the assumed return of 7.25%.

* The Market Value and Actuarial Value of Assets as of June 30, 2012 include employer contributions receivable of $4,318,042 as appropriated for fiscal year ending June 30, 2012 but received after such date.

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

Annualized Asset Returns: Actuarial Value and Market Value



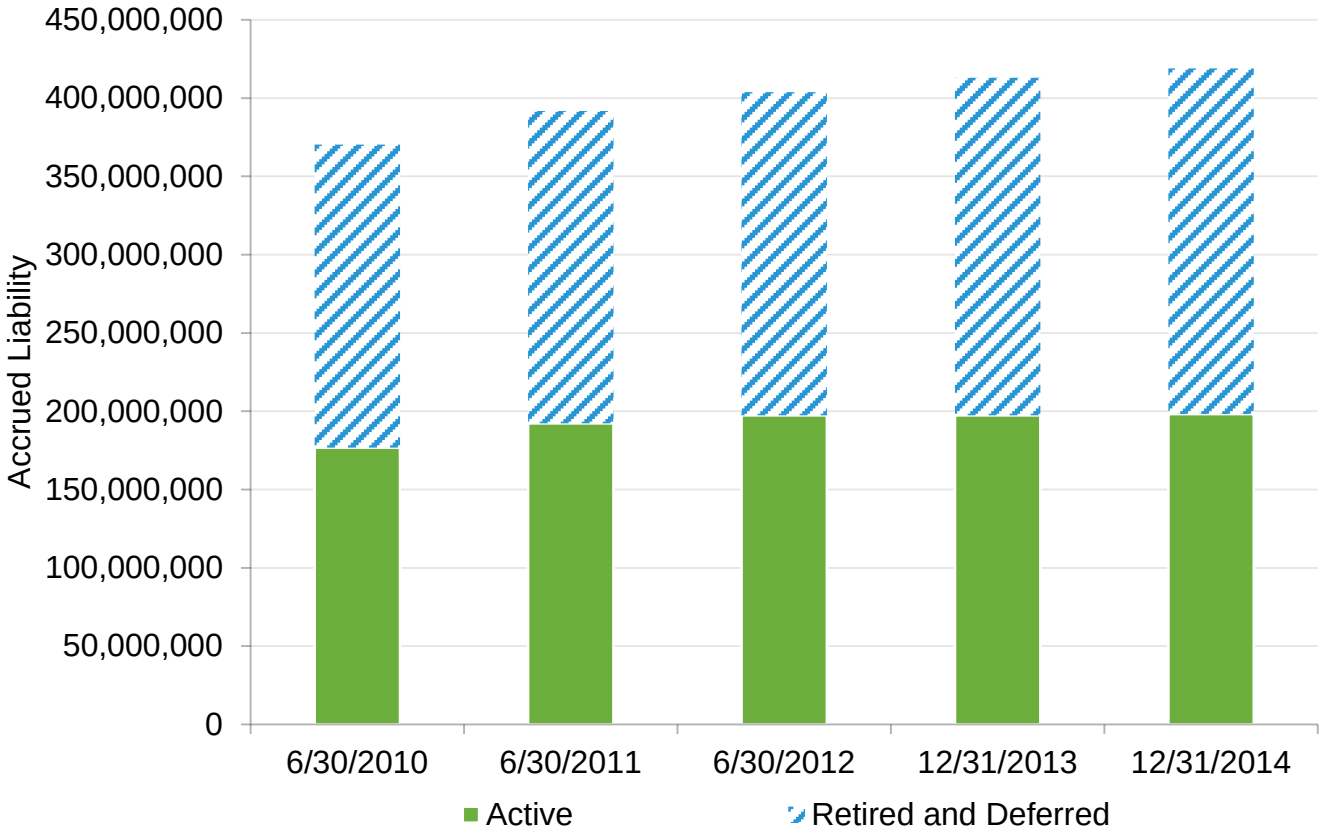
The actuarial value of assets smoothes investment gains and losses.

Higher than expected market returns resulted in an actuarial value of asset return for 2014 of 7.42%, which is higher than the assumed rate of 7.25%. Therefore, FRSWPF experienced an asset gain of $0.6 million.

* Equals the asset return for the year preceding the valuation date except for the asset return at 12/31/2013 which equals the annualized asset return between 6/30/2012 and 12/31/2013

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

Actuarial Accrued Liability (AAL)

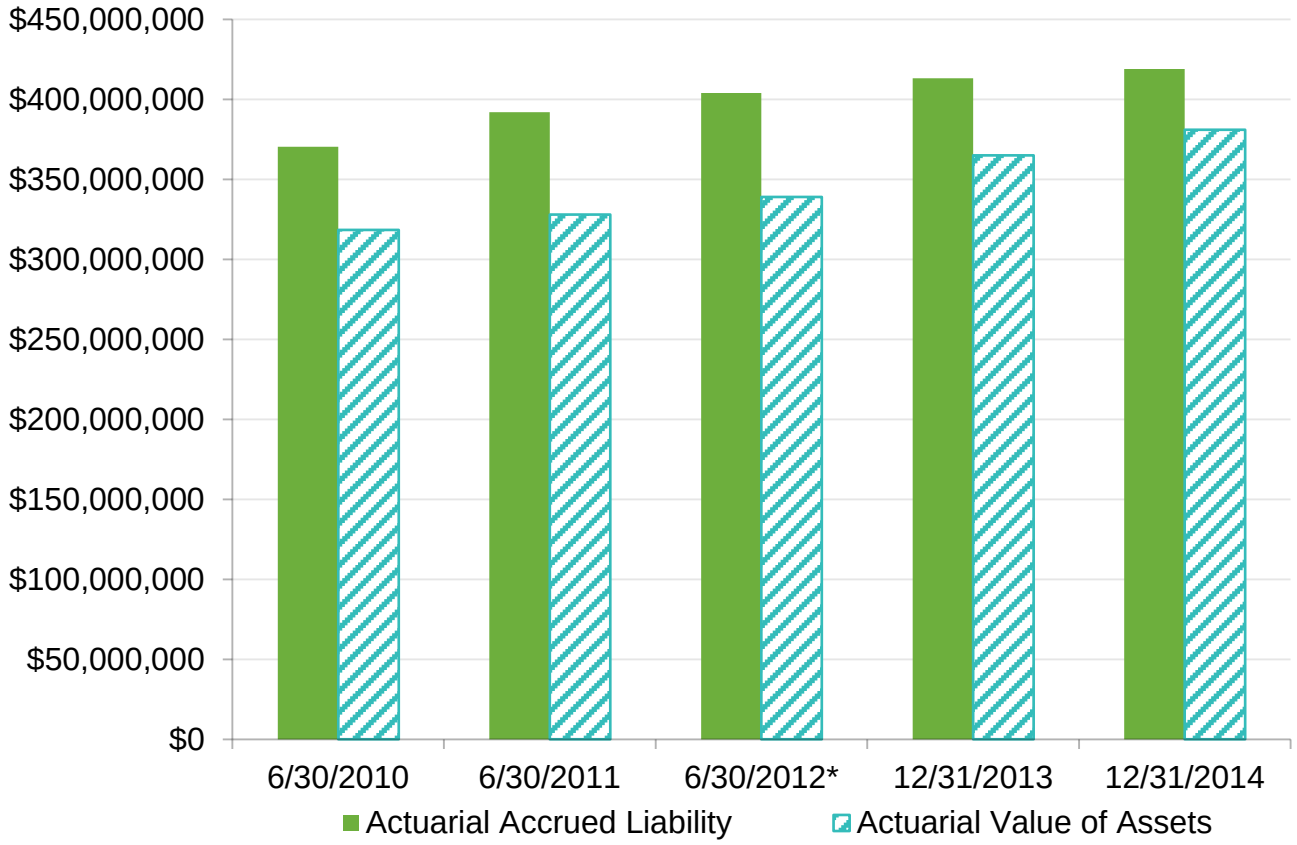


The AAL increased from $413 million to $419 million in 2014. FRSWPF is an open plan, which means that new members enter the plan each year. In an open plan, liabilities are expected to grow from one year to next as more benefits accrue and the membership approaches retirement.

The AAL was $5.5 million lower than expected, which resulted in a demographic gain of $5.5 million during 2014.

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

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



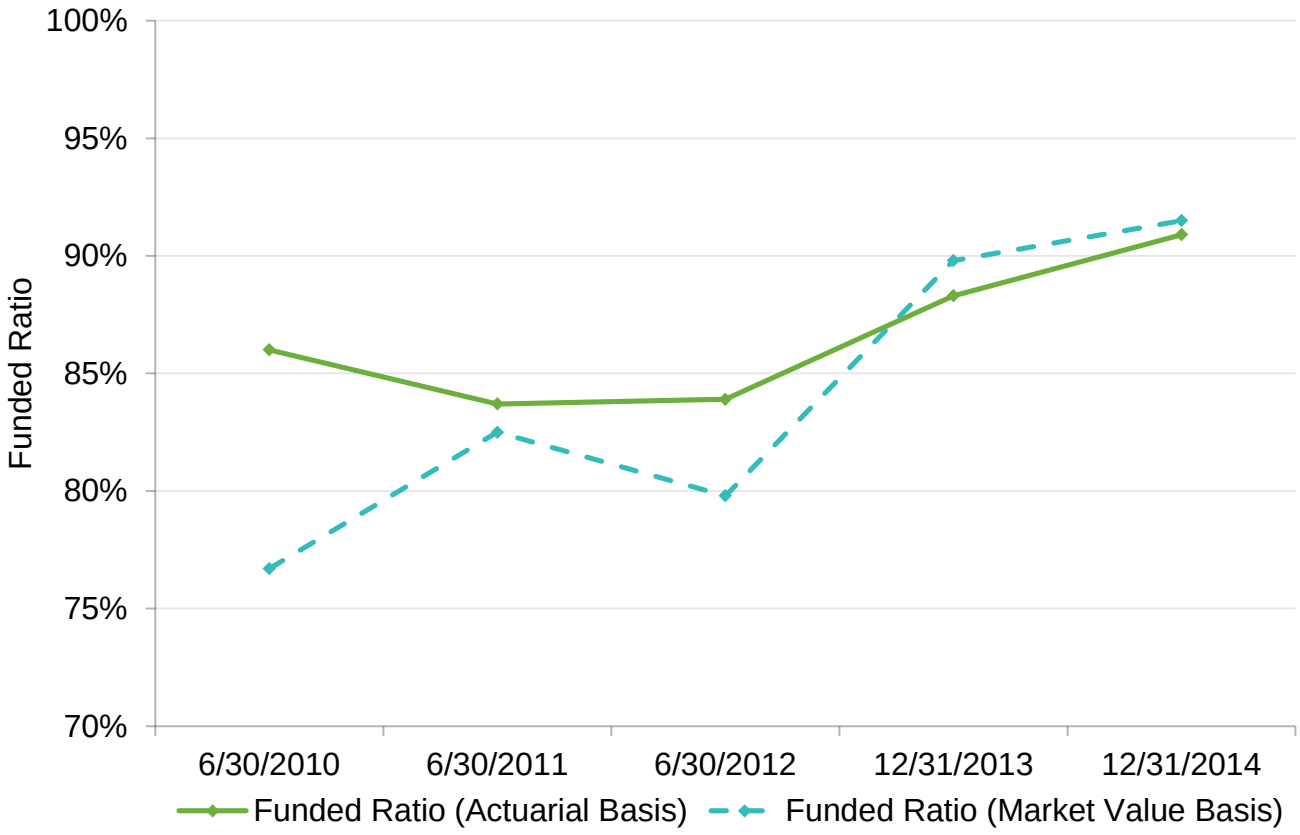
AVA is the basis used for computing contributions to alleviate contribution volatility.

