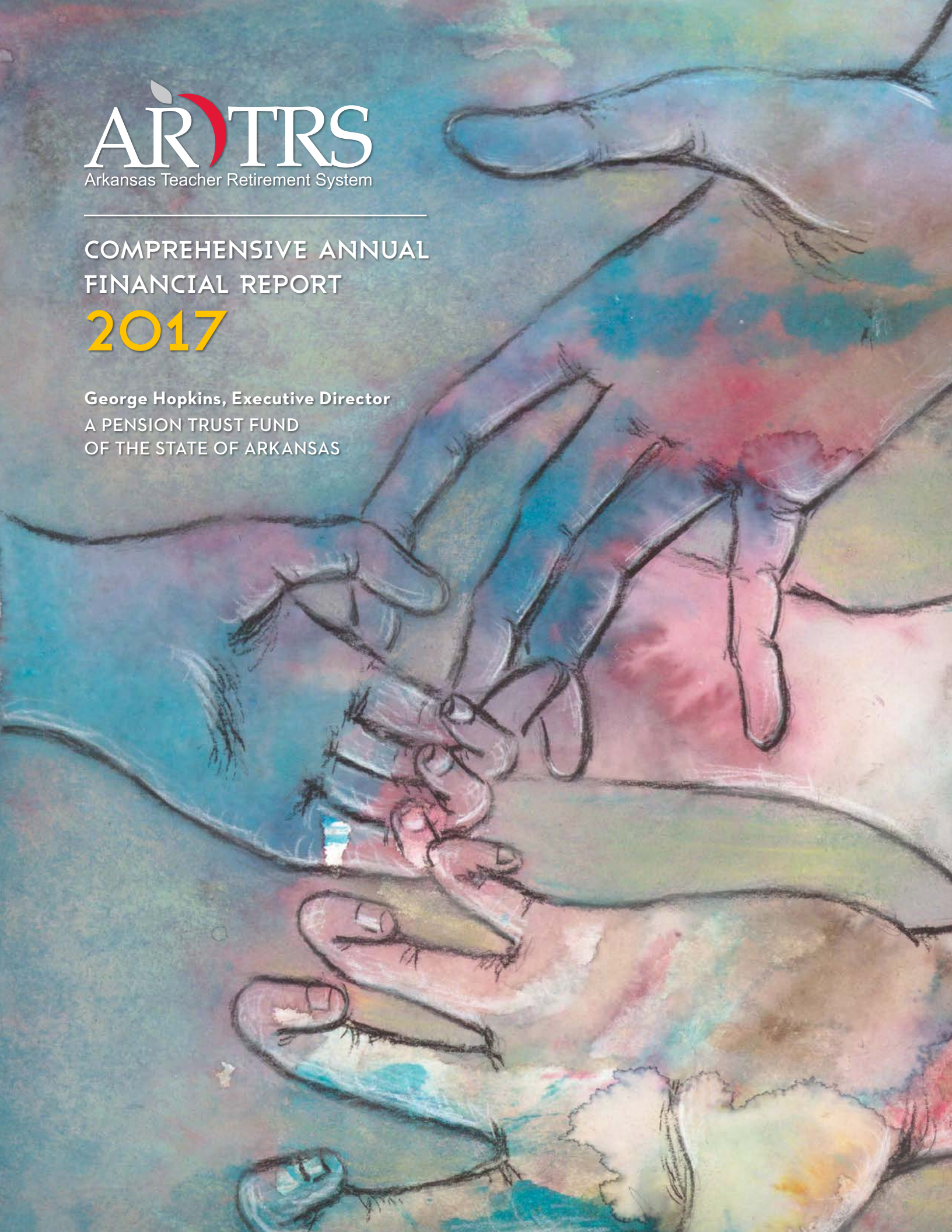




COMPREHENSIVE ANNUAL  
FINANCIAL REPORT

2017

George Hopkins, Executive Director  
A PENSION TRUST FUND  
OF THE STATE OF ARKANSAS





Prepared by the Staff of  
**ARKANSAS TEACHER RETIREMENT SYSTEM**

1400 West Third Street • Little Rock, AR 72201  
501.682.1517 • 1.800.666.2877 • artrs.gov

Featured artwork in the ATRS 2017 Annual Report are just a few of the award-winning pieces submitted by Arkansas K-12 students to the Arkansas PTA Reflections Arts Program. Artwork was provided to ATRS by Arkansas PTA Reflections Chair Eleica Rowe ([reflectionart.arpta@gmail.com](mailto:reflectionart.arpta@gmail.com)).



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A close-up, artistic rendering of a tiger's face, focusing on the eye and whisker area. The tiger's fur is depicted with fine, textured strokes in shades of brown, tan, and black. A large, circular graphic element in shades of green and blue is positioned in the upper left quadrant, partially overlapping the tiger's eye. The overall style is painterly and detailed.

*INTRODUCTION*

**ARTRS**  
Arkansas Teacher Retirement System

February 21, 2018

Board of Trustees  
Arkansas Teacher Retirement System  
1400 West Third Street  
Little Rock, AR 72201

The Arkansas Teacher Retirement System (the “System” or ATRS) is pleased to submit this Comprehensive Annual Financial Report (CAFR) for the fiscal year ended June 30, 2017. The ATRS CAFR provides comprehensive information on the retirement plan that ATRS administers. Responsibility for both the accuracy of the data and the completeness and fairness of presentation rests with the System. To the best of the System’s knowledge and belief, the enclosed data is accurate in all material respects and presents fairly the System’s financial status and changes in the financial condition.

The 2017 Financial Report is presented in five sections. Contents are summarized below (a detailed Table of Contents may be found on page 3).

**Introductory Section:**

This section contains the transmittal letter, the Board of Trustees, and organizational chart.

**Financial Section:**

This section provides the System’s financial statements, required supplementary information, and supporting schedules with additional information about the System’s expenses.

**Investment Section:**

This section includes the investment consultant’s report, investment policies, asset allocation, and investment results.

**Actuarial Section:**

This section provides the certification letter from the independent actuary, supporting schedules, and a summary of plan provisions.

**Statistical Section:**

This section presents schedules and tables of comparative data related to the membership, active and retired, of the System.

On March 17, 1937, ATRS was established by Act 266 of 1937. ATRS is a combination contributory/noncontributory retirement system governed by Arkansas retirement law, Chapter 24 of the Arkansas Code. ATRS is one of five state-supported retirement systems in Arkansas and provides retirement, disability, and survivor benefits to employees of Arkansas public schools and educationally related public agencies. The System has 335 participating employers.

**Investments**

Performance across capital markets was broadly positive during fiscal year 2017, with both non-U.S. markets and U.S. markets posting strong returns. Within the U.S., economic indicators show signs of continuing improvement. While the global outlook is still uncertain and corrections should be anticipated, markets have shown momentum and resiliency.

ATRS has structured a diversified portfolio that has allocations to equity markets, bonds, private equity, real assets, and alternative investments. Investing in multiple asset classes not only allows the System to benefit from equity advances, but also offers protection during down markets. The approach is not static and changes in accordance with the changing investment environment. For example, the target allocation to equities continues to add global diversification, and investments in alternative asset classes such as real assets continue to be added. These target allocation alignments are designed to further stabilize the portfolio and match the ATRS assets to its liabilities.

Over the long-term, ATRS’ investment approach has proved beneficial. For example, over the 1-year, 3-year and 5-year periods ending June 30, 2017, ATRS ranked in the top 1% in the universe of large public pension funds. ATRS maintains a roster of compelling investment managers, and new opportunities that will benefit the System are being considered. ATRS still uses indexing to level out risk. A focus on long-term growth potential, coupled with asset protection and cost containment, continues to be a focus for ATRS.

### **Additions/Deductions to Plan Net Assets**

As a retirement system matures, employer and member contributions are supplemented from investment earnings to fully fund retirement benefits and operating costs. This process is intended to leave the investment nucleus untouched to continue providing the required investment income for future generations of plan participants.

Fiscal year 2017 contributions totaled about \$548 million dollars (\$415 million employer and \$133 million member) and remained stable from previous years. As ATRS becomes a more mature system, the total active members compared to retirees will continue to move more towards a one-to-one ratio, and is now just over a 1.5 to 1 ratio. This equalization trend will occur for some time as ATRS matures, as the Baby Boomer generation reaches retirement age, and as schools continue to consolidate and outsource nonteaching positions to private contractors in transportation, food service, classroom support, custodial services, and substitute teachers.

### **Funding Status**

ATRS has recovered well since the financial crisis in 2008 and 2009. ATRS had a 15.989% actuarially determined return as compared to its 7.5% assumed rate of return. To reduce the impact of wild swings in the financial markets, annual results are spread over a four-year period (four year smoothing). This means the returns above or below 7.5% will be smoothed in through fiscal year 2017. ATRS remains a stable 80% funded and improved its funded level from last fiscal year. Amortization required to fund the unfunded accrued actuarial liability (UAAL) remained at 29 years.

### **Internal Controls**

Internal controls are at the heart of safeguarding the System's assets. ATRS has an active internal audit department that is continually reviewing and updating control policies. As the System grows and technology advances, we feel it prudent to continuously monitor internal systems and policies to detect and correct potential errors before they occur and to correct any errors that are discovered as soon as possible.

### **Professional Services**

The ATRS Board of Trustees employs firms that are proven experts to draw on their knowledge and expertise on policy and administration. ATRS' independent general investment consultant and real asset consultant is AON Hewitt Investment Consultants (formerly known as Hewitt EnnisKnupp), headquartered in Chicago, IL; the private equity consultant is Franklin Park Associates, LLC of Bala Cynwyd, PA; and the independent actuary is Gabriel Roeder Smith & Company, headquartered in Southfield, MI. The System also uses the services of local legal firms.

### **Acknowledgements**

This report is intended to provide complete and reliable information as a foundation for management decisions, determining compliance with legal provisions, and determining conscientious administration of the System's fund. Compilation of this report symbolizes the collective efforts of the staff, under the direction of the Board of Trustees.

This report is posted on the ATRS website ([artrs.gov](http://artrs.gov)), and hard copies are available upon request.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "George Hopkins".

