North Dakota Teachers' Fund for Retirement

Actuarial Valuation and Review as of July 1, 2014

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October 16, 2014

Board of Trustees
North Dakota Teachers' Fund for Retirement
1930 Burnt Boat Drive P.O. Box 7100
Bismarck, ND 58507-7100

Dear Trustees:

We certify that the information contained in this report is accurate and fairly presents the actuarial position of the North Dakota Teachers' Fund for Retirement (TFFR) as of July 1, 2014.

All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion the results presented also comply with the North Dakota Century Code, and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board (GASB). The undersigned are independent actuaries. All are Fellows of the Society of Actuaries, Enrolled Actuaries, and Members of the American Academy of Actuaries, and all are experienced in performing valuations for large public retirement systems. They all meet the Qualification Standards of the American Academy of Actuaries.

ACTUARIAL VALUATION

The primary purposes of the valuation report are to determine the adequacy of the current employer contribution rate, to describe the current financial condition of TFFR, and to analyze changes in TFFR's financial condition. In addition, the report provides information required by TFFR in connection with the Governmental Accounting Standards Board Statement No. 67 (GASB 67) and it provides various summaries of the data. Valuations are prepared annually, as of July 1 of each year, the first day of TFFR's plan and fiscal year.

FINANCING OBJECTIVES

The member and employer contribution rates are established by statute. The member rate was increased from 9.75% to 11.75% effective July 1, 2014. The employer rate was increased from 10.75% to 12.75% effective July 1, 2014. The 11.75% member contribution rate and 12.75% employer contribution rate will remain in effect until TFFR is 100% funded on an actuarial basis. At that point, the employer and member contribution rates will revert to 7.75%.

The rates are intended to be sufficient to pay TFFR's normal cost and to amortize TFFR's unfunded actuarial accrued liability (UAAL) over a period of 29 years beginning July 1, 2014, although at any given time the statutory rates may be insufficient.

PROGRESS TOWARD REALIZATION OF FINANCING OBJECTIVES

In order to determine the adequacy of the 12.75% statutory employer contribution rate, it is compared to the actuarially determined contribution (ADC). The ADC is equal to the sum of (a) the employer normal cost rate and (b) the level percentage of pay required to amortize the UAAL over the 30-year closed period that began July 1, 2013 (29 years remaining as of July 1, 2014). For this calculation, payroll is assumed to increase 3.25% per year. As of July 1, 2014, the ADC is 11.57%, compared to 10.26% last year. This is less than the 12.75% rate currently required by law.

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) increased from last year. The funded ratio at July 1, 2013, was 58.8%, while it is 61.8% as of July 1, 2014. Based on the market value of assets rather than the actuarial value of assets, the funded ratio increased to 66.6%, compared to 61.4% last year.

The plan has a net asset gain of $151 million from previous years that has not yet been recognized in the actuarial value of assets because of the five-year smoothing. This unrecognized asset gain is due to market gains during FY 2011, FY 2013, and FY 2014 offset by an asset loss in FY 2012. As these gains are recognized over the next four years, the funded ratio is expected to continue to improve, assuming the plan earns 8.00% in the future.

REPORTING CONSEQUENCES

TFFR is required to disclose certain actuarial information in its Comprehensive Annual Financial Report (CAFR), including the Net Pension Liability (NPL), the sensitivity of the NPL to changes in the discount rate, a schedule of changes in NPL, and a comparison of actual contributions to the ADC. The State and the school districts need to comply with GASB 68, which also requires disclosure of certain actuarial information in their financial statements. This information will be provided in a separate report.

BENEFIT PROVISIONS

The actuarial valuation reflects the benefit and contribution provisions set forth in the North Dakota Century Code. These have not changed from the prior valuation.

ASSUMPTIONS AND METHODS

Actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the Plan's actuary. On January 21, 2010, the Board adopted new assumptions, effective for the July 1, 2010 valuation. In our opinion, the assumptions as approved by the Board are reasonably related to the experience of the Plan.

Effective with the July 1, 2013 actuarial valuation, the Trustees adopted an Actuarial Funding Policy, which provides direction on how to calculate an actuarially determined contribution. The actuarially determined contribution is compared to statutory contribution rates as a measure of funding adequacy.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates, and funding periods.

DATA

Member data for retired, active, and inactive participants was supplied as of July 1, 2014, by the staff of the Retirement and Investment Office (RIO). We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data. Asset information was also supplied by the RIO staff.

Sincerely,

Segal Consulting, a member of the Segal Group

By:

Kim Nicholl, FSA, MAAA, EA
Senior Vice President and Actuary

Matthew A. Strom, FSA, MAAA, EA
Vice President and Actuary

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SECTION 1

VALUATION SUMMARY

SECTION 2

VALUATION RESULTS

SECTION 3

SUPPLEMENTAL INFORMATION

SECTION 4

REPORTING INFORMATION

Significant Issues in the Valuation Year

1. The Governmental Accounting Standards Board (GASB) approved two new Statements affecting the reporting of pension liabilities for accounting purposes. Statement 67 replaces Statement 25 and is for plan reporting. Statement 68 replaces Statement 27 and is for employer reporting. Statement 67 is effective with the fiscal year ending June 30, 2014, for Plan reporting. Statement 68 is effective with the fiscal year ending June 30, 2015, for employer reporting. The information contained in this valuation is intended to be used (along with other information) to comply with both Statements 67 and 68.

2. The employer statutory contribution rate for the fiscal year beginning July 1, 2014, under the North Dakota Century Code is equal to 12.75% of payroll for employers. Compared to the actuarially determined contribution of 11.57% of payroll, the contribution sufficiency is 1.18% of payroll as of July 1, 2014.

3. The 2011 legislative changes included increases to the statutory contribution rates: 2% each for employer and member effective July 1, 2012, and an additional 2% each for employer and member effective July 1, 2014. Employer and member contributions will be reset to 7.75% each once the Fund reaches a 100% funded ratio, measured using the actuarial value of assets.

4. The funded ratio based on the actuarial value of assets over the actuarial accrued liability as of July 1, 2014, is 61.8%, compared to 58.8% as of July 1, 2013. This ratio is a measure of funding status and its history is a measure of funding progress. The total 8% increase in the statutory contribution rates is expected to improve the funded ratio of the plan over time.

5. For the year ended June 30, 2014, Segal has determined that the asset return on a market value basis was 16.1%. After gradual recognition of investment gains and losses under the actuarial smoothing method, the actuarial rate of return was 12.6%. This represents an experience gain when compared to the assumed rate of 8.0%. As of June 30, 2014, the actuarial value of assets ($1.940 billion) represented 92.8% of the market value ($2.091 billion).

6. The portion of deferred investment gains and losses recognized during the calculation of the July 1, 2014, actuarial value of assets contributed to a gain of $80,084,128. The demographic and liability experience resulted in a $8,882,399 loss.

7. As mentioned above, the current method used to determine the actuarial value of assets yields an amount that is 92.8% of the market value of assets as of June 30, 2014. 92.8% falls within the 20% corridor, so no further adjustment to the actuarial value of assets is necessary. Guidelines in Actuarial Standard of Practice No. 44 (Selection and Use of Asset Valuation Methods for Pension Valuations) recommend that asset values fall within a reasonable range around the corresponding market value. The actuarial asset method complies with these guidelines.

8. When measuring pension liability for GASB purposes, the same actuarial cost method (Entry Age Normal) is used to determine the funded status of the Plan, the actuarially determined contribution rate, and the effective amortization period. In addition, the GASB blended discount rate calculation results in the same discount rate (expected return on assets) as used for funding purposes (8.0%). This means that the Total Pension Liability (TPL) measure for financial reporting shown in this report is determined on the same basis as the Actuarial Accrued Liability (AAL) measure for funding. We note that the same is true for the Normal Cost component of the annual plan cost for funding and financial reporting.

9. The Net Pension Liability (NPL) is equal to the difference between the TPL and the Plan’s Fiduciary Net Position. The Plan’s Fiduciary Net Position is equal to the market value of assets and therefore, the NPL measure is very similar to the Unfunded Actuarial Accrued Liability on a market value basis. The NPL decreased from $1,157,555,127 as of June 30, 2013, to $1,047,822,717 as of June 30, 2014.

10. This actuarial valuation report as of July 1, 2014, is based on financial data as of that date. Changes in the value of assets subsequent to that date are not reflected.

11. The Fund’s cash flow (contributions minus benefit payments, refunds, and expenses) as a percentage of the market value of assets is -2.0% as of June 30, 2014, compared to -1.9% as of June 30, 2013. The increase in the employer and member contribution rates effective July 1, 2014, will improve the cash flow percentage, assuming all other experience emerges as expected.

Summary of Key Valuation Results

	2014	2013
Demographic Data for Plan Year Beginning July 1:		
Number of retirees and beneficiaries	7,747	7,489
Number of inactive vested members	1,509	1,500
Number of inactive non-vested members	661	563
Number of active members	10,305	10,138
Total payroll supplied by System, annualized	$557,222,917	$526,698,342
Statutory Contributions (% of Payroll) for Plan Year Beginning July 1:		
Member	11.75%	9.75%
Employer	12.75%	10.75%
Actuarially determined contribution rate for year beginning July 1	11.57%	10.26%*
Margin/(deficit)	1.18%	0.49%*
Assets:		
Market value	$2,090,977,056	$1,839,583,960
Actuarial value	1,940,473,504	1,762,321,644
Return on market value as determined by Segal	16.1%	13.4%
Return on actuarial value	12.6%	2.7%
Ratio of actuarial value to market value	92.8%	95.8%
Net cash flow % relative to market value	-2.0%	-1.9%
Actuarial Information:		
Normal cost %	10.63%	10.15%
Normal cost	$62,980,534	$56,751,722
Actuarial accrued liability	3,138,799,773	2,997,139,087
Unfunded actuarial accrued liability	1,198,326,269	1,234,817,443
Funded ratio	61.8%	58.8%
Effective amortization period	24 years	28 years*
GASB Information:		
Discount rate	8.00%	8.00%
Total pension liability	$3,138,799,773	$2,997,139,087
Plan fiduciary net position	2,090,977,056	1,839,583,960
Net pension liability	1,047,822,717	1,157,555,127
Plan fiduciary net position as a percentage of total pension liability	66.6%	61.4%

**Reflects increases in member and employer contribution rates effective July 1, 2014.*

Summary of Key Valuation Results (continued)

	2014	2013
Gains/(Losses):		
Asset experience	$80,084,128	-$91,132,324
Liability experience	-8,882,399	-4,300,712
Benefit changes	0	0
Assumption/method changes	0	11,150,759
Total gain/(loss)	$71,201,729	-$84,282,277

A. MEMBER DATA

The Actuarial Valuation and Review considers the number and demographic characteristics of covered participants, including active participants, inactive participants, retirees, and beneficiaries.

This section presents a summary of significant statistical data on these participant groups.

More detailed information for this valuation year and the preceding valuation can be found in Section 3, Exhibits A, B, and C.

A historical perspective of how the participant population has changed over the past ten valuations can be seen in this chart.

CHART 1

Member Population: 2005 – 2014

Year Ended June 30	Active Members	Inactive Vested Members	Inactive Non-vested Members	Retirees and Beneficiaries	Ratio of Actives to Retirees and Beneficiaries
2005	9,801	1,377	168	5,586	1.75
2006	9,585	1,409	143	5,893	1.63
2007	9,599	1,439	142	6,077	1.58
2008	9,561	1,459	229	6,317	1.51
2009	9,707	1,490	292	6,466	1.50
2010	9,907	1,472	331	6,672	1.48
2011	10,004	1,463	407	6,933	1.44
2012	10,014	1,483	468	7,151	1.40
2013	10,138	1,500	563	7,489	1.35
2014	10,305	1,509	661	7,747	1.33

Active Members

Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 10,305 active members with an average age of 42.9 and 12.8 average years of service. The 10,138 active members in the prior valuation had an average age of 43.2 and 13.2 average years of service.