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

* The Actuarial Value of Assets as of June 30, 2012 include employer contributions receivable of $4,318,042 as appropriated for fiscal year ending June 30, 2012 but received after such date.

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

Funded Ratio: AAL Divided by AVA



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

The funded ratio on an actuarial basis increased from 88.3% at December 31, 2013 to 90.9% at December 31, 2014.

Valuation Results

Net Actuarial Gain or Loss

Reconciliation of Unfunded Actuarial Accrued Liability Since the Prior Valuation

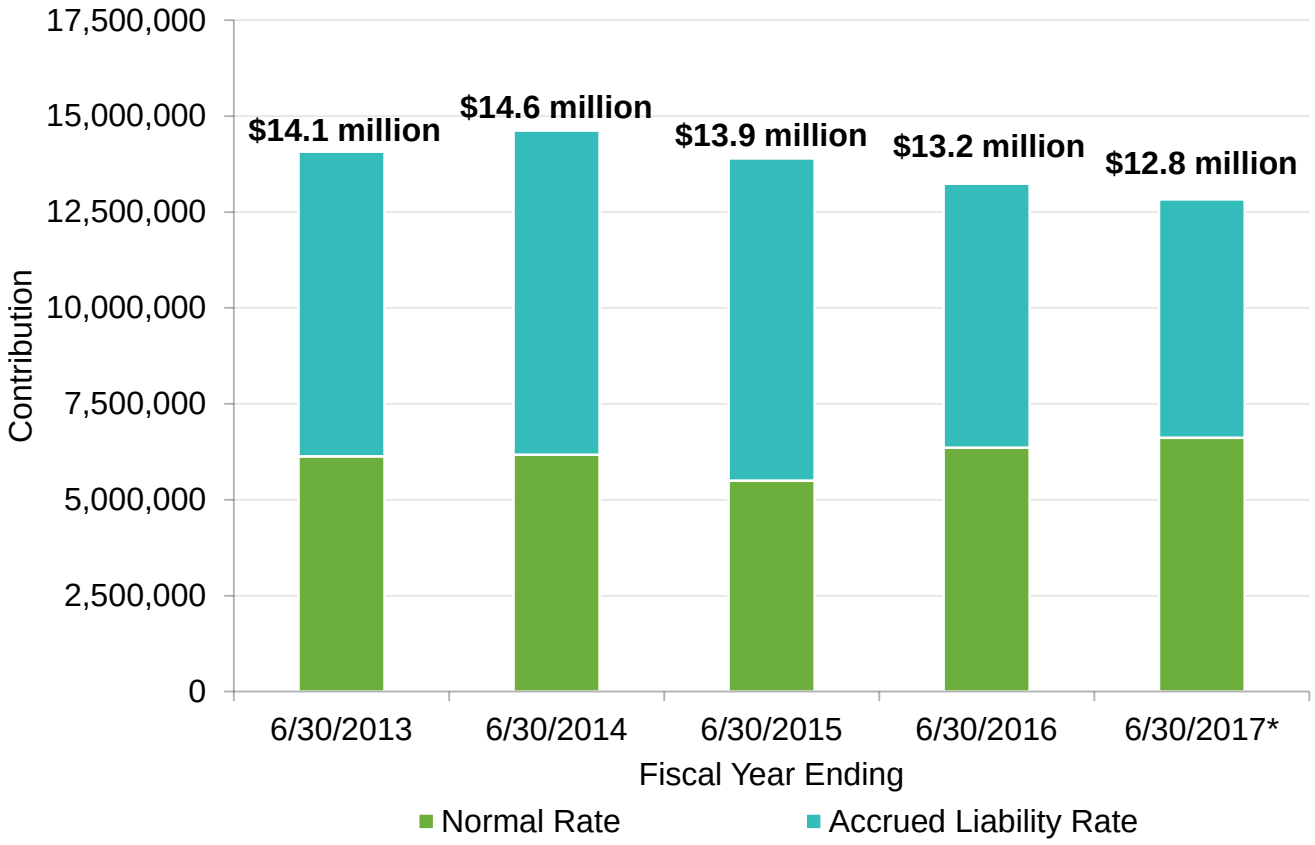
(in millions)		
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2013	$	48.2
Normal Cost for 2014		9.0
Reduction due to Actual Contributions		(16.6)
Interest on UAAL, Normal Cost, and Contributions		3.5
Asset (Gain)/Loss		(0.6)
Actuarial Accrued Liability (Gain)/Loss		(5.5)
Impact of Assumption Changes		0.0
Impact of Legislative Changes		0.0
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2014	$	38.0

The accrued liability gain of $5.5 million means that the unfunded actuarial accrued liability was $5.5 million lower than we would have expected based on the assumptions.

The asset gain of $0.6 million means that the asset valuation method resulted in a recognition of $0.6 million of deferred asset gains.

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

Employer Required Contributions



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

The employer required contribution 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 $10 monthly contribution the members make until the member attains 20 years of service.

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 employer required contributions is provided in Section 6 of the actuarial report.

Employer Required Contribution Rates

Valuation Date	Fiscal Year Ending	Preliminary ARC	Subsequent Changes to ARC	Final ARC	Appropriated Rate
12/31/2014	6/30/2017	$12,830,706	N/A	N/A	N/A
12/31/2013	6/30/2016	13,240,552	0	13,240,552	$13,550,000
6/30/2012*	6/30/2015	15,100,000	$(1,200,000)**	$13,900,000	13,900,000
6/30/2012	6/30/2014	14,620,362	0	14,620,362	14,626,599
6/30/2011	6/30/2013	14,074,371	0	14,074,371	15,446,599

* Because a valuation was not performed at June 30, 2013, the preliminary total employer contribution was estimated to be $15,100,000 for fiscal year ending June 30, 2015 based on the June 30, 2012 valuation.

** Based on the findings in Phase One of the audit of the census data for lapsed members, the total employer contribution was estimated to decrease by $2,200,000. House Bill 1034 (Session Law 2014-64) increased the employer contribution by $1,000,000. Subsequently, the 2014 Appropriations Act (Session Laws 2014-100) set contributions at $13,900,000 effective for the fiscal year ending June 30, 2015.

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

Reconciliation of the Change in the Annual Required Contribution

Fiscal year ending June 30, 2016 Preliminary ARC (estimated based on December 31, 2013 Valuation)	13,240,552
Impact of Legislative Changes	0
Fiscal year ending June 30, 2016 Final ARC	13,240,552
Change Due to Demographic (Gain)/Loss	(321,139)
Change Due to Investment (Gain)/Loss	(83,565)
Change Due to Contributions Greater than ARC	(5,142)
Fiscal year ending June 30, 2017 Preliminary ARC (estimated based on December 31, 2014 Valuation)	12,830,706

Investment gain is a recognition of deferred asset gains.

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

Key Takeaways

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

- Market value returns of 6.24% compared to 7.25% assumed
- No significant legislation signed into law
- Actuarial assumptions intended to estimate the impact of a full audit of the census data for lapsed members, including the development of a select and ultimate lapse assumption based on the full audit
- No changes in assumptions or funding methodology from the prior year's valuations

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

- Higher funded ratio (90.9% in the December 31, 2014 valuation compared to 88.3% in the December 31, 2013 valuation)
- Lower employer required contribution ($12,830,706 for fiscal year ending June 30, 2017 compared to $13,240,552 for fiscal year ending June 30, 2016)

Key Takeaways

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

- Stakeholders working together to keep FRSWPF 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
- Modest changes in benefits when compared to peers

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

Certification

The assumptions, methods, and plan provisions used in the results presented in this presentation were provided in October 2015 in the "Report Actuarial Valuation of the North Carolina Firefighters' and Rescue Squad Workers' Pension Fund prepared as of December 31, 2014."

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

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law.

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Principal, Consulting Actuary

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

Questions?

THANK YOU

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North Carolina Firefighters' and Rescue Squad Workers' Pension Fund

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

October 2015

Document Version: 1.0 (July 2014).

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October 7, 2015

Board of Trustees
Local Governmental Employees'
Retirement System of North Carolina
3200 Atlantic Avenue
Raleigh, NC 27604

Members of the Board:

We submit herewith our report on the actuarial valuation of the North Carolina Firefighters' and Rescue Squad Workers' Pension Fund (referred to as "FRSWPF" or the "Firefighter and Rescue Squad Worker Plan") prepared as of December 31, 2014.

The primary purpose of the valuation report is to determine the required member and employer contribution rates, to describe the current financial condition of FRSWPF, and to analyze changes in such condition. In addition, the report provides information that the Office of the State Controller (OSC) requires for its Comprehensive Annual Financial Report (CAFR) and it summarizes census data. Use of this report for any other purposes or by anyone other than OSC and its auditors may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of the report for that purpose. The attached pages should not be provided without a copy of this cover letter. No one may make any representations or warranties based on any statements or conclusions contained in this report without Buck Consultants' written consent.

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

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

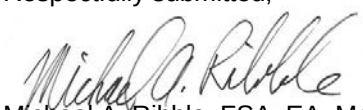
The valuation reflected adjustments intended to estimate the impact of a full audit of the census data for lapsed members, including the development of a select and ultimate lapse assumption based on the full audit. Note that subsequent to the issuance of the June 30, 2012 actuarial valuation, the employer contributions and liabilities were also adjusted downward to reflect these lapse assumptions for purposes of estimating the annual required contribution for fiscal year ending June 30, 2015. For this December 31, 2014 valuation, we assumed that approximately 1,800 members who are not expected to return to active membership and receive full roster credit will be removed from future valuations, and we assumed that the select and ultimate assumption will equate to a 20% reduction in accrued liability and normal cost for the remaining lapsed population not removed (approximately 13,600 members). Such assumptions are subject to revision based upon completion of the full audit.

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. Other than the adjustments previously described, the latest assumptions were adopted for use with the June 30, 2010 actuarial valuation, based on the experience study prepared as of December 31, 2009 and adopted by the Board of Trustees on October 21, 2010. The next experience study will be prepared as of December 31, 2014 and will be presented to the Board in October 2015. Assumptions and methods based on this experience study, as adopted by the Board, will be used with the December 31, 2015 valuation.

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

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

Respectfully submitted,



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Executive Summary

Overview

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

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

The Firefighters' and Rescue Squad Workers' Pension Fund ("FRSWPF") provides benefits to all paid and volunteer certified firefighters and rescue squad workers. FRSWPF has approximately $383 million in assets and over 56,000 members as of December 31, 2014. This actuarial valuation report is our annual analysis of the financial health of FRSWPF. This report, prepared as of December 31, 2014, presents the results of the actuarial valuation of the Retirement System.

Purpose

An actuarial valuation will be performed on FRSWPF annually as of the end of the calendar year. The actuary determines the amount of contributions to be made to FRSWPF 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 FRSWPF,
- Explore why the results of the current valuation differ from the results of the valuation of the previous year, and
- Satisfy regulatory and accounting requirements.

