

nyhart

***Indiana State Teachers'  
Retirement Fund  
1996 Account***

***Annual Actuarial Valuation  
June 30, 2016***

## **Indiana State Teachers' Retirement Fund 1996 Account**

Annual Actuarial Valuation as of June 30, 2016

### **Nyhart**

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November 7, 2016

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***The Board of Trustees  
Indiana Public Retirement System  
Indianapolis, IN***

***Dear Board Members:***

An actuarial valuation is prepared annually for the Indiana State Teachers' Retirement Fund 1996 Account. Submitted in this report are the results of the June 30, 2016 actuarial valuation.

**Census Data and Asset Information**

The member census data and the asset information for this valuation were furnished by the Chief Financial Officer and Staff. Their efforts and cooperation in furnishing these materials are acknowledged with appreciation. We did not audit the information provided, but we did review it thoroughly for reasonableness and compared it with the prior year's submission for consistency.

**Assumptions and Methods**

The majority of the actuarial assumptions used in the June 30, 2016 valuation were adopted by the Board pursuant to the Experience Study completed in April 2015, which reflects the experience period from July 1, 2011 to June 30, 2014. The Board adopted changes to the Actuarial Value of Assets smoothing period and to the amortization period for the Calculated Contribution Rate with the June 30, 2016 valuation. Assumptions are summarized in the Assumptions and Methods section of this report. These assumptions and methods have been used to develop the Actuarially Determined Contribution and are consistent with the accounting requirements detailed in GASB Statements No. 67 and No. 68.

Benefit obligations in the June 30, 2016 valuation are determined using June 30, 2015 census data and rolled-forward to the June 30, 2016 measurement date at the valuation interest rate, using actual distributions and ASA account returns during that period. We are not aware of any material events that would require additional adjustments to the benefit obligations for changes to the population not anticipated in the demographic assumptions used in the valuation.

**Funding Objective**

The funding objective of the Indiana State Teachers' Retirement Fund 1996 Account is to establish and receive contributions that, when invested at the assumed rate of return, will ultimately accumulate assets over each member's working lifetime that will be sufficient to pay expected retirement allowances. As such, an employer contribution rate is calculated each year. That rate is then considered in conjunction with the goal of maintaining a relatively stable contribution over time.

**Fund Structure**

The Indiana State Teachers' Retirement Fund (TRF) is one fund comprised of a two-account structure in compliance with Indiana Code Section 5-10.4-2-2:

The 1996 Account consists of members who were:

1. hired on or after July 1, 1995; or

2. hired before July 1, 1995, and prior to June 30, 2005:
  - a. were either hired by another school corporation or institution covered by TRF, or
  - b. were re-hired by a covered prior employer.

### **Characteristics of the 1996 Account**

1. As members depart from active service in the Pre-1996 Account, their replacements will become members of the 1996 Account. If the 1996 Account were a stand-alone plan, this pattern of departures and hirings would produce a fairly constant population size.
2. Defined Benefits payable from the 1996 Account are funded by contributions from local school corporations or other institutions that employ covered members. At the time of retirement, ASA benefits payable from the 1996 Account are funded by the annuitization of 1996 Account member contributions.

### **Funding Arrangements**

Defined Benefits payable from the 1996 Account are funded through employer percent-of-pay contributions. The Board of the Indiana Public Retirement System sets this contribution rate after reviewing the most recent actuarial valuation report.

The contribution rate of 7.50% for fiscal year 2017 was set by the Board in fiscal year 2016. The contribution rate of 7.50% for fiscal year 2018 was set by the Board in fiscal year 2017.

### **Progress Towards Realization of Financing Objectives**

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a Plan's funded status. In the absence of benefit improvements, it should increase over time, until it reaches 100%. The funded ratio of the 1996 Account decreased to 91.8% from 92.5% for the preceding year. Based on the actuarial assumptions, it is anticipated that the 1996 Account will attain 100% funded status on 6/30/2035.

### **Certification**

We have included several schedules and exhibits in this report, including the following:

#### Financial Section

- Note 1 – Tables of Plan Membership
- Note 8 – Net Pension Liability and Actuarial Information – Defined Benefit Plans
- Schedule of Changes in Net Pension Liability and Net Pension Liability
- Schedule of Contributions (Actuarially Determined Contribution)
- Schedule of Notes to Required Supplementary Information

#### Actuarial Section

- Summary of INPRS Funded Status
- Historical Summary of Actuarial Valuation Results by Retirement Plan (Schedule of Funding Progress)
- Summary of Actuarial Assumptions, Methods and Plan Provisions
- Analysis of Financial Experience (Unfunded Actuarial Accrued Liability Reconciliation)
- Solvency Test
- Schedule of Active Member Valuation Data
- Schedule of Retirants and Beneficiaries

#### Statistical Section

- Membership Data Summary
- Ratio of Active Members to Annuitants
- Schedule of Benefit Recipients by Type of Benefit Option
- Schedule of Average Benefit Payments

To the best of our knowledge, this report presents a fair position of the funded status of the plan in accordance with the Actuarial Standards of Practice as described by the American Academy of Actuaries. In addition, information has been prepared in accordance with applicable government standards of financial reporting for defined benefit pension plans.

The actuarial valuation is prepared using information which has been reconciled and reviewed for reasonableness. We are not aware of any material inadequacy in employee census or asset values. The census information and the asset information have been provided to us by the Chief Financial Officer and Staff. We have not audited the information at the source, and therefore do not accept responsibility for the accuracy or the completeness of the data on which the information is based.

In our opinion, the actuarial assumptions and methods are individually reasonable and in combination represent our best estimate of anticipated experience of the plan.

Neither Nyhart nor any of its employees have any relationship with the plan or its sponsor which could impair or appear to impair the objectivity of this report.

The undersigned are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States.

Respectfully submitted,



Michael Zurek, EA, MAAA



Danielle Winegardner, ASA, EA, MAAA



Tayt V. Odom, FSA, EA, MAAA

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## ***Executive Summary***

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### **Contribution Rates**

The Calculated Contribution Rate section shows the calculated rate for the 1996 Account. That rate is determined for the 1996 Account as a stand-alone plan.

### **Plan Provisions**

There is no ad-hoc COLA on January 1, 2017. Instead, retirees were paid a service-related lump sum (i.e., referred to as 13th check) in September 2016. These changes are reflected in the June 30, 2016 valuation. Any future COLA is estimated by an ongoing assumption of 1.0% annual increases in all pension payments beginning January 1, 2018.

ASA annuitizations are scheduled to be based on a 4.50% conversion rate for the period from June 30, 2016 through March 31, 2017. After April 1, 2017, annuity conversions will occur outside of the plan. Benefit obligations in the June 30, 2016 valuation have been adjusted for the anticipated gains through March 31, 2017 for conversions at interest rates lower than the valuation interest rate of 6.75%.

We are not aware of any other material changes in the plan provisions since the June 30, 2015 actuarial valuation.

### **Census Data**

Census data for the valuation was provided by INPRS. We have thoroughly examined the data for reasonableness and consistency with prior years, but we did not otherwise audit it.

### **Assumptions and Methods**

The actuarial assumptions used in the June 30, 2016 valuation are based on plan experience from July 1, 2011 to June 30, 2014. The Board adopted changes to the Actuarial Value of Assets smoothing period and to the amortization period for the Calculated Contribution Rate with the June 30, 2016 valuation.

Benefit obligations in the June 30, 2016 valuation are determined using June 30, 2015 census data and rolled-forward to the June 30, 2016 measurement date at the valuation interest rate, using actual distributions and ASA account returns during that period. We are not aware of any material events that would require additional adjustments to the benefit obligations for changes to the population not anticipated in the demographic assumptions used in the valuation.

### **Investment Experience**

The investment return for the year ended June 30, 2016 was lower than the assumed 6.75% return. The assets of the TRF 1996 Account are commingled with the assets of other funds administered by INPRS. The TRF money-weighted return was 1.01% during fiscal 2016. Under the asset valuation method, market gains and losses are spread over a five-year period. The Market Value of Assets is currently \$254 million lower than the Actuarial Value of Assets, meaning the plan is currently in a position of having net deferred investment losses to be recognized in future years.

### **Challenges**

The 1996 Account has been steadily funded since its inception. As membership in that portion of the plan increases, the amount of required contributions will increase as a dollar amount, but should remain relatively stable as a percentage of covered payroll with plan experience causing gradual changes.

## Summary of Key Valuation Results

	June 30, 2016	June 30, 2015	June 30, 2014	June 30, 2013
<b>Member Information</b>				
Number				
Active Members	55,265	52,424	51,204	51,204
Inactive Vested Members	4,335	4,132	3,103	3,103
Inactive Nonvested Members	12,529	12,292	11,147	11,147
Retired Members and Beneficiaries	<u>4,977</u>	<u>4,136</u>	<u>3,665</u>	<u>3,665</u>
Total	77,106	72,984	69,119	69,119
Valuation Payroll	\$ 3,004,169,194	\$ 2,827,310,987	\$ 2,740,661,321	\$ 2,740,939,967
Projected Payroll for Fiscal Year	\$ 3,127,400,000	\$ 3,078,600,000	\$ 2,987,300,000	
Annual Benefit Payments				
Annuity	\$ 10,255,680	\$ 8,189,292	\$ 7,111,980	\$ 7,111,980
Pension	<u>80,904,120</u>	<u>67,524,240</u>	<u>60,057,396</u>	<u>60,057,396</u>
Total	\$ 91,159,800	\$ 75,713,532	\$ 67,169,376	\$ 67,169,376
<b>Assets and Liabilities</b>				
Accrued Liability				
ASA Account Balance	\$ 1,217,432,610	\$ 1,170,914,523	\$ 1,120,728,729	\$ 991,924,506
ASA Annuities	122,416,233	108,501,422	86,516,737	78,374,599
Pension: Retirees	956,838,640	788,534,587	672,727,439	703,495,761
Pension: Non-retirees	<u>4,095,062,582</u>	<u>3,837,740,501</u>	<u>3,357,020,264</u>	<u>2,975,573,809</u>
Total	\$ 6,391,750,065	\$ 5,905,691,033	\$ 5,236,993,169	\$ 4,749,368,675
Market Value of Assets				
ASA Account Balance	\$ 1,217,432,610	\$ 1,170,914,523	\$ 1,120,728,729	\$ 991,924,506
ASA Annuities	122,416,233	108,501,422	86,516,737	78,374,599
Pension: Retirees	956,838,640	788,534,587	672,727,439	703,495,761
Pension: Non-retirees	<u>3,314,542,211</u>	<u>3,311,162,510</u>	<u>3,309,469,425</u>	<u>2,659,891,307</u>
Total	\$ 5,611,229,694	\$ 5,379,113,042	\$ 5,189,442,330	\$ 4,433,686,173
Actuarial Value of Assets				
ASA Account Balance	\$ 1,217,432,610	\$ 1,170,914,523	\$ 1,120,728,729	\$ 991,924,506
ASA Annuities	122,416,233	108,501,422	86,516,737	78,374,599
Pension: Retirees	956,838,640	788,534,587	672,727,439	703,495,761
Pension: Non-retirees	<u>3,569,041,934</u>	<u>3,393,221,851</u>	<u>3,155,258,596</u>	<u>2,680,033,218</u>
Total	\$ 5,865,729,417	\$ 5,461,172,383	\$ 5,035,231,501	\$ 4,453,828,084
Unfunded Accrued Liability				
ASA Account Balance	\$ 0	\$ 0	\$ 0	\$ 0
ASA Annuities	0	0	0	0
Pension: Retirees	0	0	0	0
Pension: Non-retirees	<u>526,020,648</u>	<u>444,518,650</u>	<u>201,761,668</u>	<u>295,540,591</u>
Total	\$ 526,020,648	\$ 444,518,650	\$ 201,761,668	\$ 295,540,591
Funded Percentage				
ASA Account Balance	100.0%	100.0%	100.0%	100.0%
ASA Annuities	100.0%	100.0%	100.0%	100.0%
Pension: Retirees	100.0%	100.0%	100.0%	100.0%
Pension: Non-retirees	<u>87.2%</u>	<u>88.4%</u>	<u>94.0%</u>	<u>90.1%</u>
Total	91.8%	92.5%	96.1%	93.8%
Pension Normal Cost	\$ 168,650,636	\$ 167,836,193	\$ 170,892,424	\$ 155,314,388
<b>Annual Costs</b>				
	<b>Fiscal 2018</b>	<b>Fiscal 2017</b>	<b>Fiscal 2016</b>	<b>Fiscal 2015</b>
Projected Payroll	\$ 3,244,100,000	\$ 3,294,100,000	\$ 3,226,300,000	\$ 2,987,600,000
Actuarially Determined Contribution (ADC)				
Normal Cost	\$ 174,856,990	\$ 179,528,450	\$ 184,544,360	\$ 169,396,920
Amortization of Unfunded Liability	<u>43,470,940</u>	<u>36,893,920</u>	<u>17,422,020</u>	<u>24,797,080</u>
Total	\$ 218,327,930	\$ 216,422,370	\$ 201,966,380	\$ 194,194,000
Calculated Contribution Rate				
Normal Cost	5.39%	5.45%	5.72%	5.67%
Amortization of Unfunded Liability	<u>1.34%</u>	<u>1.12%</u>	<u>0.54%</u>	<u>0.83%</u>
Total	6.73%	6.57%	6.26%	6.50%
Approved Employer Contribution Rate	7.50%	7.50%	7.50%	7.50%