Inactive Members

In this year's valuation, there were 1,509 participants with a vested right to a deferred or immediate vested benefit.

In addition, there were 661 participants entitled to a return of their employee contributions.

These graphs show a distribution of active members by age and by years of service.

CHART 2

Distribution of Active Members by Age as of June 30, 2014

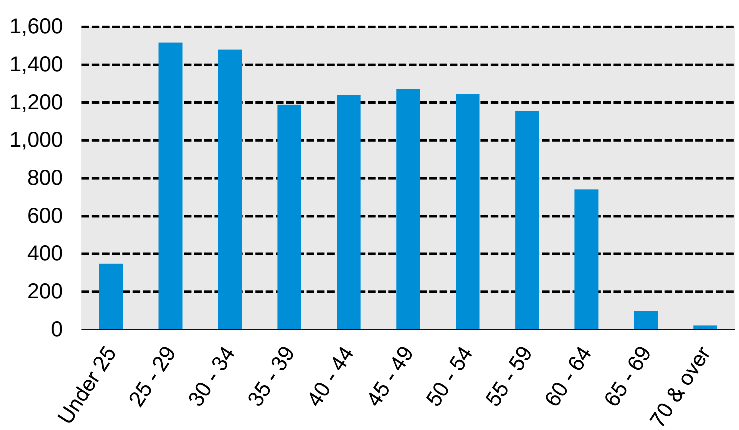
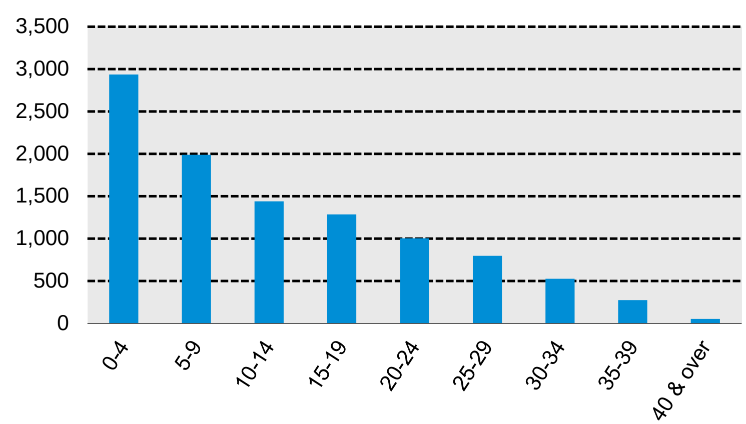


CHART 3

Distribution of Active Members by Years of Service as of June 30, 2014

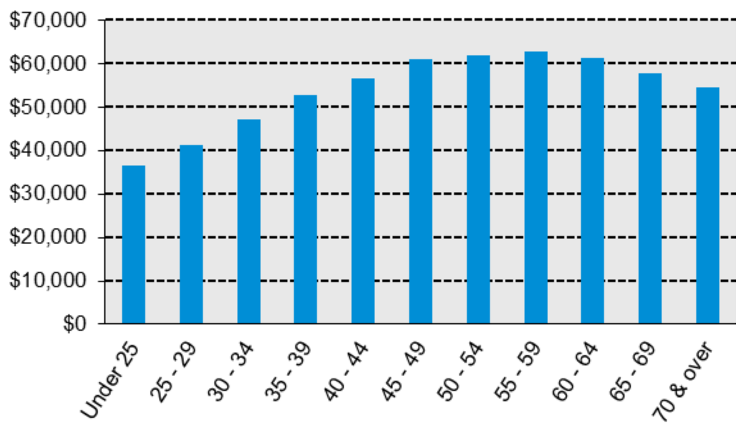


Distribution of Active Members by Age and Average Compensation

In this year's valuation, there were 10,305 active members with an average compensation of $54,073. The 10,138 active members in the prior valuation had an average compensation of $51,953.

CHART 4

Distribution of Active Members by Age and Average Compensation as of June 30, 2014



Retirees and Beneficiaries

As of July 1, 2014, 7,120 retirees and 627 beneficiaries were receiving total monthly benefits of $13,814,311. For comparison, in the previous valuation, there were 6,878 retirees and 611 beneficiaries receiving monthly benefits of $12,987,372.

These graphs show a distribution of the current retirees and beneficiaries based on their monthly amount and age, by type of pension.

CHART 5

Distribution of Retirees and Beneficiaries by Type and by Monthly Amount as of July 1, 2014

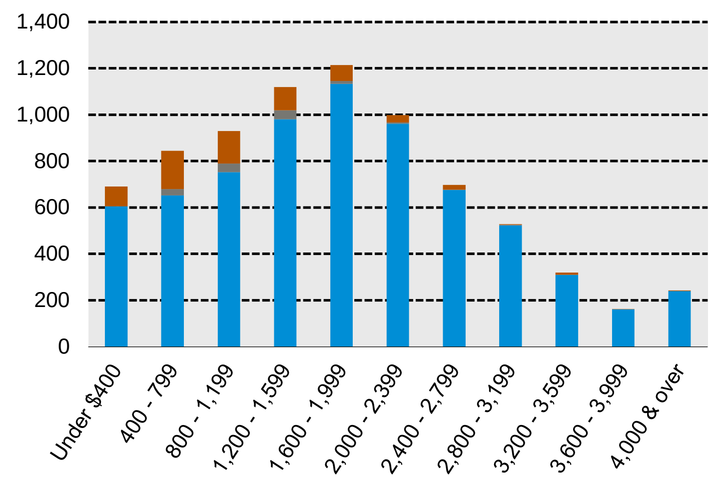
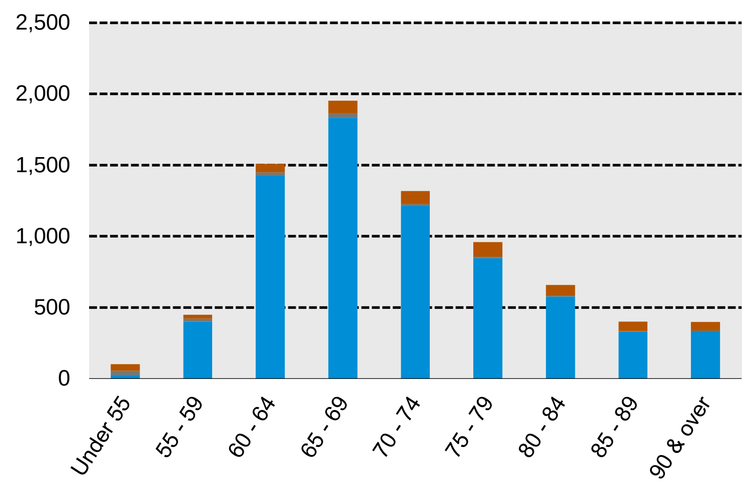


CHART 6

Distribution of Retirees and Beneficiaries by Type and by Age as of July 1, 2014



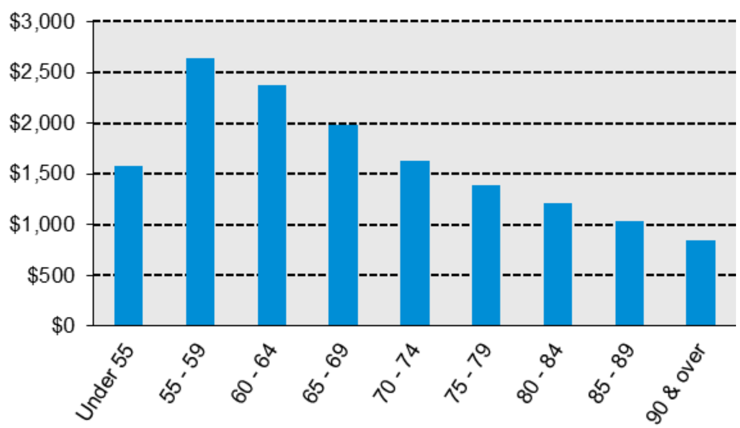
■ Beneficiary
■ Disabled Retiree
■ Retiree

Distribution of Retirees and Beneficiaries by Age and Average Monthly Benefit Amount

As of July 1, 2014, the average monthly benefit amount among 7,120 retirees and 627 beneficiaries was $1,783. In the previous valuation, the average monthly benefit amount among 6,878 retirees and 611 beneficiaries was $1,722.

CHART 7

Distribution of Retirees and Beneficiaries by Age and Average Monthly Amount as of July 1, 2014



B. FINANCIAL INFORMATION

It is desirable to have level and predictable plan costs from one year to the next. For this reason, TFFR's Board utilizes an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

The chart shows the determination of the actuarial value of assets as of the valuation date and the value from the prior year.

CHART 8

Determination of Actuarial Value of Assets for Years Ended June 30, 2014, and June 30, 2013

				2014		2013	
1.	Market value of assets available for benefits				$2,090,977,056		$1,839,583,960
2.	Calculation of unrecognized return*		Original Amount**	% Not Recognized		% Not Recognized	
	(a)	Year ended June 30, 2014	$147,144,380	80%	$117,715,504		
	(b)	Year ended June 30, 2013	87,575,593	60%	52,545,356	80%	$70,060,475
	(c)	Year ended June 30, 2012	-159,245,999	40%	-63,698,400	60%	-95,547,599
	(d)	Year ended June 30, 2011	219,705,461	20%	43,941,092	40%	87,882,184
	(e)	Year ended June 30, 2010	74,336,281		0	20%	14,867,256
	(f)	Total unrecognized return			$150,503,552		$77,262,316
3.	Actuarial value of assets (Current Assets): (1) – (2f)				$1,940,473,504		$1,762,321,644
4.	Actuarial value as a percent of market value: (3) ÷ (1)				92.8%		95.8%

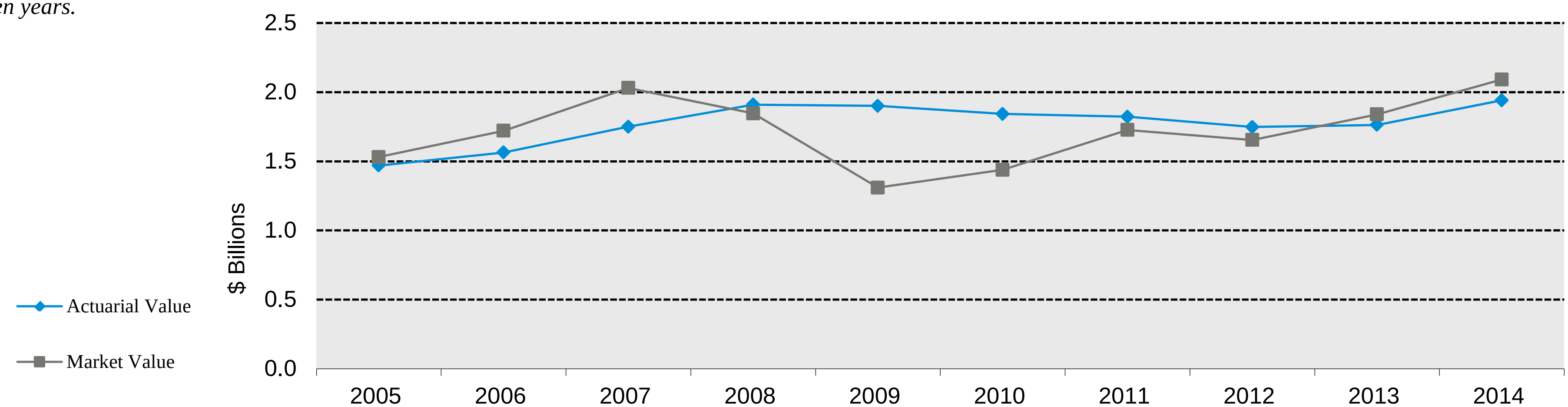
* *Recognition at 20% per year over 5 years*
***Total return minus expected return on market value*

Both the actuarial value and market value of assets are representations of the TFFR's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The actuarial asset value is significant because the TFFR's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

This chart shows the change in the actuarial value of assets versus the market value over the past ten years.