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

Executive Summary

Key Takeaways

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

- Market value returns of 6.24% compared to 7.25% assumed
- No significant legislation signed into law
- Actuarial assumptions intended to estimate the impact of a full audit of the census data for lapsed members, including the development of a select and ultimate lapse assumption based on the full audit
- No changes in assumptions or funding methodology from the prior year's valuations

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

- Higher funded ratio (90.9% in the December 31, 2014 valuation compared to 88.3% in the December 31, 2013 valuation)
- Lower employer required contribution ($12,830,706 for fiscal year ending June 30, 2017 compared to $13,240,552 for fiscal year ending June 30, 2016)

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

- Stakeholders working together to keep FRSWPF 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
- Modest changes in benefits when compared to peers

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

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

Section 1: The Valuation Process

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

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

Valuation Input: Membership Data

As with any estimate, the actuary collects information that we know now. Under the actuarial valuation process, current information about FRSWPF members is collected annually by the Retirement Systems Division staff at the direction of the actuary. This 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, and benefit group identifier for members that have not separated service, and actual benefit amounts and form of payment for members that have separated service. Data elements such as gender and date of birth are used to determine when a benefit might be paid and for how long.

Section 1: The Valuation Process

Valuation Input: Membership Data (continued)

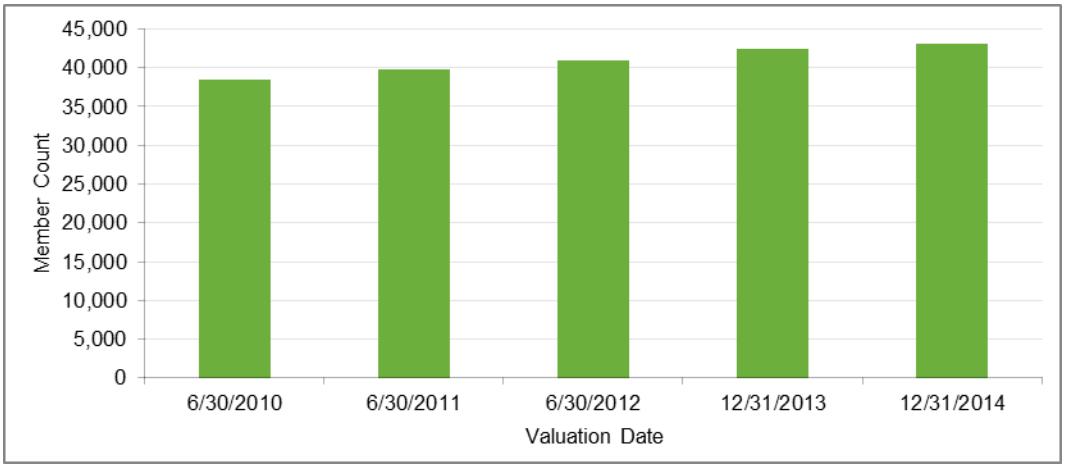
The table below provides a summary of the membership data used in this valuation compared to the prior valuation.

Number as of	12/31/2014	12/31/2013
Active members	43,134	42,464
Terminated members entitled to benefits but not yet receiving benefits	153	156
Retired members currently receiving benefits	12,730	12,445
Total	56,017	55,065

Commentary: The number of active members increased by 1.6% from the previous valuation date. The increase in the active population could result in more benefits accruing, but also more contributions supporting the system. The number of retired members increased by 2.3% from the previous valuation date. 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 over the past five years.



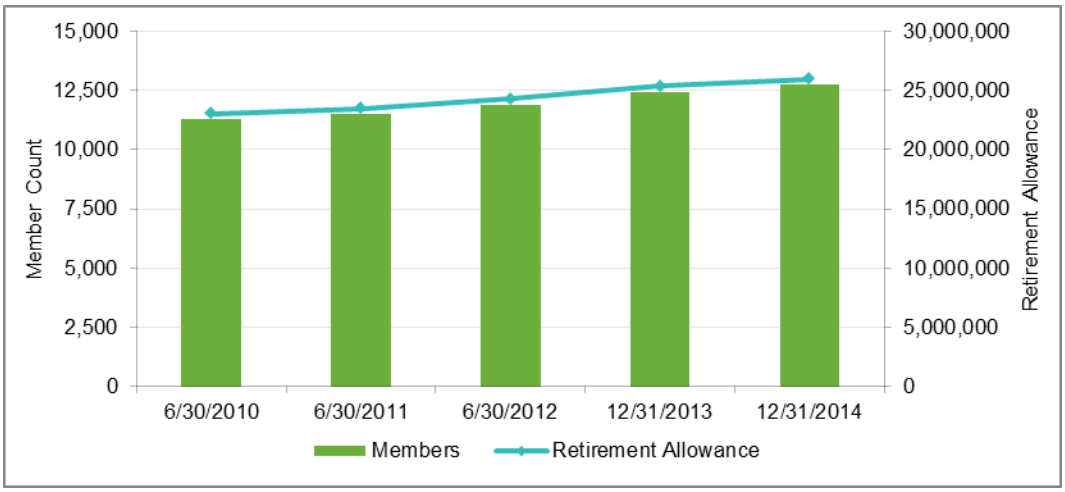
Commentary: While we have seen a steady increase in the number of active members submitted for the annual valuation, more and more of these members are not accruing a benefit. As a result, an audit of the census data is being conducted in order to develop a lapse assumption to reflect that some members are reported as active but are not currently accruing benefits.

Section 1: The Valuation Process

Valuation Input: Membership Data (continued)

Graph 2: Retired Members

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



Commentary: The number of retired 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.

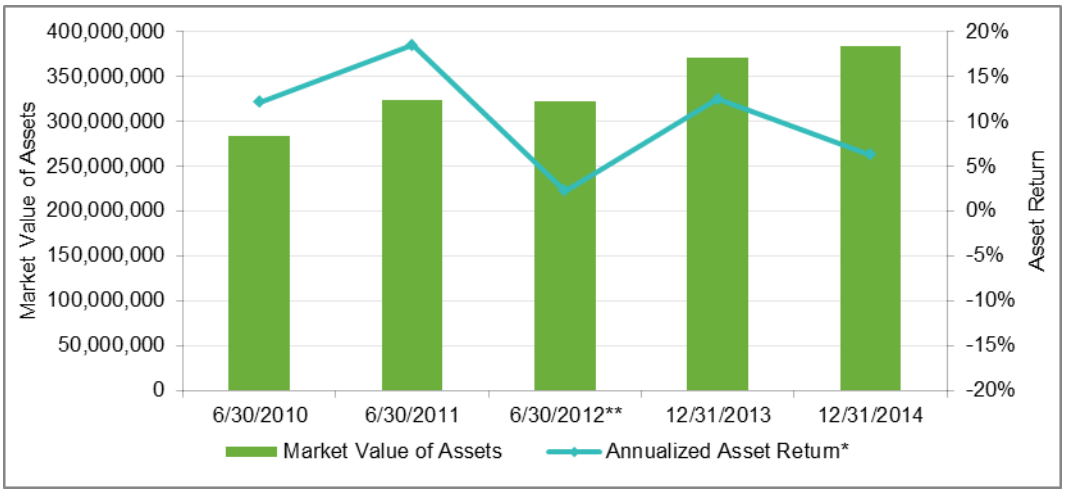
Section 1: The Valuation Process

Valuation Input: Asset Data

FRSWPF assets are held in trust and are invested for the exclusive benefit of plan members. The Market Value of Assets is $383 million as of December 31, 2014 and $371 million as of December 31, 2013. The investment return for the market value of assets for 2014 was 6.24%.

Graph 3: Market Value of Asset and Annualized Asset Returns

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



* Equals the asset return for the year preceding the valuation date except for the asset return at 12/31/2013 which equals the annualized asset return between 6/30/2012 and 12/31/2013

** The market value of assets as of June 30, 2012 includes employer contributions receivable of $4,318,042 as appropriated for fiscal year ending June 30, 2012 but received after such date.

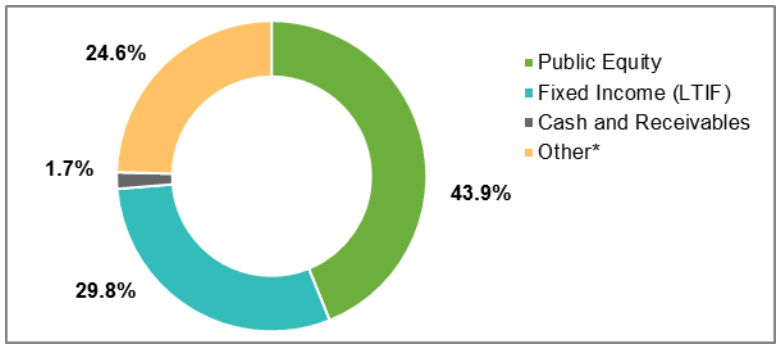
Commentary: Returns were less than the 7.25% assumed rate of return, resulting in higher contributions and lower funded ratio than anticipated.

Section 1: 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, 2014 by asset category.



* Real Estate, Alternatives, Inflation and Credit

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

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

Section 1: The Valuation Process

Valuation Input: Benefit Provisions

Benefit provisions are described in North Carolina General Statues, Chapter 58.

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

Highlights of the benefit provisions are described below.

- An unreduced retirement allowance is payable to members who retire from service after attaining age 55 and 20 years of service as an eligible firefighter or eligible rescue squad worker.
- The unreduced retirement allowance is equal to $170 per month.

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 the Retirement System due to the legislature contributing the actuarially required contribution, benefit cuts have not been needed in North Carolina.

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, and benefits of the members) and what may happen in the future. The actuarial assumptions of the Retirement System are reviewed at least every five years. Based on this review, the actuary will make recommendations on the demographic and economic assumptions.

Demographic assumptions describe future events that relate to people such as retirement rates, termination rates, disability rates, and mortality rates. Economic assumptions describe future events that relate to the Retirement System's assets such as the interest rate and the real return.

The valuation reflected adjustments intended to estimate the impact of a full audit of the census data for lapsed members, including the development of a select and ultimate lapse assumption based on the full audit. Note that subsequent to the issuance of the June 30, 2012 actuarial valuation, the employer contributions and liabilities were also adjusted downward to reflect these lapse assumptions for purposes of estimating the annual required contribution for fiscal year ending June 30, 2015. For this December 31, 2014 valuation, we assumed that approximately 1,800 members who are not expected to return to active membership and receive full roster credit will be removed from future valuations, and we assumed that the select and ultimate assumption will equate to a 20% reduction in accrued liability and normal cost for the remaining lapsed population not removed (approximately 13,600 members). Such assumptions are subject to revision based upon completion of the full audit.

Section 1: The Valuation Process

Other than the adjustments previously described, the latest assumptions were adopted for use with the June 30, 2010 actuarial valuation, based on the experience study prepared as of December 31, 2009 and adopted by the Board of Trustees on October 21, 2010. The next experience study will be prepared as of December 31, 2014 and presented to the Board in October 2015. Assumptions and methods based on the next experience study, as adopted by the Board, will be used with the December 31, 2015 valuation. This policy of reviewing assumptions every five years is a best practice.

Valuation Input: Funding Methodology

The Funding Methodology is the payment plan for FRSWPF 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
- Asset Valuation Methods smooth or average the market value returns over time to alleviate contribution volatility that results from market returns.
  - 20% of market value plus 80% of the expected actuarial value
  - 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 FRSWPF 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.