Valuations on and after June 30, 2014 are based on census data collected at the prior measurement date.



***Unfunded Accrued Liability***

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<b>\$Millions</b>				
<b>June 30</b>	<b>Accrued Liability</b>	<b>Actuarial Value of Assets</b>	<b>Unfunded Accrued Liability</b>	<b>Funded Percentage</b>
1996	\$ 48	\$ 21	\$ 27	43.8%
1997	176	72	104	40.9%
1998	298	136	162	45.6%
1999	498	240	258	48.2%
2000	706	368	338	52.1%
2001	828	447	381	54.0%
2002	1,167	621	546	53.2%
2003	1,392	826	566	59.3%
2004	1,649	1,039	610	63.0%
2005	2,011	1,268	743	63.1%
2006	2,363	2,209	154	93.5%
2007	2,828	2,713	115	95.9%
2008	2,958	3,080	(122)	104.1%
2009	3,136	2,921	215	93.1%
2010	3,615	3,423	192	94.7%
2011	3,997	3,665	332	91.7%
2012	4,338	3,936	402	90.7%
2013	4,750	4,454	296	93.8%
2014	5,237	5,035	202	96.1%
2015	5,906	5,461	445	92.5%
2016	6,392	5,866	526	91.8%

**Reconciliation of Market Value of Assets**

	June 30, 2015 thru June 30, 2016	June 30, 2014 thru June 30, 2015
Market Value, beginning of year	\$ 5,379,113,042	\$ 5,189,442,330
Member Contributions	\$ 88,386,508	\$ 86,515,294
Employer Contributions	215,625,986	205,763,142
Non-Employer Contributing Entity Contributions	0	0
Benefit Payments	(135,289,991)	(127,898,876)
Net Transfers <sup>1</sup>	<u>4,793,681</u>	<u>5,889,210</u>
Non-Investment Net Cash Flow	\$ 173,516,184	\$ 170,268,770
Administrative Expenses	\$ (5,603,306)	\$ (6,185,233)
Investment Return	<u>64,203,774</u>	<u>25,587,175</u>
Net Investment Return	\$ 58,600,468	\$ 19,401,942
Market Value, end of year	\$ 5,611,229,694	\$ 5,379,113,042
Market Value of Assets Approximate Time-Weighted Annual Rate of Return <sup>2</sup>	1.1%	0.4%

<sup>1</sup> Net transfers from June 30, 2015 thru June 30, 2016 include member service credit purchases of \$43,175.

<sup>2</sup> Consolidated pension and ASA account return, net of investment and administrative expenses, assumes cash flows occur at mid-year.

## **Development of the Actuarial Value of Assets**

	<b>June 30, 2015 thru June 30, 2016</b>
1. Actuarial Value, beginning of year	\$ 5,461,172,383
2. ASA Account Balance, beginning of year	<u>\$ 1,170,914,523</u>
3. Actuarial Value, Net of ASA Account Balance, beginning of year [(1) – (2)]	\$ 4,290,257,860
4. Market Value, Net of ASA Account Balance, beginning of year	\$ 4,208,198,519
5. Market Value, Net of ASA Account Balance, end of year	\$ 4,393,797,084
6. Non-Investment Net Cash Flow	129,437,231
7. Net Investment Return	
a. Expected [.0675 x ((4)+0.5*(6))]	288,421,907
b. Actual [(5) - (4) - (6)]	<u>56,161,334</u>
8. Current Year Market Value Gain/(Loss) [(7b) - (7a)]	\$ (232,260,573)
9. Deferred Recognition of Investment Gain/(Loss)	
a. Current Fiscal Year (80% of (8))	\$ (185,808,458)
b. Current Fiscal Year - 1 (60%)	(173,096,725)
c. Current Fiscal Year - 2 (40%)	107,815,584
d. Current Fiscal Year - 3 (20%)	<u>(3,410,124)</u>
e. Total [(a) + (b) + (c) + (d)]	\$ (254,499,723)
10. Preliminary Actuarial Value, end of year [(5) - (9e)]	\$ 4,648,296,807
a. 80% of Market Value, end of year [80% of (5)]	3,515,037,667
b. 120% of Market Value, end of year [120% of (5)]	5,272,556,501
11. Actuarial Value, end of year [(10), but not Greater than (10b), nor Less than (10a)]	\$ 4,648,296,807
12. Actuarial Value as a % of Market Value [(11) / (5)]	105.79%
13. Net Investment Return on Actuarial Value [(11) - (3) - (6)]	\$ 228,601,716
14. Actuarial Value Net Rate of Return [(13) / ((3) + 0.5*(6))]	5.25%
15. Actuarial Value, Net of ASA Account Balance, end of year	\$ 4,648,296,807
16. ASA Account Balance, end of year	\$ 1,217,432,610
17. Actuarial Value, end of year [(15) + (16)]	\$ 5,865,729,417

## ***Accrued Liability Reconciliation***

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	<b>June 30, 2015 thru June 30, 2016</b>	<b>June 30, 2014 thru June 30, 2015</b>
Total Accrued Liability, beginning of year	\$ 5,905,691,033	\$ 5,236,993,169
ASA Account Balance, beginning of year	\$ 1,170,914,523	\$ 1,120,728,729
Accrued Liability, Net of ASA Account Balance, beginning of year	\$ 4,734,776,510	\$ 4,116,264,440
Normal Cost	167,836,193	170,892,424
Actual Benefit Payments	(99,506,626)	(90,266,941)
Transfers	13,301,977	27,488,475
Expected Interest	<u>328,016,951</u>	<u>287,264,315</u>
Expected Accrued Liability, Net of ASA Account Balance, end of year	\$ 5,144,425,005	\$ 4,511,642,713
Sources of Change:		
Experience (Gain) or Loss	\$ 40,667,310	\$ (34,483,801)
Mortality Change <sup>1</sup>	0	303,071,328
Other Assumption Changes <sup>2</sup>	0	(39,080,278)
Additional Liability due to Cost-of-Living Adjustment <sup>3</sup>	(10,774,860)	(6,373,452)
Plan Provision Changes	<u>0</u>	<u>0</u>
Accrued Liability, Net of ASA Account Balance, end of year	\$ 5,174,317,455	\$ 4,734,776,510
ASA Account Balance, end of year	\$ 1,217,432,610	\$ 1,170,914,523
Total Accrued Liability, end of year	\$ 6,391,750,065	\$ 5,905,691,033

<sup>1</sup> The June 30, 2015 mortality assumption was updated to the RP-2014 White Collar mortality table with Social Security Administration improvement scale applied from 2006.

<sup>2</sup> Assumption changes other than mortality adopted on June 30, 2015 pursuant to the 2015 experience study.

<sup>3</sup> 13<sup>th</sup> check to retirees in lieu of the assumed 2017 and 2016 1.0% COLAs.

## Asset and Liability Allocation<sup>1</sup>

	June 30, 2016		
	Non-Retired	Retired	Total
<b>Accrued Liability (AL)</b>			
ASA Balance	\$ 1,204,885,475	\$ 12,547,135	\$ 1,217,432,610
ASA Annuities	0	122,416,233	122,416,233
Pension: Retirees	0	956,838,640	956,838,640
Pension: Non-Retirees	4,095,062,582	0	4,095,062,582
Total	\$ 5,299,948,057	\$ 1,091,802,008	\$ 6,391,750,065
<b>Market Assets</b>			
ASA Balance	\$ 1,204,885,475	\$ 12,547,135	\$ 1,217,432,610
ASA Annuities	0	122,416,233	122,416,233
Pension: Retirees	0	956,838,640	956,838,640
Pension: Non-Retirees	3,314,542,211	0	3,314,542,211
Total	\$ 4,519,427,686	\$ 1,091,802,008	\$ 5,611,229,694
<b>Actuarial Assets</b>			
ASA Balance	\$ 1,204,885,475	\$ 12,547,135	\$ 1,217,432,610
ASA Annuities	0	122,416,233	122,416,233
Pension: Retirees	0	956,838,640	956,838,640
Pension: Non-Retirees	3,569,041,934	0	3,569,041,934
Total	\$ 4,773,927,409	\$ 1,091,802,008	\$ 5,865,729,417
<b>Unfunded AL</b>			
ASA Balance	\$ 0	\$ 0	\$ 0
ASA Annuities	0	0	0
Pension: Retirees	0	0	0
Pension: Non-Retirees	526,020,648	0	526,020,648
Total	\$ 526,020,648	\$ 0	\$ 526,020,648