**George Hopkins**  
Executive Director

GH/tp



## Member and Retirant Trustees

**Position #1**

Member Trustee  
1st Congressional District

Robin Nichols  
Jonesboro, AR  
Term Expires 6/30/2019

**Position #2**

Member Trustee  
2nd Congressional District

Janet Watson  
Bryant, AR  
Term Expires 6/30/2022

**Position #3**

Member Trustee  
3rd Congressional District

Deborah Thompson  
Springdale, AR  
Term Expires 6/30/2019

**Position #4**

Member Trustee  
4th Congressional District

Kathy Clayton  
Malvern, AR  
Term Expires 6/30/2019

**Position #5**

Member Trustee  
Administrator Trustee

Dr. Richard Abernathy  
Bryant, AR  
Term Expires 6/30/2018

**Position #6**

Member Trustee  
Administrator Trustee

Jeff Stubblefield (Chair)  
Charleston, AR  
Term Expires 6/30/2021

**Position #7**

Member Trustee  
Non-Certified Trustee

Kelly Davis  
Fort Smith, AR  
Term Expires 6/30/2021

**Position #8**

Member Trustee  
Minority Trustee

Anita Bell  
North Little Rock, AR  
Term Expires 6/30/2021

**Position #9**

Retirant Trustee

Lloyd Black  
Little Rock, AR  
Term Expires 6/30/2022

**Position #10**

Retirant Trustee

Bobby Lester  
Jacksonville, AR  
Term Expires 6/30/2019

**Position #11**

Retirant Trustee

Danny Knight (Vice Chair)  
Sherwood, AR  
Term Expires 6/30/2018

## Ex Officio Trustees

**Johnny Key**

Commissioner of Education  
Little Rock, AR

**Dennis Milligan**

State Treasurer  
Little Rock, AR

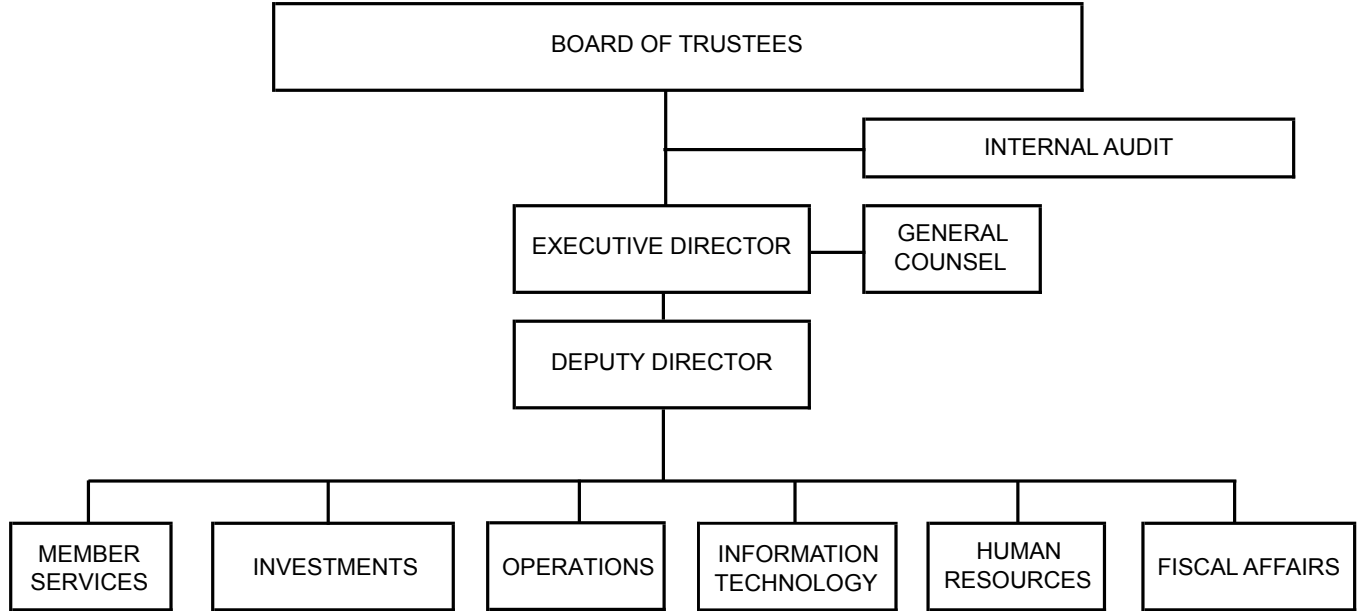
**Candace A. Franks**

State Bank Commissioner  
Little Rock, AR

**Andrea Lea**

State Auditor  
Little Rock, AR





## Administrative Staff

**George Hopkins**  
Executive Director

**Rett Hatcher**  
Deputy Director

**Laura Gilson**  
General Counsel

**Michael Ray**  
Member Services Administrator

**Rod Graves**  
Deputy Director

**G. Wayne Greathouse**  
Associate Director of Investments

**Clint Rhoden**  
Associate Director of Operations

**Curtis Carter, CPA**  
Associate Director of Fiscal Affairs

**Mullahalli Manjunath**  
Associate Director  
of Information Technology

**Brenda West, CPA**  
Internal Auditor

**Vicky Fowler**  
Human Resources Manager



## Actuary

**Gabriel Roeder Smith & Company**  
Southfield, MI

## Legal Counsel

**Gill, Ragon, Owen & Sherman**  
Little Rock, AR

**Ice Miller**  
Columbus, OH

**Kutak Rock, LLP**  
Scottsdale, AZ

**Rose Law Firm, PA**  
Little Rock, AR

**Williams & Anderson**  
Little Rock, AR

## Securities Monitoring Counsel

**Bernstein, Litowitz, Berger  
& Grossman, LLP**  
New York, NY

**Kaplan, Fox & Kilsheimer**  
New York, NY

**Kessler, Topaz, Meltzer & Check, LLP**  
Radnor, PA

**Labaton Sucharow, LLP**  
New York, NY

**Nix, Patterson & Roach, LLP**  
Daingerfield, TX

**Attorney General's Office Contact**  
Little Rock, AR

## Investment Consultants

**AON Hewitt Investment Consulting (AHIC)**  
Chicago, IL

**Simmons**  
Little Rock, AR

## Custodian (Domestic and International)

**State Street Public Fund Services**  
Boston, MA

**State Street Fund Services Toronto Inc.**  
Toronto, Ontario

## Public Markets

**Allianz Global Investors Capital**  
New York, NY

**BlackRock**  
San Francisco, CA

**Daruma Asset Management, Inc.**  
New York, NY

**D.E. Shaw & Company, LP**  
New York, NY

**GMO, LLC.**  
Boston, MA

**Harris Associates, LP**  
Chicago, IL

**Jacobs Levy Equity Management, Inc.**  
Florham Park, NJ

**Kennedy Capital Management**  
St. Louis, MO

**Lazard Asset Management, LLC**  
New York, NY

**Loomis Sayles & Company, LP**  
Boston, MA

**Pershing Square Capital Management, LP**  
New York, NY

**Putnam Investments Management**  
Boston, MA

**Reams Asset Management**  
Columbus, IN

**Relational Investors, LLC**  
San Diego, CA

**Russell Implementation Services**  
Seattle, WA

**State Street Global Advisors (SSGA)**  
Boston, MA

**State Street Global Markets, LLC  
Transition Management**  
Boston, MA

**State Street - Securities Lending**  
Boston, MA

**State Street Specialized Trust Services**  
Kansas City, MO

**Stephens Investment Management**  
Houston, TX

**T. Rowe Price Associates, Inc.**  
Baltimore, MD

**Triam Partners**  
New York, NY

**Voya Investment Management (FKA ING)**  
Chicago, IL

**Wellington Management Co., LLP**  
Boston, MA



## Private Equity

### Franklin Park

Bala Cynwyd, PA

### 21st Century Group I

Dallas, TX

### Advent International Corporation

Boston, MA

### Altaris Capital Partners, LLC

New York, NY

### Altus Capital Partners

Westport, CT

### Arlington Capital Partners

Chevy Chase, MD

### Atlas Holdings, LLC

Greenwich, CT

### Audax

New York, NY

### Bison Capital Asset Management, LLC

Santa Monica, CA

### Blackstone Mezzanine Partners

New York, NY

### BV Investment Partners (FKA Boston Ventures)

Boston, MA

### Castlelake II & III

Minneapolis, MN

### Clearlake Capital Group

Santa Monica, CA

### Court Square Capital Partners III, LP

New York, NY

### The Cypress Group

New York, NY

### Diamond State Ventures

### Diamond State Ventures III

Little Rock, AR

### DLJ Investment Partners III

Darien, CT

### DLJ Merchant Banking Partners III

New York, NY

### Doughty Hanson & Company III

### Doughty Hanson & Company Technology

London, England

### DW Healthcare

Park City, UT

### EnCap Investments, LP

Houston, TX

### Greyrock Capital Group, LLC

Chicago, IL

### Grosvenor Capital Management

### FKA Credit Suisse Customized Fund Investment Group

New York, NY

### Hicks Muse Tate & Furst Equity Fund III, IV, & V

Dallas, TX

### Insight Equity II

### Insight Mezzanine I

Southlake, TX

### J.F. Lehman & Company

New York, NY

### KPS Capital Partners

New York, NY

### Levine Leichtman III

Beverly Hills, CA

### Lime Rock Resources III

Westport, CT

### LLR Equity Partners III

Philadelphia, PA

### Mason Wells

Milwaukee, WI

### Natural Gas Partners (NGP)

Irving, TX

### Oak Hill Capital Partners

New York, NY

### One Rock Capital Partners, LLC

New York, NY

### PineBridge Investments

New York, NY

### Riverside Partners

Boston, MA

### Siris Capital Group

New York, NY

### Sycamore Partners III

New York, NY

### TA XI

Boston, MA

### Tennenbaum

Santa Monica, CA

### Thoma Bravo, LLC

San Francisco, CA

### VISTA Equity Partners

San Francisco, CA

### Wellspring Capital Management, LLC

New York, NY

### The Wicks Group of Companies, LLC

New York, NY



## Real Assets Infrastructure

### Antin Infrastructure Partners

London, England

### BlackRock Global Energy & Power Infrastructure Fund (FKA First Reserve)

Greenwich, CT

### Global Infrastructure Partners

New York, NY

### IFM Investors (US), LLC

New York, NY

### Kohlberg Kravis Roberts & Co

New York, NY

### Macquarie Infrastructure and Real Assets

Chicago, IL

## Real Estate

### Almanac Realty Securities

New York, NY

### Blackstone Real Estate Partners

New York, NY

### Calmwater

Los Angeles, CA

### The Carlyle Group

New York, NY

### CB Richard Ellis Strategic Partners

Los Angeles, CA

### Cerberus

New York, NY

### Harbert Management Corporation

Dallas, TX

### Heitman

Chicago, IL

### J.P. Morgan Asset Management

New York, NY

### Landmark Partners

Simsbury, CT

### LaSalle

Chicago, IL

### Lone Star Real Estate Partners Fund IV, LP

Dallas, TX

### Long Wharf Real Estate Partners, LLC

Boston, MA

### Metropolitan Real Estate Partners Co-Investments Fund

New York, NY

### New Boston Fund VII

Boston, MA

### O'Connor North American Property Partners II

New York, NY

### Olympus Real Estate Corporation

Addison, TX

### PGIM Real Estate

New York, NY

### Rockwood Capital Real Estate Partners

New York, NY

### Torchlight Debt Opportunity Fund (Cayman) II, LP

### Torchlight Debt Opportunity Fund III

New York, NY

### UBS Realty Investors

Hartford, CT

### Westbrook Funds II-V

Boston, MA

### Westbrook Funds IX

New York, NY

## Direct Real Estate Partnerships

### CRI - American Center

Rogers, AR

## Alternative Investments

### Hedge Funds

### Anchorage Capital Group, LLC

New York, NY

### Breven Howard US, LLC

New York, NY

### Capula Investment US LP

Greenwich, CT

### Circumference Group

Little Rock, AR

### Graham Capital Management, LP

Rowayton, CT

### Parametric

Minneapolis, MN

### York Capital Management

New York, NY

## Re-Insurance

### Aeolus

Hamilton, Bermuda

### Nephila Capital Rubik Holdings, Ltd.

Hamilton, Bermuda

## Farm Manager

### Halderman Farm Management

Wabash, IN

### UBS Agrivest

Dallas, TX

## Timberland

### BTG Pactual Timberland Investment Group

Atlanta, GA

FINANCIAL

AR TRS  
Arkansas Teacher Retirement System





## STATEMENT OF PLAN NET POSITION

As of June 30, 2017

### ASSETS

Cash and cash equivalents	\$ <u>273,336,545</u>
---------------------------	-----------------------

#### Receivables

Member contributions	8,829,432
Employer contributions	24,950,151
Investment trades pending	47,285,929
Accrued investment income	11,987,514
Due from other funds	2,960,655
Other receivables	202,639
<b>Total Receivables</b>	<u>96,216,320</u>

#### Investments, at fair value:

Domestic equities	\$2,342,524,863
International equities	987,229,454
U.S. Government obligations	15,055,571
Corporate bonds	642,108,955
Asset- and mortgage-backed securities	40,631,854
Limited partnerships	70,178,093
Real estate	59,095,506
Pooled investments	7,313,897,063
Alternative investments	4,297,122,835
State recycling tax credits	224,000,000
Investment derivatives	(299,446)
<b>Total Investments</b>	<u>15,991,544,748</u>

Securities lending collateral	431,215,542
Capital assets, net of accumulated depreciation	212,559
Other assets	65,142

### TOTAL ASSETS

**16,792,590,856**

### LIABILITIES

Accrued expenses and other liabilities	11,692,789
Compensated absences	547,824
Post-employment benefit liability	3,565,302
Investment trades pending payable	58,527,138
Securities lending liability	431,189,697
Due to other funds	2,259,862

### TOTAL LIABILITIES

**507,782,612**

### NET POSITION RESTRICTED FOR PENSION BENEFITS

**\$ 16,284,808,244**

THE ACCOMPANYING NOTES ARE AN INTEGRAL PART OF THESE FINANCIAL STATEMENTS.



## STATEMENT OF CHANGES IN PLAN NET POSITION

For the Year Ended June 30, 2017

### ADDITIONS

Contributions:

Member	\$	133,109,939
Employer		414,954,939
Total contributions		548,064,878

Investment income

From investing activities:

Net appreciation (depreciation) in fair value of investments		2,219,149,518
Interest and dividends		99,067,988
Real estate operating income		7,516,675
Total investment income (loss)		2,325,734,181
Less investment expense		40,659,490
Net investment income (loss)		2,285,074,691

From securities lending activities:

Securities lending gross income		7,422,249
Less: securities lending expense		2,802,078
Net securities lending income (loss)		4,620,171

Other income

		123,729
		123,729

### TOTAL ADDITIONS (LOSSES)

2,837,883,469

### DEDUCTIONS

Benefits		1,092,952,357
Refunds of contributions		10,874,003
Administrative expenses		7,825,595
		1,111,651,955

### TOTAL DEDUCTIONS

1,111,651,955

### CHANGE IN NET POSITION RESTRICTED FOR PENSION BENEFITS

1,726,231,514

### NET POSITION - BEGINNING OF YEAR

14,558,576,730

### NET POSITION - END OF YEAR

\$ 16,284,808,244

**THE ACCOMPANYING NOTES ARE AN INTEGRAL PART OF THESE FINANCIAL STATEMENTS.**



## Notes to Financial Statements

June 30, 2017

### NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

#### A. Reporting Entity/History

Act 266 of 1937, as amended, established the Arkansas Teacher Retirement System (ATRS) as an office of Arkansas state government for the purpose of providing retirement benefits for employees of any school or other educational agency participating in ATRS. Act 427 of 1973, as amended, provided that the general administration of ATRS, responsibility for its proper operation, and responsibility for making effective the provisions of the Teacher Retirement law are vested in a 15-member Board of Trustees. The State Bank Commissioner, Treasurer of State, Auditor of State, and Commissioner of Education are ex-officio trustees. The remaining 11 trustees are elected and consist of seven active members of ATRS with at least five years of actual service, three retired members receiving an annuity from ATRS, and one active or retired member from a minority racial ethnic group. The seven active trustees consist of one member from each of the four congressional districts; two administrators, of which one must be a superintendent; and one member employed in a position that does not require state licensure. The trustees are elected in accordance with rules adopted by the Board. Board members serve as trustees without compensation but are reimbursed for any necessary expenses incurred to attend Board meetings or perform other duties authorized by the Board.

#### B. Plan Description

ATRS is a cost-sharing, multiple-employer defined benefit pension plan that covers employees of schools and education-related agencies, including Arkansas School for the Blind, Arkansas School for the Deaf, Arkansas Activities Association, State Board of Education, regional education service cooperatives, ATRS, Arkansas Educational Television Commission, area vocational-technical schools, Arkansas Rehabilitation Services, enterprises privatized by a public school district, and educational nonprofit organizations.

On June 30, 2017, the number of participating employers was as follows:

Public schools	259
State colleges and universities	40
State agencies	11
Other/privatized	29
<b>TOTAL</b>	<b>339</b>

On June 30, 2017, ATRS's membership consisted of the following:

Retirees or beneficiaries currently receiving benefits	45,092
T-DROP participants	3,811
Inactive plan members (not receiving benefits)	12,401
Active Members	
Fully vested	45,498
Non-vested	22,839
<b>TOTAL</b>	<b>129,641</b>

Members are eligible for full retirement benefits at age 60 with five or more years of actual or reciprocal service or at any age with 28 or more years of credited service. Members with 25 years of actual or reciprocal service who have not attained age 60 may receive an annuity reduced by 5/12 of 1% (7/1/16-3/31/17) or 6/12 of 1% (4/1/17-6/30/17) multiplied by the number of months by which the early retirement precedes the earlier of (1) completion of 28 years of credited service or (2) attainment of age 60. The normal retirement benefit, paid monthly, is determined based on (1) the member's final average salary (effective April 1, 1998, computed using highest three years' salary) and (2) the number of years of service.

ATRS has contributory and noncontributory plans. The contributory plan has been in effect since the beginning of ATRS. The noncontributory plan became available July 1, 1986. Act 81 of 1999, effective July 1, 1999, requires all new members to be contributory and allowed active members as of July 1, 1999, until July 1, 2000, to make an irrevocable choice to be contributory or noncontributory. Act 93 of 2007 allows any noncontributory member to make an irrevocable election to become contributory on July 1 of each fiscal year.





## Notes to Financial Statements (Continued)

June 30, 2017

### B. Plan Description (Continued)

Disability retirement benefits are payable to members who are vested and demonstrate total and permanent incapacity to perform the duties of their position while in active employment. The disability annuity is computed in the same manner as the age and service annuity.

Survivor benefits are payable to qualified survivors upon the death of an active, vested member. Eligible spouse survivors receive a survivor annuity that is based on the member's years of service credit prior to their death, and minor child survivors receive a percentage of the member's highest salary earned. ATRS also provides a lump sum death benefit for active and retired members with 10 years of actual service. The amount for contributory members will be up to \$10,000 and up to \$6,667 for noncontributory members. The amount will be prorated for members who have both contributory and noncontributory service. Members with 15 or more years of contributory service will receive the full \$10,000.

A cost of living adjustment (COLA) is payable on July 1 of each year to retirees, certain survivors, and annuity beneficiaries who received monthly benefits for the previous 12 months. The COLA is calculated by multiplying 100% of the member's base retirement annuity by 3%.

Act 1096 of 1995 created a teacher deferred retirement option plan (T-DROP) for members with 30 or more years of service credits. Act 1590 of 1999 allows for participation in the T-DROP after 28 years of credited service with a reduction of at least 6% but not more than 12% for each year under 30 years. Effective September 1, 2003, Act 992 of 2003 requires employers to make contributions on behalf of all members participating in T-DROP at rates established by the Board of Trustees. Member election to enter T-DROP is irrevocable, and additional service credit cannot be accumulated. During participation in T-DROP, ATRS will credit the member account with plan deposits and interest. The plan deposits are the member's normal retirement benefit reduced by 1% for each year of service. For members who entered T-DROP prior to September 1, 2003, the reduction is 1/2 of 1% (.5%) for contributory service and 3/10 of 1% (.3%) for noncontributory service for each year above 30 years of service. The T-DROP account accrues interest at a variable rate that is set annually by the ATRS Board of Trustees. T-DROP deposits into member accounts cease at the completion of 10 years of participation in the program; however, a member may continue employment and will continue to receive interest on the account balance at the 10-year plus interest rate that is also set annually by the Board of Trustees. When T-DROP participation ceases, the member may receive the T-DROP distribution as a lump-sum cash payment or an annuity or may roll it over into another tax-deferred account. A member may also elect to defer all or part of the distribution into a T-DROP cash balance account held by ATRS.

### C. Basis of Presentation - Fund Accounting

The accounting system is organized and operated on a fund basis. A *fund* is defined as a fiscal and accounting entity with a self-balancing set of accounts recording cash and other financial resources, together with all related liabilities and residual equities or balances and changes therein, which are segregated for purposes of carrying on specific activities or attaining certain objectives in accordance with special regulations, restrictions, or limitations. The following types of funds, if applicable to this Agency, are recognized in the accompanying financial statements.

#### Fiduciary Funds

**Trust and Agency Funds** - Trust and Agency Funds are used to report resources held by the Agency in a trustee capacity or as an agent for individuals, other governmental units, and other funds. These include Pension Trust Funds, Employee Health Trust Funds, Investment Trust Funds, Private-Purpose Trust Funds, and Agency Funds. The specific activity accounted for at this Agency includes the following:

Arkansas Teacher Retirement System Fiduciary Pension Trust Fund

### D. Basis of Accounting

Basis of accounting refers to when revenues and expenditures or expenses are recognized and reported in the financial statements. The economic resources measurement focus and accrual basis of accounting are used in Fiduciary Fund financial statements. Under the accrual basis, contributions and other revenues are recognized when earned, and benefits, refunds, and other expenses are recorded when incurred.



## Notes to Financial Statements (Continued)

June 30, 2017

### E. Federal Income Tax Status

During the year ended June 30, 2017, ATRS was a qualified plan under 26 USC § 401(a) and was exempt from federal income taxes under 26 USC § 501(a).

### F. Cash and Cash Equivalents

Cash and cash equivalents include demand accounts, imprest accounts, cash on hand, cash in State Treasury, all short-term instruments with maturities at purchase of 90 days or less, and deposits in the Short-Term Investment Fund (STIF). The STIF is created through daily sweeps of excess cash by the custodial bank into bank-sponsored commingled funds that are invested in U.S. Government and agency securities and other short-term instruments.

### G. Capital Assets

Capital assets purchased and in the custody of this Agency were recorded as expenditures at the time of purchase. Assets with costs exceeding \$5,000 and an estimated useful life exceeding one year are reported at historical cost, including ancillary costs (such as professional fees and costs, freight costs, preparation or setup costs, and installation costs). Gifts or contributions are generally recorded in the accounts at acquisition value at the time received. Acquisition value is the market value if the Agency would have purchased the item. Depreciation is reported based on a straight-line method, with no salvage value. Estimated useful lives generally assigned are as follows:

<u>Assets:</u>	<u>Years</u>
Equipment	5-20

Capital assets activity for the year ended June 30, 2017, were as follows:

<b>Fiduciary activities:</b>	<b>Beginning Balance</b>	<b>Additions</b>	<b>Retirements</b>	<b>Ending Balance</b>
Equipment	\$ 2,018,509	\$ 11,633	\$ 862,599	\$ 1,167,543
Less: Accumulated depreciation	<u>1,786,521</u>	<u>31,012</u>	<u>862,549</u>	<u>954,984</u>
Fiduciary activities, net	<u>\$ 231,988</u>	<u>\$ (19,379)</u>	<u>\$ 50</u>	<u>\$ 212,559</u>

### H. Deposits and Investments

#### Deposits

Deposits are carried at cost and consist of cash in bank, cash in State Treasury, and Short-Term Investment Funds. At June 30, 2017, these totals were \$7,197,648, \$2,391,841 and \$263,746,981, respectively. State Treasury Management Law governs the management of funds held in the State Treasury, and the Treasurer of State is responsible for ensuring these funds are adequately insured and collateralized.

**Custodial Credit Risk** – Custodial credit risk for deposits is the risk that, in the event of the failure of a depository institution, the Agency will not be able to recover deposits or will not be able to recover collateral securities that are in the possession of an outside party. The Agency has adopted the State Board of Finance policy requiring the use of depository insurance and collateralization procedures to manage the risk that deposits may not be returned. As of June 30, 2017, \$1,561,557 of the Agency's bank balance of \$7,225,079 was exposed to custodial credit risk.

#### Investments

Ark. Code Ann. §§ 24-2-601 – 24-2-619 authorizes the ATRS Board of Trustees to have full power to invest and reinvest monies of ATRS and to hold, purchase, sell, assign, transfer, or dispose of any of the investments, or investment proceeds in accordance with the prudent investor rule. The Code also states ATRS shall seek to invest no less than 5% and no more than 10% of the ATRS portfolio in Arkansas-related investments, as long as the System's responsibility to invest in accordance with the prudent investor rule is not limited or impaired.



## Notes to Financial Statements (Continued)

June 30, 2017

### H. Deposits and Investments (Continued)

#### Investments (Continued)

Each investment manager is required to invest within the specific guidelines and parameters set by the Board of Trustees. Asset allocation guidelines have been established as follows:

Asset Allocation	Minimum	Target	Maximum
Total equity	45.0%	50.0%	55.0% **
Fixed income	15.0%	20.0%	25.0%
Alternatives	N/A*	5.0%	N/A*
Real assets***	N/A*	15.0%	N/A*
Private equity	N/A*	10.0%	N/A*
Cash equivalents	0.0%	0.0%	5.0%

\*Due to the illiquid nature of alternatives, real assets, and private equity, it is not prudent to set rebalancing ranges for these asset classes.