CHART 9

Actuarial Value of Assets vs. Market Value of Assets as of June 30, 2005 – 2014



Investment Rate of Return

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the TFFR's investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets is 8.00%. The actual rate of return on an actuarial basis for the Plan Year ended June 30, 2014, was 12.60%.

Since the actual return for the year was greater than the assumed return, the TFFR experienced an actuarial gain during the year ended June 30, 2014, with regard to its investments.

This chart shows the gain/(loss) due to investment experience.

CHART 10

Actuarial Value Investment Experience for Year Ended June 30, 2014

1.	Actual return	$219,419,167
2.	Average value of assets	1,741,687,990
3.	Actual rate of return: (1) ÷ (2)	12.60%
4.	Assumed rate of return	8.00%
5.	Expected return: (2) x (4)	$139,335,039
6.	Actuarial gain/(loss): (1) – (5)	$80,084,128

Because actuarial planning is long-term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial basis compared to the market value investment return for the last twenty years, including five-year, ten-year, fifteen-year and twenty-year averages.

Chart 11
Investment Return

Year Ended June 30	Market Value	Actuarial Value
1995	13.6%	9.1%
1996	15.6%	11.3%
1997	18.5%	12.6%
1998	13.2%	12.6%
1999	11.5%	13.5%
2000	11.6%	13.3%
2001	-7.6%	8.6%
2002	-8.6%	3.0%
2003	2.1%	0.6%
2004	18.9%	1.9%
2005	13.3%	3.3%
2006	14.6%	8.5%
2007	20.4%	14.4%
2008	-7.0%	11.6%
2009	-27.0%	1.7%
2010	13.9%	-0.5%
2011	23.5%*	1.4%
2012	-1.4%*	-1.4%
2013	13.4%*	2.7%
2014	16.1%*	12.6%
Average Returns		
Last 5 years:	12.7%	2.9%
Last 10 years:	6.8%	5.2%
Last 15 years:	5.5%	5.3%
Last 20 years:	7.6%	6.9%

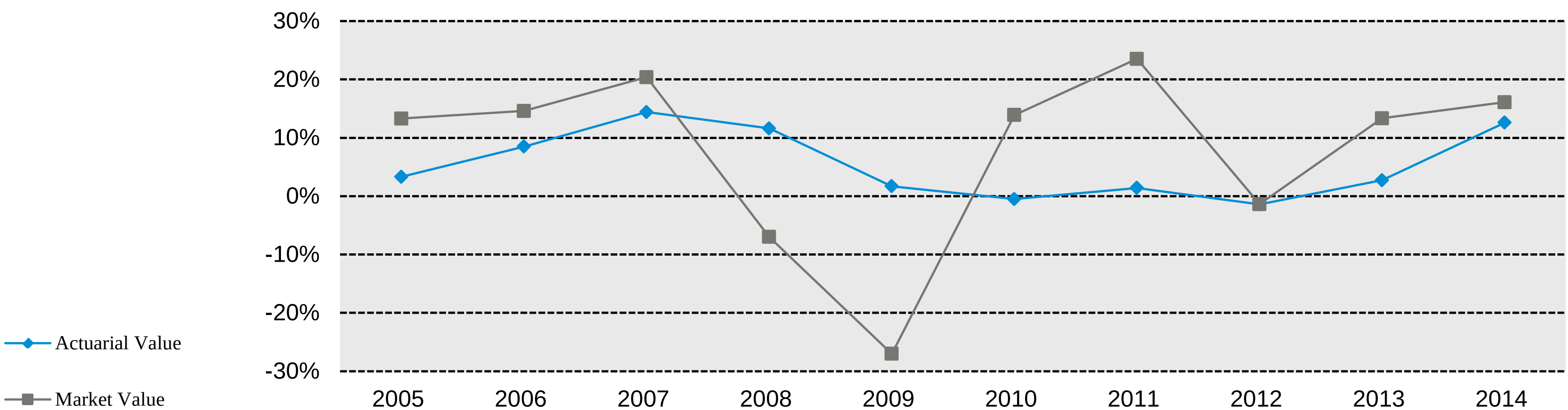
* *As determined by Segal.*

Subsection B described the actuarial asset valuation method that gradually takes into account fluctuations in the market value rate of return. The effect of this is to stabilize the actuarial rate of return, which contributes to leveling pension plan costs.

This chart illustrates how this leveling effect has actually worked over the years 2005 - 2014.

CHART 12

Market and Actuarial Rates of Return for Years Ended June 30, 2005 - 2014



Cash Flow

Cash flow is the difference between contributions and benefit payments, refunds, and expenses. Negative cash flow indicates that the payments made from the Fund exceed contributions made to the Fund.

The increase in the employer and member contribution rates effective July 1, 2014, will improve the cash flow percentage, assuming all other experience emerges as expected.

Chart 13

History of Cash Flow

		Disbursements or Expenditures						
Year Ending June 30,	Contributions[1]	Benefit Payments	Refunds	Administrative Expenses	Total	Net Cash Flow for the Year[2]	Market Value of Assets	Net Cash Flow as Percent of Market Value
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2005	$64,072,881	($84,498,130)	($2,733,407)	($2,086,849)	($89,318,386)	($25,245,505)	$1,530,194,427	-1.6%
2006	65,577,828	(91,818,092)	(2,697,308)	(1,484,591)	(95,999,991)	(30,422,163)	1,720,324,948	-1.8%
2007	66,362,099	(99,737,905)	(3,328,931)	(1,592,060)	(104,658,896)	(38,296,797)	2,029,777,412	-1.9%
2008	70,573,389	(106,456,334)	(5,500,476)	(1,639,521)	(113,596,331)	(43,022,942)	1,846,113,411	-2.3%
2009	74,380,980	(113,966,079)	(2,362,251)	(1,707,506)	(118,035,836)	(43,654,856)	1,309,716,730	-3.3%
2010	78,105,830	(124,472,154)	(2,557,240)	(1,902,796)	(128,932,190)	(50,826,360)	1,437,949,843	-3.5%
2011	84,923,250	(127,435,564)	(2,210,738)	(2,003,705)	(131,650,007)	(46,726,757)	1,726,179,317	-2.7%
2012	88,808,604	(135,250,568)	(2,479,194)	(1,596,976)	(139,326,738)	(50,518,134)	1,654,149,659	-3.1%
2013	115,849,348	(145,943,323)	(3,053,395)	(1,623,638)	(150,620,356)	(34,771,008)	1,839,583,960	-1.9%
2014	120,991,968	(158,350,355)	(3,908,921)	(1,586,045)	(163,845,321)	(42,853,353)	2,090,977,056	-2.0%

[1] Column (2) includes employee and employer contributions, as well as any purchased service credits during the year.
[2] Column (7) = Column (2) + Column (6).

Other Experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include, but are not limited to:

- the extent of turnover among the participants,
- retirement experience (earlier or later than expected),
- mortality (more or fewer deaths than expected),
- the number of disability retirements, and
- salary increases different than assumed.

The net loss from this other experience for the year ended June 30, 2014, amounted to $8,882,399, which is less than 0.3% of the actuarial accrued liability.

The chart shows elements of the experience gain/(loss) for the most recent year.

CHART 14

Experience Due to Changes in Demographics for Year Ended June 30, 2014

1.	Turnover	-$3,199,333
2.	Retirement	4,469,339
3.	Deaths among retired members and beneficiaries	-672,722
4.	Salary/service increase for continuing actives	1,065,833
5.	New entrants	-6,483,726
6.	Miscellaneous	-4,061,790
7.	Total	-$8,882,399

C. DEVELOPMENT OF EMPLOYER COSTS

The amount of actuarially determined contribution is comprised of an employer normal cost payment and a payment on the unfunded actuarial accrued liability. This total amount is then divided by the projected payroll for active members to determine the actuarially determined contribution of 11.57% of payroll.

Effective July 1, 2013, the amortization period was set to 30 years, but will decline by one year in each subsequent valuation. As of July 1, 2014, the amortization period has declined to 29 years.

The chart compares this valuation's recommended contribution with the prior valuation.

CHART 15

Actuarially Determined Contribution

	Year Beginning July 1			
	2014		2013	
	Amount	% of Compensation	Amount	% of Compensation
1. Total normal contribution rate	$62,980,534**	10.63%	$56,751,722	10.15%
2. Less: member contribution rate	69,591,661	-11.75%	54,539,537	-9.75%
3. Employer normal contribution rate	-$6,611,127	-1.12%	$2,212,185	0.40%
4. Employer normal contribution rate, adjusted for timing*	-6,611,127	-1.12%	2,298,407	0.41%
5. Actuarial accrued liability	3,138,799,773		2,997,139,087	
6. Actuarial value of assets	1,940,473,504		1,762,321,644	
7. Unfunded actuarial accrued liability: (5) - (6)	1,198,326,269		1,234,817,443	
8. Payment on unfunded actuarial accrued liability, adjusted for timing	75,149,970	12.69%	55,075,563	9.85%***
9. Actuarially determined contribution (4) + (8)	$68,538,843	11.57%	$57,373,970	10.26%
10. Total payroll supplied by System, annualized	$557,222,917		$526,698,342	
11. Projected annual payroll for fiscal year beginning July 1	$592,269,452		$559,379,867	

* *Contributions are assumed to be paid at the middle of every month.*

** *Reflects the adjustment for middle of month timing.*

*** *Reflects the actuarial present value of the increased statutory contributions scheduled to occur July 1, 2014.*

The actuarially determined contribution as of July 1, 2014, is based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. It includes all changes affecting future costs, adopted benefit changes, actuarial gains and losses, and changes in the actuarial assumptions.

Reconciliation of Actuarially Determined Contribution

The chart below details the changes in the actuarially determined contribution from the prior valuation to the current year's valuation.

The chart reconciles the actuarially determined contribution from the prior valuation to the amount determined in this valuation.

CHART 16

Reconciliation of Actuarially Determined Contribution from July 1, 2013 to July 1, 2014

	July 1, 2014	July 1, 2013
1. Prior valuation	10.26%	9.49%
2. Increases/(decreases) due to:		
a. Change in amortization period (decrease from 30 years to 29 years remaining as of July 1, 2014)	0.00%	-0.23%
b. Change in covered payroll and normal cost	-0.27%	-0.20%
c. Employer contributions received at 10.75% rather than 10.26% for FY2014 or 9.49% for FY 2013	-0.05%	-0.14%
d. Liability experience	0.25%	0.05%
e. Investment experience	-0.62%	1.02%
f. Legislative changes	0.00%	0.00%
g. Change in actuarial cost method	0.00%	0.27%
h. Adjustment to remove present value of increased employer statutory contributions from amortization payment	2.00%	0.00%
i. Total	1.31%	0.77%
3. Current valuation (1. + 2.i.)	11.57%	10.26%
4. Statutory employer contribution rate	12.75%	10.75%
5. Margin available [contribution sufficiency/(deficiency)] (4. – 3.)	1.18%	0.49%

D. ADDITIONAL INFORMATION

Critical information to assess the funding progress is the historical comparison of the actuarially determined contribution (annual required contribution prior to July 1, 2014) to the actual contributions. Chart 17 below presents a graphical representation of this information for TFFR.

The other critical piece of information regarding TFFR's financial status is the funded ratio. This ratio compares the actuarial value of assets to the actuarial accrued liabilities of the Plan. High ratios indicate a well-funded plan with assets sufficient to cover the plan's actuarial accrued liabilities. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors.

Chart 18 shows the funded ratio calculated using both the actuarial value of assets and the market value of assets.