	June 30, 2015		
	Non-Retired	Retired	Total
<b>Accrued Liability (AL)</b>			
ASA Balance	\$ 1,159,597,089	\$ 11,317,434	\$ 1,170,914,523
ASA Annuities	0	108,501,422	108,501,422
Pension: Retirees	0	788,534,587	788,534,587
Pension: Non-Retirees	3,837,740,501	0	3,837,740,501
Total	\$ 4,997,337,590	\$ 908,353,443	\$ 5,905,691,033
<b>Market Assets</b>			
ASA Balance	\$ 1,159,597,089	\$ 11,317,434	\$ 1,170,914,523
ASA Annuities	0	108,501,422	108,501,422
Pension: Retirees	0	788,534,587	788,534,587
Pension: Non-Retirees	3,311,162,510	0	3,311,162,510
Total	\$ 4,470,759,599	\$ 908,353,443	\$ 5,379,113,042
<b>Actuarial Assets</b>			
ASA Balance	\$ 1,159,597,089	\$ 11,317,434	\$ 1,170,914,523
ASA Annuities	0	108,501,422	108,501,422
Pension: Retirees	0	788,534,587	788,534,587
Pension: Non-Retirees	3,393,221,851	0	3,393,221,851
Total	\$ 4,552,818,940	\$ 908,353,443	\$ 5,461,172,383
<b>Unfunded AL</b>			
ASA Balance	\$ 0	\$ 0	\$ 0
ASA Annuities	0	0	0
Pension: Retirees	0	0	0
Pension: Non-Retirees	444,518,650	0	444,518,650
Total	\$ 444,518,650	\$ 0	\$ 444,518,650

<sup>1</sup> Assets are allocated first to member ASA account liabilities, then to ASA annuity liabilities, then to Pension: Retirees liabilities, and finally to Pension: Non-Retirees liabilities to determine unfunded accrued liabilities.

## ***Solvency Test***

\$Thousands

Year Ended June 30	Accrued Liability				Portion of Accrued Liability Covered by Assets				
	Active Member Contributions	Retirees and Beneficiaries	Active Member (Employer Financed Portion)	Total	Actuarial Value of Assets	Active Member Contribs.	Retirees and Bfcys	Active Member (Employer Financed Portion)	Total
2005	\$535,179	\$219,722	\$1,255,845	\$2,010,746	\$1,268,575	100.0%	100.0%	40.9%	63.1%
2006	\$602,051	\$282,638	\$1,478,412	\$2,363,101	\$2,209,468	100.0%	100.0%	89.6%	93.5%
2007	\$656,918	\$449,452	\$1,721,184	\$2,827,554	\$2,713,051	100.0%	100.0%	93.3%	95.9%
2008	\$649,840	\$514,933	\$1,792,985	\$2,957,758	\$3,080,057	100.0%	100.0%	100.0%	104.1%
2009	\$655,843	\$432,942	\$2,046,748	\$3,135,533	\$2,920,735	100.0%	100.0%	89.5%	93.1%
2010	\$750,575	\$483,117	\$2,380,867	\$3,614,559	\$3,422,554	100.0%	100.0%	91.9%	94.7%
2011	\$840,341	\$562,445	\$2,594,053	\$3,996,839	\$3,664,657	100.0%	100.0%	87.2%	91.7%
2012	\$882,942	\$662,558	\$2,792,809	\$4,338,309	\$3,936,455	100.0%	100.0%	85.6%	90.7%
2013	\$975,309	\$798,486	\$2,975,573	\$4,749,368	\$4,453,828	100.0%	100.0%	90.1%	93.8%
2014	\$1,102,686	\$777,287	\$3,357,020	\$5,236,993	\$5,035,232	100.0%	100.0%	94.0%	96.1%
2015	\$1,159,597	\$908,353	\$3,837,741	\$5,905,691	\$5,461,172	100.0%	100.0%	88.4%	92.5%
2016	\$1,204,885	\$1,091,802	\$4,095,063	\$6,391,750	\$5,865,729	100.0%	100.0%	87.2%	91.8%

## ***Analysis of Financial Experience<sup>1</sup>***

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<b>\$Thousands</b>	<b>June 30, 2015 thru June 30, 2016</b>	<b>June 30, 2014 thru June 30, 2015</b>
<b>Unfunded Accrued Liability, beginning of year</b>	<b>\$ 444,519</b>	<b>\$ 201,762</b>
<b>(Gain) / Loss:</b>		
Actuarial Value of Assets	\$ 60,156	\$ 36,284
Actuarial Accrued Liabilities	40,667	(34,484)
Amortization of Existing Bases	(15,531)	(16,661)
Mortality Change <sup>2</sup>	0	303,071
Other Assumption Changes <sup>3</sup>	0	(39,080)
Asset Smoothing Method Change <sup>4</sup>	6,985	0
Additional Liability due to Cost-of-Living Adjustment <sup>5</sup>	(10,775)	(6,373)
Plan Provision Change	<u>0</u>	<u>0</u>
Net Change	<b>\$ 81,502</b>	<b>\$ 242,757</b>
<b>Unfunded Accrued Liability, end of year</b>	<b>\$ 526,021</b>	<b>\$ 444,519</b>

<sup>1</sup> Based on pension and ASA annuities only, i.e. net of ASA account balances.

<sup>2</sup> The June 30, 2015 mortality assumption was updated to the RP-2014 White Collar mortality table with Social Security Administration improvement scale applied from 2006.

<sup>3</sup> Assumption changes other than mortality adopted on June 30, 2015 pursuant to the 2015 experience study.

<sup>4</sup> Change in the asset smoothing period from 4 years to 5 years on June 30, 2016.

<sup>5</sup> 13<sup>th</sup> check to retirees in lieu of the assumed 2017 and 2016 1.0% COLAs.

**Sensitivity to Changes in Assumed Investment Return / Interest Rate**

<b>\$Millions</b>	<b>Assumed Investment Return / Interest Rate</b>				
	<b>5.75%</b>	<b>6.00%</b>	<b>6.25%</b>	<b>6.50%</b>	<b>6.75%</b>
<b>Funded Status</b>					
Actuarial Accrued Liability	\$ 7,348.8	\$ 7,094.2	\$ 6,850.1	\$ 6,616.1	\$ 6,391.7
Actuarial Value of Assets	<u>5,865.7</u>	<u>5,865.7</u>	<u>5,865.7</u>	<u>5,865.7</u>	<u>5,865.7</u>
Unfunded Accrued Liability	\$ 1,483.1	\$ 1,228.5	\$ 984.4	\$ 750.4	\$ 526.0
Funded Ratio	79.8%	82.7%	85.6%	88.7%	91.8%
<b>Actuarially Determined Contribution Rate</b>					
Normal Cost %	7.24%	6.72%	6.25%	5.80%	5.39%
UAL Amortization %	<u>3.71%</u>	<u>3.11%</u>	<u>2.52%</u>	<u>1.93%</u>	<u>1.34%</u>
Actuarially Determined Contribution %	10.95%	9.83%	8.77%	7.73%	6.73%

<b>\$Millions</b>	<b>Assumed Investment Return / Interest Rate</b>				
	<b>7.00%</b>	<b>7.25%</b>	<b>7.50%</b>	<b>7.75%</b>	<b>8.00%</b>
<b>Funded Status</b>					
Actuarial Accrued Liability	\$ 6,188.2	\$ 5,993.2	\$ 5,806.1	\$ 5,626.7	\$ 5,460.1
Actuarial Value of Assets	<u>5,865.7</u>	<u>5,865.7</u>	<u>5,865.7</u>	<u>5,865.7</u>	<u>5,865.7</u>
Unfunded Accrued Liability	\$ 322.5	\$ 127.5	\$ (59.6)	\$ (239.0)	\$ (405.6)
Funded Ratio	94.8%	97.9%	101.0%	104.2%	107.4%
<b>Actuarially Determined Contribution Rate</b>					
Normal Cost %	5.00%	4.64%	4.33%	4.05%	3.77%
UAL Amortization %	<u>0.79%</u>	<u>0.25%</u>	<u>-0.29%</u>	<u>-0.82%</u>	<u>-1.33%</u>
Actuarially Determined Contribution %	5.79%	4.89%	4.04%	3.23%	2.44%



**Calculated Employer Contribution Rate**

	June 30, 2016	% of Projected Payroll for Fiscal 2017
Normal Cost	\$ 168,650,636	5.39%
Amortization of Unfunded Accrued Liability		
Unfunded Accrued Liability (UAL) <sup>1</sup>	\$ 526,020,648	
Unamortized UAL from Prior Years <sup>2</sup>	437,884,995	
Net Unamortized UAL	\$ 88,135,653	
Amortization Factor (20-years, level dollar) <sup>2</sup>	11.5322	
Current Year Amortization Payment	\$ 7,642,571	
Payments Established in Prior Years <sup>2</sup>	34,321,933	
Total Amortization Payments	\$ 41,964,504	1.34%
<b>Calculated Employer Contribution Rate</b>	<b>\$ 210,615,140</b>	<b>6.73%</b>
Projected Fiscal 2018 Payroll	\$ 3,244,100,000	
Projected Fiscal 2018 ADC	\$ 218,327,930	

<sup>1</sup> Pension and ASA annuity only

<sup>2</sup> The amortization period was changed from 30 years to 20 years on a prospective basis on 6/30/2016.

## **Statement of Fiduciary Net Position**

	<b>June 30, 2016</b>	<b>June 30, 2015</b>
<b>Assets</b>		
Cash and Cash Equivalents	\$ 1,624,223	\$ 1,082,812
Receivables		
Contributions	\$ 1,657,503	\$ 2,249,757
Miscellaneous	208,832	299,460
Investments	75,813,928	81,431,379
Foreign Exchange Contracts	1,064,393,447	1,002,489,643
Accrued Interest and Dividends	15,340,071	15,335,120
Due from Other Funds	706,866	1,116,070
Total Receivables	<u>\$ 1,158,120,647</u>	<u>\$ 1,102,921,429</u>
Investments		
Short Term	\$ 5,915,199	\$ 9,953,374
Pooled Unit Trust Assets		
Repurchase Agreements	1,142,394	0
Short Term Investments	322,782,362	223,459,504
Fixed Income	2,129,316,197	2,122,904,122
Equities	1,461,265,927	1,397,181,889
Alternatives	1,795,974,206	1,646,501,214
Derivatives	(158,044)	608,228
Securities Lending Collateral	67,393,242	211,163,685
Total Investments	<u>\$ 5,783,631,483</u>	<u>\$ 5,611,772,016</u>
Net Capitalized Assets	<u>\$ 416,777</u>	<u>\$ 717,683</u>
Total Assets	<u>\$ 6,943,793,130</u>	<u>\$ 6,716,493,940</u>
<b>Liabilities</b>		
Accounts Payable	\$ 260,629	\$ 236,622
Retirement Benefits Payable	15,728,116	17,515,010
Salaries and Benefits Payable	0	0
Investments Payable	139,971,744	69,656,855
Foreign Exchange Contracts	1,060,638,685	1,006,080,660
Securities Lending Obligations	67,393,242	211,163,685
Securities Sold Under Agreement to Repurchase	47,651,563	32,099,795
Due to Other Funds	919,457	628,271
Total Liabilities	<u>\$ 1,332,563,436</u>	<u>\$ 1,337,380,898</u>
<b>Net Position Restricted for Pensions</b>	<b>\$ 5,611,229,694</b>	<b>\$ 5,379,113,042</b>