\*\*Additional allocations to total equity may be made beyond the maximum range to serve as a placeholder for unfunded and uncommitted alternatives, real assets, and private equity.

\*\*\*Real assets include real estate, timber, agriculture, and infrastructure.

**Fair Value** – ATRS implemented GASB Statement No. 72, *Fair Value Measurement and Application*, which will enhance comparability of financial statements among governments by requiring a consistent and more detailed definition of fair value and by providing information to financial statement users about the impact of fair value measurements on the government's financial position.

The fair value measurement of investments is categorized within the hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset and gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities and the lowest priority to unobservable inputs. In instances where inputs used to measure fair value fall into different levels, fair value measurements in their entirety are categorized based on the lowest level input that is significant to the valuation.

The hierarchy of inputs is defined as follows:

Level 1 – Unadjusted quoted prices for identical instruments in active markets.

Level 2 – Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs are observable.

Level 3 – Valuations derived from valuation techniques in which significant inputs are unobservable.

For investments that do not have a readily determinable fair value and fall outside of the fair value hierarchy, the system establishes the value by utilizing the Net Asset Value (NAV) or its equivalent as a practical expedient.

The fair value measurement of plan investments and securities lending collateral as of June 30, 2017, is detailed on the following page.



## Notes to Financial Statements (Continued)

June 30, 2017

### H. Deposits and Investments (Continued)

#### Investments (Continued)

Investments measured at fair value	Total	Level 1	Level 2	Level 3
Equity investments:				
Domestic equities	\$ 2,342,524,863	\$ 2,342,524,863		
International equities	987,229,454	987,229,454		
Fixed income investments:				
U.S. Government obligations	15,055,571		\$ 15,055,571	
Corporate bonds	642,108,955		642,108,955	
Asset- and mortgage-backed securities	40,631,854		40,631,854	
Real estate investments:				
Limited partnerships	70,178,093			\$ 70,178,093
Real estate	59,095,506			59,095,506
State recycling tax credits:	224,000,000		224,000,000	
Derivative investments:				
Forward contracts	(299,446)		(299,446)	
Total plan investments at fair value	<u><u>\$ 4,380,524,850</u></u>	<u><u>\$ 3,329,754,317</u></u>	<u><u>\$ 921,496,934</u></u>	<u><u>\$ 129,273,599</u></u>
<b>Investments measured at net asset value (NAV)</b>				
Pooled investments:				
Commingled domestic equities	\$ 626,969,699			
Commingled international equities	4,703,902,961			
Commingled domestic fixed income	979,037,012			
Commingled international fixed income	1,003,987,391			
Alternative investments:				
Private equity funds	1,702,695,127			
Real estate funds	1,243,651,854			
Timberland funds	280,766,872			
Farmland funds	172,479,904			
Infrastructure funds	119,193,061			
Re-insurance funds	175,437,997			
Hedge funds	466,881,984			
Opportunistic funds	23,638,815			
Partnership funds	112,377,221			
Total plan investments at net asset value	<u><u>\$ 11,611,019,898</u></u>			
Total plan investments	<u><u>\$ 15,991,544,748</u></u>			
Securities Lending Collateral:				
Quality D short-term investment pool*	\$ 431,215,542			

\*Cash collateral received totaled \$431,189,697. The amount reported in the GASB 40 footnote above is the market value of the collateral received at June 30, 2017.



## Notes to Financial Statements (Continued)

June 30, 2017

### H. Deposits and Investments (Continued)

#### Investments (Continued)

Cash equivalents invested in short-term investment funds are valued at amortized cost, which approximates fair value. The fund may issue and redeem shares at any time.

Equity investments are classified as Level 1 and are exchange-traded securities whose values are based on published market prices and quotations from either national security exchanges or active markets for those securities.

Fixed income investments are classified as Level 2 and include publicly traded securities in inactive markets. Investments in this category are sourced from reputable pricing vendors using price matrix models and techniques. Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices. Fair value is defined as the quoted market value on the last trading day of the period.

Real estate and partnerships are classified as Level 3 and are comprised mostly of owned properties leased to commercial enterprises. These investments are valued using professional property valuations or appraisals, net of debt borrowed against the related assets. Appraisals and valuations are updated every three years.

Derivative investments include forward contracts and are classified as Level 2 and valued using observable exchange, dealer, or broker market pricing.

Pooled and alternative investments generally do not have readily obtainable market values and are valued using the net asset value (NAV) per share (or its equivalent). These values are based on the capital account balance of the general partner reports at the end of each reporting period, adjusted by subsequent contributions, distributions, management fees, and changes in values of foreign currency. There are inherent uncertainties in estimating fair values for these types of investments, and it is possible that the estimates will change in the near-term or the subsequent sale of assets will be different from the reported net asset value. Generally, the investments cannot be redeemed or have certain redemption restrictions, and distributions are from the liquidation of the underlying assets.

The valuation for investments measured at the net asset value (NAV) per share (or its equivalent) is presented in the following table:

<u>Investments measured at net asset value (NAV)</u>	<u>Total</u>	<u>Unfunded Commitments</u>	<u>Redemption Frequency</u>	<u>Redemption Notice Period</u>
Pooled investments:				
Commingled domestic equities	\$ 626,969,699		Daily - Monthly	5 days
Commingled international equities	4,703,902,961		Daily - Quarterly	T-2, 5-65 days
Commingled domestic fixed income	979,037,012		Daily	T-2
Commingled international fixed income	1,003,987,392		Daily - Monthly	3-10 days, T +1, T+3
Alternative investments:				
Private equity funds	1,702,695,126	\$ 941,939,061	N/A	N/A
Real estate funds	1,243,651,854	272,921,773	Quarterly	45-60 days
Timberland funds	280,766,872	24,891,933	N/A	N/A
Farmland funds	172,479,904	33,981,007	Daily - Quarterly	30-60 days
Infrastructure funds	119,193,061	175,303,956	N/A	N/A
Re-insurance funds	175,437,997		Semiannually - Annually	60-90 days
Hedge funds	466,881,984		Monthly - Annually	3-90 days
Opportunistic funds	23,638,815		Quarterly	60 days
Partnership funds	112,377,221	45,812,443	Quarterly - Annually	65-90 days
Total plan investments at net asset value	<u>\$ 11,611,019,898</u>	<u>\$ 1,494,850,173</u>		



## Notes to Financial Statements (Continued)

June 30, 2017

### H. Deposits and Investments (Continued)

#### Investments (Continued)

**Pooled Investments** – Pooled investments are commingled funds that consist of assets from several accounts that are blended together to lower trading costs per dollar of investment. The System has funds invested in domestic and international equities, as well as domestic and international fixed income securities. The value of the investments in this asset class has been determined using the NAV per share (or its equivalent) of the System's ownership interest in partners' capital. These investments can be redeemed with proper notification to the fund manager. Distributions are received through liquidation of the underlying assets. The expected holding period is dependent on the discretion of the fund manager.

**Private Equity Funds** – Private equity includes 40 buyout funds, 3 distressed funds, 2 growth equity funds, 9 hard asset funds, 9 mezzanine funds, 5 multi-strategy funds, 5 turnaround funds, 11 venture capital funds, and 4 direct investments that invest mostly in private companies across a variety of industries. The value of the investments in this type has been determined using the NAV per share (or its equivalent) of the System's ownership interest in partners' capital. These investments cannot be easily redeemed. The nature of private equity investments is that distributions are received through the liquidation of the underlying assets of the fund. The expected holding period of a private equity portfolio company is 2 to 10 years.

**Real Estate Funds** – Real estate funds include 4 core funds, 14 value added funds, and 18 opportunistic funds that invest primarily in the United States, Europe, and Asia. Fund investments can be made in the debt, equity, or a combination of both in real estate property ventures. The value of the investments in this asset class has been determined using the NAV per share (or its equivalent) of the System's ownership interest in partners' capital. These investments can be redeemed with proper notification to the fund manager. Distributions from each fund may be received as cash flows from operations or return of capital from sales of assets. The expected holding period of underlying assets in the real estate funds is 2 to 10 years.

**Timberland Funds** – The System has one timberland fund that invests in acquisition, growth, and disposition of timber and associated properties. The value of the investments in this asset class has been determined using the NAV per share (or its equivalent) of the System's ownership interest in partners' capital. These investments cannot be easily redeemed. Distributions from the fund may be received as cash flows from operations or return of capital from sales of assets. The holding period for these assets is at the discretion of the fund manager based on the fund's purchase or sale of the underlying assets.

**Farmland Funds** – The System has two farmland funds. One fund is an open-ended fund comprised of units that represent the System's ownership of underlying agricultural related assets. This fund may be redeemed quarterly with proper notification to the fund manager. The other fund holds the System's direct investments in farmland and related assets. These investments cannot be easily redeemed. The value of the investments in this asset class has been determined using the NAV per share (or its equivalent) of the System's ownership interest in partners' capital. Distributions from the fund may be received in cash flows from operations or return of capital from sales of assets. The holding period is at the discretion of the fund manager based on the fund's purchase or sale of the underlying assets in the portfolio.

**Infrastructure Funds** – Infrastructure funds include five funds that primarily invest in physical, operational, systems, and monopolistic opportunities such as governmental functions (transmission lines and toll roads). The value of the investments in this asset class has been determined using the NAV per share (or its equivalent) of the System's ownership interest in partners' capital. These investments cannot be easily redeemed. Distributions from each fund may be received as cash flows from operations or return of capital from sales of assets. The expected holding period of underlying assets in the real estate funds is 2 to 10 years.

**Re-insurance Funds** – Re-insurance funds invest in insurance products designed to collect premiums from an insurance company for taking a specific type and level of risk associated with natural disasters. The value of the investments in this asset class has been determined using the NAV per share (or its equivalent) of the System's ownership interest in partners' capital. These investments can be redeemed annually. Distributions from each fund may be received as cash flows from operations or return of capital from sales of assets. The expected holding period of underlying assets is 6 months to 1 year.

**Hedge Funds** – Hedge funds consist of three global macro, two credit funds that invest opportunistically across investment classes on a long and short basis, and one fund that uses options designed to enhance the returns of the underlying global benchmarks. The value of the investments in this asset class has been determined using the NAV per share (or its equivalent) of the System's ownership interest in partners' capital. Redemption ranges from monthly to annually depending on the manager (with the exception of one fund that currently has a one-year hold). Distributions are received through liquidation of the underlying assets. The expected holding period is dependent on the discretion of the fund manager.



## Notes to Financial Statements (Continued)

June 30, 2017

### H. Deposits and Investments (Continued)

#### Investments (Continued)

**Opportunistic Funds** - Opportunistic funds utilize operational experience of the fund managers in the fields of information technology, telecommunications, and business services industries to seek quality returns. The value of the investments in this asset class has been determined using the NAV per share (or its equivalent) of the System's ownership interest in partners' capital. These investments can be redeemed quarterly with proper notification to the fund manager. Distributions are received through liquidation of the underlying assets. The expected holding period is dependent on the discretion of the fund manager.

**Partnership Funds** - The System has three Partnership funds that acquire enough shares of a company to gain a controlling interest in order to make corrections to potentially increase a stock's value. The value of the investments in this asset class has been determined using the NAV per share (or its equivalent) of the System's ownership interest in partners' capital. These investments can be redeemed every year subject to redemption lockup restrictions and proper notification to the fund manager. Distributions are received through liquidation of the underlying assets. The expected holding period is dependent on the discretion of the fund manager.

**Securities Lending Collateral** - Cash collateral received from borrowers in the securities lending program is invested in a Quality D short-term investment fund that consists of a liquidating account with a liquidity pool and a duration pool. The value of this fund has been determined by the fund administrator using the NAV per share (or its equivalent).

**Rate of Return** - The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested. For the year ended June 30, 2017, the annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was 16.09%.

**Interest Rate Risk** - Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. Investments can be highly sensitive to changes in interest rates due to their terms or characteristics. The Agency has not adopted a formal investment policy that limits investment maturities as a means of managing its exposure to fair value losses arising from increasing interest rates.

The summary below indicates that 88% of the Agency's investment maturities are one year or longer.

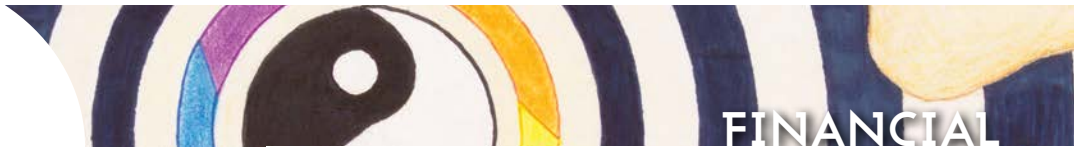
Investment Type	Fair value	Investment maturities (in Years)			
		Less than 1	1-5	6-10	More than 10
U.S. Government obligations	\$ 15,055,571		\$ 15,055,571		
Corporate bonds	642,108,955	\$ 16,551,515	217,817,689	\$ 263,583,575	\$ 144,156,176
Asset- and mortgage-backed securities	40,631,854		15,409,207	2,891,743	22,330,904
Pooled investments	1,983,024,404	304,873,687	35,688,945	\$ 1,642,461,772	
<b>TOTAL</b>	<b>\$ 2,680,820,784</b>	<b>\$ 321,425,202</b>	<b>\$ 283,971,412</b>	<b>\$ 1,908,937,090</b>	<b>\$ 166,487,080</b>

#### Securities Lending Collateral

Quality D short-term investment pool	\$ 431,215,542	\$ 427,138,212	\$ 4,077,330
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**Asset-Backed Securities** - As of June 30, 2017, ATRS held asset-backed securities with a fair value of \$35,799,959. These securities represent interests in various trusts consisting of pooled financial assets other than mortgage loans conveyed by the issuing parties. ATRS's ability to recover the amount of principal invested in these securities depends on the performance and quality of the trust assets. At June 30, 2017, ATRS held no asset-backed securities that were considered highly sensitive to changes in interest rates.

**Mortgage-Backed Securities** - As of June 30, 2017, mortgage-backed securities had a fair value of \$4,831,895. The yields and maturities of mortgage-backed securities generally depend on when the underlying mortgage loan principal and interest are repaid. Although the full amount of principal will be received if prepaid, the interest income that would have been collected during the remaining period to maturity, net of any market adjustment, is lost. At June 30, 2017, no mortgage-backed securities were considered highly sensitive to changes in interest rates.



## Notes to Financial Statements (Continued)

June 30, 2017

### H. Deposits and Investments (Continued)

#### Investments (Continued)

**Corporate Bonds** - As of June 30, 2017, ATRS held corporate bonds with a fair value of \$253,515,455. Corporate bonds are debt instruments that are issued by private corporations. They have a term maturity and can have either a fixed or variable interest rate. Adjustments to variable interest rate bonds are made periodically and vary directly with movements in interest rates. At June 30, 2017, ATRS held no corporate bonds that were considered highly sensitive to changes in interest rates.

**Convertible Corporate Bonds** - As of June 30, 2017, ATRS held convertible bonds with a fair value of \$388,593,500. Convertible bonds convey an option to the bondholder to exchange each bond for a specified number of shares of common stock of the corporation. Convertible bonds offer lower coupon rates and promised yields to maturity than do nonconvertible bonds. A variable coupon varies directly with movements in interest rates. At June 30, 2017, ATRS held no convertible corporate bonds that were considered highly sensitive to changes in interest rates.

**Credit Risk** - Credit Risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. This risk is measured by the credit quality of investments in debt securities as described by nationally-recognized statistical rating organizations. The Agency has not adopted a formal investment policy that limits investment in debt securities based on their statistical rating as a means of managing exposure to credit risk.

The Agency's exposure to credit risk as of June 30, 2017, is as follows:

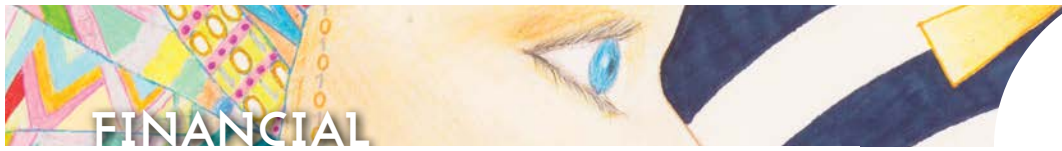
<u>Rating</u>	<u>Fair Value</u>	<u>Rating</u>	<u>Fair Value</u>
AAA	\$ 20,132,577	Aaa	\$ 29,382,687
AA	977,849	Aa	4,563,490
A	33,040,074	A	21,369,950
BBB	188,371,264	Baa	131,894,785
BB	95,554,802	Ba	89,569,541
B	74,275,169	B	37,109,340
CCC or below	4,782,158	Caa or below	12,046,473
Unrated	2,263,686,892	Unrated	2,354,884,519
<b>Total</b>	<b>\$ 2,680,820,785</b>	<b>Total</b>	<b>\$ 2,680,820,785</b>
<b><u>Securities Lending Collateral</u></b>			
<b>Unrated</b>	<b>\$ 431,215,542</b>	<b>Unrated</b>	<b>\$ 431,215,542</b>

**Custodial Credit Risk** - Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, the Agency will not be able to recover the value of its investments or collateral securities that are in the possession of an outside party. The Agency has not adopted a formal investment policy that requires the use of depository insurance and collateralization procedures to manage the risk that investments may not be returned for any investments other than loaned securities. At June 30, 2017, none of the Agency's investments were exposed to custodial credit risk.

**Concentration of Credit Risk** - Concentration of credit risk is the risk of loss attributed to the magnitude of the Agency's investment in a single issuer. The Agency places no limit on the amount it may invest in any one issuer. As of June 30, 2017, none of the Agency's investments in any one issuer (other than those issued or guaranteed by the U.S. Government) represent more than 5% of total investments.