The details regarding the calculations of these values may be found in Section 4.

CHART 17
Actuarially Determined Versus Actual Employer Contributions, Years Ended June 30

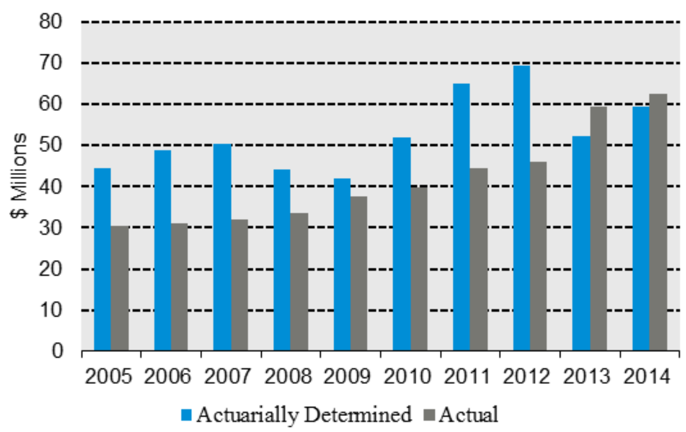
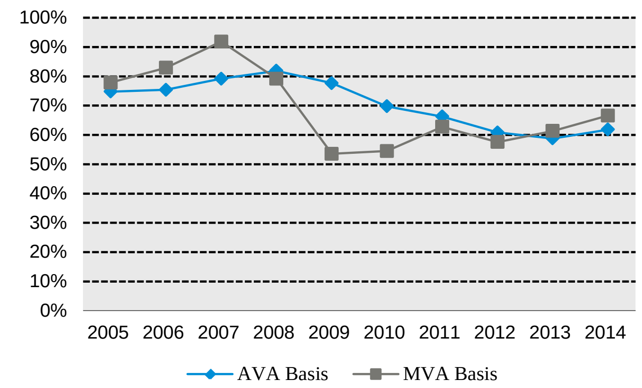


CHART 18
Funded Ratio, Years Ended June 30



Membership Data

Membership data was provided on electronic files sent by the RIO staff. Data for active members includes sex, birth date, service, salary for the prior fiscal year, and accumulated contributions. Data for inactive members was similar, but also includes the members' unreduced benefit. For retired members, data includes status (service retiree, disabled retiree or beneficiary), sex, birth date, pension amount, date of retirement, form of payment, and beneficiary sex and birth date if applicable.

While not verifying the correctness of the data at the source, we performed various tests to ensure the internal consistency of the data and its overall reasonableness.

Membership statistics are summarized in Exhibit A. Exhibit B summarizes certain active member data, and the age/service distribution of active members among tiers is shown in Exhibit C. Exhibit D-1 and Exhibit D-2 show the distribution of retirees by option and by benefit amount. Exhibit E shows a reconciliation of the member data from last year's valuation to this year's valuation.

The number of active members increased by 1.6% since last year, from 10,138 to 10,305. Note that normally the actual number of members employed during the year will be somewhat higher than the valuation count, since the July 1 count excludes most June and July retirees but does not include new teachers joining the system for the next school year.

Total payroll increased 5.8% since last year. For all comparative purposes, payroll is the amount supplied by the RIO staff (i.e., the 2013-2014 member pay), annualized. However, this figure is increased by one year's assumed pay increase to determine the member's rate of pay (and thus, total projected payroll) at July 1, 2014. Pay is assumed to change only at the beginning of a school/fiscal year.

Average pay increased by 4.1%, from $51,953 to $54,073. This includes the impact of replacing more highly paid members who retire with new teachers. The average increase in salary for the 9,296 continuing members (members active in both this valuation and the preceding valuation) was 6.4%.

The average age of active members decreased from 43.2 years to 42.9 years, and their average service decreased from 13.2 years to 12.8 years.

The table below shows additional information about the active membership this year and last year. Tier 1 Grandfathered members are those who had 65 points as of June 30, 2013, or were at least age 55 and vested. Current Tier 1 members that did not meet these criteria are considered Tier 1 Non-grandfathered members. Tier 2 members are those hired or rehired after June 30, 2008. All new members in future years will enter as Tier 2 members, so the number will increase over time. The Tier 1 Grandfathered and Non-grandfathered population will decrease each year as members leave due to retirement, termination, death, and disability.

Active Statistics		
	July 1, 2014	**July 1, 2013***
Plan Eligibility		
a. Tier 1 Grandfathered	3,240	3,627
b. Tier 1 Non-grandfathered	3,395	3,474
c. Tier 2	3,670	3,037
d. Total	10,305	10,138
Benefit Eligibility		
a. Non-Vested	2,899	2,673
b. Vested	5,428	5,432
c. Early Retirement	938	967
d. Normal Retirement	1,040	1,066
e. Total	10,305	10,138

** Number of Tier 1 Grandfathered and Non-grandfathered members is estimated based on the July 1, 2013 census data and eligibility requirements specified above.*

In addition, this table shows the number of members who are non-vested, those who are vested but not eligible for retirement, those who are eligible only for an early retirement (reduced) benefit, and those eligible for a normal (unreduced) benefit. As of the valuation date, 1,978 members were eligible for either reduced or unreduced retirement, a decrease over last year's figure of 2,033.

EXHIBIT A
Member Data

Member Data	July 1, 2014	July 1, 2013
1. Active members		
a. Males	2,656	2,599
b. Females	7,649	7,539
c. Total members	10,305	10,138
d. Total payroll supplied by System, annualized	$557,222,917	$526,698,342
e. Average salary	$54,073	$51,953
f. Average age	42.9	43.2
g. Average service	12.8	13.2
h. Total contributions with interest	$698,157,822	$671,139,304
i. Average contribution with interest	$67,749	$66,200
2. Vested inactive members		
a. Number	1,509	1,500
b. Total annual deferred benefits	$10,207,883	$9,681,777
c. Average annual deferred benefit	$6,765	$6,455
d. Average age	49.6	49.2
3. Non-vested inactive members		
a. Number	661	563
b. Employee contributions with interest due	$3,084,613	$2,229,664
c. Average refund due	$4,667	$3,960
d. Average age	38.3	38.6
4. Service retirees		
a. Number	6,991	6,754
b. Total annual benefits	$155,409,403	$144,956,155
c. Average annual benefit	$22,230	$21,462
d. Average age	70.9	70.8
5. Disabled retirees		
a. Number	129	124
b. Total annual benefits	$1,886,877	$1,766,281
c. Average annual benefit	$14,627	$14,244
d. Average age	61.3	61.0
6. Beneficiaries		
a. Number	627	611
b. Total annual benefits	$8,475,439	$8,046,021
c. Average annual benefit	$13,517	$13,169
d. Average age	73.6	73.5

EXHIBIT B

Historical Summary of Active Member Data

	Active Members		Total Payroll Supplied by System, Annualized		Average Salary			
Year Ending June 30,	Number	Percent Increase/ (Decrease)	Amount in $ Millions	Percent Increase/ (Decrease)	$ Amount	Percent Increase/ (Decrease)	Average Age	Average Service
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1995	9,663	0.1%	$268.7	2.4%	$27,803	2.3%	42.6	13.4
1996	9,797	1.4%	281.2	4.7%	28,708	3.3%	42.9	13.6
1997	10,010	2.2%	294.1	4.6%	29,382	2.3%	43.4	14.0
1998	9,896	-1.1%	298.4	1.5%	30,156	2.6%	43.5	14.0
1999	10,046	1.5%	314.6	5.4%	31,318	3.9%	44.0	14.4
2000	10,025	-0.2%	323.0	2.7%	32,223	2.9%	43.9	14.1
2001	10,239	2.1%	342.2	5.9%	33,421	3.7%	44.4	14.4
2002	9,931	-3.0%	348.1	1.7%	35,052	4.9%	44.5	14.4
2003	9,916	-0.2%	367.9	5.7%	37,105	5.9%	44.8	14.6
2004	9,826	-0.9%	376.5	2.3%	38,321	3.3%	44.9	14.7
2005	9,801	-0.3%	386.6	2.7%	39,447	2.9%	44.9	14.7
2006	9,585	-2.2%	390.1	0.9%	40,703	3.2%	44.8	14.6
2007	9,599	0.1%	401.3	2.9%	41,810	2.7%	44.7	14.5
2008	9,561	-0.4%	417.7	4.1%	43,684	4.5%	44.6	14.4
2009	9,707	1.5%	440.0	5.3%	45,327	3.8%	44.5	14.3
2010	9,907	2.1%	465.0	5.7%	46,937	3.6%	44.2	14.0
2011	10,004	1.0%	488.8	5.1%	48,857	4.1%	43.9	13.8
2012	10,014	0.1%	505.3	3.4%	50,458	3.3%	43.7	13.7
2013	10,138	1.2%	526.7	4.2%	51,953	3.0%	43.2	13.2
2014	10,305	1.6%	557.2	5.8%	54,073	4.1%	42.9	12.8

EXHIBIT C

Members in Active Service as of June 30, 2014
By Age, Years of Service, and Average Compensation

		Years of Credited Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	348	348	- -	- -	- -	- -	- -	- -	- -	- -
	$36,396	$36,396								
25 - 29	1,517	1,195	322	- -	- -	- -	- -	- -	- -	- -
	41,375	40,308	$45,337	- -	- -	- -	- -	- -	- -	- -
30 - 34	1,480	482	780	217	1	- -	- -	- -	- -	- -
	47,056	41,204	48,663	$54,167	$70,913	- -	- -	- -	- -	- -
35 - 39	1,188	275	303	460	150	- -	- -	- -	- -	- -
	52,802	43,894	51,427	56,108	61,768	- -	- -	- -	- -	- -
40 - 44	1,241	207	192	249	479	112	2	- -	- -	- -
	56,563	44,969	53,179	57,413	61,083	$62,049	$85,458	- -	- -	- -
45 - 49	1,272	135	149	181	260	384	160	3	- -	- -
	61,030	46,993	52,583	57,572	62,833	65,982	69,617	$72,545	- -	- -
50 - 54	1,245	125	98	132	161	217	361	149	2	- -
	61,860	46,972	52,897	56,099	62,336	65,255	67,538	65,826	$84,864	- -
55 - 59	1,156	84	79	96	139	169	186	275	128	- -
	62,729	49,771	50,928	54,112	62,516	64,462	65,400	67,301	69,219	- -
60 - 64	740	67	58	87	75	109	80	88	138	38
	61,228	50,091	47,391	55,534	57,964	63,012	66,218	66,763	67,762	$69,300
65 - 69	97	14	5	17	18	9	6	10	5	13
	57,873	47,757	43,450	51,820	55,419	57,655	59,608	66,068	62,537	76,885
70 & over	21	5	2	2	1	3	2	2	1	3
	54,422	35,117	57,961	41,838	52,376	62,899	51,853	64,110	52,809	80,623
Total	10,305	2,937	1,988	1,441	1,284	1,003	797	527	274	54
	$54,073	$41,767	$49,533	$55,986	$61,569	$64,723	$67,270	$66,789	$68,418	$71,755

EXHIBIT D-1

Schedule of Annuitants by Type of Benefit as of July 1, 2014

Type of Benefits/ Form of Payment	Number	Annual Benefits Amount	Average Monthly Benefits
Service:			
Straight Life	3,014	$57,177,132	$1,581
100% J&S	2,570	67,401,183	2,186
50% J&S	552	13,940,658	2,105
5 Years C&L	21	292,694	1,161
10 Years C&L	175	3,238,626	1,542
20 Years C&L	91	2,045,920	1,874
Level	568	11,313,190	1,660
Subtotal:	6,991	$155,409,403	$1,852
Disability:			
Straight Life	105	$1,578,754	$1,253
100% J&S	13	164,515	1,055
50% J&S	7	92,932	1,106
5 years C&L	2	25,253	1,052
10 Years C&L	0	0	0
20 Years C&L	2	25,423	1,059
Level	0	0	0
Subtotal:	129	$1,886,877	$1,219
Beneficiaries:			
Straight Life	612	$8,310,307	$1,132
5 Years Certain Only	2	42,878	1,787
10 Years Certain Only	9	70,362	652
20 Years Certain Only	4	51,891	1,081
Subtotal:	627	$8,475,439	$1,126
Total:	7,747	$165,771,719	$1,783