**Statement of Changes in Fiduciary Net Position**

	<b>June 30, 2016</b>	<b>June 30, 2015</b>
<b>Additions</b>		
Contributions		
Member Contributions	\$ 88,429,683	\$ 86,515,294
Employer Contributions	215,625,986	205,763,142
Nonemployer Contributing Entity Contributions	0	0
Other Contributions	<u>0</u>	<u>0</u>
Total Contributions	\$ 304,055,669	\$ 292,278,436
Investment Income/(Loss)		
Net Appreciation/(Depreciation)		
Fair Value of Investments	\$ 20,334,556	\$ (14,664,501)
Other Net Investment Income	549,215	764,980
Net Interest and Dividends Income	73,863,716	71,351,232
Miscellaneous Income	0	0
Securities Lending Income	<u>722,896</u>	<u>702,276</u>
Total Investment Income/(Loss)	\$ 95,470,383	\$ 58,153,987
Less Direct Investment Expenses		
Investment Management Fees	\$ (28,085,647)	\$ (29,958,051)
Securities Lending Fees	(134,053)	(113,395)
Other Direct Investment Expenses	<u>(3,046,909)</u>	<u>(2,495,365)</u>
Total Direct Investment Expenses	\$ (31,266,609)	\$ (32,566,811)
Net Investment Income/(Loss)	\$ 64,203,774	\$ 25,587,176
Other Additions		
Miscellaneous	\$ 15,894	\$ 24,170
Interfund Transfers	<u>6,586,994</u>	<u>7,133,930</u>
Total Other Additions	\$ 6,602,888	\$ 7,158,100
Total Additions	\$ 374,862,331	\$ 325,023,712
<b>Deductions</b>		
Pension and Disability Benefits	\$ 124,302,337	\$ 116,186,940
Special Death Benefits	0	0
Distributions of Contributions and Interest	10,987,653	11,711,936
Pension Relief Distributions	0	0
Local Unit Withdrawals	0	0
Administrative Expenses	5,603,306	5,602,399
Project Expenses	0	582,834
Interfund Transfers	<u>1,852,383</u>	<u>1,268,891</u>
Total Deductions	\$ 142,745,679	\$ 135,353,000
Net Increase/(Decrease) in Net Position	\$ 232,116,652	\$ 189,670,712
<b>Net Position Restricted for Pensions</b>		
Beginning of Year	\$ 5,379,113,042	\$ 5,189,442,330
End of Year	\$ 5,611,229,694	\$ 5,379,113,042

**Schedule of Changes in Net Pension Liability and Related Ratios**

	June 30, 2016	June 30, 2015	June 30, 2014
<b>Total Pension Liability</b>			
Total Pension Liability, beginning of year	\$ 5,905,691,033	\$ 5,236,993,169	\$ 4,748,148,931
Annuity Savings Account (ASA), beginning of year	1,170,914,523	1,120,728,729	990,704,762
Excluding ASA, beginning of year	4,734,776,510	4,116,264,440	3,757,444,169
Service Cost	\$ 167,836,193	\$ 170,892,424	\$ 155,314,388
Interest Cost	328,017,487	287,264,315	262,263,149
Experience (Gains)/Losses	29,876,020	(40,857,253)	504,077
Assumption Changes	0	263,991,050	0
Plan Amendments	0	0	(4,504,201)
Benefit Payments	(99,506,626)	(90,266,941)	(77,253,362)
ASA Annuitizations	8,931,954	22,574,841	15,151,081
Net Member Reassignments	4,370,023	4,889,464	6,922,378
Other	15,894	24,170	422,761
Net Change in Total Pension Liability, Excluding ASA	\$ 439,540,945	\$ 618,512,070	\$ 358,820,271
Net Change in Total Pension Liability, ASA	46,518,087	50,185,794	130,023,967
Net Change in Total Pension Liability	486,059,032	668,697,864	488,844,238
Total Pension Liability, Excluding ASA, end of year	\$ 5,174,317,455	\$ 4,734,776,510	\$ 4,116,264,440
Total Pension Liability, ASA, end of year	1,217,432,610	1,170,914,523	1,120,728,729
Total Pension Liability, end of year	6,391,750,065	5,905,691,033	5,236,993,169
<b>Fiduciary Net Position</b>			
Fiduciary Net Position, beginning of year	\$ 5,379,113,042	\$ 5,189,442,330	\$ 4,433,677,345
Employer Contributions	215,625,986	205,763,142	194,750,861
Nonemployer contributing entities contributions	0	0	0
Member Contributions	88,386,508	86,515,294	81,801,667
Net investment income	64,203,774	25,587,176	586,783,647
Benefit Payments	(135,289,991)	(127,898,876)	(108,719,624)
Net Member Reassignments	4,777,787	5,865,039	7,835,271
Administrative Expenses	(5,603,306)	(6,185,233)	(6,707,586)
Other	15,894	24,170	20,749
Net Change in Fiduciary Net Position	\$ 232,116,652	\$ 189,670,712	\$ 755,764,985
Fiduciary Net Position, end of year	\$ 5,611,229,694	\$ 5,379,113,042	\$ 5,189,442,330
<b>Net Pension Liability and Related Ratios</b>			
Net Pension Liability, beginning of year	\$ 526,577,991	\$ 47,550,839	\$ 314,471,586
Net Pension Liability, end of year	\$ 780,520,371	\$ 526,577,991	\$ 47,550,839
Plan's Fiduciary Net Position as a			
Percentage of the Total Pension Liability	87.8%	91.1%	99.1%
Covered Employee Payroll (Actual)	\$ 2,881,397,273	\$ 2,742,186,608	\$ 2,598,115,000
Net Pension Liability as a Percentage of			
Covered Employee Payroll	27.1%	19.2%	1.8%

**Schedule of Changes in Net Pension Liability and Related Ratios**

	<b>June 30, 2013</b>
<b>Total Pension Liability</b>	
Total Pension Liability, beginning of year	\$ 4,338,309,018
Annuity Savings Account (ASA), beginning of year	899,338,904
Excluding ASA, beginning of year	3,438,970,114
Service Cost	\$ 147,336,605
Interest Cost	240,281,897
Experience (Gains)/Losses	(15,994,636)
Assumption Changes	0
Plan Amendments	0
Benefit Payments	(68,792,905)
ASA Annuitizations	11,621,194
Net Member Reassignments	0
Other	<u>4,021,900</u>
Net Change in Total Pension Liability, Excluding ASA	\$ 318,474,055
Net Change in Total Pension Liability, ASA	91,365,858
Net Change in Total Pension Liability	409,839,913
Total Pension Liability, Excluding ASA, end of year	\$ 3,757,444,169
Total Pension Liability, ASA, end of year	990,704,762
Total Pension Liability, end of year	4,748,148,931
<b>Fiduciary Net Position</b>	
Fiduciary Net Position, beginning of year	\$ 4,018,148,837
Employer Contributions	180,714,567
Nonemployer contributing entities contributions	0
Member Contributions	77,532,304
Net investment income	258,111,000
Benefit Payments	(97,157,000)
Net Member Reassignments	2,806,000
Administrative Expenses	(6,482,000)
Other	<u>3,637</u>
Net Change in Fiduciary Net Position	\$ 415,528,508
Fiduciary Net Position, end of year	\$ 4,433,677,345
<b>Net Pension Liability and Related Ratios</b>	
Net Pension Liability, beginning of year	\$ 320,160,181
Net Pension Liability, end of year	\$ 314,471,586
<b>Plan's Fiduciary Net Position as a</b>	
Percentage of the Total Pension Liability	93.4%
Covered Employee Payroll (Actual)	\$ 2,442,496,000
Net Pension Liability as a Percentage of	
Covered Employee Payroll	12.9%

**Required Supplementary Information under GASB No. 68**

	<b>June 30, 2016</b>	<b>June 30, 2015</b>	<b>June 30, 2014</b>	<b>June 30, 2013</b>
<b>Schedule of Contributions</b>				
Actuarially Determined Contribution	\$ 180,375,469	\$ 178,260,000	\$ 177,711,000	\$ 164,400,000
Contributions in Relation to the				
Actuarially Determined Contributions	<u>215,625,986</u>	<u>205,525,842*</u>	<u>194,750,861</u>	<u>180,714,567</u>
Contribution Deficiency/(Excess)	\$ (35,250,517)	\$ (27,265,842)	\$ (17,039,861)	\$ (16,314,567)
Covered Employee Payroll	\$ 2,881,397,273	\$ 2,742,186,608	\$ 2,598,115,000	\$ 2,442,496,000
Contributions as a Percentage of				
Covered Employee Payroll	7.5%	7.5%	7.5%	7.5%

**Schedule of Investment Returns**

Annual Money-Weighted Rate of Return, Net of Investment Expense	1.01%	0.57%	12.71%	5.11%
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**Sensitivity of the Net Pension Liability to Changes in the Discount Rate**

The following presents the net pension liability of the TRF 1996 Account calculated using the discount rate of 6.75%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1% lower (5.75%) or 1% higher (7.75%) than the current rate:

	<b>1% Decrease</b>	<b>Current Rate</b>	<b>1% Increase</b>
	<b>5.75%</b>	<b>6.75%</b>	<b>7.75%</b>
Net Pension Liability	\$ 1,737,602,789	\$ 780,520,371	\$ 15,493,517

\* Excludes \$237,300 attributable to member service credit purchases.

## ***Pension Expense***

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	<b>June 30, 2016</b>	<b>June 30, 2015</b>
Service Cost	\$ 167,836,193	\$ 170,892,424
Interest on Total Pension Liability	328,017,487	287,264,315
Projected Earnings on Pension Plan Investments	(288,232,795)	(279,255,149)
Changes of Benefit Terms	0	0
Pension Plan Administrative Expenses*	5,488,857	6,068,861
Other Changes	0	0
 Current Period Recognition of Deferred Outflows/(Inflows) of resources:		
Differences between Expected and Actual Experience in Measurement of the Total Pension Liability	(745,599)	(2,879,600)
Changes of Assumptions	18,856,504	18,856,504
Differences between Projected and Actual Earnings on Pension Plan Investments	<u>49,496,400</u>	<u>4,202,769</u>
 Total	 \$ 280,717,047	 \$ 205,150,124

\* Administrative expenses are net of INPRS contributions to the plan of \$114,449 in fiscal 2016 and \$116,372 in fiscal 2015.