**Foreign Currency Risk** - Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or deposit. The Agency has not adopted a formal investment policy that limits investment in foreign currency.





## Notes to Financial Statements (Continued)

June 30, 2017

### H. Deposits and Investments (Continued)

#### Investments (Continued)

The Agency's exposure to foreign currency risk in U.S. dollars for investments and deposits at June 30, 2017 was as follows:

Currency	Fair Value	Investments			Cash Deposits	
		Fixed Income	Equities	Forward Contracts		
Argentine Peso	ARS	\$ 3,445,996	\$ 3,445,996			
Australian Dollar	AUD	21,799,307	\$ 21,799,307			
Brazilian Real	BRL	11,217,107	360,975	10,856,132		
British Pound Sterling	GBP	272,582,189	271,665,816	\$ 833,069	\$ 83,304	
Canadian Dollar	CAD	18,892,612	19,586,462	(693,883)	33	
Columbian Peso	COP	3,625,395	3,625,395			
Euro	EUR	218,736,549	328,109	218,471,101	(242,821)	180,160
Hong Kong Dollar	HKD	47,155,843		47,056,073		99,770
Indian Rupee	INR	4,248,256	3,744,890			503,366
Indonesian Rupiah	IDR	12,438,584		12,438,584		
Japanese Yen	JPY	146,093,564		147,925,701	(2,366,542)	534,405
Malaysian Ringgit	MYR	-				
Mexican Peso	MXN	16,566,173	9,235,103	9,554,203	(2,222,804)	(329)
New Taiwan Dollar	TWD	15,258,217		15,097,622		160,595
New Zealand Dollar	NZD	6,056,483		6,056,483		
Norwegian Krone	NOK	10,583,214	3,620,747	6,962,467		
Philippine Peso	PHP	2,438,972		2,438,972		
South African Rand	ZAR	35,249,214		31,116,886	4,132,328	
South Korean Won	KRW	23,303,512		23,303,504		8
Swedish Krona	SEK	62,203,531		61,778,081	425,450	
Swiss Franc	CHF	71,785,036		79,965,000	(8,180,208)	244
Turkish Lira	TRY	5,242,969	4,085,910	1,157,059		
<b>Totals</b>		<b>\$ 1,008,922,723</b>	<b>\$ 28,447,125</b>	<b>\$ 987,229,453</b>	<b>\$ (8,315,411)</b>	<b>\$ 1,561,556</b>

For Forward Currency Contracts in the schedule above, a positive number represents the market value of contracts to purchase that currency in excess of the market value of contracts to sell that currency. A negative number, therefore, represents the market value of contracts to sell foreign currency in excess of contracts to purchase that currency.

**Derivatives** – Derivative instruments are financial contracts or agreements whose values depend on the values of one or more underlying assets, reference rates, and/or financial indexes. Derivative instruments include futures contracts, forward contracts, swap contracts, options contracts, and forward foreign currency exchange. ATRS investment guidelines state that derivatives may be used to reduce the risk in a portfolio but should not be used to create a position of leverage or substantially increase the risk of the overall portfolio. Futures and options should be matched by cash or cash equivalent securities, and all short futures positions should be matched by equivalent long security positions. Each investment manager's derivative usage is specified in the investment management agreement or specific guidelines.



## Notes to Financial Statements (Continued)

June 30, 2017

### H. Deposits and Investments (Continued)

#### Investments (Continued)

**Forward Currency Contracts** - ATRS enters into various currency contracts to manage exposure of foreign portfolio holdings to changes in foreign currency exchange rates. A forward exchange contract is a commitment to purchase or sell a foreign currency at a future date at a negotiated forward rate. Risks associated with such contracts include movement in the value of the foreign currency relative to the U.S. dollar and the ability of the counterparty to perform. The contracts are valued at forward exchange rates, and the changes in value of open contracts are recognized as unrealized appreciation/depreciation in the statement of changes in plan net position. The realized gain or loss on closed forward currency contracts represents the difference between the value of the original contracts and the closing value of such contracts and is included in net appreciation (depreciation) in fair value of investments in the statement of changes in plan net position. At June 30, 2017, ATRS had outstanding forward exchange currency contracts to purchase foreign currencies with contract amounts of \$6,502,292 and market values of \$6,488,130, resulting in a net loss of \$14,162. Outstanding forward exchange currency contracts to sell foreign currencies with contract amounts of \$14,518,257 had market values of \$14,803,541, resulting in a net loss of \$285,284.

The fair value balances and notional amounts of derivative instruments outstanding at June 30, 2017, classified by type, and the changes in fair value of such derivative instruments for the year then ended, as reported in the 2017 financial statements, are as follows:

	Changes in Fair Value		Fair Value at June 30, 2017		Notional
	Classification	Amount	Classification	Amount	
<b>Fiduciary funds</b>					
Derivative investments:					
Foreign currency forwards	Investment revenue	\$ 289	Investments	\$ 289	CAD \$ 901,146
	Investment revenue	(156,836)	Investments	(293,538)	CHF 7,803,526
	Investment revenue	3,061	Investments	2,502	EUR 800,204
	Investment revenue	2,454	Investments	(5)	GBP 30,047
	Investment revenue	1,363	Investments	9,125	JPY 301,314,683
	Investment revenue	(3,234)	Investments	(3,234)	MXN 40,232,194
	Investment revenue	(423)	Investments	(423)	SEK 617,873
	Investment revenue	(37,882)	Investments	(14,162)	USD 6,502,292
		<u>\$ (191,208)</u>		<u>\$ (299,446)</u>	

**Securities Lending Transactions** - Arkansas Code Annotated and Board policy permit ATRS to participate in a securities lending program administrated by State Street Bank (the "Custodian"). The Custodian enters into agreements with broker-dealers or other entities to loan securities for collateral and have the same securities redelivered in the future. There were no restrictions on the dollar amount of securities loaned by ATRS. Securities on loan to participating brokers at year-end include U.S. Government securities, corporate securities, and international securities. Brokers who borrow the securities provide cash or other collateral, including securities issued or guaranteed by the U.S. Government. Collateral must be provided in the amount of at least 100% of the market value of the loaned securities. ATRS cannot pledge or sell collateral securities received unless the borrower defaults. The cash collateral received on each loan is invested in a collective investment fund comprised of a liquidity pool and a duration pool. As of June 30, 2017, the liquidity pool had an average duration of 29.38 days and an average weighted final maturity of 107.80 days for USD collateral. The duration pool had an average duration of 22.55 days and an average weighted final maturity of 3,187.05 days for USD collateral. Because the loans were terminable at will, their duration did not generally match the duration of the investments made with cash collateral.



## Notes to Financial Statements (Continued)

June 30, 2017

### H. Deposits and Investments (Continued)

#### Investments (Continued)

At year-end, ATRS had no credit risk exposure to borrowers due to the custodian's indemnification. The Custodian indemnified ATRS by agreeing to purchase replacement securities, or return cash collateral in the event a borrower failed to return a loaned security or failed to pay the trust funds for income of the securities while on loan. No borrowers failed to return loaned securities or pay distributions during the year. Investments made with cash collateral appear as an asset on the Statement of Plan Net Position. Corresponding liabilities are recorded, as ATRS must return the cash collateral to the borrower upon expiration of the loan. ATRS is exposed to investment risk, including the possible loss of principal value in the cash collateral pool, due to fluctuation in the market value of the assets held by the cash collateral pool. As of June 30, 2017, the fair value of the securities lending assets exceeded the securities lending liabilities by \$25,843.

### I. Contributions

The Agency's funding policy provides for periodic employer contributions at statutorily-established rates based on annual actuarial valuations. The employer contribution rate was 14% for the fiscal year ending June 30, 2017. Contributory members are required to contribute 6% of gross wages to ATRS. Employee contributions are refundable if ATRS-covered employment terminates before a monthly benefit is payable. Employee contributions remaining on deposit with ATRS for a period of one or more years earn interest credits, which are included in the refund.

### J. Reserves

In accordance with the provisions of Ark. Code Ann. § 24-7-405, ATRS must maintain reserve accounts showing net assets available for benefits. At June 30, 2017, the reserve accounts were funded at a level that complied with the code provisions.

The reserve balances at June 30, 2017, were as follows:

		<u>Total</u>
Members' deposit account reserve	\$	9,956,290,367
Employers' accumulation account reserve		(4,831,197,897)
Retirement reserve		10,563,229,196
Teacher deferred retirement option plan account reserve		487,173,970
Survivor benefit account reserve		99,957,384
Income - expense account reserve		9,355,224
<b>Total</b>		<b><u>\$ 16,284,808,244</u></b>

Arkansas Code provisions define each of the reserve accounts as follows:

**Members' Deposit Account Reserve** - The account in which members' contributions shall be accumulated with regular interest and from which shall be made transfers and refunds of contributions.

**Employers' Accumulation Account Reserve** - The account in which shall be accumulated the employer's contributions to ATRS and from which shall be made transfers as provided in the code.

**Retirement Reserve** - The account from which shall be paid all annuities and benefits in lieu of annuities payable as provided in this act to retirants who retired on account of superannuation or disability and to beneficiaries of such retirants.

**Teacher Deferred Retirement Option Plan Account Reserve** - The account in which shall be accumulated plan deposits made on behalf of the member with plan interest.

**Survivor Benefit Account Reserve** - The account from which shall be paid survivor benefits payable as provided in this act.

**Income - Expense Account Reserve** - The account to which shall be credited all investment income from invested assets of ATRS. It shall also be the account in which shall be accumulated the contributions made by employers for the administrative expenses of ATRS, from which shall be made annual transfers of interest credits and excess amounts to the other accounts of ATRS, and from which shall be paid all the expenses of the Board necessary for the administration and operation of ATRS.



## Notes to Financial Statements (Continued)

June 30, 2017

### K. Net Pension Liability

The components of the net pension liability of the participating employers at June 30, 2017, were as follows:

Total pension liability	\$ 20,488,672,118
Plan net position	<u>(16,284,808,244)</u>
<b>Net pension liability</b>	<b><u>\$ 4,203,863,874</u></b>
<b>Plan net position as a percentage of the total pension liability</b>	<b>79.48%</b>

**Actuarial Assumptions** - The total liability was determined by an actuarial valuation as of June 30, 2017, using the following actuarial assumptions, applied to all prior periods included in the measurement:

Wage inflation rate	2.75%
Salary increases	2.75-7.75%
Investment rate of return	7.50%

Mortality rates were based on the RP-2014 Mortality Table for Males and Females adjusted using projection scale MP-2017 Table from 2006.

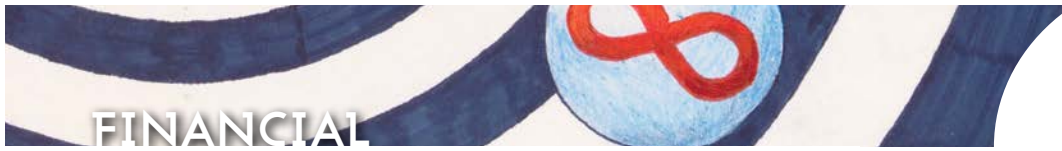
The actuarial assumptions used in the June 30, 2017, valuation were based on the results of an actuarial experience study for the period July 1, 2010 through June 30, 2015.

The long-term expected rate of return on pension plan investments 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 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 geometric real rates of return were adopted by the plan's trustees after considering input from the plan's investment consultant and actuary.

For each major asset class that is included in the pension plan's target asset allocation as of June 30, 2017, these best estimates are summarized in the following table:

<u>Asset Allocation</u>	<u>Target</u>	<u>Long-Term Expected Real Rate of Return</u>
Total Equity	50.0%	5.0%
Fixed income	20.0%	1.2%
Alternatives	5.0%	4.8%
Real assets	15.0%	3.7%
Private equity	10.0%	6.5%
Cash equivalents	<u>0.0%</u>	0.3%
	<b>100.0%</b>	

**Single Discount Rate** - A single discount rate of 7.50% was used to measure the total pension liability. This single discount rate was based on the expected rate of return on pension plan investments of 7.50%. The projection of cash flows used to determine this single discount rate assumed that plan member contributions will be made at the current contribution rate and that employer contributions will be 14% of payroll. Based on these assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. 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.



## Notes to Financial Statements (Continued)

June 30, 2017

### K. Net Pension Liability (Continued)

Regarding the sensitivity of the net pension liability to changes in the single discount rate, the following presents the plan's net pension liability, calculated using a single discount rate of 7.50%, as well as what the plan's net pension liability would be if it were calculated using a single discount rate that is 1% lower or 1% higher:

<b>Sensitivity of the Net Pension Liability to the Single Discount Rate</b>			
	1% Decrease	Current Rate	1% Increase
	6.50%	7.50%	8.50%
<b>Net pension liability</b>	<b>\$6,733,569,352</b>	<b>\$4,203,863,874</b>	<b>\$2,106,730,051</b>

### L. Compensated Absences - Employee Leave

Annual leave is earned by all full-time employees. Upon termination, employees are entitled to receive compensation for their unused accrued annual leave up to 30 days. Liabilities for compensated absences are determined at the end of the year based on current salary rates.

Sick leave is earned by all full-time employees and may be accrued up to 120 days. Compensation up to a maximum of \$7,500 for unused sick leave is payable to employees upon retirement.

Compensated absences are reported in the State's "Government-Wide" financial statements but are not reported as liabilities or expenditures in the governmental funds. However, the compensated absences payable attributable to this Agency's employee annual and sick leave as of June 30, 2017 and 2016, amounted to \$547,824 and \$487,212, respectively. The net changes to compensated absences payable during the year ended June 30, 2017, amounted to \$60,612.

## NOTE 2: Other Post-Employment Benefits (OPEB)

GASB Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions (OPEB)*, requires that OPEB expense of fiduciary funds be recognized on the accrual basis in the fund financial statements. The 2017 liability of \$3,565,302 is a prorated amount from DFA based on a state-wide actuarial study. The amount allocated to ATRS is based on budgeted employees of ATRS and is composed of (1) the annual required contribution (ARC), which is the normal cost and 1/30 of the unfunded actuarial accrued liability (UAAL), (2) one year's interest on the net OPEB, (3) adjustments to the ARC to offset the effect of actuarial amortization of past under or over contributions, (4) minus actual contributions. The State of Arkansas 2017 CAFR will contain the complete OPEB footnote required by GASB 45.

## NOTE 3: Required Supplementary Schedules

Detailed historical information about the pension liabilities for which the pension plan's assets are being held and managed and the significant assumptions used to measure these liabilities are required supplementary information. This required supplementary information, prepared in accordance with the parameters of GASB Statement No. 67, is included immediately following the notes to the financial statements.



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

For the ten-year period ended June 30, 2017

<b>Total Pension Liability</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<small>2013* 2012* 2011* 2010* 2009* 2008*</small>
Service cost	\$ 307,786,503	\$ 305,086,337	\$ 298,134,477	\$ 326,999,276	
Interest	1,485,759,965	1,433,768,167	1,371,168,271	1,326,709,192	
Changes in benefit terms	(469,205,711)			(27,405,705)	
Difference between actual and expected experience	(76,812,667)	(15,341,738)	123,519,055	(103,017,525)	
Changes in assumptions	1,374,950,899				
Benefit payments	(1,092,952,357)	(1,035,958,950)	(970,719,484)	(914,250,015)	
Refunds	(10,874,003)	(10,145,471)	(10,774,122)	(10,485,103)	
<b>Net change in total pension liability</b>	<b>1,518,652,629</b>	<b>677,408,345</b>	<b>811,328,197</b>	<b>598,550,120</b>	
<b>Total pension liability- Beginning of year</b>	<b>18,970,019,489</b>	<b>18,292,611,144</b>	<b>17,481,282,947</b>	<b>16,882,732,827</b>	
<b>Total pension liability- End of year (A)</b>	<b>\$ 20,488,672,118</b>	<b>\$ 18,970,019,489</b>	<b>\$ 18,292,611,144</b>	<b>\$ 17,481,282,947</b>	
<b>Plan Net Position</b>					
Contributions - employer	\$ 414,954,939	\$ 410,358,229	\$ 408,230,472	\$ 404,920,440	
Contributions - member	133,109,939	131,100,983	128,555,684	125,225,906	
Net investment income	2,289,818,591	35,579,657	632,166,951	2,429,334,097	
Benefit payments	(1,092,952,357)	(1,035,958,950)	(970,719,484)	(914,250,015)	
Refunds	(10,874,003)	(10,145,471)	(10,774,122)	(10,485,103)	
Administrative expense	(7,825,595)	(8,059,030)	(8,034,857)	(8,034,236)	
<b>Net change in plan net position</b>	<b>1,726,231,514</b>	<b>(477,124,582)</b>	<b>179,424,644</b>	<b>2,026,711,089</b>	
<b>Plan net position- Beginning of year</b>	<b>14,558,576,730</b>	<b>15,035,701,312</b>	<b>14,856,276,668</b>	<b>12,829,565,579</b>	
<b>Plan net position- End of year (B)</b>	<b>\$16,284,808,244</b>	<b>\$ 14,558,576,730</b>	<b>\$ 15,035,701,312</b>	<b>\$ 14,856,276,668</b>	
<b>Net pension liability- End of year (A)-(B)</b>	<b>\$ 4,203,863,874</b>	<b>\$ 4,411,442,759</b>	<b>\$ 3,256,909,832</b>	<b>\$ 2,625,006,279</b>	
Plan net position as a percentage of total pension liability	79.48%	76.75%	82.20%	84.98%	
Covered employee payroll	\$ 2,921,965,125	\$ 2,888,392,668	\$ 2,873,988,053	\$ 2,850,860,174	
Net pension liability as a percentage of covered employee payroll	143.87%	152.73%	113.32%	92.08%	

\*ATRS is only required to present those years for which information is available until the full 10-year trend is completed.