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

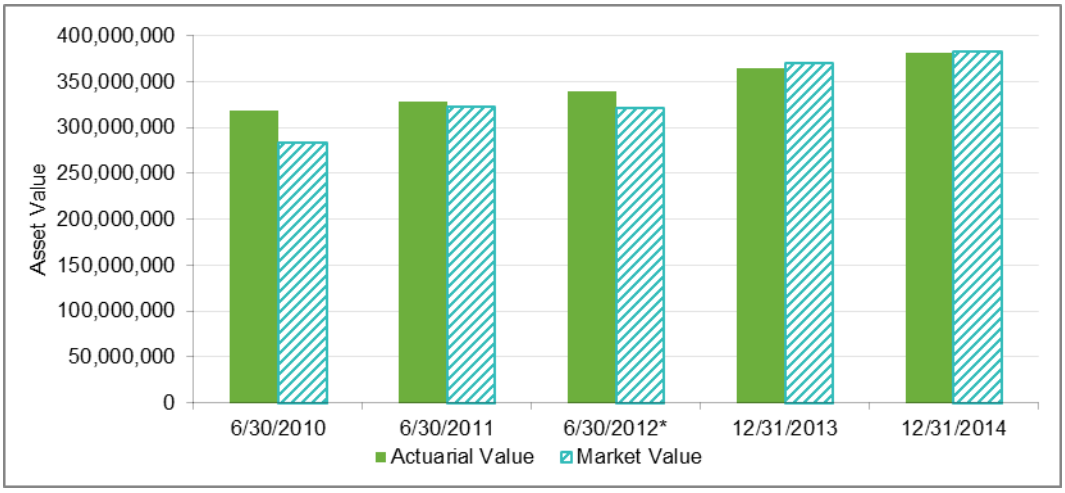
Section 1: The Valuation Process

Valuation Results: Actuarial Value of Assets

In order to reduce the volatility that investment gains and losses can have on required contributions and funded status of FRSWPF, the Board adopted an asset valuation method to determine the Actuarial Value of Assets used for funding purposes. The Actuarial Value of Assets is $381 million as of December 31, 2014 and $365 million as of December 31, 2013.

Graph 5: 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.



* The Market Value and Actuarial Value of Assets as of June 30, 2012 include employer contributions receivable of $4,318,042 as appropriated for fiscal year ending June 30, 2012 but received after such date.

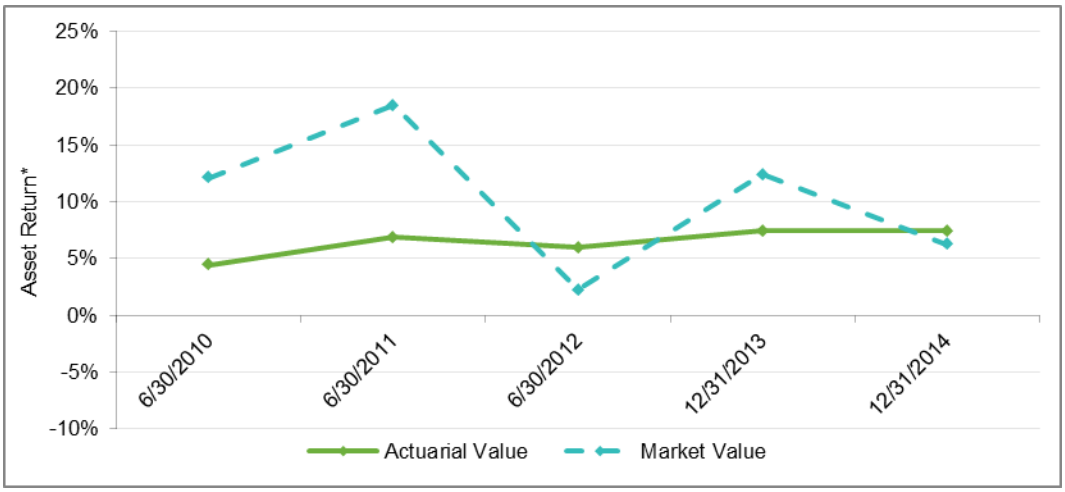
Commentary: The market value of assets is higher than the actuarial value of assets, which is used to determine employer contributions. This indicates that there are unrecognized asset returns to be recognized in future valuations, which will mitigate the impact of asset returns that are less than the assumed return of 7.25%.

Section 1: The Valuation Process

Valuation Results: Actuarial Value of Assets (continued)

Graph 6: Asset Returns

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



* Equals the asset return for the year preceding the valuation date except for the asset return at 12/31/2013 which equals the annualized asset return between 6/30/2012 and 12/31/2013

Commentary: The investment return for the market value of assets for 2014 was 6.24%. The actuarial value of assets smoothes investment gains and losses. Higher than expected market returns resulted in an actuarial value of asset return for 2014 of 7.42%, which is higher than the assumed rate of 7.25%. Therefore, FRSWPF experienced an asset gain of $0.6 million.

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

Section 1: The Valuation Process

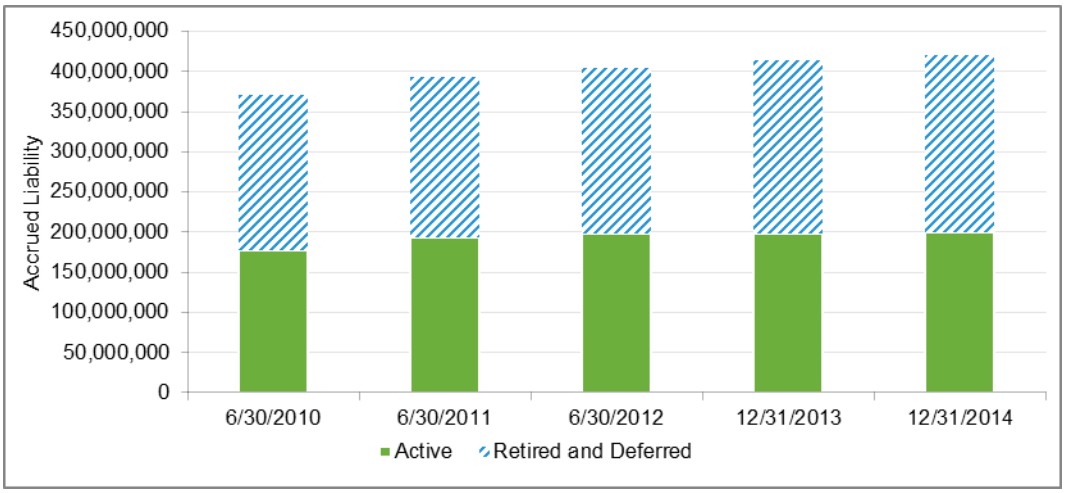
Valuation Results: Actuarial Accrued Liability

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

Graph 7: Actuarial Accrued Liability

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



Commentary: The AAL increased from $413 million to $419 million in 2014. FRSWPF is an open plan, which means that new members enter the plan each year. In an open plan, liabilities are expected to grow from one year to next as more benefits accrue and the membership approaches retirement. The AAL was $5.5 million lower than expected, which resulted in a demographic gain of $5.5 million during 2014.

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

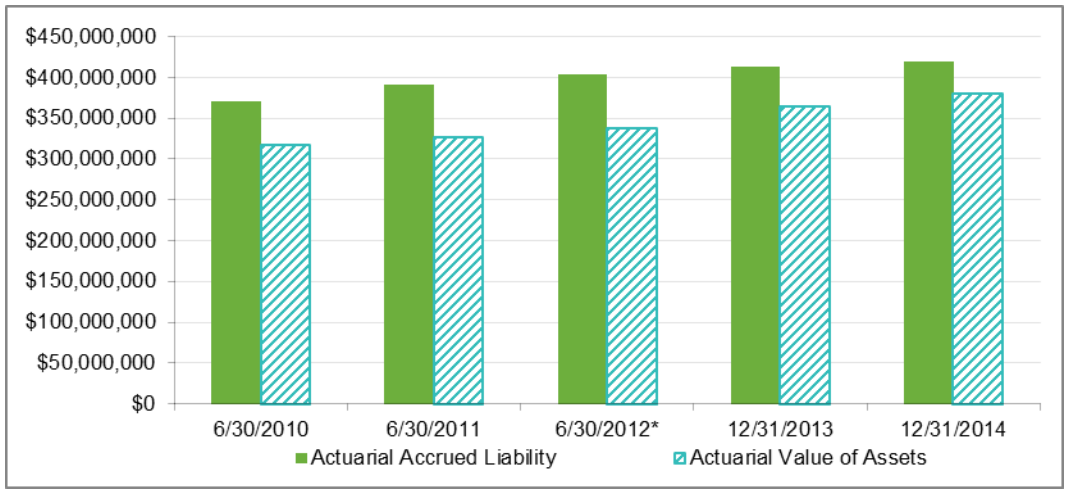
Section 1: The Valuation Process

Valuation Results: Funded Ratio

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

Graph 8: Actuarial Accrued Liability and Actuarial Value of Assets

The graph below provides a history of the actuarial accrued liability and actuarial value of assets over the past 5 years.



* The Actuarial Value of Assets as of June 30, 2012 include employer contributions receivable of $4,318,042 as appropriated for fiscal year ending June 30, 2012 but received after such date.

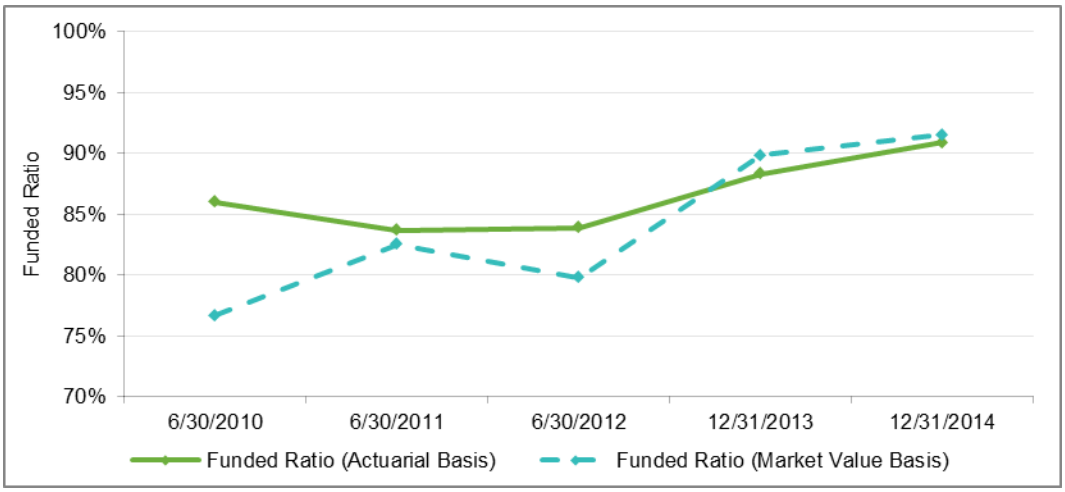
Commentary: The actuarial value of assets basis is used for computing contributions to alleviate contribution volatility. The difference in the actuarial accrued liability and the actuarial value of assets is the amount of pension debt to be paid off in 12 years.

Section 1: The Valuation Process

Valuation Results: Funded Ratio (continued)

Graph 9: 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 increased from 88.3% at December 31, 2013 to 90.9% at December 31, 2014.