EXHIBIT D-2

Schedule of Annuitants by Monthly Benefit as of July 1, 2014

Monthly Benefit Amount	Number of Members	Female	Male	Average Service
Under $200	228	167	61	6.46
200 - 399	462	356	106	12.16
400 - 599	443	347	96	17.36
600 - 799	402	300	102	21.65
800 - 999	408	295	113	23.53
1,000 - 1,199	522	388	134	26.56
1,200 - 1,399	532	364	168	28.35
1,400 - 1,599	587	383	204	29.56
1,600 - 1,799	615	406	209	29.43
1,800 - 1,999	599	393	206	30.46
2,000 - 2,199	537	363	174	30.45
2,200 - 2,399	462	284	178	31.35
2,400 - 2,599	377	244	133	32.39
2,600 - 2,799	320	199	121	33.21
2,800 - 2,999	301	179	122	33.22
3,000 - 3,199	228	145	83	34.14
3,200 - 3,399	178	101	77	34.98
3,400 - 3,599	141	79	62	34.09
3,600 - 3,799	101	50	51	35.23
3,800 - 3,999	62	34	28	35.89
4,000 & over	242	103	139	36.47
Total:	7,747	5,180	2,567	27.47

EXHIBIT E

Reconciliation of Member Data by Status for the Year Ending June 30, 2014

	Active Members	Vested Terminated Members	Non-Vested Terminated Members	Service Retirees	Disabled Retirees	Beneficiaries	Total
A. Number as of July 1, 2013	10,138	1,500	563	6,754	124	611	19,690
B. Additions and new hires	918	0	0	0	0	0	918
C. Participant movement							
1. Retirement	-363	-44	0	407	0	0	0
2. Disability	-4	-3	0	0	7	0	0
3. Died with beneficiary	-1	-3	0	-40	0	46	2
4. Died without beneficiary	-5	-2	-1	-127	-1	-31	-167
5. Terminated vested	-155	155	0	0	0	0	0
6. Terminated non-vested	-165	0	165	0	0	0	0
7. Refunds	-147	-40	-33	0	0	0	-220
8. Rehired as active	91	-55	-32	-3	-1	0	0
9. Expired benefits	0	0	0	0	0	0	0
10. New alternate payee	0	0	0	0	0	1	1
11. Data corrections	-2	1	-1	0	0	0	-2
D. Number as of June 30, 2014	10,305	1,509	661	6,991	129	627	20,222

EXHIBIT F

Statement of Change in Plan Net Assets for Year Ended June 30, 2014

	As of June 30	
	2014	**2013**
A. Assets available at beginning of year	$1,839,583,960	$1,654,149,659
B. Revenue for the year		
1. Contributions		
a. Employee contributions	$56,554,767	$53,784,461
b. Employer contributions	62,355,146	59,300,720
c. Purchased service credit	2,034,289	2,641,019
d. Interest, penalties and other	47,766	123,148
e. Total	$120,991,968	$115,849,348
2. Income		
a. Interest, dividends, and other income	$36,744,024	$41,018,935
b. Investment expenses	-7,257,140	-6,010,000
c. Net	$29,486,884	$35,008,935
3. Net realized and unrealized gains/(losses)	264,759,565	185,196,374
4. Total revenue: (1e) + (2c) + (3)	$415,238,417	$336,054,657
C. Expenditures for the year		
1. Benefits and refunds		
a. Refunds	$3,908,921	$3,053,395
b. Regular annuity benefits	157,529,892	145,079,333
c. Partial lump-sum benefits paid	820,463	863,990
d. Total	$162,259,276	$148,996,718
2. Administrative and miscellaneous expenses	1,586,045	1,623,638
3. Total expenditures	$163,845,321	$150,620,356
D. Increase/(decrease) in net assets: (B4 – C3)	$251,393,096	$185,434,301
E. Value of assets at end of year: (A + D)	$2,090,977,056	$1,839,583,960

EXHIBIT G

Statement of Plan Net Assets (Assets at Market or Fair Value)

	As of June 30	
	2014	**2013**
1. Cash and cash equivalents (operating cash)	$17,012,740	$16,044,045
2. Receivables:		
a. Member and employer contributions	$16,233,852	$15,648,020
b. Investment income	7,457,808	7,657,195
c. Miscellaneous receivables	4,362	5,172
d. Total receivables	$23,696,022	$23,310,387
3. Investments		
a. Invested cash	$20,045,640	$24,369,601
b. Domestic equities	457,923,675	397,390,800
c. International equities	631,143,702	553,882,067
d. Domestic fixed income	374,882,829	307,517,259
e. International fixed income	103,794,657	85,289,832
f. Real assets	369,078,739	340,442,941
g. Private equity	97,357,862	94,185,760
h. Total investments	$2,054,227,104	$1,803,078,260
4. Due from other funds	$0	$616
5. Equipment & software (net of depreciation)	$0	$0
6. Total assets: (1) + (2d) + (3h) + (4) + (5)	$2,094,935,866	$1,842,433,308
7. Liabilities		
a. Accounts payable	$3,320,810	$2,183,134
b. Accrued expenses	631,740	658,494
c. Due to other funds	6,260	7,720
d. Total liabilities	$3,958,810	$2,849,348
8. Total market value of assets available for benefits: (6) – (7d)	$2,090,977,056	$1,839,583,960

EXHIBIT G (continued)

Statement of Plan Net Assets (Assets at Market or Fair Value)

	As of June 30	
	2014	**2013**
9. Asset allocation (investments)		
a. Invested cash	1.0%	1.4%
b. Domestic equities	22.3%	22.0%
c. International equities	30.7%	30.7%
d. Domestic fixed income	18.2%	17.1%
e. International fixed income	5.1%	4.7%
f. Real estate	18.0%	18.9%
g. Private equity	4.7%	5.2%
h. Total investments	100.0%	100.0%

EXHIBIT H

Development of Unfunded Actuarial Accrued Liability

	Year Ending June 30			
	2014		2013	
1. Unfunded actuarial accrued liability at beginning of year		$1,234,817,443		$1,123,789,515
2. Normal cost at beginning of year		56,751,722		52,667,248
3. Total contributions		120,991,968		115,849,348
4. Interest on:				
(a) Unfunded actuarial accrued liability and normal cost	$103,325,533		$94,116,541	
(b) Total contributions	4,374,732		4,188,790	
(c) Total interest: (4a) – (4b)		$98,950,801		$89,927,751
5. Expected unfunded actuarial accrued liability: (1) + (2) – (3) + (4c)		$1,269,527,998		$1,150,535,166
6. Changes due to (gain)/loss from:				
(a) Investments	-$80,084,128		$91,132,324	
(b) Demographics	8,882,399		4,300,712	
(c) Total changes due to (gain)/loss: (6a) + (6b)		-71,201,729		95,433,036
7. Change due to plan amendments		0		0
8. Change in actuarial cost method		0		-11,150,759
9. Unfunded actuarial accrued liability at end of year: (5) + (6c) + (7) + (8)		$1,198,326,269		$1,234,817,443

EXHIBIT I
Definitions of Pension Terms

The following list defines certain technical terms for the convenience of the reader:

Actuarial Accrued Liability For Actives: The equivalent of the accumulated normal costs allocated to the years before the valuation date.

Actuarial Accrued Liability For Pensioners: The single-sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

Actuarial Cost Method: A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the Actuarially Determined Contribution (ADC).

Actuarial Gain or Actuarial Loss: A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., TFFR's assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield in actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

Actuarially Equivalent: Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

Actuarial Present Value (APV): The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is:

a. Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)
b. Multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and
c. Discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Actuarial Present Value of Future Plan Benefits: The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would be provide sufficient assets to pay all projected benefits and expenses when due.

Actuarial Valuation: The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB, such as the Actuarially Determined Contribution (ADC) and the Net Pension Liability (NPL).

Actuarial Value of Assets: The value of the Fund’s assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.

Actuarially Determined:	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
Actuarially Determined Contribution (ADC):	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under GASB. The ADC consists of the Employer Normal Cost and the Amortization Payment.
Amortization Method:	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
Amortization Payment:	The portion of the pension plan contribution, or ADC, that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
Assumptions or Actuarial Assumptions:	The estimates on which the cost of the Fund is calculated including: (a) Investment return - the rate of investment yield that the Fund will earn over the long-term future; (b) Mortality rates - the death rates of employees and pensioners; life expectancy is based on these rates; (c) Retirement rates - the rate or probability of retirement at a given age; (d) Turnover rates - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement; (e) Salary increase rates - the rates of salary increase due to inflation and productivity growth.

Closed Amortization Period:	A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.
Decrements:	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.
Defined Benefit Plan:	A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.
Defined Contribution Plan:	A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.
Employer Normal Cost:	The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.
Experience Study:	A periodic review and analysis of the actual experience of the Fund that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.
Funded Ratio:	The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA.
Funding Period or Amortization Period:	The term "Funding Period" is used in two ways. First, it is the period used in calculating the Amortization Payment as a component of the ADC. Second, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on the statutory employer contribution rate, and assuming no future actuarial gains or losses.

GASB: Governmental Accounting Standards Board.

GASB 67 and GASB 68: Governmental Accounting Standards Board Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves.

Investment Return: The rate of earnings of the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.

Margin: The difference, whether positive or negative, between the statutory employer contribution rate and the Actuarially Determined Contribution (ADC) as defined by GASB.

Net Pension Liability: The Net Pension Liability is equal to Total Pension Liability minus Plan Fiduciary Net Position.

Normal Cost: That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability, or retirement.

Open Amortization Period:	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount, or in relation to covered payroll, if the actuarial assumptions are realized.
Plan Fiduciary Net Position:	Market value of assets.
Total Pension Liability:	The actuarial accrued liability based on the blended discount rate as described in GASB 67/68.
Unfunded Actuarial Accrued Liability:	The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.
Valuation Date or Actuarial Valuation Date:	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.