## Schedule of Contributions

For the ten-year period ended June 30, 2017

	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<small>2013* 2012* 2011* 2010* 2009* 2008*</small>
Actuarially-determined contribution	\$ 423,846,831	\$ 437,434,470	\$ 474,773,530	\$ 485,904,529	
Actual contribution	414,954,939	410,358,229	408,230,472	404,920,440	
<b>Contribution deficiency (excess)</b>	<b>\$ 8,891,892</b>	<b>\$ 27,076,241</b>	<b>\$ 66,543,058</b>	<b>\$ 80,984,089</b>	
<b>Covered employee payroll</b>	<b>\$ 2,921,965,125</b>	<b>\$ 2,888,392,668</b>	<b>\$ 2,873,988,053</b>	<b>\$ 2,850,860,174</b>	
Actual contribution as a percentage of covered employee payroll	14.20%	14.21%	14.20%	14.20%	

\*ATRS is only required to present those years for which information is available until the full 10-year trend is completed.

## Schedule of Investment Returns

For the ten-year period ended June 30, 2017

	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<small>2013* 2012* 2011* 2010* 2009* 2008*</small>
Annual money-weighted rate of return	16.09%	0.24%	4.34%	19.27%	

\*ATRS is only required to present those years for which information is available until the full 10-year trend is completed.



## Notes to Required Supplementary Information

June 30, 2017

### Note 1: Summary of Significant Information Related to Required Supplementary Schedules

#### A. Changes in benefit terms

- The noncontributory multiplier was decreased from 1.39% to 1.25% beginning in fiscal year 2020.
- For fiscal year 2018, the three-year final average salary was calculated for all members. The final average salary for benefit calculation purposes will be the greater of the five-year final average salary at retirement and the three-year final average salary for fiscal year 2018.
- The retiree benefit stipend was removed from the base for COLA calculations and was lowered from \$75 to \$50 per month.
- The T-DROP interest rate was lowered to a fixed 3% for future crediting.
- The T-DROP annuity factors were updated to use a static version of the updated mortality tables and interest rate changes of 7.5% for fiscal year 2018, 7% for fiscal year 2019, 6% for fiscal year 2020, 5% for fiscal year 2021, 4% for fiscal year 2022, and 3% for fiscal year 2023 and thereafter.
- The beneficiary annuity factors were updated to use a static version of the updated mortality tables and an assumed interest rate of 5%.
- The Cash Balance Account (CBA) interest rates were increased by year of participation. Interest rates are 2.50% for Year 1, 2.75% for Year 2, 3.00% for Year 3, 3.25% for Year 4, 3.50% for Year 5, and 4.00% for Year 6 and thereafter.
- The reduction for early retirement was increased from 5/12 to 10/12 of 1% per month.

#### B. Changes in assumptions

- The assumed rate of interest was lowered from 8% to 7.5%.
- The assumed rate of price inflation was decreased to 2.5%.
- The assumed rate of payroll growth was decreased to 2.75%.
- The mortality tables changed to RP 2014 Healthy Annuitant, Disability Annuitant, and Employee Mortality Tables adjusted using projection scale MP 2017 based on the ATRS Experience Study.

#### C. Method and assumptions used in calculations of actuarially determined contributions

Valuation date: June 30, 2017

The actuarially determined contribution rates are calculated as of June 30 of every year, which is one year prior to the beginning of the fiscal year in which contributions are reported.





**C. Method and assumptions used in calculations of actuarially determined contributions (Continued)**

The following actuarial methods and assumptions were used to determine contribution rates reported in the schedule of contributions:

Actuarial cost method	Entry age normal
Amortization method	Level percentage of payroll, closed
Remaining amortization period	29 years
Asset valuation method	4-year closed period; 20% corridor
Wage inflation	2.75%
Projected salary increases	2.75% - 7.75%
Investment rate of return	7.50% compounded annually
Mortality table	RP-2014 Healthy Annuitant, Disabled Annuitant, and Employee Mortality Tables were used for males and females. Mortality rates were adjusted using projection scale MP-2017 from 2006.

Table	Scaling Factor	
	Males	Females
Healthy Annuitant	101%	91%
Disabled Annuitant	99%	107%
Employee Mortality	94%	84%

## Schedule of Selected Information

For the five-year period ended June 30, 2017

For the Year ended June 30,	2017	2016	2015	2014	2013
<b>Total Assets</b>	\$ 16,792,590,856	\$ 15,236,170,821	\$ 15,746,448,807	\$ 15,587,124,060	\$ 13,661,085,708
<b>Total Liabilities</b>	507,782,612	677,591,091	710,747,795	730,847,392	831,520,129
<b>Net Position Restricted for Pension Benefits</b>	16,284,808,244	14,558,576,730	15,035,701,312	14,856,276,668	12,829,565,579
<b>Total Additions (Losses)</b>	2,837,883,469	577,038,869	1,168,953,107	2,959,480,443	2,210,733,616
<b>Total Deductions</b>	1,111,651,955	1,054,163,451	989,528,463	932,769,354	865,053,546



INVESTMENTS

AR TRS  
Arkansas Teacher Retirement System

# Legacy



February 13, 2018



Board of Trustees  
Arkansas Teacher Retirement System  
1400 West Third Avenue  
Little Rock, AR 72201

### Market Overview

The 2017 fiscal year was primarily characterized by economic stability, low volatility, and strong equity returns. Investors primarily maintained a risk-on attitude during the year and capital markets generated strong returns. On the heels of the Brexit referendum, global markets began the fiscal year positively with expectations of minimal impact on the global economy, along with evidence of stabilization in China's economy and central bank stimulus in the UK and Japan. Uncertainty briefly crept into markets surrounding a December Federal Fund's rate hike resulting in bond yields spiking nearly 100bps from October through the end of 2016, though remained mostly range-bound during the rest of the fiscal year. Late in the calendar year, equity markets rallied due to investor expectations of improved global growth and U.S. based stimulus.

Inflation expectations fell and Treasury yields moderated during the last half of the fiscal year as questions remained regarding global growth. Investors focused on positive news including economic growth in both the U.S. and abroad and favorable corporate earnings. Central bank policy was also at the forefront of investors' focus. The second Fed Fund's rate hike during the 2017 fiscal year occurred in March and was largely anticipated, and therefore, had a relatively benign impact on markets. However, the third rate hike which took place in June, received more attention as concerns arose surrounding an end to easing monetary policies. As stronger economic data came out of Europe, the ECB and the Bank of England gave hawkish signals, including reports that the ECB may begin tapering its quantitative easing program later in 2017. The shift in central bank policy from divergence to convergence, along with downward pressure on the U.S. Dollar (USD), brought a tailwind for international and emerging equity markets.

In terms of returns, global equity markets remained mostly enthused throughout the year. U.S. equities continued their bull market rallying on favorable economic growth and continued signals of economic stability. The broad U.S. equity market, as represented by the Dow Jones U.S. Total Stock Market Index, returned an 18.5% over the 2017 fiscal year. Diverging from the past several years, international developed and emerging markets outperformed U.S. equities on both a hedged and unhedged basis over the year. International equities proved resilient against the Brexit referendum and gained on strong economic growth. Developed international markets, represented by the MSCI EAFE Index returned 20.3% in USD terms and 22.1% in local currency. Despite experiencing weakness around the U.S. Presidential election, emerging markets fared even better, posting a 23.8% return in USD terms and 21.8% in local currency, as represented by the MSCI Emerging Markets Equity Index. Consistent with the risk-on mentality, credit spreads tightened and spread sectors of the bond market outpaced safe haven treasuries. The broad Bloomberg Barclays Aggregate Bond Index declined 30 basis points on the year, while the Bloomberg Barclays High Yield Index returned 12.7%. Overall, the 2017 fiscal year provided a strong return for a portfolio comprised primarily of traditional equities and bonds.

### Overview of ATRS Fund Structure

The ATRS portfolio is well-diversified across several asset classes, including global public equities, fixed income, alternative investments, real assets, and private equity. The asset allocation is a long-term Policy determined through periodic asset-liability studies and assessments of risk and liquidity needs. Within these asset classes, the investments are diversified across investment types, styles, regions and vintage years. A variety of investment firms are employed within each category to minimize manager- and firm-specific risks. We continue to believe the diversification and overall risk level of the portfolio is appropriate given the goals and objectives of the ATRS.

During the 2017 fiscal year, there were no major changes to the long-term asset allocation, and the portfolio continued to progress towards its long-term policy targets. The real assets portfolio ended the year at 11.7% of Total Fund assets, with a long-term target of 15.0%, and the opportunistic/alternatives allocation grew to 4.1% of Total Fund assets, with a long-term target of 5.0%.



ATRS's underlying investment manager structure remained mostly unchanged throughout the year. The only changes were within the opportunistic/alternative portfolio. During the 2017 Fiscal Year, the Board approved an additional allocation to the reinsurance space, which is intended to provide a diversified source of attractive risk-adjusted returns for the Total Fund, as well as the addition of a second options premium strategy which is intended to provide 350 basis points above the global equity market index.

AHIC and the ATRS Investment Team continue to regularly review the portfolio allocation, structure and manager line-up, and evaluate additional types of strategies in order to best position the fund to achieve its investment objectives

**ATRS Performance Overview (annualized returns)**

Periods ending 6/30/2017	1 Year		3 Years		5 Years	
	Return	Rank	Return	Rank	Return	Rank
<b>Total Fund</b>	<b>16.1%</b>	<b>1</b>	<b>6.7%</b>	<b>1</b>	<b>10.6%</b>	<b>1</b>
Performance Benchmark	13.2	33	6.6	1	10.2	4
<b>Total Equity</b>	<b>22.1</b>	<b>26</b>	<b>6.5</b>	<b>29</b>	<b>12.8</b>	<b>27</b>
Performance Benchmark	19.0	47	6.7	28	12.3	32
<b>Total Fixed Income</b>	<b>5.2</b>	<b>9</b>	<b>3.2</b>	<b>33</b>	<b>3.9</b>	<b>23</b>
Performance Benchmark	0.9	65	2.8	51	2.7	57
<b>Total Opportunistic/Alternatives</b>	<b>6.8</b>	<b>--</b>	<b>3.6</b>	<b>--</b>	<b>6.7</b>	<b>--</b>
Custom Alternatives Benchmark	2.8	--	0.2	--	2.7	--
<b>Total Real Assets</b>	<b>7.5</b>	<b>--</b>	<b>9.6</b>	<b>--</b>	<b>--</b>	<b>--</b>
Total Real Assets Benchmark	6.6	--	9.4	--	--	--
<b>Total Private Equity</b>	<b>16.7</b>	<b>--</b>	<b>12.1</b>	<b>--</b>	<b>13.8</b>	<b>--</b>
Private Equity Policy	20.4	--	11.9	--	15.4	--

The System ended the fiscal year with approximately \$16.1 billion representing growth of approximately \$1.7 billion over the year. Strong investment earnings of \$2.3 billion drove the asset growth, which is net of withdrawals of approximately \$587 million. The investment gains equate to a 16.1% net-of-fee total return. The strong absolute returns were driven by the global equity asset class which produced a positive 22.1% return over the year. On a relative basis, the Total Fund posted its strongest relative performance figure in fifteen years, as it outperformed its Performance Benchmark during the fiscal year by 2.9 percentage points. Relative to a peer group of U.S. Public Pension Plans with assets over \$1 billion, the Plan ended the year at the top of the group, ranking in the 1st percentile. Longer-term performance remains very strong, as the Total Fund returned an annualized 6.7% over the three-year period, 10.6% over the five-year period, and 6.0% over the ten-year period and outperformed its Performance Benchmark over each trailing time period. Further, the Total Fund also ranked in the top percentile of its peer group over both the three- and five-year time periods and in the eighth percentile over the ten-year period.

During the year, the total equity asset class returned 22.1%, outperforming its benchmark return of 19.0%. The two highest performance managers were Harris Global Equity and T. Rowe Price Global Equity which returned 38.9% and 28.8%, respectively.



The fixed income market returns were muted during the fiscal year due to low yet rising interest rates and slim credit spreads above Treasury bonds. The ATRS fixed income portfolio, however, produced a strong return of 5.2% adding significant value over the Performance Benchmark's return of 0.9%. The highest performing portfolio was Loomis Sayles which returned 8.1% during the year. The Putnam portfolio also produced impressive results returning 7.9%. Both strategies benefitted from significant exposure to corporate credit as spreads fell significantly over the past twelve months. The Putnam portfolio also has very little interest rate exposure which helped absolute returns over the year as base interest rates rose. The ATRS fixed income portfolio returns for the trailing 3-, 5- and 10-years periods exceeded those of the benchmark by material margins.

The fiscal year return of the opportunistic/alternatives portfolio outperformed that of the Custom Alternatives Benchmark 6.8% to 2.8%. The Aelous insurance-related investment had the most favorable impact on relative asset class performance returning 11.2% for the fiscal year. The Capula Global Macro strategy and the York credit-oriented strategy also produced positive gains relative to their respective benchmarks. Late in the fiscal year, ATRS funded a \$150 million investment in the Parametric Global Defensive Equity Fund. This strategy is designed to earn a return similar to that of global equity market over a market cycle with approximately one-half the volatility. The Fund accomplished this by supplementing a 50/50% portfolio of T-Bills and equity with selling covered call and put options on various equity indices.

The real assets category, which includes real estate, timber, agriculture and infrastructure, returned a solid 7.5% during the fiscal year fueled by strong performance by the timber and infrastructure portfolios. The infrastructure portfolio is still relatively immature but achieved a double-digit since-inception (2014) internal rate of return. Favorable appraisals and increased volume benefitted the timber portfolio leading to an 8% return for the fiscal year. Despite a more conservation positioning than the benchmark, the ATRS core real estate portfolio approximated the return of NCREIF ODCE benchmark during the year.

The ATRS private equity portfolio returned 16.7% on a time-weighted return basis during the fiscal year benefitting the Total Fund's absolute return. The private equity portfolio exceeded its long-term objective of adding 2 percentage points above publicly traded equities since-inception but did not meet this goal during the fiscal year due mostly to the exceptionally strong returns of the public equity markets.

We are pleased to report on the great success of the ATRS portfolio and feel it is well positioned going-forward to achieve its long-term goals.

Sincerely,

A handwritten signature in black ink that reads "Patrick J. Kelly".

Patrick J. Kelly, CFA, CAIA  
Partner

A handwritten signature in black ink that reads "Katie Comstock".

Katie Comstock  
Senior Consultant



## Investment Policies and Procedures

- Amended October 4, 2010
- Amended February 7, 2011
- Amended June 3, 2013
- Amended October 7, 2013
- Amended February 17, 2014
- Amended June 1, 2015
- Amended April 21, 2016

## STATEMENT OF INVESTMENT POLICY

This Investment Policy has been prepared within the context of applicable Arkansas laws and is intended to allow for sufficient flexibility in the investment process to capture opportunities, yet ensure that both prudence and care are maintained in the execution of the investment program. While safety of principal is given primary consideration, the Arkansas Teacher Retirement System Board of Trustees, hereinafter “Board” may take appropriate levels of risk to earn higher levels of investment return.

The Board has arrived at this policy through careful study of the rates of return and risks associated with various investment strategies in relation to the current and projected liabilities of the Arkansas Teacher Retirement System, hereinafter, “the System”. This policy has been chosen as the most appropriate for achieving the financial objectives of the System. The policy will be reviewed periodically as circumstances dictate.

The Board has adopted a long-term investment horizon so that the chances and duration of investment losses are carefully weighed against the long-term potential for appreciation of assets. The assets of the System will be invested in a manner that provides the safeguards and diversity to which a prudent investor would adhere. All transactions undertaken on behalf of the System will be in the sole interest of the members of the System.

To achieve the overall investment goal of the System, one or more investment consultants may be retained by the Board as investment advisors. The scope of duties, together with the terms and conditions of engagement, of any investment consultant will be set forth in a contract approved by the Board. Throughout this document, investment advisors are referred to as investment consultants.

The System shall manage those assets not specifically allocated to investment managers. No investment shall be made without an investment consultant’s recommendation.

### Standard of Care

The standard of care for the Board and Executive Director of the assets of the System is: when investing and reinvesting trust assets and in acquiring, retaining, managing and disposing of investments of the trust assets, there shall be exercised the reasonable care, skill, and caution that a prudent investor would use after considering the purposes, terms, distribution requirements, and other circumstances of the trust. Investment and management decisions respecting individual assets shall be evaluated not in isolation but in the context of the trust portfolio as a whole and as a part of an overall investment strategy having risk and return objectives reasonably suited to the trust. The investments of the trust shall be diversified unless the Board reasonably determines that, because of special circumstances, the purposes of the trust are better served without diversifying. The trust assets shall be invested and managed solely in the interest of the members and benefit recipients of the trust. The trust assets shall be invested in a manner to only incur costs that are appropriate and reasonable in relation to the assets and purposes of the investment. Compliance with the standard of care is determined in light of facts and circumstances at the time of action, not in hindsight.

Investment and management functions may be delegated to an investment agent that a prudent trustee of comparable skills could properly delegate under the circumstances. When making such delegation, the Board shall establish the scope and terms of the delegation, consistent with the purposes and terms of the trust, and shall monitor the investment agent performance and compliance with the terms of the delegation. In performing a delegated function, an investment agent owes a duty to the System and the trust to exercise reasonable care to comply with the terms of the delegation. In addition, the Executive Director may delegate certain duties to the System’s investment staff without relieving the Executive Director from the ultimate responsibility.

Each party serving in a fiduciary capacity for the trust shall apply the standard of care set forth herein.

## Investment Policies and Procedures (Continued)

### Asset Allocation

The Board is responsible for the prudent investment of funds and to maintain a proper allocation of the System’s investment assets. The Board, in conjunction with its investment consultants, shall set and adjust the System’s asset allocation ranges as necessary to provide an optimal allocation to obtain its target returns. The general investment consultant shall notify the Executive Director and the Board when an asset liability modeling study should be undertaken. It shall be the goal of the System to maintain the following asset allocation targets and ranges:

Asset Category	Minimum*	Target	Maximum*
Total Equity	45.0	50.0	55.0**
Fixed Income	15.0	20.0	25.0
Opportunistic/Alternatives	N/A	5.0	N/A
Real Assets***	N/A	15.0	N/A
Private Equity	N/A	10.0	N/A
Cash Equivalents	0.0	0.0	5.0

\*Due to the illiquid nature of opportunistic/alternatives, real assets, and private equity, it is not prudent to set rebalancing ranges for these asset classes.