**Deferred Outflows of Resources and Deferred Inflows of Resources  
Related to Pensions**

	Initial Balance	Initial Amortization Period	Annual Recognition	June 30, 2016 Balance
<b>Difference between Expected and Actual Experience in Measurement of the Total Pension Liability</b>				
Base for Year ending June 30, 2016	\$ 29,876,020	14	\$ 2,134,001	\$ 27,742,019
Base for Year ending June 30, 2015	(40,857,253)	14	(2,918,375)	(35,020,503)
Base for Year ending June 30, 2014	504,077	13	38,775	387,752
<b>Change of Assumptions</b>				
Base for Year ending June 30, 2016	\$ 0		\$ 0	\$ 0
Base for Year ending June 30, 2015	263,991,050	14	18,856,504	226,278,042
Base for Year ending June 30, 2014	0		0	0
<b>Differences between Projected and Actual Earnings on Pension Plan Investments</b>				
Base for Year ending June 30, 2016	\$ 226,468,155	5	\$ 45,293,631	\$ 181,174,524
Base for Year ending June 30, 2015	276,569,674	5	55,313,935	165,941,804
Base for Year ending June 30, 2014	(255,555,829)	5	(51,111,166)	(102,222,331)
<b>Changes in State's Proportion and Differences between Actual State Contributions and State's Proportionate Share of Contributions</b>				
Base for Year ending June 30, 2016	\$ 0		\$ 0	\$ 0
Base for Year ending June 30, 2015	0		0	0
Base for Year ending June 30, 2014	0		0	0
Total			\$ 67,607,305	\$ 464,281,307

The balances as of June 30, 2016 of the deferred outflows/(inflows) of resources will be recognized in pension expense as follows:

Year Ended June 30,	
2017	\$ 67,607,305
2018	\$ 67,607,306
2019	\$ 118,718,470
2020	\$ 63,404,536
2021	\$ 18,110,905
Thereafter	\$ 128,832,785



## ***Member Data***

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The tables below summarize the member data used in the valuation. The June 30, 2016 valuation is based on June 30, 2015 census data, with liabilities rolled-forward to the June 30, 2016 measurement date. The data summarized in this section is as of the June 30, 2015 census collection date. The pages that follow show various distributions of the member groups.

	<b>Males</b>	<b>Females</b>	<b>Total</b>
<b>Number of Actives</b>	<b>14,495</b>	<b>40,770</b>	<b>55,265</b>
Average Age	39.7	39.4	39.5
Average Service	10.7	9.9	10.1
Average Pay	\$ 59,956	\$ 52,370	\$ 54,359
<b>Number of Inactive Vesteds</b>	<b>1,113</b>	<b>3,222</b>	<b>4,335</b>
Average Age	49.3	50.5	50.2
Average Service	15.7	14.8	15.0
<b>Number of Inactive Nonvesteds</b>	<b>2,922</b>	<b>9,607</b>	<b>12,529</b>
<b>Number of Retirees and Beneficiaries</b>	<b>1,608</b>	<b>3,369</b>	<b>4,977</b>
Average Age	67.4	66.7	66.9
Average Years Retired	7.2	5.7	6.2
Average Monthly Annuity <sup>1</sup>	\$ 219	\$ 149	\$ 172
Average Monthly Pension	\$ 1,691	\$ 1,194	\$ 1,355
<b>Total Number of Members</b>	<b>20,138</b>	<b>56,968</b>	<b>77,106</b>

<sup>1</sup> The average monthly annuity above is the average over all retirees and beneficiaries, including those that did not annuitize their ASA balances. The average monthly annuity for the 2,050 retirees and beneficiaries that did annuitize their ASA balances is \$417.

**Active Member Data**

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June 30	Number	Valuation Payroll (\$000s)	Average			
			Age	Service	Pay	Pay Increase %
1996	8,683	\$ 72,506	32.2	1.3	\$ 8,350	
1997	20,686	245,168	33.0	1.8	11,852	41.9%
1998	25,634	395,758	33.6	2.2	15,439	30.3
1999	21,185	538,837	35.3	4.0	25,435	64.7
2000	24,950	631,072	36.4	4.7	25,293	(0.6)
2001	24,846	754,426	36.3	5.5	30,364	20.0
2002	27,873	1,004,515	36.7	6.1	36,039	18.7
2003	29,936	1,136,864	37.0	6.5	37,976	5.4
2004	32,000	1,267,173	37.3	6.9	39,599	4.3
2005	34,826	1,428,604	37.5	7.2	41,021	3.6
2006	36,356	1,565,341	37.7	7.5	43,056	5.0
2007	39,307	1,891,605	38.2	7.8	48,124	11.8
2008	41,628	2,052,719	38.1	8.2	49,311	2.5
2009	45,046	2,308,548	38.3	8.4	51,249	3.9
2010	46,433	2,447,509	38.6	8.8	52,711	2.9
2011	46,633	2,507,193	39.2	9.4	53,764	2.0
2012	47,885	2,594,952	39.4	9.8	54,191	0.8
2013	51,204	2,740,940	39.3	9.8	53,530	(1.2)
2014*	51,204	2,740,940	39.3	9.8	53,530	(1.2)
2015*	52,424	2,827,311	39.4	10.0	53,932	0.8
2016*	55,265	3,004,169	39.5	10.1	54,359	0.8

\* Valuations on and after June 30, 2014 are based on census data collected at the prior measurement date.

## ***Active Members***

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### **By Attained Age and Years of Service**

Attained Age	Years of Service to Valuation Date						Total
	<10	10-14	15-19	20-24	25-29	30+	
15-19							0
20-24	1,475						1,475
25-29	8,438	1					8,439
30-34	8,501	1,670	2				10,173
35-39	3,789	5,084	1,511	2			10,386
40-44	2,417	1,863	4,010	527	3		8,820
45-49	1,801	1,209	1,769	1,212	177	6	6,174
50-54	1,147	867	1,068	516	512	122	4,232
55-59	737	625	935	479	239	289	3,304
60-64	344	322	486	278	128	194	1,752
65-69	138	81	86	56	35	34	430
70-74	29	9	12	2	1	1	54
75-79	11	1					12
80 & over	10	3	1				14
<b>Total</b>	<b>28,837</b>	<b>11,735</b>	<b>9,880</b>	<b>3,072</b>	<b>1,095</b>	<b>646</b>	<b>55,265</b>

Average Age: 39.5  
 Average Service: 10.1

***Inactive Vested Members***

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**By Attained Age and Years of Service**

Attained Age	Years of Service at Termination						Total
	<10	10-14	15-19	20-24	25-29	30+	
30-34		66	1				67
35-39		518	33				551
40-44		526	261	23			810
45-49		360	239	77	11	1	688
50-54		322	174	96	42	11	645
55-59		346	208	107	52	27	740
60-64		322	158	73	33	30	616
65-69		97	46	24	11	15	193
70-74		14	6	1	2	1	24
75-79		1					1
80 & over							
<b>Total</b>		2,572	1,126	401	151	85	4,335

Average Age: 50.2  
 Average Service: 15.0

***Retired Members***

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**By Attained Age and Completed Years of Retirement**

Attained Age	Years of Retirement						Total
	<10	10-14	15-19	20-24	25-29	30+	
Under 40	7						7
40-44	6	2					8
45-49	14	3	1				18
50-54	57	8					65
55-59	316	7	4				327
60-64	1,231	33	5	1	1		1,271
65-69	1,542	293	17	1			1,853
70-74	500	295	110	3			908
75-79	74	136	99	31	5		345
80-84	17	24	38	36	7		122
85-89	2	5	5	15	14	1	42
90 & over			2	2	6	1	11
<b>Total</b>	<b>3,766</b>	<b>806</b>	<b>281</b>	<b>89</b>	<b>33</b>	<b>2</b>	<b>4,977</b>

Average Age: 66.9  
 Average Years Retired: 6.2

***Retired Members***

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**By Year of Retirement**

Year of Retirement As of June 30	Number	Monthly Pension	
		Total	Average
1981	1	\$ 259	\$ 259
1982	1	936	936
1986	2	1,562	781
1987	5	2,954	591
1988	3	1,050	350
1989	5	3,767	753
1990	11	10,617	965
1991	12	10,707	892
1992	11	12,590	1,145
1993	8	7,935	992
1994	17	23,280	1,369
1995	27	31,393	1,163
1996	33	42,329	1,283
1997	31	38,656	1,247
1998	44	53,219	1,210
1999	50	66,228	1,325
2000	79	101,041	1,279
2001	105	138,202	1,316
2002	136	193,184	1,420
2003	165	225,347	1,366
2004	192	262,291	1,366
2005	168	245,315	1,460
2006	168	227,915	1,357
2007	193	242,657	1,257
2008	256	352,675	1,378
2009	234	325,810	1,392
2010	285	392,803	1,378
2011	407	585,173	1,438
2012	516	684,548	1,327
2013	628	820,481	1,307
2014	519	687,068	1,324
2015	665	950,016	1,429
<b>Total</b>	<b>4,977</b>	<b>\$ 6,742,010</b>	<b>\$ 1,355</b>

## ***Retired Members***

### **Reconciliation of Benefit Recipients**

	<b>Number of Members</b>	<b>Sum of Annual Allowances*</b>
Benefit Recipient Rolls, July 1, 2007	1,925	\$ 37,012,980
Added to Rolls	255	5,126,028
Removed from Rolls	(21)	(316,275)
Net Transfers to Pre-1996 Account	104	1,762,578
Benefit Changes		<u>(103,335)</u>
End of Year Rolls	2,263	\$ 43,481,976
Percentage Increase in Annual Allowances		17.48%
Average Annual Allowances		\$ 19,214
Benefit Recipient Rolls, July 1, 2008	2,263	\$ 43,481,976
Added to Rolls	270	5,145,053
Removed from Rolls	(10)	(119,161)
Net Transfers to Pre-1996 Account	(579)	(11,768,469)
Benefit Changes		<u>(427,067)</u>
End of Year Rolls	1,944	\$ 36,312,332
Percentage Increase in Annual Allowances		(16.49%)
Average Annual Allowances		\$ 18,679
Benefit Recipient Rolls, July 1, 2009	1,944	\$ 36,312,332
Added to Rolls	249	4,859,402
Removed from Rolls	(12)	(129,306)
Benefit Changes		<u>(341,332)</u>
End of Year Rolls	2,181	\$ 40,701,096
Percentage Increase in Annual Allowances		12.1%
Average Annual Allowances		\$ 18,662
Benefit Recipient Rolls, July 1, 2010	2,181	\$ 40,701,096
Added to Rolls	390	7,665,877
Removed from Rolls	(17)	(253,436)
Benefit Changes		<u>(226,865)</u>
End of Year Rolls	2,554	\$ 47,886,672
Percentage Increase in Annual Allowances		17.65%
Average Annual Allowances		\$ 18,750