EXHIBIT I

Summary of Actuarial Valuation Results

The valuation was made with respect to the following data supplied to us:

1.	Pensioners as of the valuation date (including 627 beneficiaries in pay status)		7,747
2.	Members inactive during year ended June 30, 2014, with vested rights		1,509
3.	Members active during the year ended June 30, 2014		10,305
	Fully vested	7,406	
	Not vested	2,899	
4.	Other non-vested inactive members as of June 30, 2014		661

EXHIBIT I (continued)

Summary of Actuarial Valuation Results

	Actuarial Present Value of Projected Benefits	Actuarial Present Value of Future Normal Costs	Actuarial Accrued Liability
A. Determination of Actuarial Accrued Liability			
1. Active members			
a. Retirement benefits	$1,848,957,667	$458,847,766	$1,390,109,901
b. Disability benefits	28,034,138	11,295,948	16,738,190
c. Death benefits	18,844,315	7,605,309	11,239,006
d. Withdrawal benefits	119,626,294	139,551,250	-19,924,956
e. Total	$2,015,462,414	$617,300,273	$1,398,162,141
2. Inactive vested members	75,906,799	--	75,906,799
3. Inactive non-vested members	3,084,613	--	3,084,613
4. Retirees and beneficiaries	1,661,646,220	--	1,661,646,220
5. Total	$3,756,100,046	$617,300,273	$3,138,799,773
B. Determination of Unfunded Actuarial Accrued Liability			
1. Actuarial accrued liability			$3,138,799,773
2. Actuarial value of assets			1,940,473,504
3. Unfunded actuarial accrued liability: (1) – (2)			$1,198,326,269

EXHIBIT II
Actuarial Balance Sheet

	July 1, 2014	July 1, 2013
A. Assets		
1. Current Assets		
a. Market Value	$2,090,977,056	$1,839,583,960
b. Adjustment for actuarial value	-150,503,552	-77,262,316
c. Actuarial value of assets	$1,940,473,504	$1,762,321,644
2. Actuarial present value of future contributions		
a. Member contributions	$721,502,103	$661,739,495*
b. Employer normal costs	-104,201,830	-89,929,993
c. Unfunded actuarial accrued liability	1,198,326,269	1,234,817,443
d. Total	$1,815,626,542	$1,806,626,945
3. Total (lc + 2d)	$3,756,100,046	$3,568,948,589
B. Liabilities (Present Value of Projected Benefits)		
1. Retirees and beneficiaries	$1,661,646,220	$1,551,654,631
2. Inactive members	78,991,412	74,041,451
3. Active members	2,015,462,414	1,943,252,507
4. Total	$3,756,100,046	$3,568,948,589

**Reflects member contribution rate increase from 9.75% to 11.75% effective July 1, 2014.*

EXHIBIT III

Comparison of Employer Contribution to Actuarially Determined Contribution

	Actuarially Determined Contribution (ADC)[1]		Actual Employer Contribution[2]		Percentage of ADC Contributed
Fiscal Year	% of Payroll[3]	Amount[4]	% of Payroll	Amount	[(5)/(3)]
(1)	(2)	(3)	(4)	(5)	(6)
2005	11.34%	$44,471,740	7.75%	$30,388,265	68.3%
2006	12.12%	48,747,189	7.75%	31,170,851	63.9%
2007	12.29%	50,532,462	7.75%	31,865,466	63.1%
2008	10.15%	44,114,585	7.75%	33,683,550	76.4%
2009	9.24%	41,986,174	8.25%	37,487,655	89.3%
2010	10.78%	52,053,217	8.25%	39,836,646	76.5%
2011	12.79%	65,112,696	8.75%	44,545,433	68.4%
2012	13.16%	69,373,794	8.75%	46,126,193	66.5%
2013	9.49%[5]	52,396,153	10.75%	59,352,860	113.3%
2014	10.26%	59,513,485	10.75%	62,355,146	104.8%

1 Prior to FY 2014, the ADC is the same as the GASB ARC determined under GASB 25.

2 Prior to FY 2014, these amounts include prior year corrections.

3 The ADC for each fiscal year is based on the actuarial valuation as of the beginning of the year. Therefore, the FY 2014 ADC is based on the July 1, 2013 valuation. The ADC is defined as the contribution rate required to pay the employer normal cost and to amortize the unfunded actuarial accrued liability over the closed 30-year period that began July 1, 2013 as a level percentage of payroll. For FY 2005 and prior years, the unfunded actuarial accrued liability is amortized over a 20-year period as a level dollar amount.

4 The dollar amount of the ADC is based on actual payroll for the year. The FY 2014 ADC shown above differs from the estimated dollar amount shown in the July 1, 2013 actuarial valuation report because of differences between estimated and actual FY 2014 payroll.

5 The FY 2013 ADC reflects the actuarial present value of the increased statutory contributions scheduled to occur July 1, 2014.

EXHIBIT IV

Schedule of Employer Contributions

Fiscal Year	Actuarially Determined Contributions	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency (Excess)	Actual Covered Employee Payroll	Contributions as a Percentage of Covered Employee Payroll
2013	$52,396,153	$59,300,720	$(6,904,567)	$551,655,590	10.75%
2014	59,513,485	62,355,146	(2,841,661)	580,053,235	10.75%

EXHIBIT V

Schedule of Funding Progress

Valuation Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded/ Accrued Liability (UAAL) (3) – (2)	Funded Ratio (2) / (3)	Total Payroll Supplied by System, Annualized	UAAL as a % of Compensation (4) / (6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
07/01/2005	$1,469,700,000	$1,965,200,000	$495,500,000	74.8%	$386,600,000	128.2%
07/01/2006	1,564,000,000	2,073,900,000	509,900,000	75.4%	390,100,000	130.7%
07/01/2007	1,750,100,000	2,209,300,000	459,200,000	79.2%	401,300,000	114.4%
07/01/2008	1,909,500,000	2,330,600,000	421,200,000	81.9%	417,700,000	100.8%
07/01/2009	1,900,327,834	2,445,896,710	545,568,876	77.7%	439,986,705	124.0%
07/01/2010	1,841,960,220	2,637,165,045	795,204,825	69.8%	465,007,110	171.0%
07/01/2011	1,822,598,871	2,749,751,755	927,152,884	66.3%	488,764,292	189.7%
07/01/2012	1,748,080,771	2,871,870,286	1,123,789,515	60.9%	505,285,069	222.4%
07/01/2013	1,762,321,644	2,997,139,087	1,234,817,443	58.8%	526,698,342	234.4%
07/01/2014	1,940,473,504	3,138,799,773	1,198,326,269	61.8%	557,222,917	215.1%

Note: Numbers for 7/1/2005 – 7/1/2008 valuation dates are rounded

Exhibit VI
Determination of Contribution Sufficiency

	July 1, 2014	
A. Statutory Contributions	**Percent of Payroll**	**Dollar Amount**
1. Member contributions	11.75%	$69,591,661
2. Employer contributions	12.75%	75,514,355
3. Total	24.50%	$145,106,016
B. Actuarially Determined Contribution	**Percent of Payroll**	**Dollar Amount**
1. Gross normal cost:		
(a) Retirement	7.66%	$45,360,076
(b) Disability	0.17%	1,038,290
(c) Death	0.12%	707,309
(d) Deferred termination benefit and refunds	2.28%	13,512,225
(e) Total normal cost as of July 1	10.23%	60,617,900
2. Gross normal cost, adjusted for timing	10.63%	62,980,534
3. Less member contribution rate	11.75%	69,591,661
4. Employer normal cost rate: (2) – (3)	-1.12%	-6,611,127
5. Unfunded actuarial accrued liability rate, adjusted for timing	12.69%	75,149,970
6. Total: (4) + (5)	11.57%	68,538,843
C. Contribution Sufficiency / (Deficiency): (A.2) – (B.6)	1.18%	$6,975,512
Projected annual payroll for fiscal year beginning on the valuation date		592,269,452

EXHIBIT VII
Solvency Test

	July 1, 2014	July 1, 2013
1. Actuarial accrued liability (AAL)		
a. Active member contributions	$698,157,822	$671,139,304
b. Retirees and beneficiaries	1,661,646,220	1,551,654,631
c. Active and inactive members (employer financed)	778,995,731	774,345,152
d. Total	$3,138,799,773	$2,997,139,087
2. Actuarial value of assets	1,940,473,504	1,762,321,644
3. Cumulative portion of AAL covered		
a. Active member contribution	100.0%	100.0%
b. Retirees and beneficiaries	74.8%	77.6%
c. Active and inactive members (employer financed)	0.0%	0.0%

EXHIBIT VIII

Net Pension Liability

The components of the net pension liability at June 30, 2014, were as follows:

Total pension liability	$3,138,799,773
Plan fiduciary net position	(2,090,977,056)
Net pension liability	$ 1,047,822,717
Plan fiduciary net position as a percentage of the total pension liability	66.6%

The net pension liability was measured as of June 30, 2014, and is determined based on the total pension liability from the July 1, 2014, actuarial valuation.

Plan provisions. The plan provisions used in the measurement of the net pension liability are the same as those used in the actuarial valuation as of July 1, 2014.

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of July 1, 2014, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.00%
Salary increases	4.50% to 14.75%, varying by service, including inflation and productivity
Investment rate of return	8.00%, net of investment expenses
Cost-of-living adjustments	None

For active members, mortality rates were based on the post-retirement mortality rates multiplied by 60% for males and 40% for females. For inactive members and healthy retirees, mortality rates were based on 80% of GRS Table 378 and 75% of GRS Table 379. For disabled retirees, mortality rates were based on the RP-2000 Disabled-Life tables for Males and Females multiplied by 80% and 95% respectively.

The actuarial assumptions used were based on the results of an experience study dated January 21, 2010. They are the same as the assumptions used in the July 1, 2014 funding actuarial valuations.

The long-term expected investment rate of return assumption was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the Fund's target asset allocation are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Global Equities	57%	7.53%
Global Fixed Income	22%	1.40%
Global Real Assets	20%	5.38%
Cash Equivalents	1%	0.00%
Total	100%	

Discount rate: The discount rate used to measure the total pension liability was 8.00% as of June 30, 2014. The projection of cash flows used to determine the discount rate assumes that member and employer contributions will be made at rates equal to those based on this July 1, 2014, Actuarial Valuation Report. For this purpose, only employer contributions that are intended to fund benefits of current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs of future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments for current plan members as of June 30, 2014. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability as of June 30, 2014.

Sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability as of June 30, 2014, and June 30, 2013, calculated using the discount rate of 8.00%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (7.00%) or 1-percentage-point higher (9.00%) than the current rate:

	1% Decrease (7.00%)	Current Discount Rate (8.00%)	1% Increase (9.00%)
Net pension liability as of June 30, 2013	$1,511,142,356	$1,157,555,127	$860,669,595
Net pension liability as of June 30, 2014	$1,414,755,083	$1,047,822,717	$739,221,908

EXHIBIT IX

Schedules of Changes in Net Pension Liability

	2014
Total pension liability	
Service cost	$56,751,722
Interest	237,820,894
Change of benefit terms	0
Differences between expected and actual experience	9,347,346
Changes of assumptions	0
Benefit payments, including refunds of employee contributions	(162,259,276)
Net change in total pension liability	$141,660,686
Total pension liability – beginning	2,997,139,087
Total pension liability – ending (a)	$3,138,799,773
Plan fiduciary net position	
Contributions – employer	$62,355,146
Contributions – member	56,554,767
Contributions – purchased service credit	2,034,289
Contributions – other	47,766
Net investment income	294,246,449
Benefit payments, including refunds of employee contributions	(162,259,276)
Administrative expense	(1,586,045)
Net change in plan fiduciary net position	$251,393,096
Plan fiduciary net position – beginning	1,839,583,960
Plan fiduciary net position – ending (b)	$2,090,977,056
Net pension liability – ending (a) – (b)	$1,047,822,717
Plan fiduciary net position as a percentage of the total pension liability	66.6%
Actual covered employee payroll	$580,053,235
Plan net pension liability as percentage of covered employee payroll	180.6%

EXHIBIT X
Summary of Assumptions and Methods

Investment Return Rate: 8.00% per annum, compounded annually, equal to an assumed 3.00% inflation rate plus a 5.65% real rate of return, less 0.65% for expected investment and administrative expenses. (Adopted July 1, 1990; allocation among inflation, real rate of return, and expenses modified effective July 1, 2010.)

Mortality Rates:

Post-Retirement Non-Disabled*: GRS tables as shown below. (Adopted effective July 1, 2010)
i. 80% of GRS Table 378
ii. 75% of GRS Table 379

Post-Retirement Disabled*: RP- 2000 Disabled-Life tables for Males and Females multiplied by 80% and 95% respectively. (Adopted effective July 1, 2010)

Number of Deaths per 100				
	Male Annuitants		Female Annuitants	
Age	Nondisabled	Disabled	Nondisabled	Disabled
20	0.044	1.806	0.023	0.708
25	0.057	1.806	0.023	0.708
30	0.069	1.806	0.028	0.708
35	0.073	1.806	0.039	0.708
40	0.092	1.806	0.057	0.708
45	0.136	1.806	0.078	0.708
50	0.222	2.318	0.115	1.096
55	0.381	2.835	0.283	1.572
60	0.358	3.363	0.354	2.075
65	0.457	4.014	0.327	2.662
70	1.198	5.007	0.672	3.575

Active Mortality*: The non-disabled post-retirement mortality rates multiplied by 60% for males and 40% for females. (Adopted effective July 1, 2010.)