\*\*Additional allocations to total equity may be made beyond the maximum range to serve as a placeholder for unfunded and uncommitted opportunistic/alternatives, real assets, and private equity.

\*\*\*Real assets includes real estate, timber, agriculture, and infrastructure.

### Rebalancing

The asset allocation ranges established by the Board represent the Board’s judgment of a portfolio mix that provides the greatest risk/return value. Allowing the portfolio to exceed the Board limits strays from the financial discipline, which the Board believes will – over time – provide the appropriate risk-adjusted return to the System.

The Executive Director is responsible for rebalancing the allowable asset classes and the individual portfolios if any of the asset classes falls outside of the designated range. The general investment consultant shall provide guidance and advice to the Executive Director to best achieve the rebalancing. Rebalancing among individual investment manager portfolios within asset classes may also be necessary to ensure the appropriate level of diversification is achieved by investment style, market capitalization or risk levels (see total asset class guidelines) and/or to take advantage of market conditions, fund manager expertise, opportunities, or other circumstances that could be beneficial to ATRS.

The Executive Director may rebalance across all equity managers, all equity holdings, all fixed income managers, and all fixed income holdings. A Board approved transition manager may be used for rebalancing. Rebalancing including the use of a Board approved transition manager, as needed, may be initiated by the Executive Director after recommendation from the appropriate investment consultant and positive notice to the Board Chair. The Executive Director and general investment consultant will monitor the asset values by classification for each asset manager on a monthly basis, based on month-end data provided by the custodial bank. The Executive Director and general investment consultant shall regularly inform the Board on the rebalancing pacing and strategy.

Whenever the minimum or maximum range of total equity or fixed income has been exceeded, a transfer of funds or other appropriate action will occur to bring the actual allocation within the prescribed range within a time frame determined to be prudent by the Executive Director in consultation with the general investment consultant.

Normal plan cash flows should be used to the extent possible to rebalance. Interest, dividends, and plan contributions should be used to the extent possible to fund asset classes that are below their target. Withdrawals should be made from asset classes that are above their target.

### Investment Manager Selection

In order to implement its investment strategy, the System will use individual investment managers. Arkansas Code § 24-3-401 et seq. requires ATRS to always operate under the prudent investor rule. The prudent investor rule requires all investment decisions to be made based on the experience of management, rates of return, appropriate risk, reasonable cost, and all other relevant factors that





## Investment Policies and Procedures (Continued)

should be used by prudent investors.

It is the policy of the Board to include, whenever appropriate, qualified minority-owned and women-owned business enterprises in the System's investment manager selection process and to objectively evaluate all qualified investment manager candidates regardless of race, gender or disability.

The Board will evaluate all qualified investment manager candidates with emphasis on demonstrated professional performance, organizational depth, institutional investment management capability, and reasonableness of fee structure regardless of the amount of investment assets under management or the age of the investment management firm.

The Board will use professional consultants that do not use discriminatory practices in the creation and maintenance of their investment manager databases and will require the investment consultants to affirm their use of non-discriminatory practices when recommending investment manager candidates to the Board.

### Goals

Recognizing the purpose of the System is to remain actuarially sound and pay member benefits, the overall investment goal is to achieve, over a period of years, the greatest rate of return for the System with due consideration given to preserving capital and its purchasing power, and to maintain an appropriate level of risk consistent with the obligations of a prudent investor. The return of the System should exceed, net of fees, a policy benchmark comprised of the respective asset class benchmarks weighted by the asset class policy targets over a full market cycle (approximately five years). During periods of transition to and from non-marketable and illiquid asset classes such as private equity and real assets, actual allocations may be used over extended periods to reflect these changes in the policy targets. Periodic performance reports will provide a detailed description of the policy benchmark composition over time.

The System's actuary sets an expected return based on the Board's policy decisions. Market cycles may result in the System earning a return materially above or below the actuarial rate of return for extended periods of time. Therefore, the actuarial rate of return will not be used for performance comparison purposes.

### Total Equity

The total equity exposure of the portfolio shall be well diversified with broad exposures to small, mid, and large capitalization companies and growth and value style sectors across U.S. and non-U.S. markets. The goal for total equity shall be to achieve a total rate of return that will exceed, net of all fees and costs, the return of the aggregate global equity market as measured by the Morgan Stanley Capital International (MSCI) All Country World Index (ACWI) Investable Market Index (IMI) over a full market cycle (approximately five years). Because the total equity portfolio was previously segregated into domestic and global equity components, the total equity portfolio has a bias to domestic equity relative to the MSCI ACWI IMI. Therefore, to ensure appropriate performance measurement, the benchmark for total equity will be weighted 30% to the Dow Jones U.S. Total Stock Market Index and 70% to the MSCI ACWI IMI Index until the domestic allocation is in line with the global opportunity set as defined by the MSCI ACWI IMI. The manager structure of the total equity portfolio should resemble the weighted average of their respective benchmarks and avoid any material biases due to a concentration of managers or management styles. To achieve this goal, the Board may employ various actively managed and passive mandates. The structure of the equity component will be analyzed annually to ensure proper diversification is achieved.

### Fixed Income

The manager structure of the aggregate fixed income portfolio's risk exposure should resemble the aggregate domestic fixed income market as measured by the Barclays U.S. Universal Bond Index. To help achieve this goal, the Board will employ investment managers that invest assets in a broad array of sectors (government, mortgage backed, credits, asset backed, and commercial mortgage backed bonds), maturities, and credit qualities so that the overall portfolio structure is not materially different from that of the domestic and global fixed income markets. To provide a broad base of low-cost diversification and readily available liquidity, the Board may allocate a portion of the fixed income assets to a passive investment portfolio that approximates the return of the broad fixed income market. The goal for fixed income investments shall be to achieve a total rate of return that will exceed, net of all costs and fees, the return of the Barclays U.S. Universal Bond Index over a full market cycle (approximately five years).

## Investment Policies and Procedures (Continued)

### Opportunistic/Alternative Investments

The Opportunistic/Alternatives asset class may include investments in direct hedge funds, hedge fund of funds, commodities, currency mandates, and other alternative strategies that are not closely correlated or related to the traditional asset classes (fixed income, equities, private equity, and real assets). Unique investments that do not fit within the other asset class categories may also be included in the Opportunistic/Alternative category at the Board's discretion.

Because this category may include illiquid investments made through closed end investment partnerships, it may take a period of time to reach the target allocation of 5%. Assets will be invested in the total equity asset class until the total target is attained.

The benchmark for the category will be a weighted average of the benchmarks of the underlying strategies.

The goal of the credit, global macro, and other liquid alternative investments shall be to achieve a total rate of return that will exceed, net of all fees and costs, the return of the appropriate institutional quality hedge fund index over a full market cycle (approximately five years). Appropriate benchmarks will be determined as investments are added to the portfolio.

### Real Assets

The Real Asset category may include real estate, timber, agriculture, and infrastructure. While no fixed targets are set, the following general parameters have been identified:

- 10% Real Estate
- 2% Timber
- 1% Agriculture
- 2% Infrastructure

The total target of the asset class will be 15%. Because this category may include illiquid investments made through closed end investment partnerships, it will take a period of time to reach these targets. Assets will be invested in the U.S. equity asset class until the total target is attained.

The System may initiate investments in real estate as governed by the Real Asset Statement of Investment Policy. The System's goal for real estate is to not materially exceed the System's approved target asset allocation for total real estate investments as determined by the Board at the beginning of each fiscal year. Should the real estate target asset allocation be exceeded, the Executive Director, working with the Real Estate Consultant, shall develop a pacing and strategy plan to address the over allocation.

ATRS' Real Estate portfolio is benchmarked on a net of fee basis against the NCREIF Fund Index Open-end Diversified Core Equity Index ("NFI-ODCE"). Once ATRS' Real Estate portfolio reaches its full target allocation for a five year period, it is expected to meet or exceed the NFI-ODCE over rolling five year periods.

The System may initiate direct ownership in timberland or indirect investments in fund of funds, partnerships, corporations, or real estate investment trusts ("REITs") investing in investment grade properties of like kind.

The goal of the timberland investments shall be to achieve a total rate of return that will exceed, net of all fees and costs, the return of the NCREIF Timberland Property Index ("NTPI") over a five year rolling period weighted according to ATRS' regional exposure based on Net Asset Value.

The goal of the agriculture investments shall be to achieve a total rate of return that will exceed, net of all fees and costs, the return of the NCREIF Farmland Index ("NFI") over a five year rolling period weighted according to ATRS' regional and crop type exposure based on Net Asset Value.

The goal of the infrastructure investments shall be to achieve a total rate of return that will exceed, net of all fees and costs, the return of the Consumer Price Index (CPI) plus 5 percentage points over a full market cycle (approximately ten years). The Consumer Price Index plus 5 percentage points will be used as the benchmark to reflect the opportunity cost of investing in infrastructure. Similar infrastructure programs of institutional investors will also be used as a secondary benchmark to the extent such data is made available.

## Investment Policies and Procedures (Continued)

The ATRS Total Real Asset Benchmark is weighted by the allocations based on Net Asset Values across the various sub-categories, and thus defined as Real Estate benchmark, Timber benchmark, Agriculture benchmark and Infrastructure benchmark. The net of fee return for ATRS' Total Real Asset Portfolio is expected to meet or exceed the Total Real Asset Benchmark over rolling five year periods.

### Private Equity

The System may initiate investments in private equity as governed by the Private Equity Statement of Investment Policy. Private equity investments may include domestic and foreign private equity partnerships, venture capital, and mezzanine financing partnerships that are intended to diversify the assets and reduce the likelihood of material losses in any individual investment classification. The investment consultant responsible for private equity shall advise the Executive Director and Board on the Private Equity Statement of Investment Policy and the structure of private equity investments best suited for the System.

The System's goal for private equity investments is to achieve a total rate of return that will exceed, net of all costs and fees, the return of the public equity markets, as measured by the Dow Jones U.S. Total Stock Market Index, plus a liquidity premium of 2 percentage points per year over a full market cycle for private equity (approximately ten years).

### Cash Equivalents

The System may hold direct ownership in short-term investments or may permit or require managers to hold cash or cash equivalents to meet liquidity needs of the investment manager or of the System.

The System's cash management goal shall be to preserve capital and maintain liquidity.

### Arkansas-Related Investments

The System may initiate Arkansas-related mortgage loans, promissory notes, direct real estate investments, or purchase insured certificates of deposit or short term securities of Arkansas financial institutions to meet the goals of the mandated requirements. Arkansas-related investments are categorized according to the appropriate asset class for each investment. In addition, Arkansas related investments include, but are not limited to, investments managed by an Arkansas related manager, Arkansas related investments held by other fund managers, Arkansas timberland, partnerships based in Arkansas, and partnerships holding Arkansas properties.

### Commingled or Mutual Funds

If a commingled fund or mutual fund is utilized, the portfolio will be governed by the prospectus or similar document for the fund. In those cases, the System will utilize the prudent investor rule and advice of the investment consultant in selecting and evaluating funds initially and in monitoring them on an on-going basis.

### Derivatives

Derivatives may be used to reduce the risk in a portfolio and provide desired market and security level positions as an alternative to purchasing cash securities. Excessive leverage shall not be created through the use of derivatives in a manner that substantially increases the System's portfolio risk. Each investment manager's derivative usage shall be specified in the investment management agreement or specific guidelines.

The use of futures and options shall be matched by cash or cash equivalent securities, and all short futures positions shall be matched by equivalent long security positions, unless otherwise stated in the investment manager guidelines or authorizing fund documents.

### Loaning of Securities

The lending agent will evaluate the credit-worthiness of potential borrowers of securities, and will loan securities only to financially sound borrowers. The lending agent will maintain a diversified list of such borrowers in order to mitigate the counterparty risk that is inherent in securities lending.

Collateral levels should be based on the nature of the loaned security and will generally be between 102% and 105% of the market value of the borrowed security. Marking to market will be performed every business day subject to de minimis rules of change in value, and borrowers will be required to deliver additional assets as necessary to maintain over-collateralization of securities loans.

## Investment Policies and Procedures (Continued)

### Securities Lending Reinvestment Guidelines

The cash collateral portfolio will be managed on an amortized cost basis (maintain a \$1 net asset value) and have investment guidelines that are 2a-7-like in nature (money market fund guidelines) to ensure that only a moderate amount of risk is taken on the reinvestment of the cash collateral. This will control the amount of credit and duration risk that can be taken by the short duration fixed income manager, which will help to mitigate losses due to insufficient collateral relative to the amount on loan. In addition, guidelines for the cash collateral portfolio will be created in conjunction with the lending strategy and with input from the securities lending agent.

The collateral pool should also maintain a reasonable level of overnight liquidity in order to allow for the smooth recall of securities over time.

### Investment Manager Reporting

The System will require all investment managers, managing partners, and general partners to provide on at least a quarterly and an annual basis, reporting appropriate for the investment.

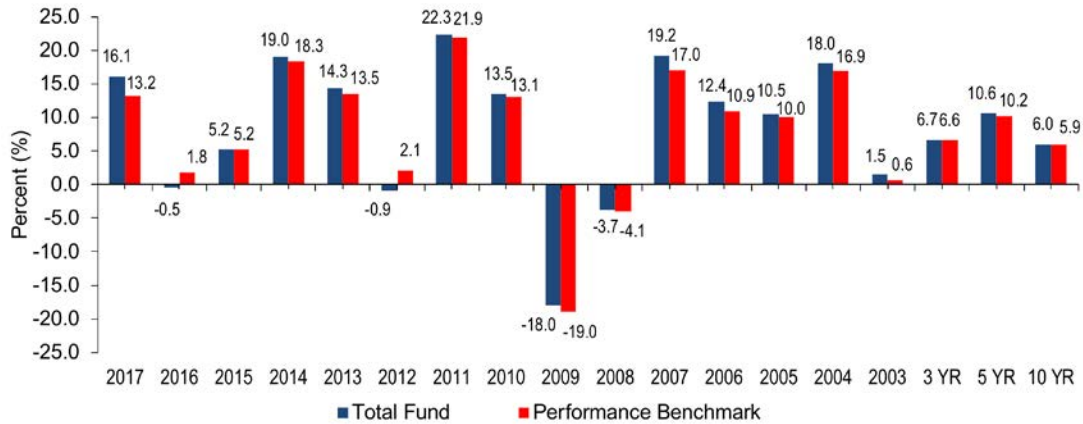
### Roles

The Executive Director and investment consultant are jointly responsible for the initial selection of investment managers and any increase or decrease in an investment manager's funding. The Executive Director and investment consultant are jointly responsible for monitoring existing investment managers on performance, stability, and compliance. The Executive Director and investment consultant may also recommend termination of an investment manager when circumstances justify termination. Reasons for termination include, but are not limited to, relative performance, relative stability, costs, strategic allocation of assets, or other relevant factors that a prudent investor would use.

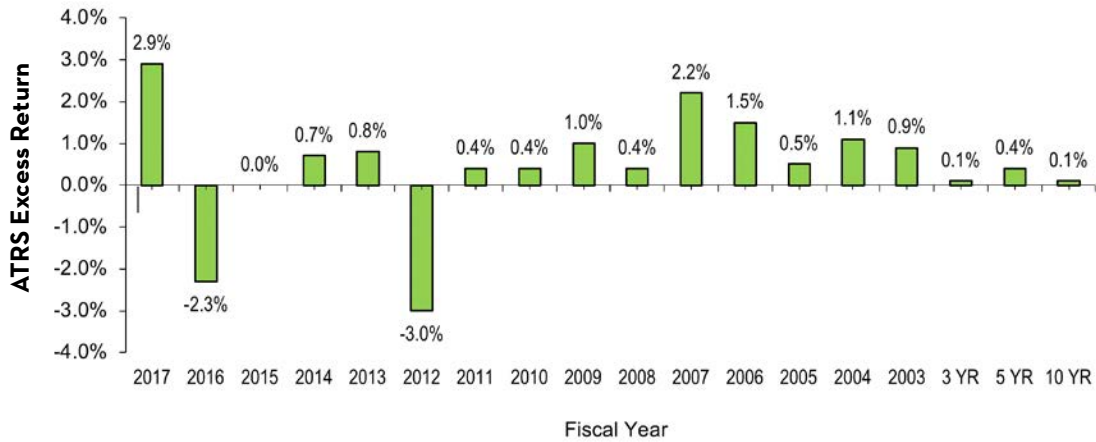
### Proxies

The System authorizes the investment manager to vote all proxies related to stocks in which it invests the System's assets. The System expects the investment manager to cast votes solely in the best interest of plan beneficiaries.

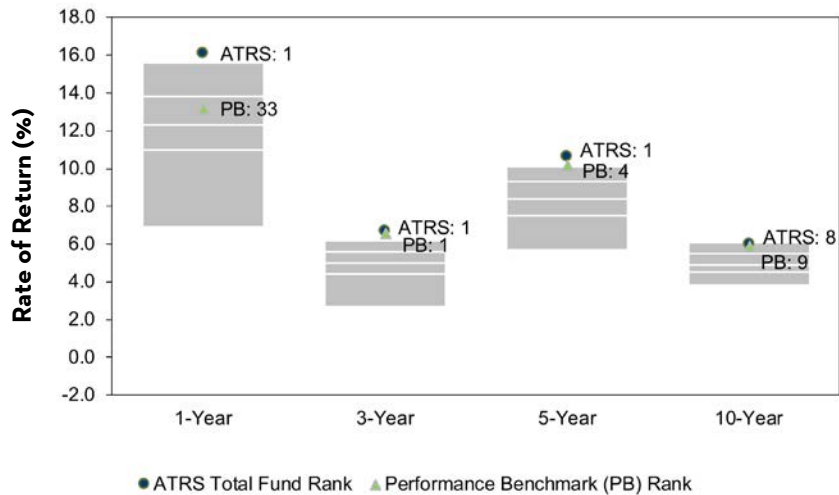
### ATRS Total Fund Fiscal Year Returns vs. Performance Benchmark: Periods Ending June 30th



### ATRS Total Fund Returns Relative to Performance Benchmark: Periods Ending June 30th



### ATRS Total Fund Ranks: Periods Ending June 30, 2017 Universe of U.S. Public Defined Benefit Plan with over \$1 billion in AUM





## Schedule of Investment Results TRADITIONAL ASSETS

### Returns for Period Ending June 30, 2017

The table below details the rates of return for the System's investment managers over various time periods ending June 30, 2017. The Appendix on page 52 provides a description of the benchmarks used for each manager as of the end of the fiscal year.