\* Pension and ASA annuity

## ***Retired Members***

### **Reconciliation of Benefit Recipients**

	<b>Number of Members</b>	<b>Sum of Annual Allowances*</b>
Benefit Recipient Rolls, July 1, 2011	2,554	\$ 47,886,672
Added to Rolls	433	8,131,748
Removed from Rolls	(16)	(236,302)
Benefit Changes		(307,450)
End of Year Rolls	2,971	\$ 55,474,668
Percentage Increase in Annual Allowances		15.85%
Average Annual Allowances		\$ 18,672
Benefit Recipient Rolls, July 1, 2012	2,971	\$ 55,474,668
Added to Rolls	712	12,216,094
Removed from Rolls	(18)	(250,893)
Benefit Changes		(270,493)
End of Year Rolls	3,665	\$ 67,169,376
Percentage Increase in Annual Allowances		21.08%
Average Annual Allowances		\$ 18,327
Benefit Recipient Rolls, July 1, 2013	3,665	\$ 67,169,376
Added to Rolls	499	9,100,772
Removed from Rolls	(28)	(353,092)
Benefit Changes		(203,524)
End of Year Rolls	4,136	\$ 75,713,532
Percentage Increase in Annual Allowances		12.72%
Average Annual Allowances		\$ 18,306
Benefit Recipient Rolls, July 1, 2014	4,136	\$ 75,713,532
Added to Rolls	858	16,074,548
Removed from Rolls	(17)	(304,652)
Benefit Changes		(323,628)
End of Year Rolls	4,977	\$ 91,159,800
Percentage Increase in Annual Allowances		20.4%
Average Annual Allowances		\$ 18,316

\* Pension and ASA annuity



## ***Retired Members***

### **Number of Benefit Recipients by Benefit Option**

<b>Amount of Monthly Benefit</b>	<b>Option A-1</b>	<b>Option A-2</b>	<b>Option A-3</b>	<b>Option B-1</b>	<b>Option B-2</b>	<b>Option B-3</b>	<b>Surv.</b>	<b>Dis.</b>	<b>Total</b>
\$1-\$500	229	138	19	148	28	49	27	65	703
\$501-\$1,000	392	315	51	342	73	149	29	63	1,414
\$1,001-\$1,500	269	249	43	274	79	112	4	20	1,050
\$1,501-\$2,000	194	168	23	223	60	101	7	8	784
\$2,001-\$3,000	154	155	19	264	79	115	4	5	795
Over \$3,000	45	55	1	62	33	33	2	0	231
<b>Total</b>	<b>1,283</b>	<b>1,080</b>	<b>156</b>	<b>1,313</b>	<b>352</b>	<b>559</b>	<b>73</b>	<b>161</b>	<b>4,977</b>

#### **Summary of Benefit Options**

- A-1 - Provides a monthly benefit for retiree's life. In the event the retiree dies before receiving five years of payments, the beneficiary receives the remainder of the five years (60 months) of guaranteed Defined Benefit pension payments in a lump sum.
- A-2 - Provides a monthly benefit for retiree's life. The benefit ceases upon the death of the retiree.
- A-3 - Provides a monthly benefit for retiree's life, including monthly annuitization of member's Annuity Savings Account (ASA). In the event the retiree dies before receiving five years of payments, the beneficiary will receive the remainder of the five years of guaranteed pension payments. The ASA is reduced with each monthly benefit paid; if the retiree dies before reducing the balance to \$0.00, the beneficiary will receive a single payment of the amount remaining.
- B-1 - Provides a monthly benefit for retiree's life. Upon the death of the retiree, the qualified designated survivor receives 100% of the member's Defined Benefit for the remainder of the survivor's life.
- B-2 - Provides a monthly benefit for retiree's life. Upon the death of the retiree, the qualified designated survivor receives 66-2/3% of the member's Defined Benefit for the remainder of the survivor's life.
- B-3 - Provides a monthly benefit for retiree's life. Upon the death of the retiree, the qualified designated survivor receives 50% of the member's Defined Benefit for the remainder of the survivor's life.
- Survivors\* - Provides a monthly benefit for the surviving spouse's or dependent's life. The benefit ceases upon death of the survivor.
- Disability\*\* - Available to members with five (5) or more years of creditable service who become disabled as determined by the Social Security Administration while teaching in Indiana.

\* (of members who die while in service)

\*\* Includes Classroom Disability – Provides a benefit of \$125 per month plus \$5 for each additional year of TRF-covered service over five years

***Retired Members***

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**Schedule of Average Benefit Payments by Service at Retirement**

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	Years of Service at Retirement						Total
	<10	10-14	15-19	20-24	25-29	30+	
Avg. Monthly Defined Benefit Pension	\$403	\$478	\$760	\$1,113	\$1,481	\$2,263	\$1,355
Avg. Monthly Annuity: All Benefit Recipients	\$69	\$75	\$108	\$144	\$218	\$257	\$172
Avg. Monthly Annuity: Benefit Recipients who Annuitized their ASA Balance (2,050 Recipients)	\$162	\$152	\$247	\$346	\$507	\$735	\$417
Avg. Final Avg. Salary at Retirement	\$35,250	\$45,420	\$52,554	\$59,740	\$64,060	\$73,994	\$61,008
Number of Benefit Recipients	59	611	1,267	764	688	1,588	4,977

***Reconciliation of Participant Data***

	Active	Inactive Vested	Inactive Nonvested	Survivor	Disabled	Retired	Beneficiary	Total
<b>6/30/2014 Census</b>	<b>52,424</b>	<b>4,132</b>	<b>12,292</b>	<b>58</b>	<b>139</b>	<b>3,854</b>	<b>85</b>	<b>72,984</b>
Disabled	(13)	(11)	(2)		26			0
Retired	(353)	(447)	(2)			802		0
Terminated with Vested Benefit	(961)	961						0
Terminated, due a Refund	(1,644)		1,644					0
Died with Survivor	(7)	(6)		13	(5)	(20)	25	0
Died, no Survivor*		(14)	(1)		(3)	(13)	(1)	(32)
Refunded*	(171)	(1)	(677)					(849)
Forfeited*			(444)					(444)
Dropped from Database	(8)	(26)	(5)					(39)
Rehired	1,165	(252)	(913)					0
Status Corrections		(5)	5					0
Data Corrections		4	127	2	4	7	4	148
New Hires	4,833		505					5,338
<b>6/30/2015 Census</b>	<b>55,265</b>	<b>4,335</b>	<b>12,529</b>	<b>73</b>	<b>161</b>	<b>4,630</b>	<b>113</b>	<b>77,106</b>

\* No remaining benefit obligation in the plan.

## **Summary of Actuarial Assumptions and Methods**

The assumptions used in this valuation reflect the study of experience covering the period July 1, 2011 through June 30, 2014.

<b>Measurement Date</b>	June 30, 2016
<b>Valuation Date</b>	
<b>Assets</b>	June 30, 2016
<b>Liabilities</b>	June 30, 2015. Member census data as of June 30, 2015 was used in the valuation and adjusted, where appropriate, to reflect changes between June 30, 2015 and June 30, 2016. Standard actuarial roll-forward techniques were then used to project the total pension liability computed as of June 30, 2015 to the June 30, 2016 measurement date.
<b>Interest Rate / Investment Return</b>	6.75% per year, compounded annually (net of administrative and investment expenses).
<b>Pay Increase Assumption</b>	Sample increases are shown in a table on the following pages. The assumption for each year of service consists of a merit and/or seniority increase and 2.25% for price inflation.
<b>Total Active Member Payroll</b>	Assumed to increase 4.1% from Fiscal 2016 to Fiscal 2017, and 3.7% from Fiscal 2017 to Fiscal 2018 for purposes of calculating the projected contribution for the 2017 and 2018 fiscal years.
<b>Price Inflation</b>	2.25% per year. Price inflation is not directly tied to benefits; however, it is a component of the economic model used to determine total wage inflation.
<b>Mortality</b>	
<b>Healthy</b>	RP-2014 White Collar Mortality Table with Social Security generational improvements from 2006 based on the 2014 Social Security Administration Trustees Report.
<b>Disabled</b>	RP-2014 White Collar Mortality Table with Social Security generational improvements from 2006 based on the 2014 Social Security Administration Trustees Report.
<b>Retirement</b>	Rates are shown in tables on the following pages.
<b>Withdrawal</b>	Sample rates are shown in tables on the following pages.
<b>Disability</b>	Sample rates are shown in a table on the following pages.
<b>Form of Payment</b>	100% of members are assumed to elect the normal form of benefit payment (Option A-1), a single life annuity with a five-year certain period.
<b>Actuarial Cost Method</b>	Entry Age Normal (level percent of pay) method, with a 20-year, closed, level dollar amortization of the Unfunded Accrued Liability arising from all sources including actuarial gains and losses. The weighted average amortization period on 6/30/2016 is 24 years.

## **Summary of Actuarial Assumptions and Methods**

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<b>Asset Valuation Method</b>	The Actuarial Value of Assets recognizes investment gains and losses in equal installments over five years. However, the Actuarial Value is limited to no more than 20% greater than or 20% less than the Market Value of Assets. Investment experience on ASA account balances is not smoothed.
<b>Marriage Assumption</b>	100% of members are assumed to be married for purposes of valuing death-in-service benefits. Male spouses are assumed to be three years older than female spouses.
<b>Pay Increase Timing</b>	Beginning of (fiscal) year. Payroll amounts stated in the valuation data are amounts projected to be paid during the current year.
<b>Decrement Timing</b>	Decrements are assumed to occur at the beginning of the year.
<b>Other</b>	Disability and withdrawal decrements do not operate after member reaches retirement eligibility. Only the withdrawal and death decrements operate during the first ten years of service.
<b>Miscellaneous Adjustments</b>	The calculated liabilities and normal costs were increased by 1% to account for the inclusion of unused sick leave in the calculation of Average Annual Compensation.
<b>Actuarial Equivalence Basis for Optional Forms of Payment</b>	6.75% interest with a 50% unisex blend of the 2018 IRS combined mortality basis.
<b>Explicit Expense Load</b>	None.
<b>COLA Assumption</b>	1.0% compounded annually on pension portion, with the first COLA credited on January 1, 2018. The January 1, 2017 assumed 1.0% COLA was replaced by a service-related lump sum (a "13 <sup>th</sup> check") ranging from \$150 to \$450 in September, 2016.
<b>Cost for ASA Conversions</b>	ASA conversions between 6/30/2016 and 3/31/2017 will be based on a 4.50% conversion rate. After 4/1/2017, ASA annuity conversions will occur outside of the plan.
<b>ASA Annuitization</b>	50% of ASA balances are assumed to be converted to annuities at retirement prior to 4/1/2017, 0% thereafter.
<b>Employee Census and Asset Data</b>	The member census data and the asset information for this valuation were furnished by the Chief Financial Officer and Staff. We did not audit the information provided, but we did review it thoroughly for reasonableness and compared it with the prior year's submission for consistency.

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The actuarial valuation computations were made under the supervision of a Member of the American Academy of Actuaries (MAAA).