*The mortality tables above reasonably reflect the projected mortality experience of the Fund as of the measurement date. As of the most recent experience study, the ratio of actual to the expected deaths was 118% for males and 115% for females (116% and 121% for males and females for post-disabled mortality). This provides a sufficient margin for future mortality improvement.

Retirement Rates:

The following rates of retirement are assumed for members eligible to retire. (Adopted effective July 1, 2010.)

	Unreduced Retirement *		Reduced Retirement	
Age	**Male**	**Female**	**Male**	**Female**
50	25.00%	15.00%		
51	25.00%	15.50%		
52	25.00%	16.00%		
53	25.00%	16.50%		
54	25.00%	17.00%		
55	20.00%	17.50%	1.50%	1.50%
56	20.00%	18.00%	1.50%	1.50%
57	20.00%	18.50%	1.50%	1.50%
58	20.00%	19.00%	1.50%	1.50%
59	20.00%	19.50%	1.50%	1.50%
60	20.00%	20.00%	4.00%	3.00%
61	20.00%	20.00%	4.00%	3.00%
62	45.00%	35.00%	9.00%	8.00%
63	35.00%	30.00%	7.00%	12.00%
64	35.00%	30.00%	10.00%	15.00%
65	40.00%	30.00%		
66	30.00%	30.00%		
67	30.00%	30.00%		
68	30.00%	30.00%		
69	30.00%	30.00%		
70	25.00%	25.00%		
71	25.00%	25.00%		
72	25.00%	25.00%		
73	25.00%	25.00%		
74	25.00%	25.00%		
75	100.00%	100.00%		

* If a member reaches eligibility for unreduced retirement before age 65 under the rule of 85 (Grandfathered Tier 1) or the Rule of 90/Age 60 (Non-grandfathered Tier 1 and Tier 2), 10% is added to the rate just at the age the member becomes first eligible for an unreduced retirement benefit.

Disability Rates:

Shown below for selected ages. (Adopted effective July 1, 2010.)

Age	Rates
20	0.011%
25	0.011%
30	0.011%
35	0.011%
40	0.033%
45	0.055%
50	0.088%
55	0.154%
60	0.297%

Termination Rates:

Termination rates based on service, for causes other than death, disability, or retirement. (Adopted effective July 1, 2010.)

Termination Rates*		
Service	Male	Female
0	33.00%	30.00%
1	15.00%	15.00%
2	12.00%	10.00%
3	9.00%	8.50%
4	8.00%	7.00%
5	7.00%	6.00%
6	6.00%	5.00%
7	5.00%	4.50%
8	4.00%	4.25%
9	3.75%	4.00%
10	3.50%	3.50%
11	3.25%	3.25%
12	3.00%	3.00%
13	2.75%	2.75%
14	2.50%	2.50%
15-19	1.25%	2.00%
20-24	1.25%	1.50%
25-28	1.25%	0.75%
29 & over	0.00%	0.00%

** Termination rates cut out at first retirement eligibility*

Salary Increase Rates:

Inflation rate of 3.00% plus productivity increase rate of 1.50%, plus step-rate/promotional increase as shown below. (Adopted effective July 1, 2010.)

Years of Service	Annual Step-Rate Promotional Component	Annual Total Salary Increase
0	10.25	14.75
1	3.50	8.00
2	3.25	7.75
3	3.00	7.50
4	2.75	7.25
5	2.50	7.00
6	2.25	6.75
7	2.00	6.50
8	1.75	6.25
9	1.75	6.25
10	1.50	6.00
11	1.50	6.00
12	1.25	5.75
13	1.25	5.75
14	1.00	5.50
15	1.00	5.50
16	0.75	5.25
17	0.75	5.25
18	0.75	5.25
19	0.50	5.00
20	0.50	5.00
21	0.50	5.00
22	0.50	5.00
23	0.25	4.75
24	0.25	4.75
25 & over	0.00	4.50

Payroll Growth Rate:

3.25% per annum. This assumption does not include any allowance for future increase in the number of members. (Adopted effective July 1, 2010.)

Percent Married:

For valuation purposes, 75% of members are assumed to be married. Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses. (Adopted effective July 1, 1992.)

Percent Electing a Deferred Termination Benefit:	Terminating members are assumed to elect the most valuable benefit at the time of termination. Termination benefits are assumed to commence at the first age at which unreduced benefits are available. (Adopted effective July 1, 1990.)
Provision for Expenses:	The assumed investment return rate represents the anticipated net rate of return after payment of all administrative and investment expenses. These expenses are expected to reduce the gross investment return rate by 0.65%. (Adopted effective July 1, 2010.)
Asset Valuation Method:	The actuarial value of assets is based on the market value of assets with a five-year phase-in of actual investment return in excess of (or less than) expected investment income. Expected investment income is determined using the assumed investment return rate and the market value of assets (adjusted for receipts and disbursements during the year). The actual investment return for this purpose is determined net of all investment and administrative expenses. The actuarial value is further adjusted, if necessary, to be within 20% of the market value.
Actuarial Cost Method:	Normal cost and actuarial accrued liability are calculated on an individual basis and are allocated by salary. Entry age is determined as the age at member's enrollment in TFFR. The actuarial accrued liability is the difference between the total present value of future benefits and the actuarial present value of future normal costs. The unfunded actuarial accrued liability (UAAL) is the excess of the actuarial accrued liability over the actuarial value of assets.
Amortization Period and Method:	The actuarially determined contribution (ADC) is determined as the sum of (a) the employer normal cost rate, and (b) a level percentage of payroll required to amortize the unfunded actuarial accrued liability over the 30-year closed period that began July 1, 2013.

EXHIBIT XI

Summary of Plan Provisions

Effective Date:	July 1, 1971
Plan Year:	Twelve-month period ending June 30th
Administration:	The Teachers' Fund for Retirement (TFFR) is administered by a Board of Trustees. A separate State Investment Board is responsible for the investment of the trust assets, although the TFFR Board establishes the asset allocation policy. The Retirement and Investment Office is the administrative agency for TFFR.
Type of Plan:	TFFR is a qualified governmental defined benefit retirement plan. For Governmental Accounting Standards Board purposes, it is a cost-sharing multiple-employer public employee retirement system.
Eligibility:	All certified teachers of any public school in North Dakota participate in TFFR. This includes teachers, supervisors, principals, administrators, etc. Non-certified employees such as teacher's aides, janitors, secretaries, drivers, etc. are not allowed to participate in TFFR. Eligible employees become members at their date of employment.
Member Contributions:	All active members contribute 11.75% of their salary per year. The employer may "pick up" the member's contributions under the provisions of Internal Revenue Code Section 414(h). The member contribution rate was increased from 7.75% to 9.75% effective July 1, 2012, and was increased to 11.75% effective July 1, 2014. The total addition of 4.00% to the member contribution rate will remain in effect until TFFR is 100% funded on an actuarial basis. At that point, the member contribution rate will revert to 7.75%.
Salary:	The member's total earnings are used for salary purposes, including overtime, etc., and including nontaxable wages under a Section 125 plan, but excluding certain extraordinary compensation, such as fringe benefits or unused sick and vacation leave.

Employer Contributions: The district or other employer that employs a member contributes a percentage of the member's salary. This percentage consists of a base percentage of 7.75%, plus, since July 1, 2008, additions as shown below.

Effective Date	Addition to 7.75% Base Rate	Employer Contribution Rate
July 1, 2008	0.50%	8.25%
July 1, 2010	1.00%	8.75%
July 1, 2012	3.00%	10.75%
July 1, 2014	5.00%	12.75%

However, the additions are subject to a "sunset" provision, so the contribution rate will revert to 7.75% once the funded ratio reaches 100%, measured using the actuarial value of assets. The contribution rate will not automatically increase if the funded ratio later falls back below 100%.

Service: Employees receive credit for service while a member. A member may also purchase credit for certain periods, such as time spent teaching at a public school in another state, by paying the actuarially determined cost of the additional service. Special rules and limits govern the purchase of additional service.

Tiers: Members who join TFFR by June 30, 2008 are in Tier 1, while members who join later are in Tier 2. If a Tier 1 member terminates, takes a refund, and later rejoins TFFR after June 30, 2008, that member will be in Tier 2. As of June 30, 2013, Tier 1 members who are at least age 55 and vested (3 years of service) as of the effective date, or the sum of the member's age and service is at least 65, are considered Grandfathered, and previous plan provisions will not change. Tier 1 members who do not fit these criteria as of June 30, 2013, are considered Non-grandfathered. These members, along with Tier 2, will have new plan provisions, as described below.

Final Average Compensation (FAC): The average of the member's highest three (Tier 1 members) or five (Tier 2 members) plan year salaries. Monthly benefits are based on one-twelfth of this amount.

Normal Retirement:

a. Eligibility:

- Tier 1 members may retire upon Normal Retirement on or after age 65 with credit for 3 years of service, or if earlier, when the sum of the member's age and service is at least 85. Effective as of June 30, 2013, Tier 1 members who are at least age 55 and vested (3 years of service) as of the effective date, or the sum of the member's age and service is at least 65, normal retirement eligibility will not change (participants are Grandfathered). For those who will not meet these criteria as of June 30, 2013 (Non-grandfathered), members may retire upon Normal Retirement on or after age 65 with credit for 3 years of service, or if earlier, when the sum of the member's age and service is at least 90, with a minimum age of 60.
- Tier 2 members may retire upon Normal Retirement on or after age 65 with credit for 5 years of service, or, if earlier, when the sum of the member's age and service is at least 90. Effective July 1, 2013, Tier 2 members may retire upon Normal Retirement on or after age 65 with credit for 5 years of service, or if earlier, when the sum of the member's age and service is at least 90, with a minimum age of 60.

b. Monthly Benefit: 2.00% of FAC (monthly) times years of service.

c. Payment Form: Benefits are paid as a monthly life annuity, with a guarantee that if the payments made do not exceed the member's contributions plus interest, determined as of the date of retirement, the balance will be paid in a lump-sum to the member's beneficiary. Optional forms of payment are available; see below.

Early Retirement:

a. Eligibility: Tier 1 members may retire early after reaching age 55 with credit for three years of service, while Tier 2 members may retire early after reaching age 55 with credit for five years of service.

b. Monthly Benefit: 2.00% of FAC (monthly) times years of service, multiplied by a factor that reduces the benefit 6% for each year from the earlier of (i) age 65, or (ii) the age at which current service plus age equals 85 (Tier 1 members) or 90 (Tier 2 members). Effective July 1, 2013 for members who are either Non-grandfathered Tier 1 or Tier 2: 2.00% of FAC (monthly) times years of service, multiplied by a factor that reduces the benefit 8% for each year from the earlier of (i) age 65, or (ii) the age at which current service plus age equals 90 with a minimum age of 60.

c. Payment Form: Same as for Normal Retirement above.

Disability Retirement:

a. Eligibility: A member is eligible provided he/she has credit for at least one year of service. Effective July 1, 2013, a member is eligible provided he/she has credit for at least five years of service.

b. Monthly Benefit: 2.00% of FAC (monthly) times years of service with a minimum 20 years of service. Effective July 1, 2013, 2.00% of FAC (monthly) times years of service.

c. Payment Form: The disability benefit commences immediately upon the member's retirement. Benefits cease upon recovery or reemployment. Disability benefits are payable as a monthly life annuity with a guarantee that, at the member's death, the sum of the member's contributions plus interest as of the date of retirement that is in excess of the sum of payments already received will be paid in a lump sum to the member's beneficiary.

d. All alternative forms of payment other than level income and the partial lump-sum option are also permitted in the case of disability retirement. For basis recovery only, disability benefits are converted to normal retirement benefits when the member reaches normal retirement age or age 65, whichever is earlier.