	1-Year	3-Years	5-Years
<b>Public Equity</b>			
Pershing Square International	8.2	-6.6	4.3
Pershing Square Holdings	8.3	-14.0	--
<i>Dow Jones U.S. Total Stock Market Index</i>	18.5	9.0	14.5
Allianz Structured Alpha U.S. 250	20.4	12.2	17.5
Trihan Partners	9.5	--	--
<i>S &amp; P 500 Index</i>	17.9	9.6	14.6
Jacobs Levy 130/30	24.6	15.5	18.6
<i>Russell 3000 Index</i>	18.5	9.1	14.6
Daruma Asset Management	20.7	2.5	11.7
<i>Russell 2000 Index</i>	24.6	7.4	13.7
Kennedy Capital Management	24.2	6.6	16.1
<i>Russell 2000 Value Index</i>	24.9	7.4	13.4
Stephens	18.3	4.6	10.0
<i>Russell 2000 Growth Index</i>	24.4	7.6	14.0
Allianz Convertibles	15.9	3.9	10.5
<i>Performance Benchmark</i>	16.8	4.8	11.2
Voya Absolute Return	20.3	9.7	15.0
<i>Performance Benchmark</i>	18.8	8.9	14.2
Allianz Structured Alpha Global 350	23.8	--	--
SSgA Global Index	19.4	5.3	11.2
BlackRock MSCI ACWI IMI Fund	19.1	5.2	11.2
<i>MSCI AC World IMI (Net)</i>	19.0	4.9	10.7
GMO Global All Country Equity	20.0	2.3	--
T. Rowe Price Global Equity	28.8	11.2	16.5
Lazard	26.2	6.5	11.5
<i>MSCI ACWI Index (Net)</i>	18.8	4.8	10.5
Harris Global Equity	38.9	6.8	--
D.E. Shaw	19.2	7.4	13.1
<i>MSCI World Index (Net)</i>	18.2	5.2	11.4
Wellington Global Perspectives	24.8	5.6	15.4
<i>Performance Benchmark</i>	20.5	5.2	12.1

Note: Allianz Structured Alpha Global 500 and Trihan Co-Investments were funded in 2016 and 2017 respectively and do not yet have a full year worth of return history.



## Schedule of Investment Results (Continued) TRADITIONAL ASSETS

The table that follows details the rates of return for the System's investment managers over various time periods ending June 30, 2017.

	1-Year	3-Years	5-Years
<b>Fixed Income</b>			
BlackRock	0.3	2.9	2.8
<i>Performance Benchmark</i>	0.9	2.8	2.7
Reams Core Plus Bond Fund	0.0	2.5	--
SSgA Aggregate Bond Index	-0.3	2.5	2.2
<i>Barclays Aggregate Index</i>	-0.3	2.5	2.2
Loomis Sayles	8.1	3.7	6.7
<i>Performance Benchmark</i>	4.0	3.3	3.9
Putnam	7.9	1.1	2.5
<i>LIBOR</i>	0.8	0.5	0.4
Wellington Global Total Return	-0.7	0.4	--
<i>BofA Merrill Lynch 3-Month U.S. T-Bill</i>	0.5	0.2	--

## ALTERNATIVES

The table that follows details the rates of return for the System's investment managers over various time periods ending June 30, 2017.

	1-Year	3-Years	5-Years
<b>Opportunistic/Alternatives</b>			
Anchorage	5.9	1.9	8.4
York	14.3	-2.6	6.2
<i>Credit Suisse Event Driven</i>	9.3	-1.4	4.6
Capula	7.8	7.6	6.9
Graham	-3.2	5.9	5.3
Brevan Howard	0.3	1.3	--
<i>HFRI Macro (Total) Index</i>	-2.4	1.2	1.0
Circumference Group Core Value	14.0	--	--
<i>Russell 2000 Index</i>	24.6	--	--
Aelous Keystone Fund	11.2	--	--
Nephila Rubik Holdings	2.2	--	--
<i>Citigroup 3 Month T-Bill</i>	0.5	--	--

Note: Parametric was funded during the past year and does not yet have a full year worth of return history.

## Schedule of Investment Results (Continued)

### REAL ASSETS

The table that follows details the rates of return for the System's investment managers for the period ending June 30, 2017.

Real Estate Manager	Since-Inception IRR*	Inception Date
<b>Core &amp; Open End Funds</b>		
Arkansas Investments	9.8%	12/31/2007
JP Morgan Strategic Property Fund	7.0%	2/5/2007
JP Morgan Special Situation Property Fund	3.0%	2/5/2007
Prudential PRISA	6.4%	6/30/2005
UBS Trumbull Property Fund	6.2%	3/31/2006
<b>Closed End Funds</b>		
Almanac Realty Securities Fund V, L.P.	11.6%	5/12/2008
Almanac Realty Securities Fund VI, L.P.	16.4%	11/20/2012
Almanac Realty Securities Fund VII, L.P.	11.7%	4/24/2015
CBRE Strategic Partners U.S. Value 8, L.P.	-1.6%	9/30/2016
Fidelity Real Estate Growth Fund III	7.3%	1/16/2008
Harbert European Real Estate Fund IV	4.9%	6/30/2016
LaSalle Income & Growth Fund VI	14.0%	7/16/2013
LaSalle Income & Growth Fund VII	N/A	6/30/2017
Long Wharf Real Estate Partners V	-0.0%	11/20/2015
New Boston Real Estate Investment Fund VII	-2.1%	10/9/2008
Rockwood Capital Real Estate Partners Fund IX, L.P.	15.0%	12/27/2012
Westbrook Real Estate Fund X, L.P.	6.9%	7/18/2016
Blackstone Real Estate Partners VII, L.P.	18.0%	2/6/2012
Carlyle Realty Partners VII, L.P.	10.8%	7/15/2014
CB Richard Ellis Strategic Partners U.S. Opportunity Fund V, L.P.	5.0%	8/13/2008
Cerberus Institutional Real Estate Partners III, L.P.	11.2%	10/3/2013
DLJ Real Estate Capital Partners II, L.P.	19.1%	9/24/1999
Doughty Hanson & Co. European Real Estate Limited Partnership Number One	28.5%	7/29/1999
Heitman European Property Partners IV	-1.2%	12/15/2008
Landmark Real Estate Partners VI, L.P.	20.7%	5/19/2010
LaSalle Asia Opportunity Fund IV	43.6%	7/22/2014
LaSalle Asia Opportunity Fund V	2.9%	9/30/2017
Lone Star Real Estate Fund IV, L.P.	18.6%	10/1/2015
Metropolitan Real Estate Partners Co-Investments	7.7%	12/30/2015
O'Connor North American Property Partners II	-1.6%	4/10/2008
Olympus Real Estate Fund III, L.P.	-3.6%	8/15/2000

\*N/A: Not applicable - no capital drawdowns through June 30, 2016.



## Schedule of Investment Results (Continued)

### REAL ASSETS

Real Estate Manager	Since-Inception IRR*	Inception Date
<b>Closed End Funds (continued)</b>		
Torchlight Debt Opportunity Fund II	-2.2%	11/2/2007
Torchlight Debt Opportunity Fund III	13.7%	12/12/2008
Torchlight Debt Opportunity Fund IV	10.2%	7/19/2013
Torchlight Debt Opportunity Fund V	13.8%	6/29/2015
Westbrook Real Estate Fund II, L.P.	13.4%	5/28/1997
Westbrook Real Estate Fund III, L.P.	8.8%	9/1/1998
Westbrook Real Estate Fund IV, L.P.	20.7%	12/31/2000
Westbrook Real Estate Fund IX, L.P.	11.9%	6/11/2013
Westbrook SHP, LLC (Sunstone Hotel Investors, LLC)	2.5%	11/15/1999
<b>Total Real Estate</b>	<b>8.2%</b>	<b>5/28/1997</b>

Timber & Agriculture	Since-Inception IRR	Inception Date
BTG Timber Separate Account	5.3%	2/18/1998
HFMS Farmland Separate Account	6.9%	4/22/2011
UBS Agrivest Core Farmland Fund	5.6%	4/1/2015

Infrastructure	Since-Inception IRR	Inception Date
Antin Infrastructure Partners II, L.P.	4.1%	7/3/2014
First Reserve Energy Infrastructure Fund II, L.P.	56.8%	12/23/2014
Global Infrastructure Partners III, L.P.	-0.1%	5/18/2016
KKR Global Infrastructure Investors II, L.P.	11.2%	12/18/2014
Macquarie Infrastructure Partners III, L.P.	9.2%	2/13/2015

## PRIVATE EQUITY

The table that follows details the rates of return for the System's investment managers for the period ending June 30, 2017.

	Inception Date	Annualized Internal Rate of Return*
<b>Individual Partnerships</b>		
Audax Mezzanine III	5/10/2010	9.7%
Blackstone Mezzanine I	12/22/1999	10.2%
DLJ Investment Partners II	11/10/1999	10.4%
Insight Mezzanine I	7/13/2009	7.0%

## Schedule of Investment Results (Continued)

### PRIVATE EQUITY

	Inception Date	Annualized Internal Rate of Return*
<b>Private Equity</b>		
21st Century Group I	4/6/2000	-3.8%
Advent GPE VI-A	3/12/2008	17.9%
Altaris Constellation	7/20/2016	NMF
Altaris IV	6/30/2017	NMF
Altus Capital II	6/3/2011	10.7%
American Industrial VI	9/30/2015	NMF
Arlington IV	7/29/2016	NMF
Altas Capital II	12/13/2013	21.0%
ATRS/FP Private Equity Fund	4/1/2012	12.0%
Big River - Equity	6/27/2014	9.4%
Big River - Funding	1/31/2017	NMF
Big River - Mezzanine	6/27/2014	10.9%
Big River - Senior Secured Debt	6/27/2014	8.3%
Bison V	6/30/2016	NMF
Blue Oak Arkansas	3/26/2014	1.0%
Boston Ventures VII	12/14/2007	7.6%
BV IX	4/7/2017	NMF
BV VIII	8/15/2014	89.4%
Castlelake II	5/4/2012	9.8%
Castlelake III	2/28/2014	12.5%
Court Square III	7/17/2012	11.1%
CSFB-ATRS 2005-1 Series	5/1/2005	7.2%
CSFB-ATRS 2006-1 Series	8/1/2006	10.1%
Cypress MBP II	6/18/1999	-0.5%
DH Tech I	1/12/2000	-25.1%
Diamond State	4/15/2000	5.5%
Diamond State II	1/4/2007	11.7%
DLJ MBP III	7/19/2000	19.4%
Doughty Hanson III	10/20/1997	13.5%
DW Healthcare III	12/21/2011	15.6%
DW Healthcare IV	12/21/2015	NMF
EnCap IX	12/19/2012	16.7%
EnCap VIII	1/31/2011	-3.4%
EnCap X	4/7/2015	17.5%
EnCap XI	3/6/2017	NMF
FP Intl 2011	2/16/2011	7.7%

\*2016 through 2017 vintage year funds' performance is deemed not meaningful (NMF).

## Schedule of Investment Results (Continued)

### PRIVATE EQUITY

Private Equity (continued)	Inception Date	Annualized Internal Rate of Return*
FP Intl 2012	1/31/2012	9.4%
FP Intl 2013	2/7/2013	8.2%
FP Intl 2014	1/23/2014	30.5%
FP Intl 2015	1/23/2015	-16.9%
FP Intl 2016	1/21/2016	NMF
FP Intl 2017	3/1/2017	NMF
FP Venture 2008	1/18/2008	16.7%
FP Venture 2009	1/16/2009	18.9%
FP Venture 2010	1/29/2010	13.6%
FP Venture 2011	2/16/2011	31.0%
FP Venture 2012	1/31/2012	23.5%
FP Venture 2013	2/7/2013	18.9%
FP Venture 2014	1/23/2014	11.0%
FP Venture 2015	1/23/2015	0.8%
FP Venture 2016	1/21/2016	NMF
FP Venture 2017	3/1/2017	NMF
Greyrock IV	12/30/2016	NMF
Highland LLC	7/28/2016	NMF
HMTF III	3/4/1997	1.8%
HMTF IV	6/18/1998	-6.1%
HMTF V	11/28/2000	17.6%
Insight Equity II	7/13/2009	12.6%
JF Lehman III	8/8/2011	12.0%
JF Lehman IV	10/23/2015	NMF
KPS III Supplemental	8/14/2009	21.1%
KPS IV	4/12/2013	29.3%
Levine Leichtman V	4/30/2013	10.5%
Lime Rock III	7/16/2013	1.5%
LLR III	5/9/2008	13.1%
Mason Wells III	5/13/2010	12.2%
NGP IX	2/27/2008	10.5%
NGP X	4/20/2012	4.8%
NGP XI	9/30/2014	30.5%
Oak Hill I	4/1/1999	10.6%
One Rock II	3/31/2017	NMF
PineBridge Structured Capital III	12/31/2015	NMF

\*2016 through 2017 vintage year funds' performance is deemed not meaningful (NMF).



## Schedule of Investment Results (Continued) PRIVATE EQUITY

	Inception Date	Annualized Internal Rate of Return*
<b>Private Equity (continued)</b>		
Riverside IV	12/4/2009	20.4%
Riverside V	5/11/2012	-1.4%
Second Cinven	4/30/1998	9.3%
Siris III	12/11/2014	0.0%
Sycamore Partners II	4/7/2014	3.3%
TA XI	4/30/2009	20.2%
Tennenbaum VI	2/15/2011	9.3%
Thoma Bravo Discover	1/29/2016	NMF
Thoma Bravo XI	5/1/2014	13.8%
Thoma Bravo XII	4/27/2016	NMF
Vista Equity III	7/11/2008	29.5%
Vista Foundation II	10/31/2013	8.6%
Vista Foundation III	5/19/2016	NMF
Wellspring V	7/28/2010	19.2%
Wicks IV	4/29/2011	10.9%

\*2016 through 2017 vintage year funds' performance is deemed not meaningful (NMF).

## DESCRIPTION OF BENCHMARKS

**Total Fund** - The Performance Benchmark for the Total Fund reflects a weighted average of the underlying asset class benchmarks, weighted as follows: Opportunistic/Alternatives and Real Assets at the weight of the previous month's ending market values, Fixed Income and Private Equity at their long-term Policy Targets of 20% and 10%, respectively, and Total Equity at its long-term Policy Target of 50% plus the balance of the unfunded or uncommitted assets of the Opportunistic/ Alternatives and Real Assets categories. From October 2007 to July 2013, the Performance Benchmark was the performance of the asset class benchmarks as a weighted average of the previous month's ending market values. The historical components of the benchmark are shown in the table below. Returns prior to September 30, 1996, consist of the actual allocations to the seven different asset classes included in the ATRS portfolio over time. The historical benchmarks used for each asset class are noted in the table on the next page.



Date	DJ U.S. Total Stock Market Index	Russell 3000 Index	MSCI ACW ex-U.S. Index	MSCI ACWI	Barclays U.S. Universal Bond Index	Barclays Aggregate Bond Index	Alternative Policy <sup>1</sup>
3/31/2004 to 9/30/2007	40.0%	-	17.5%	-	25.0%	-	17.5%
7/31/2003 to 2/29/2004	40.0%	-	17.5%	-	-	25.0%	17.5%
10/31/2001 to 6/30/2003	-	40.0%	17.5%	-	-	25.0%	17.5%
8/31/1998 to 9/30/2001	-	40.0%	17.0%	-	-	28.0%	15.0%
10/31/1996 to 7/31/1998	-	40.0%	20.0%	-	-	28.0%	12.0%

<sup>1</sup>Currently, the benchmarks for Real Assets and Opportunistic/Alternatives are included in the Total Fund Performance Benchmark at their actual beginning quarter weights. Prior to October 1, 2007, private equity, real estate, and other alternatives (timber) were grouped together in one "Alternatives Asset Class." The Alternative Policy for this asset class was comprised of the weighted average of the Real Estate, Private Equity, and Other Alternatives policy benchmarks. Prior to July 31, 2003, the alternative benchmark consisted of 57.0% of the Russell 3000 + a 2% Premium per year, 8.5% of the NCREIF South Timberland Index, 28.5% of the Real Estate Index, 6% of the EnnisKnupp STIF Index. After this date, real estate and private equity benchmarks started to report on a one-quarter lag to align with the returns of their asset classes.

**Total Equity** - A weighted average of the Dow Jones U.S. Total Stock Market Index and the MSCI All Country World IMI Index based on weights of the underlying investment manager allocations. As of December 31, 2016, the Total Equity Performance Benchmark was comprised of 35.6% DJ U.S. Total Stock Market Index and 64.4% MSCI ACWI IMI.