Section 1: The Valuation Process

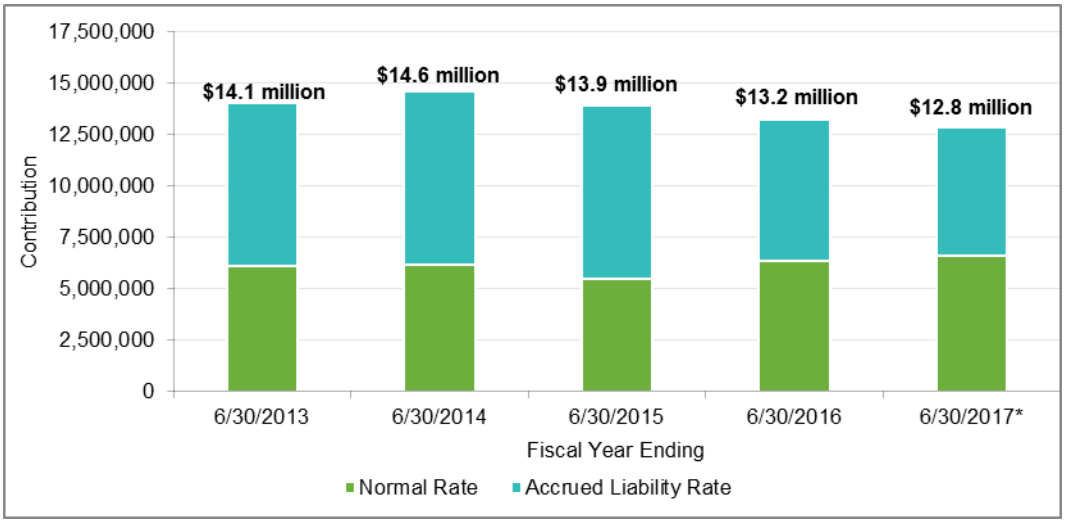
Valuation Results: Employer Contributions

The retirement act provides that the contributions of employers shall consist of a normal contribution and an accrued liability contribution.

The December 31, 2013 valuation suggested that the preliminary total contribution be set at $13,240,552 for the fiscal year ending June 30, 2016. Subsequently, the 2015 Appropriations Act (Session Laws 2015-241) set the contribution at $13,550,000 for the fiscal year ending June 30, 2016. As a result of this December 31, 2014 valuation, the preliminary total contribution should be set at $12,830,706 for the fiscal year ending June 30, 2017, subject to the impact of any future legislative changes effective during that fiscal year.

Graph 10: Employer Required Contributions

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



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

Commentary: The employer required contribution 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 $10 monthly contribution the members make until the member attains 20 years of service. 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 employer required contributions rates is provided in Section 6 of this report.

Section 1: The Valuation Process

Valuation Results: Accounting Information

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

The valuation has been prepared in accordance with the parameters of Statement No. 67 of the GASB and all applicable Actuarial Standards of Practice. The Net Pension Liability (Asset) under GASB 67 for the fiscal year ending June 30, 2015, is $36,359,000 (compared to $27,418,000 for fiscal year ending June 30, 2014). The required financial reporting information for the Retirement System under GASB No. 67 can be found in Section 8 of this report.

Section 2: Principal Results

This report, prepared as of December 31, 2014, presents the results of the actuarial valuation of the system. The principal results of the valuation and a comparison with the preceding year's results are summarized below.

Table 1: Summary of Principal Results

Valuation results as of	12/31/2014	12/31/2013
Active Members		
Number	43,134	42,464
Retired Members Currently Receiving Benefits		
Number	12,730	12,445
Annual Allowances	$ 25,969,200	$ 25,387,800
Number of Deferred Disabled Members	153	156
Assets		
Actuarial Value (AVA)	$ 380,885,154	$ 364,836,260
Market Value	$ 383,327,980	$ 371,122,130
Actuarial Accrued Liability (AAL)	$ 418,915,121	$ 413,053,513
Unfunded Accrued Liability (AAL-AVA)	$ 38,029,967	$ 48,217,253
Funded Ratio (AVA/AAL)*	90.9%	88.3%
Results for Fiscal Year Ending	**6/30/2017**	**6/30/2016**
Actuarially Determined Employer Contribution (ADEC)		
Normal Cost	$ 6,620,072	$ 6,354,036
Accrued Liability	6,210,634	6,886,516
Total	$ 12,830,706	$ 13,240,552
Impact of Legislative Changes	N/A	0
Final Employer ADEC	N/A	$ 13,240,552
Recommended Employer Contribution Rate		
Normal Cost	$ 6,620,072	$ 6,354,036
Accrued Liability	6,210,634	6,886,516
Total	$ 12,830,706	$ 13,240,552
Impact of Legislative Changes	N/A	0
Final Employer Contribution Rate	N/A	$ 13,240,552

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

Section 3: Membership Data

The Retirement Systems Division provided membership data as of the valuation date for each member of the Retirement System. 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
Firefighters	39,498	39.88	11.69
Rescue Squad Workers	3,636	43.01	11.91
Total	43,134	40.14	11.71

Table 3: Data for Members Currently Receiving Benefits

	Member Count	Average Age	Annual Retirement Allowances
Firefighters	11,491	68.26	$ 23,441,640
Rescue Squad Workers	1,239	68.84	2,527,560
Total	12,730	68.32	$ 25,969,200

Table 4: Data for Disabled Members Eligible for Deferred Pensions

	Member Count	Average Age	Annual Retirement Allowances
Firefighters	144	51.08	$ 293,760
Rescue Squad Workers	9	52.88	18,360
Total	153	51.19	$ 312,120

Section 4: Asset Data

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

Table 5: Market Value of Assets

Asset Data as of	12/31/2014	12/31/2013
Beginning of Year Market Value of Assets	$ 371,122,130	$ 322,225,386
Contributions	16,648,810	27,469,616
Benefit Payments	(27,276,016)	(39,300,367)
Investment Income	22,833,056	60,727,495
Net Increase/(Decrease)	12,205,850	48,896,744
End of Year Market Value of Assets	$ 383,327,980	$ 371,122,130
Estimated Net Investment Return on Market Value (Annualized)	6.24%	12.42%

The contributions, benefit payments, investment income, and estimated net investment return as of December 31, 2013 are for the 18-month period from June 30, 2012 to December 31, 2013. The contributions and market value of assets as of June 30, 2012 include employer contributions receivable of $4,318,042 as appropriated for fiscal year ending June 30, 2012 but received after such date.

Table 6: Allocation of Investments by Category of the Market Value of Assets

Asset Data as of	12/31/2014	12/31/2013
Allocation by Dollar Amount		
Public Equity	$ 168,249,986	$ 177,900,313
Fixed Income (LTIF)	114,099,537	113,242,630
Cash and Receivables	6,582,943	1,873,993
Other*	94,395,514	78,105,194
Total Market Value of Assets	$ 383,327,980	$ 371,122,130
Allocation by Percentage of Asset Value		
Public Equity	43.9%	47.9%
Fixed Income (LTIF)	29.8%	30.5%
Cash and Receivables	1.7%	0.5%
Other*	24.6%	21.1%
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 FRSWPF, 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 7: Actuarial Value of Assets

Asset Data as of	12/31/2014
(a) Actuarial Value of Assets at 12/31/2013	$ 364,836,260
(b) Contributions	16,648,810
(c) Benefit Payments	(27,276,016)
(d) Net Cash Flow: (b) + (c)	(10,627,206)
(e) Expected Investment Return: [(a) x 7.250%] + [(d) x 3.6250%]	26,065,393
(f) Expected End of Year Actuarial Value of Assets: (a) + (d) + (e)	380,274,447
(g) End of Year Market Value of Assets	383,327,980
(h) Excess of Market Value over Expected Actuarial Value of Assets: (g) - (f)	3,053,533
(i) 20% Adjustment toward Market Value: (h) x 20%	610,707
(j) Preliminary End of Year Actuarial Value of Assets: (f) + (i)	380,885,154
(k) Final End of Year Actuarial Value of Assets: (j) not less than 80% of (g) and not greater than 120% of (g)	380,885,154
(l) Estimated Net Investment Return	7.42%

Commentary: The actuarial value of assets smoothes investment gains/losses, resulting in less volatility in the employer contribution. Higher than expected returns resulted in a $0.6 million asset gain recognition this year (item (i) above).

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 8: Historical Asset Returns (Annualized)

Year*	Actuarial Value of Asset Return	Market Value of Asset Return
2006	8.63%	7.24%
2007	9.98%	14.85%
2008	7.43%	(1.92%)
2009	3.09%	(14.15%)
2010	4.47%	12.09%
2011	6.88%	18.47%
2012	5.96%	2.25%
2013	7.43%	12.42%
2014	7.42%	6.24%
Average	6.79%	5.95%
Range	6.89%	32.62%

* Asset returns for years prior to 2013 are the returns for the year ending on June 30 of the applicable year. The 2013 asset return is the annualized return for the 18-month period from June 30, 2012 to December 31, 2013. Asset returns for years after 2013 are for the calendar year.

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 6.79% tracks average market return of 5.95% rather well. But the range of returns is markedly less – 6.89% versus 32.62%. This results in much lower employer contribution volatility using the actuarial value of assets versus market, while ensuring that the actuarial needs of FRSWPF are met.

Section 5: Liability Results

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

Table 9: Liability Summary

Valuation Results as of	12/31/2014	12/31/2013
(a) Present Value of Future Benefits		
(1) Active Members	$ 267,823,610	$ 267,441,652
(2) Members Currently Receiving Benefits and Members with Deferred Benefits	220,628,896	215,560,754
(3) Total	$ 488,452,506	$ 483,002,406
(b) Present Value of Future Normal Costs		
(1) Employee Future Normal Costs	$ 27,666,734	$ 27,560,503
(2) Employer Future Normal Costs	41,870,651	42,388,390
(3) Total	$ 69,537,385	$ 69,948,893
(c) Actuarial Accrued Liability: (a3) - (b3)	$ 418,915,121	$ 413,053,513
(d) Actuarial Value of Assets	$ 380,885,154	$ 364,836,260
(e) Unfunded Accrued Liability: (c) - (d)	$ 38,029,967	$ 48,217,253

Section 5: Liability Results

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

Table 10: Reconciliation of Unfunded Actuarial Accrued Liability

(in millions)	
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2013	$ 48.2
Normal Cost for 2014	9.0
Reduction due to Actual Contributions	(16.6)
Interest on UAAL, Normal Cost, and Contributions	3.5
Asset (Gain)/Loss	(0.6)
Actuarial Accrued Liability (Gain)/Loss	(5.5)
Impact of Assumption Changes	0.0
Impact of Legislative Changes	0.0
Unfunded Actuarial Accrued Liability (UAAL) as of 12/31/2014	$ 38.0

Section 6: Annual Required Contribution

The annual required contribution consists of a normal cost contribution and an accrued liability contribution. The normal cost contribution is the employer's portion of the cost of benefits accruing during the year after reducing for the member contribution. The accrued liability contribution 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 annual required contribution for the current and prior years' valuations.