## **Summary of Actuarial Assumptions and Methods**

### **Rates of Age and Service Retirement**

Regular Retirement		Rule of 85 Retirement		Early Retirement	
Age	Probability	Age	Probability	Age	Probability
				50-53	0.020
				54	0.050
		55	0.150	55	0.050
		56	0.150	56	0.050
		57	0.150	57	0.065
		58	0.150	58	0.080
		59	0.200	59	0.120
60	0.200	60	0.200		
61	0.250	61	0.250		
62	0.300	62	0.300		
63	0.350	63	0.350		
64	0.400	64	0.400		
65	0.450	65	0.450		
66	0.450	66	0.450		
67	0.450	67	0.450		
68	0.450	68	0.450		
69	0.450	69	0.450		
70	1.000	70	1.000		

### **Rates of Disability**

Attained Age	Age-Based	
	Male	Female
25	0.0001	0.0001
30	0.0001	0.0001
35	0.0001	0.0001
40	0.0001	0.0001
45	0.0002	0.0002
50	0.0005	0.0005
55	0.0009	0.0009
60	0.0010	0.0010

## **Summary of Actuarial Assumptions and Methods**

### **Rates of Withdrawal**

<b>Years of Service</b>	<b>Service-Based</b>	
	<b>Male</b>	<b>Female</b>
0	0.3500	0.3500
1	0.1400	0.1400
2	0.1100	0.1100
3	0.0900	0.0900
4	0.0800	0.0800
5	0.0700	0.0700
6	0.0600	0.0600
7	0.0500	0.0550
8	0.0450	0.0500
9	0.0450	0.0450

<b>Attained Age</b>	<b>Age-Based*</b>	
	<b>Male</b>	<b>Female</b>
30	0.0225	0.0300
35	0.0225	0.0300
40	0.0225	0.0200
45	0.0225	0.0200
50	0.0225	0.0200
55	0.0225	0.0200
60	0.0225	0.0200

*\*Age-Based rates apply only if 10 or more years of service.*

## **Summary of Actuarial Assumptions and Methods**

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### **Pay Increase Assumption**

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<b>Years of Service</b>	<b>Merit &amp; Seniority</b>	<b>Inflation</b>	<b>Total</b>
1	10.25%	2.25%	12.50%
5	2.75%	2.25%	5.00%
10	2.75%	2.25%	5.00%
15	1.50%	2.25%	3.75%
20	0.25%	2.25%	2.50%
25	0.25%	2.25%	2.50%
30	0.25%	2.25%	2.50%
35	0.25%	2.25%	2.50%
40	0.25%	2.25%	2.50%

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## **Definitions of Technical Terms**

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<b>Accrued Service</b>	Service credited under the system that was rendered before the date of the actuarial valuation.
<b>Accrued Liability</b>	The difference between the actuarial present value of future benefit payments and the actuarial present value of future normal costs. Also referred to as “actuarial accrued liability” or “past service liability”.
<b>Actuarial Assumptions</b>	Estimates of expected future experience with respect to rates of mortality, disability, turnover, retirement, rate of investment return, and pay increases. Decrement assumptions (rates of mortality, disability, turnover, and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (pay increases and investment return) consist of the underlying rates in an inflation-free environment plus a provision for a long-term average rate of inflation.
<b>Actuarial Cost Method</b>	A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future benefit payments” between future normal costs and actuarial accrued liabilities. Sometimes referred to as the “actuarial funding method”.
<b>Actuarial Equivalent</b>	One series of payments is said to be actuarially equivalent to another series of payments if the two series have the same actuarial present value.
<b>Actuarial Gain / (Loss)</b>	The difference between actual unfunded actuarial accrued liability and anticipated unfunded actuarial accrued liability during the period between two valuation dates. It is a measurement of the difference between actual and expected experience.
<b>Actuarial Present Value</b>	The single amount now that is equal to a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest and by probabilities of payment.
<b>Amortization</b>	Paying off a present value with periodic payments.
<b>Normal Cost</b>	The portion of the actuarial present value of future benefits that is assigned to the current year by the actuarial cost method. Sometimes referred to as “current cost”.
<b>Unfunded Accrued Liability</b>	The difference between the accrued liability and the actuarial value of assets. Sometimes referred to as “unfunded past service liability” or “unfunded actuarial accrued liability” or simply as “unfunded liability”.

## ***The Actuarial Valuation Process***

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The **actuarial valuation** is the mathematical process by which a contribution rate is determined. The flow of activity constituting the valuation may be summarized as follows:

**Covered Person Data:** Furnished by the Plan Administrator

Retired Members and Beneficiaries Now Receiving Benefits  
Former Employees with Vested Benefits Not Yet Payable  
Active Members

+ **Asset Data (Cash and Investments):** Furnished by the Plan Administrator

+ **Estimates of Future Experience (Actuarial Assumptions):** Established by the Board of Trustees after Consulting with the Actuary

+ **Funding Method:** The Allocation of Employer Costs to Past Service, Current Service, and Future Service

+ **Mathematically Combining the Assumptions, the Funding Method, and the Data**

= **Determination of:**

Plan Funded Status and Employer Contribution Rate

## ***Summary of Benefit Provisions***

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### **Changes in Plan Provisions since June 30, 2015**

None.

### **Regular Retirement**

#### **Eligibility**

Age 65 with ten years of service, or age 60 with 15 years of service, or if age is at least 55 and the sum of age plus credited service is at least 85.

#### **Annual Amount**

State pension equal to total service times 1.1% of Average Annual Compensation.

### **Early Retirement**

#### **Eligibility**

Age 50 with 15 years of service.

#### **Annual Amount**

State pension is computed as regular retirement benefit, but reduced for each month between age at early retirement and attainment of age 65. The age reduction factor is calculated as the sum of the following:

- 1/10 of 1% for each month from age 60 to 65.
- 5/12 of 1% for each month from age at early retirement to 60.

### **Deferred Retirement**

#### **Eligibility**

Ten years of service. Benefit commences at regular or early retirement eligibility.

#### **Annual Amount**

Computed as a regular retirement benefit with state pension based on service and Average Annual Compensation at termination.

### **Disability Retirement**

#### **Regular Disability Benefit:**

##### **Eligibility**

Five years of service.

##### **Annual Amount**

\$125 per month plus \$5 per month for each year of service credit over five years.

#### **Disability Retirement Benefit:**

##### **Eligibility**

Five years of service and determined to be disabled by the Social Security Administration. Annual verification of Social Security disability is required.

##### **Annual Amount**

Computed as a regular retirement benefit using creditable service to the date of disability and without reduction for early retirement. The minimum benefit is \$180 per month.

## ***Summary of Benefit Provisions***

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### **Death Before Retirement**

#### **Eligibility**

15 years of service. Spouse to whom member had been married for two or more years is automatically eligible, or a dependent may be designated as beneficiary.

#### **Annual Amount**

Computed as regular retirement benefit but reduced in accordance with a 100% joint and survivor election.

### **Benefit Increases After Retirement**

No automatic increases after retirement are provided. Periodically, unscheduled increases have been made. In September 2016, retirees were paid a service-related lump sum ranging from \$150 to \$450.

### **Average Annual Compensation**

Average of highest five years of compensation. Years do not need to be consecutive.

### **Member Contributions**

All Fund members are required by state law to contribute 3% of salary contributions to their Annuity Savings Account. These 3% contributions are generally “picked up” by the employer and contributed on a pre-tax basis on behalf of the employee. Extra voluntary contributions by the member are also possible, but on a post-tax basis. At retirement, there are six alternatives for receiving the proceeds of this account, including lump sums, full and partial rollovers, full and partial annuitization of the balance, and deferred distribution.

### **Forms of Benefit Payment (Pension)**

The normal form of benefit payment (Option A-1) is a single life annuity with a five-year certain period. There are five optional forms of payment available, as listed below. Additionally, members retiring between ages 50 and 62 may integrate their pension benefit with their Social Security benefit by choosing Social Security Integration (Option A-4) in conjunction with the normal form or any other optional form selected. Optional forms of payment are calculated on an actuarially equivalent basis.

Option A-2: Straight Life benefit with no certain period

Option A-3: Modified Cash Refund Annuity (operates in conjunction with the Annuity Savings Account)

Option B-1: 100% Survivorship

Option B-2: 66 2/3% Survivorship

Option B-3: 50% Survivorship

State law provides for actuarially-adjusted and re-calculated benefits based on a new optional form election in the event of the death of the member’s spouse after retirement.

Optional forms of benefit are calculated based on 6.75% interest with a 50% unisex blend of the IRS 2018 combined mortality basis.

***Member Data: Total Fund***

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The tables below summarize the member data used in the valuation. The June 30, 2016 valuation is based on June 30, 2015 census data, with liabilities rolled-forward to the June 30, 2016 measurement date. The data summarized in this section is as of the June 30, 2015 census collection date. The pages that follow show various distributions of the member groups.

	<b>Males</b>	<b>Females</b>	<b>Total</b>
<b>Number of Actives</b>	<b>18,137</b>	<b>51,455</b>	<b>69,592</b>
Average Age	42.7	42.6	42.6
Average Service	14.3	13.4	13.6
Average Pay	\$ 63,708	\$ 56,220	\$ 58,171
<b>Number of Inactive Vesteds</b>	<b>1,819</b>	<b>5,635</b>	<b>7,454</b>
Average Age	52.4	53.7	53.4
Average Service	18.4	17.5	17.7
<b>Number of Inactive Nonvesteds</b>	<b>2,977</b>	<b>9,946</b>	<b>12,923</b>
<b>Number of Retirees and Beneficiaries</b>	<b>18,769</b>	<b>38,783</b>	<b>57,552</b>
Average Age	72.4	72.0	72.1
Average Years Retired	12.8	12.0	12.2
Average Monthly Annuity <sup>1</sup>	\$ 234	\$ 185	\$ 201
Average Monthly Pension	\$ 1,659	\$ 1,421	\$ 1,499
<b>Total Number of Members</b>	<b>41,702</b>	<b>105,819</b>	<b>147,521</b>

<sup>1</sup> The average monthly annuity above is the average over all retirees and beneficiaries, including those that did not annuitize their ASA balances. The average monthly annuity for the 25,413 retirees and beneficiaries that did annuitize their ASA balances is \$454.