Deferred Termination Benefit:

a. Eligibility: A Tier 1 member with at least three years of service, or a Tier 2 member with at least five years of service, who does not withdraw his/her contributions from the fund, is eligible for a deferred termination benefit.

b. Monthly Benefit: 2.00% of FAC (monthly) times years of service. Both FAC and service are determined at the time the member leaves active employment. Benefits may commence unreduced at age 65 or when the sum of the member’s age and service is 85 (Grandfathered Tier 1 members) or 90 with a minimum age of 60 (Non-grandfathered Tier 1 and Tier 2 members). Reduced benefits may commence at or after age 55 if the member is not eligible for an unreduced benefit. Reductions are the same as for Early Retirement.

c. Payment Form: The form of payment is the same as for Normal Retirement above.

d. Death Benefit: A member who dies after leaving active service but before retiring is entitled to receive a benefit as described below.

Withdrawal (Refund) Benefit:

a. Eligibility: Tier 1 members leaving covered employment with less than three years of service, and Tier 2 members leaving covered employment with less than five years of service, are eligible. Optionally, vested members may withdraw their contributions plus interest in lieu of the deferred benefits otherwise due.

b. Benefit: The member who withdraws receives a lump-sum payment of his/her employee contributions, plus the interest credited on these contributions. Interest is credited at 6% per year (0.5% per month).

Death Benefit:

a. Eligibility: Death must have occurred while an active or an inactive, non-retired member.

b. Benefit: Upon the death of a nonvested member, a refund of the member's contributions and interest is paid. Upon the death of a vested member, the beneficiary may elect (i) the refund benefit above, or (ii) a life annuity of the normal retirement benefit, determined under Option One below, based on FAC and service as of the date of death, but without applying any reduction for the member's age at death. In determining the reduction for Option One, members not eligible for normal retirement benefits use the Fund's option tables for disabled members.

Optional Forms of Payment:

There are optional forms of payment available on an actuarially equivalent basis, as follows:

Option 1 - A life annuity payable while either the participant or his beneficiary is alive, "popping-up" to the original life annuity if the beneficiary predeceases the member.

Option 2 - A life annuity payable to the member while both the member and beneficiary are alive, reducing to 50% of this amount if the member predeceases the beneficiary, and "popping-up" to the original life annuity if the beneficiary predeceases the member.

Option 3a - A life annuity payable to the member, with a guarantee that, should the member die prior to receiving 60 payments (five years), the payments will be continued to a beneficiary for the balance of the five-year period. (This option has been replaced by Option 3b. It is not available to employees who retire on or after August 1, 2003. Retirees who elected this option prior to that date are unaffected.)

Option 3b - A life annuity payable to the member, with a guarantee that, should the member die prior to receiving 240 payments (twenty years), the payments will be continued to a beneficiary for the balance of the twenty-year period. (This option replaced Option 3a effective August 1, 2003.)

Option 4 - A life annuity payable to the member, with a guarantee that, should the member die prior to receiving 120 payments (10 years), the payments will be continued to a beneficiary for the balance of the ten-year period.

Option 5 - A non-level annuity payable to the member, designed to provide a level total income when combined with the member's Social Security benefit. This option is not available to disabled retirees.

In addition, members may elect a partial lump-sum option (PLSO) at retirement. Under this option, a member receives an immediate lump-sum equal to 12 times the monthly life annuity benefit and a reduced annuity. The reduction is determined actuarially. The member can then elect to receive the annuity benefit in one of the other optional forms, except that members who receive a PLSO may not elect Option 5 – the level income option. The PLSO is not available to disabled retirees or retirees who are not eligible for an unreduced retirement benefit.

Actuarial equivalence is based on tables adopted by the Board of Trustees.

Cost-of-living Increase:

From time to time, TFFR has been amended to grant certain post-retirement benefit increases. However, TFFR has no automatic cost-of-living increase features.

EXHIBIT XII

Summary of Plan Changes

1991 Legislative Session:

1. Benefit multiplier increased from 1.275% to 1.39% for all future retirees.
2. Provide a post-retirement benefit increase for all annuitants receiving a monthly benefit on June 30, 1991. The monthly increase is the greater of a 10% increase or a level increase based on years of service and retirement date:
    a. $3 per year of service for retirements before 1980
    b. $2 per year of service for retirements between 1980 and 1983
    c. $1 per year of service for retirements from 1984 through June 30, 1991

    Minimum increase is $5 per month. Maximum increase is $75 per month.

1993 Legislative Session:

1. Benefit multiplier increased from 1.39% to 1.55% for all future retirees.
2. Provide a post-retirement benefit increase for all annuitants receiving a monthly benefit on June 30, 1993. The monthly increase is the greater of a 10% increase or a level increase based on years of service and retirement date:
    a. $3 per year of service for retirements before 1980
    b. $2.50 per year of service for retirements between 1980 and 1983
    c. $1 per year of service for retirements from 1984 through June 30, 1993

    Minimum increase is $5 per month. Maximum increase is $100 per month.
3. Minimum retirement benefit increased to $10 times years of service up to 25, plus $15 times years of service greater than 25. (Previously was $6 up to 25 years of service plus $7.50 over 25 years of service.)
4. Disability benefit changed to 1.55% of FAC times years of service using a minimum of 20 years of service.

1995 Legislative Session:

There were no material changes made during the 1995 legislative session.

1997 Legislative Session:

1. Benefit multiplier increased from 1.55% to 1.75% for all future retirees.
2. Member contribution rate and employer contribution rate increased from 6.75% to 7.75%.
3. A $30.00/month benefit improvement was granted to all retirees and beneficiaries.

1999 Legislative Session:

1. Active members will now be fully vested after three years (rather than five years) of service.
2. Early retirement benefits will be reduced 6% per year from the earlier of (i) age 65, or (ii) the date as of which age plus service equals 85 (rather than from age 65 in all cases).
3. An ad hoc COLA was provided for all retirees and beneficiaries. This increase is equal to an additional $2.00 per month for each year of service plus $1.00 per month for each year since the member's retirement.
4. The formula multiplier was increased from 1.75% to 1.88% effective July 1, 1999.

2001 Legislative Session:

1. An ad hoc COLA was provided for all retirees and beneficiaries. The ad hoc COLA increase is equal to an additional $2.00 per month for each year of service plus $1.00 per month for each year since the member's retirement. Retirees and beneficiaries will also receive two additional increases equal to 0.75% times the monthly benefit, payable July 1, 2001 and July 1, 2002. The two 0.75% increases are conditional. If the actuarial margin is a shortfall, i.e., is negative, by 60 basis points or more, or if the margin has been negative by 30 or more basis points for two years, the Board could elect to suspend the increase.
2. The formula multiplier was increased from 1.88% to 2.00% effective July 1, 2001.

2003 Legislative Session:

1. Partial lump-sum option adopted, equal to twelve times the monthly life annuity benefit. Not available if level-income option is elected. Not available for reduced retirement or disability retirement.
2. Five-year certain and life option replaced with 20-year certain and life. This does not impact retirees who retired under the five-years certain and life option.

3. Employer service purchase authorized.
4. Active members of the Department of Public Instruction are permitted to make a one-time irrevocable election to transfer to the North Dakota Public Employees Retirement System in FY 2004. Both assets and liabilities for all TFFR service will be transferred for electing employees. Transferred assets will be based on the actuarial present value of the member's accrued TFFR benefit, or the member's contribution account balance if larger.

2005 Legislative Session:

There were no material changes made during the 2005 legislative session.

2007 Legislative Session:

1. For active members hired on or after July 1, 2008 (called Tier 2 members):
    a. Members will be eligible for an unreduced retirement benefit when they reach age 65 with at least five years of service (rather than three years of service); or if earlier, when the sum of the member's age and service is at least 90 (rather than 85).
    b. Members will be eligible for a reduced (early) retirement benefit when they reach age 55 with five years of service, rather than three years of service.
    c. Members will be fully vested after five years of service (rather than three year of service).
    d. The Final Average Compensation for Tier 2 members is the average of the member's highest five plan year salaries, rather than the average of the three highest salaries.
2. The employer contribution rate increases from 7.75% to 8.25% effective July 1, 2008, but this rate will be reset to 7.75% once the Fund reaches a 90% funded ratio, measured using the actuarial value of assets. (If the funded ratio later falls below 90% again, the contribution rate will not automatically return to 8.25%.)
3. Employer contributions are required on the salary of reemployed retirees.
4. Active members of the Department of Career and Technical Education are permitted to make a one-time irrevocable election to transfer to the North Dakota Public Employees Retirement System in FY 2008. Both assets and liabilities for all TFFR service will be transferred for electing employees. Transferred assets will be the actuarial present value of the member's accrued TFFR benefit, or the member's contribution account balance, if larger.

2009 Legislative Session:

1. An individual who retired before January 1, 2009, and is receiving monthly benefits is entitled to receive a supplemental payment from the fund. The supplemental payment is equal to an amount determined by taking twenty dollars multiplied by the member's number of years of service credit plus fifteen dollars multiplied by the number of years since the member's retirement as of January 1, 2009. The supplemental payment may not exceed the greater of 10% of the member's annual annuity or $750.00. TFFR will make the supplemental payment in December 2009.
2. The employer contribution rate increases from 8.25% to 8.75% effective July 1, 2010, but this rate will be reset to 7.75% once the Fund reaches a 90% funded ratio, measured using the actuarial value of assets. (If the funded ratio later falls below 90% again, the contribution rate will not automatically return to 8.75%.)

2011 Legislative Session:

1. The employer contribution rate increases from 8.75% to 10.75% effective July 1, 2012, and increases thereafter to 12.75% effective July 1, 2014. The member contribution rate increases from 7.75% to 9.75% effective July 1, 2012, and increases thereafter to 11.75% effective July 1, 2014. Employer and member contributions will be reset to 7.75% once the Fund reaches a 90% funded ratio, measured using the actuarial value of assets.
2. For current Tier 1 members who, as of June 30, 2013, are vested (at least 3 years of service), and at least age 55, OR the sum of the member's age and service is at least 65, are considered a Tier 1 Grandfathered member. Current Tier 1 members, who will not meet this criteria as of June 30, 2013, are considered a Tier 1 Non-grandfathered member.
3. Eligibility for normal/ unreduced retirement benefits do not change for Tier 1 Grandfathered members. For Tier 1 Non-grandfathered and Tier 2 members, effective after June 30, 2013, unreduced retirement benefits start when the member reaches age 65 and is vested (3 years for Tier 1 Non-grandfathered, 5 years for Tier 2); or if earlier, when the sum of the member's age and service is at least 90, with a minimum age of 60.
4. Early retirement benefits do not change for Tier 1 Grandfathered members. For Tier 1 Non-grandfathered and Tier 2 members, effective after June 30, 2013, the normal retirement benefit will be reduced by 8% per year from the earlier of age 65 OR the age at which the sum of the member's age and service is at least 90, with a minimum age of 60.
5. Effective after June 30, 2013, all members may retire on disability after a period of at least five years of service (rather one year of service). The amount of the benefit is based on a 2% multiplier and actual service (rather than a minimum of twenty years of service in the current calculation).

6. Effective July 1, 2012, re-employed retirees are required to pay member contributions.
7. Effective August 1, 2011, beneficiary and death benefit provisions were updated, and the 60-month death payment benefit was removed.

2013 Legislative Session:

1. Employer and member contribution rates will be reset to 7.75% once the Fund reaches a 100% funded ratio (rather than the 90% funded ratio enacted with the 2011 Legislation), measured using the actuarial value of assets.
2. Various technical and administrative changes that do not have an actuarial effect on the Plan were enacted.

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