Table 11: Calculation of the Annual Required Contribution (ARC) Payable per Active Member

Valuation Date	12/31/2014	12/31/2013
ARC for Fiscal Year Ending	6/30/2017	6/30/2016
Normal Cost Rate Calculation		
(a) Employer Future Normal Cost	$ 41,870,651	$ 42,388,390
(b) Present Value of Future Active Member Count	298,309	297,734
(c) Normal Cost Rate: (a) / (b)	$ 140.36	$ 142.37
(d) Expenses Rate*	$ 31.18	$ 22.52
(e) Total Normal Cost Rate: (c) + (d)	$ 171.54	$ 164.89
Accrued Liability Rate Calculation		
(f) Total Annual Amortization Payments**	$ 6,210,634	$ 6,886,516
(g) Current Active Member Count***	38,592	38,535
(h) Accrued Liability Rate: (f) / (g)	$ 160.93	$ 178.71
Total ARC (e) + (h)	$ 332.47	$ 343.60

* Based on actual expenses during the previous year.

** See Table 15 for more detail.

*** Reflects adjustments intended to estimate the impact of a full audit of the census data for lapsed members.

Section 6: Annual Required Contribution

The tables below provide the calculation and reconciliation of the annual required contribution (ARC) for the current and prior years' valuations.

Table 12: Annual Required Contribution (ARC)

Valuation Date ARC for Fiscal Year Ending	12/31/2014 6/30/2017	12/31/2013 6/30/2016
(a) Current Active Member Count*	38,592	38,535
(b) Normal Cost Rate	$ 171.54	$ 164.89
(c) Normal Cost Contribution: (a) x (b)	$ 6,620,072	$ 6,354,036
(d) Accrued Liability Contribution	6,210,634	6,886,516
(e) Total ARC: (c) + (d)	$ 12,830,706	$ 13,240,552

***** Reflects adjustments intended to estimate the impact of a full audit of the census data for lapsed members.

Table 13: Reconciliation of the Change in the ARC

Fiscal year ending June 30, 2016 Preliminary ARC (estimated based on December 31, 2013 Valuation)	13,240,552
Impact of Legislative Changes	0
Fiscal year ending June 30, 2016 Final ARC	13,240,552
Change Due to Demographic (Gain)/Loss	(321,139)
Change Due to Investment (Gain)/Loss	(83,565)
Change Due to Contributions Greater than ARC	(5,142)
Fiscal year ending June 30, 2017 Preliminary ARC (estimated based on December 31, 2014 Valuation)	12,830,706

Section 6: Annual Required Contribution

Amortization methods determine the payment schedule for the unfunded actuarial accrued liability. FRSWPF 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	12/31/2014	12/31/2013
(a) Unfunded Actuarial Accrued Liability	$ 38,029,967	$ 48,217,253
(b) Prior Years' Outstanding Balances	$ 42,969,443	$ 59,591,323
(c) New Amortization Base: (a) - (b)	$ (4,939,476)	$ (11,374,070)
(d) New Amortization Payment	$ (675,882)	$ (1,556,345)

Table 15: Amortization Schedule for Unfunded Accrued Liability

Date Established	Original Balance	12/31/2014 Outstanding Balance	Annual Payment
June 30, 2010	$ 51,963,371	$ 43,976,974	$ 6,865,854
June 30, 2011	8,122,313	7,445,581	1,073,191
June 30, 2012	3,813,072	3,745,578	503,816
December 31, 2013	(11,374,070)	(12,198,690)	(1,556,345)
December 31, 2014	(4,939,476)	(4,939,476)	(675,882)
Total		$ 38,029,967	$ 6,210,634

Section 6: Annual Required Contribution

The table below provides a history of the annual required contribution and the corresponding appropriated rate.

Table 16: History of Annual Required Contributions and Appropriated Rates

Valuation Date	Fiscal Year Ending	Preliminary ARC	Subsequent Changes to ARC	Final ARC	Appropriated Rate
12/31/2014	6/30/2017	$12,830,706	N/A	N/A	N/A
12/31/2013	6/30/2016	13,240,552	0	13,240,552	$13,550,000
6/30/2012*	6/30/2015	15,100,000	$(1,200,000)**	$13,900,000	13,900,000
6/30/2012	6/30/2014	14,620,362	0	14,620,362	14,626,599
6/30/2011	6/30/2013	14,074,371	0	14,074,371	15,446,599

* Because a valuation was not performed at June 30, 2013, the preliminary total employer contribution was estimated to be $15,100,000 for fiscal year ending June 30, 2015 based on the June 30, 2012 valuation.

** Based on the findings in Phase One of the audit of the census data for lapsed members, the total employer contribution was estimated to decrease by $2,200,000. House Bill 1034 (Session Law 2014-64) increased the employer contribution by $1,000,000. Subsequently, the 2014 Appropriations Act (Session Laws 2014-100) set contributions at $13,900,000 effective for the fiscal year ending June 30, 2015.

Section 7: Valuation Balance Sheet

The valuation balance sheet shows the assets and liabilities of FRSWPF. 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 17: Valuation Balance Sheet

Balance Sheet as of	12/31/2014	12/31/2013
Assets		
Current Actuarial Value of Assets		
Annuity Savings Fund	$ 40,869,614	$ 40,526,406
Pension Accumulation Fund	340,015,540	324,309,854
Total	$ 380,885,154	$ 364,836,260
Future Member Contributions to the Annuity Savings Fund	$ 27,666,734	$ 27,560,503
Prospective Contributions to the Pension Accumulation Fund		
Normal Contributions	$ 41,870,651	$ 42,388,390
Unfunded Accrued Liability Contributions	38,029,967	48,217,253
Total	$ 79,900,618	$ 90,605,643
Total Assets	$ 488,452,506	$ 483,002,406
Liabilities		
Annuity Savings Fund		
Past Member Contributions	$ 40,869,614	$ 40,526,406
Future Member Contributions	27,666,734	27,560,503
Total Contributions	$ 68,536,348	$ 68,086,909
Pension Accumulation Fund		
Benefits Currently in Payment	$ 220,628,896	$ 215,560,754
Benefits to be Paid to Current Active Members	199,287,262	199,354,743
Total Benefits Payable	$ 419,916,158	$ 414,915,497
Total Liabilities	$ 488,452,506	$ 483,002,406

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, 2015 based on a valuation date of December 31, 2014.

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

The June 30, 2015 total pension liability presented in this section was determined by an actuarial valuation as of December 31, 2014, based on the assumptions, methods and plan provisions described in this report. The actuarial cost method used to develop the total pension liability is the Entry Age Normal Cost method, as required by GASB Statement No. 67.

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

Table 18: Number of Active and Retired Members as of December 31, 2014

Group	Number
Retired members currently receiving benefits	12,730
Terminated members entitled to benefits but not yet receiving benefits	153
Active members	43,134
Total	56,017

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

Calculation as of	June 30, 2015
Total Pension Liability	
Service Cost	$ 5,884,000
Interest	29,671,000
Changes of Benefit Terms	0
Difference between Expected and Actual Experience	(2,799,000)
Change of Assumptions	0
Benefit Payments, including Refund of Member Contributions	(26,912,000)
Net Change in Total Pension Liability	$ 5,844,000
Total Pension Liability - Beginning of Year	$ 416,823,000
Total Pension Liability - End of Year	$ 422,667,000
Plan Fiduciary Net Position	
Employer Contributions	$ 13,900,000
Member Contributions	2,822,000
Net Investment Income	8,711,000
Benefit Payments, including Refund of Member Contributions	(26,912,000)
Administrative Expenses	(1,622,000)
Other	4,000
Net Change in Fiduciary Net Position	$ (3,097,000)
Plan Fiduciary Net Position - Beginning of Year	$ 389,405,000
Plan Fiduciary Net Position - End of Year	$ 386,308,000

Table 20: Net Pension Liability (Asset)

Calculation as of	June 30, 2015	June 30, 2014
Total Pension Liability	$ 422,667,000	$ 416,823,000
Plan Fiduciary Net Position	386,308,000	389,405,000
Net Pension Liability (Asset)	$ 36,359,000	$ 27,418,000
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	91.40%	93.42%

Section 8: Accounting Results

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

Table 21: Sensitivity of the Net Pension Liability (Asset) at June 30, 2015 to Changes in the Discount Rate

	1% Decrease	Current	1% Increase
Discount Rate	6.25%	7.25%	8.25%
Net Pension Liability (Asset)	86,337,000	36,359,000	(5,502,000)

The discount rate used to measure the total pension liability was 7.25%. The projection of cash flows used to determine the discount rate assumed that System contributions will continue to follow the current funding policy. Based on those assumptions, the System's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Please see Appendix E for additional detail.

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

Table 22: Additional Information for GASB Statement No. 67

Valuation Date	12/31/2014
Actuarial Cost Method	Entry Age
Amortization Method	Level dollar closed
Amortization Period	12 years
Asset Valuation Method	20% of market value plus 80% of expected actuarial value (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	N/A
*Includes Inflation of	3.50%
Cost-of-living Adjustments	N/A

Appendix A: Valuation Process and Glossary of Actuarial Terms

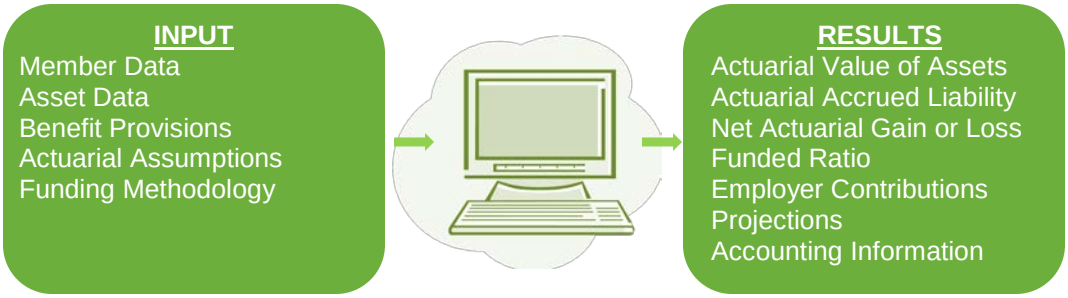
Purpose of an Actuarial Valuation

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

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

The Actuarial Valuation Process

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



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

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

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

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

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

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

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

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

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

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

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

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

Appendix A: Valuation Process and Glossary of Actuarial Terms

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

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

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

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

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

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

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

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

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

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

Appendix A: Valuation Process and Glossary of Actuarial Terms

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

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

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

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

Appendix B: Detailed Tabulations of Member Data

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

	Years of Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & Up	Total
Under 25	777	2,516	335	0	0	0	0	0	0	0	3,628
25 to 29	384	2,021	2,798	307	0	0	0	0	0	0	5,510
30 to 34	243	1,403	2,112	1,993	155	0	0	0	0	0	5,906
35 to 39	189	1,009	1,515	1,753	1,360	135	0	0	0	0	5,961
40 to 44	125	811	1,285	1,555	1,497	1,020	104	0	0	0	6,397
45 to 49	109	639	921	1,163	1,205	1,112	879	56	0	0	6,084
50 to 54	48	432	601	761	939	903	1,114	595	64	0	5,457
55 to 59	23	186	303	466	471	306	270	154	73	2	2,254
60 to 64	11	105	156	224	245	138	91	35	15	7	1,027
65 to 69	9	64	95	112	116	56	45	20	14	4	535
70 & Up	5	56	74	92	70	38	24	12	3	1	375
Total	1,923	9,242	10,195	8,426	6,058	3,708	2,527	872	169	14	43,134