***Active Member Data: Total Fund***

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June 30	Number	Valuation Payroll (\$000s)	Average			
			Age	Service	Pay Increase %	
1975	63,932	\$ 749,200	38.7	10.9	\$ 11,719	
1980	66,575	1,107,699	39.7	11.9	16,638	
1985	62,932	1,519,887	41.5	14.2	24,151	
1987	64,157	1,751,709	42.0	14.5	27,303	
1989	65,986	2,044,797	42.6	14.9	30,988	
1991	63,373	2,278,715	43.0	15.4	35,957	
1992	63,980	2,416,263	43.8	16.0	37,766	5.0%
1993	64,594	2,536,165	44.0	16.1	39,263	4.0
1994	65,209	2,614,915	44.1	16.2	40,101	2.1
1995	66,542	2,728,811	44.2	16.2	41,009	2.3
1996	78,866	2,878,329	42.9	14.1	36,497	(11.0)
1997	84,206	2,984,604	42.4	13.2	35,444	(2.9)
1998	84,664	3,094,941	42.5	13.2	36,556	3.1
1999	77,745	3,294,326	44.1	15.1	42,374	15.9
2000	77,870	3,192,605	44.4	15.2	40,999	(3.2)
2001	75,648	3,318,877	44.6	15.7	43,872	7.0
2002	75,383	3,609,471	44.7	15.8	47,884	9.1
2003	73,641	3,585,135	44.5	15.5	48,684	1.7
2004	73,510	3,651,653	44.5	15.5	49,676	2.0
2005	73,923	3,734,330	44.4	15.4	50,516	1.7
2006	73,350	3,802,721	44.5	15.4	51,844	2.6
2007	75,833	4,267,995	44.9	15.5	56,281	8.6
2008	76,256	4,348,535	44.6	15.6	57,025	1.3
2009	74,343	4,339,032	44.4	15.3	58,365	2.3
2010	72,872	4,312,611	44.2	15.2	59,181	1.4
2011	71,343	4,269,944	44.5	15.5	59,851	1.1
2012	70,573	4,232,018	44.4	15.4	59,967	0.2
2013	70,414	4,124,368	43.5	14.6	58,573	(2.3)
2014*	70,414	4,124,368	43.5	14.6	58,573	(2.3)
2015*	68,734	4,006,157	43.0	14.1	58,285	(0.5)
2016*	69,592	4,048,266	42.6	13.6	58,171	(0.2)

\* Valuations on and after June 30, 2014 are based on census data collected at the prior measurement date.

***Active Members: Total Fund***

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**By Attained Age and Years of Service**

Attained Age	Years of Service to Valuation Date						Total
	<10	10-14	15-19	20-24	25-29	30+	
15-19							
20-24	1,475						1,475
25-29	8,438	1					8,439
30-34	8,501	1,670	2				10,173
35-39	3,789	5,084	1,511	2			10,386
40-44	2,492	1,903	4,099	950	4		9,448
45-49	1,948	1,340	1,931	2,933	776	7	8,935
50-54	1,222	939	1,143	1,203	2,447	920	7,874
55-59	784	668	1,010	1,029	1,171	2,487	7,149
60-64	382	359	524	652	594	2,036	4,547
65-69	165	91	96	109	120	431	1,012
70-74	38	14	17	5	8	36	118
75-79	15	2				3	20
80 & over	10	4	1			1	16
<b>Total</b>	<b>29,259</b>	<b>12,075</b>	<b>10,334</b>	<b>6,883</b>	<b>5,120</b>	<b>5,921</b>	<b>69,592</b>

Average Age: 42.6  
Average Service: 13.6

***Inactive Vested Members: Total Fund***

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**By Attained Age and Years of Service**

Attained Age	Years of Service to Valuation Date						Total
	<10	10-14	15-19	20-24	25-29	30+	
30-34		66	1				67
35-39		518	33				551
40-44		560	282	31			873
45-49		496	329	150	25	2	1,002
50-54		546	306	209	150	30	1,241
55-59		540	368	259	206	198	1,571
60-64		637	258	175	129	323	1,522
65-69		215	77	56	49	144	541
70-74		25	11	7	3	9	55
75-79		1	3				4
80 & over		11	7	3	5	1	27
<b>Total</b>		3,615	1,675	890	567	707	7,454

Average Age: 53.4  
Average Service: 17.7



***Retired Members: Total Fund***

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**By Attained Age and Completed Years of Retirement**

Attained Age	Years of Service to Valuation Date						Total
	<10	10-14	15-19	20-24	25-29	30+	
Under 40	19	15	8	5	5	1	53
40-44	14	5	8	4		1	32
45-49	34	8	6	9			57
50-54	139	26	20	17	4	2	208
55-59	1,728	49	38	17	14	6	1,852
60-64	8,430	232	82	47	32	13	8,836
65-69	11,545	3,762	281	90	51	28	15,757
70-74	3,961	4,341	2,567	317	68	34	11,288
75-79	592	1,810	3,170	1,582	278	78	7,510
80-84	45	349	1,509	2,324	854	270	5,351
85-89	14	68	239	1,305	1,660	705	3,991
90 & over	11	4	33	175	827	1,567	2,617
<b>Total</b>	26,532	10,669	7,961	5,892	3,793	2,705	57,552

Average Age: 72.1  
Average Years Retired: 12.2

***Retired Members: Total Fund***

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**By Year of Retirement**

Year of Retirement As of June 30	Number	Monthly Pension	
		Total	Average
Before 1978	406	\$ 163,745	\$ 403
1978	120	56,482	471
1979	143	75,336	527
1980	198	117,525	594
1981	208	114,395	550
1982	209	118,453	567
1983	291	176,069	605
1984	353	220,606	625
1985	511	345,111	675
1986	489	341,080	698
1987	594	456,922	769
1988	723	591,076	818
1989	622	538,339	865
1990	967	973,485	1,007
1991	977	1,069,560	1,095
1992	927	1,032,833	1,114
1993	987	1,180,267	1,196
1994	1,131	1,384,421	1,224
1995	1,477	1,878,551	1,272
1996	1,490	1,940,142	1,302
1997	1,308	1,691,580	1,293
1998	1,648	2,130,154	1,293
1999	1,551	2,121,930	1,368
2000	1,838	2,585,446	1,407
2001	1,841	2,666,160	1,448
2002	2,189	3,167,105	1,447
2003	1,976	2,907,072	1,471
2004	2,307	3,449,099	1,495
2005	2,203	3,457,307	1,569
2006	2,381	3,778,318	1,587
2007	2,310	3,603,921	1,560
2008	2,786	4,559,263	1,636
2009	2,090	3,571,648	1,709
2010	2,366	4,158,675	1,758
2011	3,233	5,860,647	1,813
2012	3,626	6,664,272	1,838
2013	3,248	6,067,332	1,868
2014	2,670	4,995,701	1,871
2015	3,158	6,032,631	1,910
<b>Total</b>	<b>57,552</b>	<b>\$ 86,242,659</b>	<b>\$ 1,499</b>

***Retired Members: Total Fund***

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**Number of Benefit Recipients by Benefit Option**

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Amount of Monthly Benefit	Option A-1	Option A-2	Option A-3	Option B-1	Option B-2	Option B-3	Surv.	Dis.	Total
\$1-\$500	1,801	885	209	1,264	273	500	464	142	5,538
\$501-\$1,000	2,301	1,538	335	2,302	769	1,156	358	234	8,993
\$1,001-\$1,500	3,391	2,567	454	4,383	1,334	1,537	145	247	14,058
\$1,501-\$2,000	3,360	3,182	367	4,858	1,577	1,941	148	117	15,550
\$2,001-\$3,000	2,583	3,127	274	3,197	1,228	1,582	61	31	12,083
Over \$3,000	304	355	19	323	143	179	7		1,330
<b>Total</b>	<b>13,740</b>	<b>11,654</b>	<b>1,658</b>	<b>16,327</b>	<b>5,324</b>	<b>6,895</b>	<b>1,183</b>	<b>771</b>	<b>57,552</b>

<sup>1</sup>Pension only

**Summary of Benefit Options**

- A-1 - Provides a monthly benefit for retiree's life. In the event the retiree dies before receiving five years of payments, the beneficiary receives the remainder of the five years (60 months) of guaranteed Defined Benefit pension payments in a lump sum.
- A-2 - Provides a monthly benefit for retiree's life. The benefit ceases upon the death of the retiree.
- A-3 - Provides a monthly benefit for retiree's life, including monthly annuitization of member's Annuity Savings Account (ASA). In the event the retiree dies before receiving five years of payments, the beneficiary will receive the remainder of the five years of guaranteed pension payments. The ASA is reduced with each monthly benefit paid; if the retiree dies before reducing the balance to \$0.00, the beneficiary will receive a single payment of the amount remaining.
- B-1 - Provides a monthly benefit for retiree's life. Upon the death of the retiree, the qualified designated survivor receives 100% of the member's Defined Benefit for the remainder of the survivor's life.
- B-2 - Provides a monthly benefit for retiree's life. Upon the death of the retiree, the qualified designated survivor receives 66-2/3% of the member's Defined Benefit for the remainder of the survivor's life.
- B-3 - Provides a monthly benefit for retiree's life. Upon the death of the retiree, the qualified designated survivor receives 50% of the member's Defined Benefit for the remainder of the survivor's life.
- Survivors\* - Provides a monthly benefit for the surviving spouse's or dependent's life. The benefit ceases upon death of the survivor.
- Disability\*\* - Available to members with five (5) or more years of creditable service who become disabled as determined by the Social Security Administration while teaching in Indiana.

\* (of members who die while in service)

\*\* Includes Classroom Disability – Provides a benefit of \$125 per month plus \$5 for each additional year of TRF-covered service over five years

***Retired Members: Total Fund***

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**Schedule of Average Benefit Payments by Service at Retirement**

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	Years of Service at Retirement						Total
	<10	10-14	15-19	20-24	25-29	30+	
Avg. Monthly Defined Benefit Pension	\$482	\$336	\$595	\$911	\$1,265	\$1,868	\$1,499
Avg. Monthly Annuity: All Benefit Recipients	\$70	\$103	\$110	\$139	\$172	\$239	\$201
Avg. Monthly Annuity: Benefit Recipients who Annuitized their ASA Balance (25,413 Recipients)	\$194	\$179	\$203	\$270	\$367	\$598	\$454
Avg. Final Avg. Salary at Retirement	\$29,961	\$30,540	\$41,376	\$48,033	\$52,623	\$58,744	\$54,051
Number of Benefit Recipients	108	1,890	5,022	6,530	9,228	34,774	57,552

**Reconciliation of Participant Data: Total Fund**

	Active	Inactive Vested	Inactive Nonvested	Survivor	Disabled	Retired	Beneficiary	Total
<b>6/30/2014 Census</b>	<b>68,734</b>	<b>8,677</b>	<b>12,700</b>	<b>1,173</b>	<b>746</b>	<b>48,506</b>	<b>3,925</b>	<b>144,461</b>
Disabled	(21)	(19)	(2)		42			0
Retired	(1,669)	(2,502)	(2)			4,173		0
Terminated with Vested Benefit	(1,731)	1,731						0
Terminated, due a Refund	(1,672)		1,672					0
Died with Survivor	(27)	(28)		55	(15)	(408)	423	0
Died, no Survivor*		(31)	(3)	(47)	(18)	(773)	(276)	(1,148)
Refunded*	(182)	(2)	(703)					(887)
Forfeited*			(469)					(469)
Dropped from Database	(8)	(51)	(7)			(2)	(6)	(74)
Rehired	1,253	(321)	(932)					0
Status Corrections		(6)	6					0
Data Corrections		6	127	2	12	13	27	187
New Hires	4,915		536					5,451
<b>6/30/2015 Census</b>	<b>69,592</b>	<b>7,454</b>	<b>12,923</b>	<b>1,183</b>	<b>767</b>	<b>51,509</b>	<b>4,093</b>	<b>147,521</b>

\* No remaining benefit obligation in the plan.