Appendix B: Detailed Tabulations of Member Data

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

Age	Number
18	66
19	249
20	438
21	532
22	671
23	768
24	896
25	1,032
26	1,089
27	1,094
28	1,152
29	1,143
30	1,176
31	1,139
32	1,222
33	1,212
34	1,157
35	1,163
36	1,193
37	1,191
38	1,234
39	1,180
40	1,244
41	1,236
42	1,264
43	1,288
44	1,372
45	1,318
46	1,268
47	1,223
48	1,152
49	1,123
50	1,108
51	1,140
52	1,065
53	1,094
54	1,050
55	783
56	453
57	372

Appendix B: Detailed Tabulations of Member Data

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

Age	Number
58	346
59	300
60	273
61	252
62	199
63	158
64	145
65	127
66	142
67	120
68	80
69	66
70	53
71	48
72	59
73	43
74	29
75	24
76	23
77	20
78	18
79	12
80	7
81	4
82	5
83	7
84	5
85	2
86	4
87	4
88	1
90	1
91	1
92	2
93	1
95	1
96	1
97	1
Total	43,134

Appendix B: Detailed Tabulations of Member Data

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

Service	Number
0	477
1	2,019
2	2,855
3	2,178
4	2,350
5	2,159
6	1,993
7	1,978
8	2,118
9	2,023
10	1,793
11	1,695
12	1,734
13	1,585
14	1,801
15	1,545
16	1,382
17	1,340
18	1,182
19	1,134
20	741
21	810
22	816
23	697
24	741
25	614
26	575
27	532
28	627
29	351
30	327
31	232
32	169
33	193
34	111

Appendix B: Detailed Tabulations of Member Data

Table B-3: The Number of Active Members Distributed by Service as of December 31, 2014 (continued)

Service	Number
35	98
36	69
37	41
38	11
39	21
40	5
41	6
42	2
44	1
46	1
47	2
Total	43,134

Appendix B: Detailed Tabulations of Member Data

Table B-4: The Number and Annual Retirement Allowances of Retired Members Distributed by Age as of December 31, 2014

Age	Number	Allowances
55	130	$ 265,200
56	503	1,026,120
57	465	948,600
58	558	1,138,320
59	527	1,075,080
60	606	1,236,240
61	585	1,193,400
62	596	1,215,840
63	577	1,177,080
64	576	1,175,040
65	537	1,095,480
66	495	1,009,800
67	533	1,087,320
68	561	1,144,440
69	410	836,400
70	435	887,400
71	434	885,360
72	457	932,280
73	344	701,760
74	356	726,240
75	335	683,400
76	277	565,080
77	269	548,760
78	240	489,600
79	245	499,800
80	250	510,000
81	213	434,520
82	198	403,920
83	158	322,320
84	152	310,080
85	129	263,160
86	100	204,000
87	99	201,960
88	101	206,040
89	83	169,320
90	65	132,600
91	37	75,480
92	28	57,120
93	19	38,760
94	15	30,600

Appendix B: Detailed Tabulations of Member Data

Table B-4: The Number and Annual Retirement Allowances of Retired Members Distributed by Age as of December 31, 2014 (continued)

Age	Number	Allowances
95	12	$ 24,480
96	11	22,440
97	5	10,200
98	3	6,120
99	1	2,040
Total	12,730	$ 25,969,200

Appendix B: Detailed Tabulations of Member Data

Table B-5: The Number and Annual Retirement Allowances of Disabled Members Eligible for Deferred Pensions Distributed by Age of December 31, 2014

Age	Number	Allowances
29	1	$ 2,040
34	1	2,040
36	3	6,120
39	2	4,080
40	2	4,080
43	5	10,200
44	7	14,280
45	5	10,200
46	5	10,200
47	6	12,240
48	7	14,280
49	9	18,360
50	14	28,560
51	12	24,480
52	12	24,480
53	8	16,320
54	9	18,360
55	16	32,640
56	8	16,320
57	1	2,040
58	2	4,080
59	4	8,160
60	3	6,120
61	1	2,040
62	4	8,160
63	3	6,120
65	1	2,040
69	1	2,040
70	1	2,040
Total	153	$ 312,120

Appendix C: Summary of Main Benefit and Contribution Provisions

All regular and volunteer firemen of the State of North Carolina whose qualifications are certified by their respective Boards of County Commissioners are eligible to be members of the Fund. All rescue squad workers who are eligible for membership in the North Carolina Association of Rescue Squads, Inc. are eligible to be members of the Fund. Credit for prior service (that is, service rendered prior to July 1, 1959) is granted to firemen who were eligible on July 1, 1959 and became members on or before June 30, 1961. Credit may also be given for certain special purchased service.

Benefits

Service Retirement Pension

Condition for Pension	A member who retires after he has attained age 55 and has credit for 20 years of service as a fireman or rescue squad worker in North Carolina is entitled to a monthly pension.
Amount of Pension	The amount of the pension is equal to $170 per month.

Deferred Early Retirement Pension

Condition for Pension	A member whose service is terminated after he has credit for 20 years of service as a fireman or rescue squad worker in North Carolina but before he has attained age 55 is eligible to receive a deferred retirement pension, starting at age 55, provided he continues to make regular contributions until age 55 or until he has contributed for a total of 20 years, whichever event occurs earlier. Any member who is totally and permanently disabled while in the discharge of his official duties and leaves service as a result of such disability is eligible for a deferred retirement pension commencing at age 55 without continuing to make contributions. Any member who becomes totally and permanently disabled for any cause, other than line of duty, after 10 years of credited service under the Pension Fund may continue to make monthly contributions until he has paid $2,400 into the Fund and receive a pension upon attainment of age 55.
Amount of Pension	The deferred pension is $170 per month.

Appendix C: Summary of Main Benefit and Contribution Provisions

Return of Contributions	Upon the death or withdrawal of a member prior to retirement, his aggregate contributions are refunded in a lump sum. Upon the death of a retired member, the excess, if any, of his aggregate contributions over the total of the pension payments he has received is refunded.

Contributions

By Members	Each member contributes $10 per month until retirement or until he has contributed for a total of 20 years, whichever event occurs earlier.
By State	The State makes annual contributions sufficient, with the members' contributions, to meet the cost of the benefits under the Fund.
Changes Since Prior Valuation	In-service distributions of pensions allowed for all members after attaining age 55 and 20 years of service as an eligible firefighter or eligible rescue squad worker.

Changes Since Prior Valuation: None.

Appendix D: Actuarial Assumptions and Methods

Interest Rate: 7.25% per annum, compounded annually.

Separations From Active Service: Representative values of the assumed annual rates of withdrawal and vesting, retirement, death and disability are as follows:

	Annual Rates of				
	Withdrawal			Retirement*	
Service	Firefighters	Rescue Squad Workers	Age	Firefighters	Rescue Squad Workers
0	.030	.05	55+	1.00	1.00
1	.030	.05			
2	.030	.05			
3	.030	.05			
4	.030	.05			
5+	.015	.02			

* These rates apply only after 20 years of membership in the system.

	Annual Rates of			
Age	Base Mortality*		Disability	
	Male	Female	Male	Female
25	.0004	.0002	.0016	.0016
30	.0006	.0004	.0030	.0030
35	.0009	.0006	.0050	.0050
40	.0012	.0009	.0068	.0068
45	.0017	.0013	.0083	.0083
50	.0024	.0020	.0120	.0120
55	.0036	.0030	.0150	.0150
60	.0059	.0047	.0200	.0200
65	.0086	.0066		
69	.0109	.0083		

* Base mortality rates as of December 31, 2003.

Appendix D: Actuarial Assumptions and Methods

Representative values of the assumed post-retirement mortality rates as of December 31, 2003 prior to any mortality improvements are as follows:

Annual Rate of Death after Retirement

Age	Male Healthy Retirees	Female Healthy Retirees	Male Disabled Retirees	Female Disabled Retirees
55	.0064	.0044	.0277	.0176
60	.0099	.0077	.0342	.0229
65	.0165	.0125	.0407	.0296
70	.0273	.0207	.0483	.0401
75	.0469	.0341	.0596	.0558
80	.0805	.0563	.0775	.0771

Mortality Improvements: Representative values of the assumed mortality improvement rates (applied to pre-retirement mortality rates for active members and post-retirement mortality rates for healthy retirees after such tables have been set back or set forward) are as follows:

Age	Male Projection Scale	Female Projection Scale
25	0.010	0.014
30	0.005	0.010
35	0.005	0.011
40	0.008	0.015
45	0.013	0.016
50	0.018	0.017
55	0.019	0.008
60	0.016	0.005
65	0.014	0.005
70	0.015	0.005
75	0.014	0.008
80	0.010	0.007

Deaths After Retirement (Non-Disabled): According to the RP-2000 Mortality tables for retirees. These tables are set forward two years for all employees. The base retiree RP-2000 tables have no rates prior to age 50. The active employee rates of RP-2000 are used for ages less than 50 prior to any adjustments for setbacks.

Death After Disability: According to the RP-2000 Mortality tables for disabled annuitants set back six years for males and set forward one year for females.

Appendix D: Actuarial Assumptions and Methods

Deaths Prior to Retirement: According to the RP-2000 Mortality tables for active employees. These tables are set forward two years for all employees. The base RP-2000 tables for active employees have no rates after age 70. A blend of active rates and retired rates are used from ages 70 to 80 prior to any set back and adjustments.

Mortality Projection (Non-Disabled): All mortality rates are projected from December 31, 2003 using Scale AA.

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

Future Expenses: Equal to prior year actual administrative expenses.

Actuarial Cost Method: Entry age normal cost method. Entry age is established on an individual basis. Gains and losses are reflected in the unfunded accrued liability.

Asset Valuation Method: Actuarial value, as developed in Schedule A. The actuarial value of assets recognizes a portion of the difference between the market value of assets (excluding receivable employer contributions) and the expected actuarial value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected actuarial value. The actuarial value of assets is not allowed to be greater than 120% of the market value of assets or less than 80% of the market value of assets. Receivable employer contributions are then added to the preliminary actuarial value of assets.

Changes Since Prior Valuation: None.

Appendix E: GASB 67 Fiduciary Net Position Projection

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

Calendar Year	Beginning Fiduciary Position	Member Contributions	Employer Contributions	Benefit Payments	Administrative Expenses	Investment Earnings	Ending Fiduciary Position
2015	$ 383,328	$ 4,631	$ 14,293	$ 27,462	$ 1,246	$ 27,443	$ 400,987
2016	400,987	4,431	11,226	27,972	1,192	28,591	416,071
2017	416,071	4,239	10,509	28,517	1,141	29,634	430,795
2018	430,795	4,054	10,129	29,018	1,091	30,665	445,534
2019	445,534	3,881	9,920	29,701	1,044	31,697	460,287
2020	460,287	3,706	9,718	30,300	997	32,734	475,148
2021	475,148	3,540	9,536	31,096	953	33,773	489,948
2022	489,948	3,367	9,353	31,831	906	34,808	504,739
2023	504,739	3,200	5,790	32,660	861	35,719	515,927
2024	515,927	3,033	1,702	33,495	816	36,351	522,702
2025	522,702	2,868	771	34,430	772	36,772	527,911
2026	527,911	2,701	371	35,479	727	37,093	531,870
2027	531,870	2,531	982	36,450	681	37,363	535,615
2028	535,615	2,367	1,937	37,464	637	37,629	539,447
2029	539,447	2,200	2,280	38,524	592	37,877	542,688
2030	542,688	2,034	2,299	39,756	547	38,064	544,782
2031	544,782	1,860	2,155	40,949	500	38,163	545,511
2032	545,511	1,689	2,006	42,183	454	38,163	544,732
2033	544,732	1,518	1,847	43,770	408	38,039	541,958
2034	541,958	1,326	1,643	45,202	357	37,775	537,143
2035	537,143	1,146	1,428	46,092	308	37,382	530,699
2036	530,699	1,000	1,238	46,220	269	36,900	523,348
2037	523,348	904	1,103	46,383	243	36,354	515,083
2038	515,083	809	975	46,525	218	35,743	505,867
2039	505,867	716	861	46,522	193	35,067	495,796
2040	495,796	632	759	46,554	170	34,330	484,793
2041	484,793	548	661	46,510	148	33,528	472,872
2042	472,872	470	568	46,431	126	32,662	460,015
2043	460,015	395	480	46,264	106	31,731	446,251
2044	446,251	325	398	46,076	88	30,735	431,545
2045	431,545	258	320	45,791	70	29,674	415,936
2046	415,936	198	250	45,303	53	28,556	399,584
2047	399,584	147	191	44,654	39	27,390	382,619
2048	382,619	103	142	43,862	28	26,186	365,160
2049	365,160	67	100	42,891	18	24,952	347,370
2050	347,370	38	68	41,794	10	23,700	329,372
2051	329,372	16	42	40,449	4	22,441	311,418
2052	311,418	4	27	38,874	1	21,195	293,769
2053	293,769	0	20	37,233	0	19,972	276,528
2054	276,528	0	16	35,594	0	18,781	259,731
2055	259,731	0	12	33,969	0	17,621	243,395
2056	243,395	0	9	32,361	0	16,494	227,537
2057	227,537	0	6	30,770	0	15,401	212,174
2058	212,174	0	4	29,201	0	14,343	197,320
2059	197,320	0	2	27,654	0	13,321	182,989
2060	182,989	0	1	26,133	0	12,335	169,192
2061	169,192	0	0	24,640	0	11,389	155,941
2062	155,941	0	0	23,176	0	10,480	143,245
2063	143,245	0	0	21,745	0	9,611	131,111
2064	131,111	0	0	20,347	0	8,781	119,545

Appendix E: GASB 67 Fiduciary Net Position Projection

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

(in thousands)

Calendar Year	Beginning Fiduciary Position	Member Contributions	Employer Contributions	Benefit Payments	Administrative Expenses	Investment Earnings	Ending Fiduciary Position
2065	$ 119,545	$ 0	$ 0	$ 18,984	$ 0	$ 7,991	$ 108,552
2066	108,552	0	0	17,657	0	7,241	98,136
2067	98,136	0	0	16,368	0	6,532	88,300
2068	88,300	0	0	15,117	0	5,863	79,046
2069	79,046	0	0	13,905	0	5,235	70,376
2070	70,376	0	0	12,735	0	4,649	62,290
2071	62,290	0	0	11,606	0	4,103	54,787
2072	54,787	0	0	10,522	0	3,598	47,863
2073	47,863	0	0	9,484	0	3,132	41,511
2074	41,511	0	0	8,494	0	2,707	35,724
2075	35,724	0	0	7,555	0	2,321	30,490
2076	30,490	0	0	6,670	0	1,973	25,793
2077	25,793	0	0	5,841	0	1,662	21,614
2078	21,614	0	0	5,069	0	1,387	17,932
2079	17,932	0	0	4,357	0	1,145	14,720
2080	14,720	0	0	3,707	0	935	11,948
2081	11,948	0	0	3,119	0	755	9,584
2082	9,584	0	0	2,593	0	603	7,594
2083	7,594	0	0	2,128	0	475	5,941
2084	5,941	0	0	1,722	0	369	4,588
2085	4,588	0	0	1,374	0	284	3,498
2086	3,498	0	0	1,081	0	215	2,632
2087	2,632	0	0	837	0	161	1,956
2088	1,956	0	0	637	0	119	1,438
2089	1,438	0	0	478	0	88	1,048
2090	1,048	0	0	352	0	63	759
2091	759	0	0	255	0	46	550
2092	550	0	0	182	0	33	401
2093	401	0	0	127	0	25	299
2094	299	0	0	87	0	19	231
2095	231	0	0	59	0	14	186
2096	186	0	0	39	0	12	159
2097	159	0	0	26	0	12	145
2098	145	0	0	16	0	9	138
2099	138	0	0	11	0	10	137
2100	137	0	0	7	0	10	140
2101	140	0	0	4	0	10	146
2102	146	0	0	3	0	11	154
2103	154	0	0	2	0	11	163
2104	163	0	0	1	0	12	174
2105	174	0	0	1	0	13	186
2106	186	0	0	0	0	13	199
2107	199	0	0	0	0	15	214
2108	214	0	0	0	0	15	229
2109	229	0	0	0	0	16	245
2110	245	0	0	0	0	18	263
2111	263	0	0	0	0	19	282
2112	282	0	0	0	0	21	303
2113	303	0	0	0	0	22	325
2114	325	0	0	0	0	23	348

Appendix E: GASB 67 Fiduciary Net Position Projection

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

Calendar Year	Beginning Fiduciary Position	Benefit Payments	Funded Benefit Payments	Unfunded Benefit Payments	Present Value of Benefit Payments: Funded Payments at 7.25%	Present Value of Benefit Payments: Unfunded Payments at 3.73%	Present Value of Benefit Payments: Using Single Discount Rate of 7.25%
2015	$ 383,328	$ 27,462	$ 27,462	$ 0	$ 26,518	$ 0	$ 26,518
2016	400,987	27,972	27,972	0	25,184	0	25,184
2017	416,071	28,517	28,517	0	23,939	0	23,939
2018	430,795	29,018	29,018	0	22,713	0	22,713
2019	445,534	29,701	29,701	0	21,676	0	21,676
2020	460,287	30,300	30,300	0	20,619	0	20,619
2021	475,148	31,096	31,096	0	19,730	0	19,730
2022	489,948	31,831	31,831	0	18,831	0	18,831
2023	504,739	32,660	32,660	0	18,015	0	18,015
2024	515,927	33,495	33,495	0	17,227	0	17,227
2025	522,702	34,430	34,430	0	16,511	0	16,511
2026	527,911	35,479	35,479	0	15,864	0	15,864
2027	531,870	36,450	36,450	0	15,196	0	15,196
2028	535,615	37,464	37,464	0	14,563	0	14,563
2029	539,447	38,524	38,524	0	13,963	0	13,963
2030	542,688	39,756	39,756	0	13,435	0	13,435
2031	544,782	40,949	40,949	0	12,903	0	12,903
2032	545,511	42,183	42,183	0	12,393	0	12,393
2033	544,732	43,770	43,770	0	11,990	0	11,990
2034	541,958	45,202	45,202	0	11,545	0	11,545
2035	537,143	46,092	46,092	0	10,977	0	10,977
2036	530,699	46,220	46,220	0	10,263	0	10,263
2037	523,348	46,383	46,383	0	9,603	0	9,603
2038	515,083	46,525	46,525	0	8,982	0	8,982
2039	505,867	46,522	46,522	0	8,374	0	8,374
2040	495,796	46,554	46,554	0	7,813	0	7,813
2041	484,793	46,510	46,510	0	7,278	0	7,278
2042	472,872	46,431	46,431	0	6,775	0	6,775
2043	460,015	46,264	46,264	0	6,294	0	6,294
2044	446,251	46,076	46,076	0	5,845	0	5,845
2045	431,545	45,791	45,791	0	5,416	0	5,416
2046	415,936	45,303	45,303	0	4,996	0	4,996
2047	399,584	44,654	44,654	0	4,591	0	4,591
2048	382,619	43,862	43,862	0	4,205	0	4,205
2049	365,160	42,891	42,891	0	3,834	0	3,834
2050	347,370	41,794	41,794	0	3,483	0	3,483
2051	329,372	40,449	40,449	0	3,143	0	3,143
2052	311,418	38,874	38,874	0	2,817	0	2,817
2053	293,769	37,233	37,233	0	2,516	0	2,516
2054	276,528	35,594	35,594	0	2,242	0	2,242
2055	259,731	33,969	33,969	0	1,995	0	1,995
2056	243,395	32,361	32,361	0	1,772	0	1,772
2057	227,537	30,770	30,770	0	1,571	0	1,571
2058	212,174	29,201	29,201	0	1,390	0	1,390
2059	197,320	27,654	27,654	0	1,228	0	1,228
2060	182,989	26,133	26,133	0	1,082	0	1,082
2061	169,192	24,640	24,640	0	951	0	951
2062	155,941	23,176	23,176	0	834	0	834
2063	143,245	21,745	21,745	0	730	0	730
2064	131,111	20,347	20,347	0	637	0	637

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%	Present Value of Benefit Payments: Unfunded Payments at 3.73%	Present Value of Benefit Payments: Using Single Discount Rate of 7.25%
2065	$ 119,545	$ 18,984	$ 18,984	$ 0	$ 554	$ 0	$ 554
2066	108,552	17,657	17,657	0	480	0	480
2067	98,136	16,368	16,368	0	415	0	415
2068	88,300	15,117	15,117	0	357	0	357
2069	79,046	13,905	13,905	0	307	0	307
2070	70,376	12,735	12,735	0	262	0	262
2071	62,290	11,606	11,606	0	222	0	222
2072	54,787	10,522	10,522	0	188	0	188
2073	47,863	9,484	9,484	0	158	0	158
2074	41,511	8,494	8,494	0	132	0	132
2075	35,724	7,555	7,555	0	109	0	109
2076	30,490	6,670	6,670	0	90	0	90
2077	25,793	5,841	5,841	0	74	0	74
2078	21,614	5,069	5,069	0	60	0	60
2079	17,932	4,357	4,357	0	48	0	48
2080	14,720	3,707	3,707	0	38	0	38
2081	11,948	3,119	3,119	0	30	0	30
2082	9,584	2,593	2,593	0	23	0	23
2083	7,594	2,128	2,128	0	18	0	18
2084	5,941	1,722	1,722	0	13	0	13
2085	4,588	1,374	1,374	0	10	0	10
2086	3,498	1,081	1,081	0	7	0	7
2087	2,632	837	837	0	5	0	5
2088	1,956	637	637	0	4	0	4
2089	1,438	478	478	0	3	0	3
2090	1,048	352	352	0	2	0	2
2091	759	255	255	0	1	0	1
2092	550	182	182	0	1	0	1
2093	401	127	127	0	1	0	1
2094	299	87	87	0	0	0	0
2095	231	59	59	0	0	0	0
2096	186	39	39	0	0	0	0
2097	159	26	26	0	0	0	0
2098	145	16	16	0	0	0	0
2099	138	11	11	0	0	0	0
2100	137	7	7	0	0	0	0
2101	140	4	4	0	0	0	0
2102	146	3	3	0	0	0	0
2103	154	2	2	0	0	0	0
2104	163	1	1	0	0	0	0
2105	174	1	1	0	0	0	0
2106	186	0	0	0	0	0	0
2107	199	0	0	0	0	0	0
2108	214	0	0	0	0	0	0
2109	229	0	0	0	0	0	0
2110	245	0	0	0	0	0	0
2111	263	0	0	0	0	0	0
2112	282	0	0	0	0	0	0
2113	303	0	0	0	0	0	0
2114	325	0	0	0	0	0	0