**Total Fixed Income** - The Barclays U.S. Universal Bond Index as of March 1, 2004.

**Total Opportunistic/Alternatives** - A custom benchmark consisting of 37% HFRI Macro Index, 25% DJ/CS Event-Driven Index, 5% Russell 2000 Index, and 33% Citigroup 3 Month T-bill. Prior to May 2016, it consisted of 45% HFRI Macro Index, 30% DJ/CS Event-Driven Index, 5% Russell 2000 Index, and 20% Citigroup 3 Month T-bill. Prior to March 2016, it consisted of 56% HFRI Macro Index, 38% DJ/CS Event-Driven Index, and 6% Russell 2000 Index. Prior to July 2015 it consisted of 60% HFRI Macro Index and 40% DJ/CS Event-Driven Index. Prior to July 2013, it was a composite of 25% DJ/CS Event-Driven Index, 25% HFR Macro Index, and 50% South Timberland NCREIF Index.

**Total Real Assets** - A custom benchmark consisting of a weighted average of the net asset values at previous month's end of the subcategories' benchmarks, defined as Real Estate Benchmark, Timber Benchmark, Agriculture Benchmark and Infrastructure Benchmark.

**Real Estate** - NFI-ODCE - NCREIF Fund Index Open-end Diversified Core Equity Index.

**Timber Benchmark** - NCREIF Timberland Property Index (NTPI) weighted according to ATRS' regional exposure based on net asset value.

**Agriculture Benchmark** - NCREIF Farmland Index (NFI) weighted according to ATRS' regional and crop type exposure based on net asset value.

**Infrastructure Benchmark** - Consumer Price Index (CPI) plus 500 basis points annually.

**Total Private Equity** - The Dow Jones U.S. Total Stock Market Index + a 2% premium per year.

## DESCRIPTION OF BENCHMARKS (Continued)

**Cash Equivalents** - The Citigroup 90 day T-bill.

**Allianz Performance Benchmark** - On January 1, 2005, the benchmark for the portfolio was changed to the Merrill Lynch Convertible Bond (All Quality) Index. Prior to January 1, 2005, the performance benchmark for the Allianz (previously Nicholas Applegate) portfolio was the CSFB Convertible Securities Index. Prior to May 1, 2004, the performance benchmark consisted of 90% CSFB Convertible Securities Index and 10% Salomon High Yield Index.

**BlackRock Performance Benchmark** - The Barclays U.S. Universal Bond Index as of March 1, 2004. Previously it was the Barclays Aggregate Bond Index.

**Jacobs Levy Performance Benchmark** - On January 1, 2008, the benchmark for the portfolio was changed to the Russell 3000 Index. Prior to January 1, 2008, the portfolio benchmark was the Russell 1000 Growth Index.

**Loomis Sayles Performance Benchmark** - An Index that splices 65% of the Barclays Capital Government/Credit Index and 35% Barclays Capital High Yield Index.

**PIMCO Performance Benchmark** - The Barclays U.S. Universal Bond Index as of March 1, 2004. Previously it was the Barclays Capital Aggregate Bond Index.

**Wellington Global Performance Benchmark** - As of July 1, 2012 the benchmark was changed to MSCI All Country World Small Cap Index. Prior to July 1, 2012, the benchmark was MSCI All Country World Small/Mid Cap Index.

**Barclays Aggregate Bond Index** - A market-value weighted index consisting of the Barclays Corporate, Government and Mortgage-Backed Securities Indices. The Index also includes credit card-, auto- and home equity loan-backed securities, and is the broadest available measure of the aggregate U.S. fixed income market.

**Barclays Government/Credit Index** - The Barclays Government/Credit Index measures the investment return of all medium and larger public issues of U.S. Treasury, agency, investment-grade corporate, and investment-grade international dollar-denominated bonds.

**Barclays High Yield Index** - The Barclays High Yield Index covers the universe of fixed rate, non-investment grade debt. Pay-in-kind (PIK) bonds, Eurobonds, and debt issues from countries designated as emerging markets (e.g., Argentina, Brazil, Venezuela, etc.) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included.

**Barclays U.S. Universal Bond Index** - A market-value weighted index consisting of the components of the Barclays Aggregate Bond Index, plus EuroDollar bonds, emerging markets bonds, 144A fixed income securities, and U.S. corporate high yield securities.

**Citigroup 90 day T-bill Index** - Treasury bill rates of return, as reported by Citigroup (Salomon Smith Barney), for bills with a maximum time remaining to maturity of 90 days.

**DJ/CS Event-Driven Index** - Event driven funds typically invest in various asset classes and seek to profit from potential mispricing of securities related to a specific corporate or market event. Such events can include: mergers, bankruptcies, financial or operational stress, restructurings, asset sales, recapitalizations, spin-offs, litigation, regulatory and legislative changes as well as other types of corporate events. Event driven funds can invest in equities, fixed income instruments (investment grade, high yield, bank debt, convertible debt and distressed), options and various other derivatives. Many event driven fund managers use a combination of strategies and adjust exposures based on the opportunity sets in each subsector.

**Dow Jones U.S. Total Stock Market Index** - A capitalization-weighted stock index representing all U.S. common stocks traded regularly on the organized exchanges. The Index is the broadest measure of the aggregate U.S. stock market.

**FTSE Europe** - A tradable index, designed to represent the performance of the 100 most highly capitalized blue chip companies in Europe.

**HFR Macro Index** - An index representing investment managers which trade a broad range of strategies in which the investment process is predicated on movements in underlying economic variables and the impact these have on equity, fixed income, hard currency and commodity markets.

**HFR Distressed/Restructuring Index** - An index representing distressed restructuring strategies which employ an investment process focused on corporate fixed income instruments, primarily on corporate credit instruments of companies trading at significant discounts to their value at issuance or obliged (par value) at maturity as a result of either formal bankruptcy proceeding or financial market perception of near term proceedings.

**LIBOR Index** - London Interbank Offered Rate. A filtered average of the world's most creditworthy banks' interbank deposit rates with maturities between overnight and one full year.

**Merrill Lynch Convertible Bond (All Quality) Index** - The Merrill Lynch All Convertibles All Qualities Index is a widely used index that measures convertible securities' performance. It measures the performance of U.S. dollar-denominated convertible securities not currently in bankruptcy with a total market value greater than \$50 million at issuance.

**MSCI All Country World Index** - A capitalization-weighted index of stocks representing 46 developed and emerging country markets.

**MSCI Europe, Australasia, Far East (EAFE) Non-U.S. Stock Index** - A capitalization-weighted index of stocks representing 23 developed and emerging country markets in Europe, Australia, Asia and the Far East.

**MSCI World Index** - A capitalization-weighted index of stocks representing 23 developed stock markets in Europe, Asia and Canada.

**NFI-ODCE Index** - NCREIF Fund Index Open-end Diversified Core Equity Index is an index of investment returns reporting on both a historical and current basis the results of 33 open-end commingled funds pursuing a core investment strategy; underlying funds are leveraged with gross and net returns available.

**Russell 3000 Index** - An index that measures the performance of the 3000 stocks that make up the Russell 1000 and Russell 2000 Indices.

**Russell 1000 Index** - An index that measures the performance of the largest 1,000 stocks contained in the Russell 3000 Index.

**Russell 1000 Value Index** - An index that measures the performance of those Russell 1000 companies with lower price-to-book ratios and lower I/B/E/S growth forecasts.

**Russell 2000 Index** - An index that measures the performance of the smallest 2000 companies contained in the Russell 3000 Index.

**Russell 2000 Growth Index** - An index that measures the performance of those Russell 2000 companies with greater price-to-book ratios and greater I/B/E/S growth forecasts.

**Russell 2000 Value Index** - An index that measures the performance of those Russell 2000 companies with lower price-to-book ratios and lower I/B/E/S growth forecasts.

**S&P 500 Stock Index** - A capitalization-weighted stock index consisting of the 500 largest publicly traded U.S. stocks.



**South Timberland Index** - The largest regional subindex of the NCREIF Timberland Index, consisting of timberland properties held in the U.S. South. This includes close to 300 properties with more than 10 million cumulative acres of timberland in the following states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. Calculations are based on quarterly returns at the individual property level. Performance is reported on an all-cash, unlevered basis, gross of investment management fees.

## DESCRIPTION OF UNIVERSES

**Total Fund** - The Total Fund and its benchmark are ranked in our Public Fund Universe. The universe is calculated based on data provided by BNY Mellon Performance & Risk Analytics, LLC, and includes roughly 85 public pension plans each with assets greater than \$1 billion.

**Total Equity** - The total equity component and its benchmark are ranked in our global equity component universe. The universe is calculated based on data provided by BNY Mellon Performance & Risk Analytics, LLC, and includes more than 450 global equity portfolios.

**Total Fixed Income** - The total fixed income component and its benchmark are ranked in our fixed income component universe. The universe is calculated based on data provided by BNY Mellon Performance & Risk Analytics, LLC, and includes the fixed income asset class returns of approximately 50 public pension plans each with assets greater than \$1 billion.

## TOP TEN LARGEST HOLDINGS

(By Market Value)

As of June 30, 2017

### Fixed Income

Security Name			Market Value
US TREASURY N/B	1.25%	6/30/2019	10,955,010.95
DISH NETWORK CORP	3.375%	8/15/2026	9,415,062.50
MICROCHIP TECHNOLOGY INC	1.625%	2/15/2027	8,925,112.50
ANTHEM INC	2.75%	10/15/2042	8,641,238.65
INTEL CORP	3.25%	8/1/2039	8,485,587.50
MICRON TECHNOLOGY INC	3%	11/15/2043	7,953,750.00
VERISIGN INC	4.451%	8/15/2037	7,132,950.00
PRICELINE GROUP INC/THE	0.35%	6/15/2020	6,925,156.25
LAM RESEARCH CORP	1.25%	5/15/2018	6,896,231.25
SALESFORCE.COM INC	0.25%	4/1/2018	6,070,275.00



## TOP TEN LARGEST HOLDINGS

(By Market Value)

As of June 30, 2017

### Domestic/Global Equities

Security Name	Market Value
PERSHING SQUARE HOLDINGS LTD/F	107,116,395.00
NASPERS LTD N SHS	31,116,886.09
INVESTOR AB B SHS	29,210,935.97
TEMPLETON EMERGING MARKETS INV	28,503,662.27
CREDIT SUISSE GROUP AG REG	23,266,245.71
ADAMS DIVERSIFIED EQUITY FUND	22,680,830.78
APPLE INC	22,003,087.56
EURAZEO SA	21,767,150.24
GENERAL AMERICAN INVESTORS CO	21,724,863.60
BNP PARIBAS	21,346,770.53

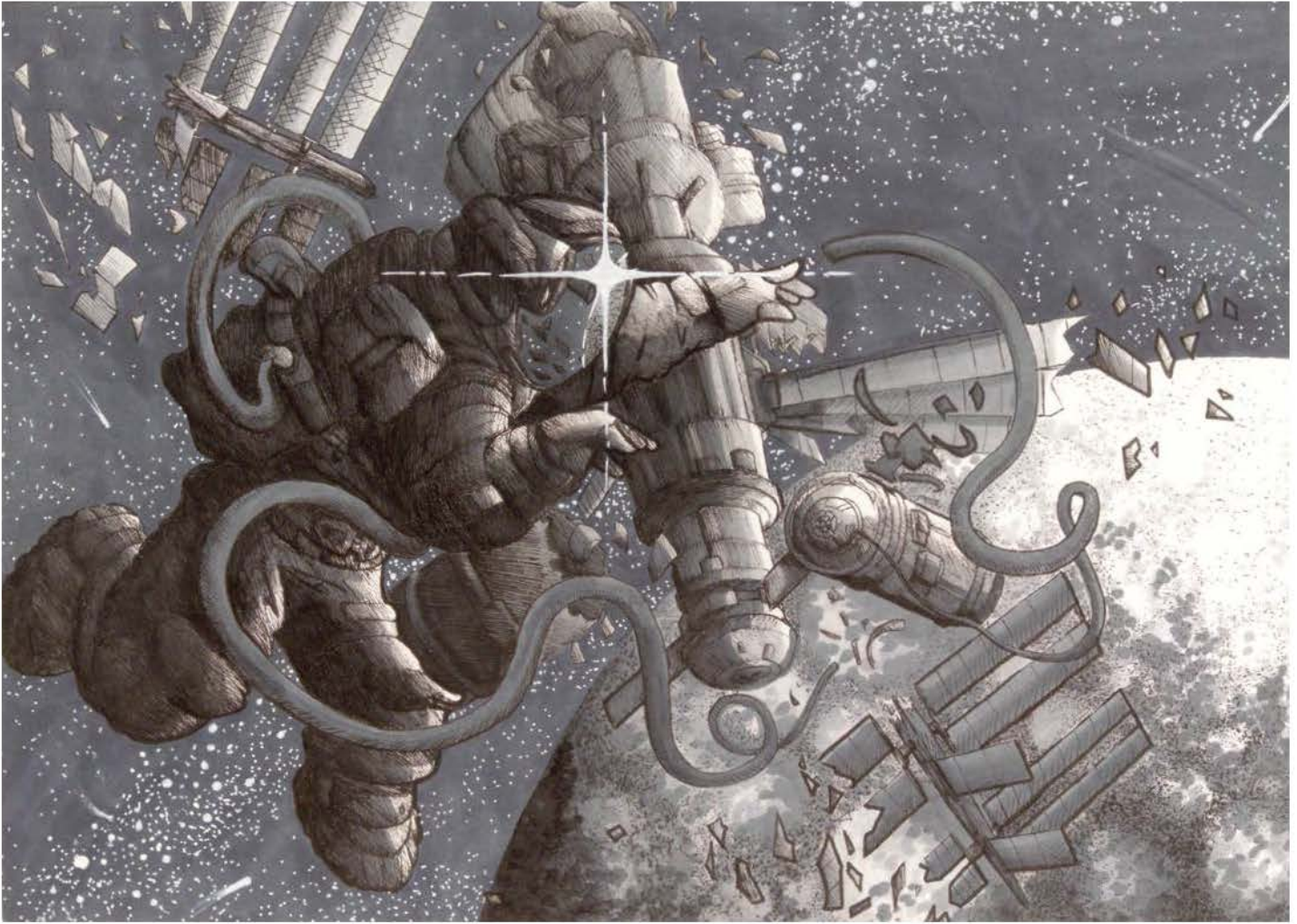
## TOP TEN LARGEST HOLDINGS

(By Market Value)

As of June 30, 2017

### Arkansas Related

Security Name	Market Value
TIMBERLAND I	280,766,872
BIG RIVER STEEL	206,880,744
AMERICAN CENTER 1 & 2 (PARTNERSHIP)	70,178,093
THE VICTORY BUILDING	32,690,557
BLUE OAK RECYCLING	16,759,833
ARKANSAS INSURANCE DEPARTMENT BUILDING	7,000,000
ROSE LAW FIRM	4,709,175
ARKANSAS TEACHER RETIREMENT BUILDING	4,632,777
RETIREMENT VILLAGE PROPERTY	4,300,000
WEST MEMPHIS DHS BUILDING	2,358,000
	<u>630,276,050</u>



*ACTUARIAL*

**AR TRS**  
Arkansas Teacher Retirement System





## Actuary's Certification Letter



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January 25, 2018

Board of Trustees  
Arkansas Teacher Retirement System  
1400 West Third Street  
Little Rock, Arkansas 72201

Dear Board Members:

The basic funding objective of the Arkansas Teacher Retirement System (ATRS) is to establish and receive contributions which:

- When expressed in terms of the percentage of active member payroll, will remain approximately level from generation to generation; and
- When combined with present assets and future investment return, will be sufficient to meet the financial obligations of ATRS to present and future retirees and beneficiaries.

The progress being made toward the realization of the financing objectives of the System through June 30, 2017 is illustrated in the attached Exhibits 1 and 2. Actuarial funding valuations are performed each year and the most recent funding valuations were completed based upon census data, asset data, and plan provisions as of June 30, 2017. In addition to the funding valuation reports, the actuary produces separate financial reporting valuation reports that provide information in accordance with Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68.

The System's administrative staff provides the actuary with data for the actuarial valuations. The actuary relies on the census data after reviewing it for internal and year-to-year consistency. Member data was not audited by the actuary. The actuary summarizes and tabulates population data in order to analyze longer term trends. Asset information was accepted without audit. We are not responsible for the accuracy or completeness of any data provided by ATRS.

The figures disclosed in the Supplementary Schedules to the Financial Section were provided by Gabriel, Roeder, Smith & Company, as were the Notes to Trend Data. In addition, Gabriel, Roeder, Smith & Company was responsible for the following schedules found in the Actuarial Section:

Computed Actuarial Liabilities	Assumed Duration in T-DROP for Members
Determination of Amortization Period as of June 30, 2017	Teachers Separations and Individual Pay Increases
Active Members in Valuation Data	Support Employees Separations and Individual Pay Increases
Retirees and Beneficiaries Added to and Removed from Rolls	Actuarial Gain (Loss) by Risk Area
Short Condition Test	Comments
Summary of Actuarial Assumptions and Methods	Schedule of Retired Members by Benefit Type
Single Life Retirement Values	Schedule of Average Benefit Payments
Probabilities of Retirement for Members	

Assets are valued on a market related basis that recognizes each year's difference between actual and assumed investment return over a closed four-year period.

Actuarial valuations are based upon assumptions regarding future activity in specific risk areas including the rates of investment return and payroll growth, eligibility for the various classes of benefits, and longevity among retired lives. The Board adopts these assumptions after considering the advice of the actuary and other professionals. The assumptions and methods used for funding purposes meet the



parameters set by the Actuarial Standards of Practice. Each actuarial valuation takes into account all prior differences between actual and assumed experience in each risk area. The June 30, 2017 valuations were based upon assumptions that were recommended in connection with a study of experience covering the 2010-2015 period.

The Arkansas Teacher Retirement System remains stable with a 79.5% funded position (based on the actuarial value of assets) and 80.2% funded position based upon the market value of assets as of June 30, 2017. The amortization period as of June 30, 2017 is 29 years. Unless there are investment gains in 2018, the amortization period is likely to increase over the next few years due to the scheduled phase-in of prior investment losses.

**Based upon the results of the June 30, 2017 valuations, we are pleased to report to the Board of Trustees that the Arkansas Teacher Retirement System is meeting its basic financial objective of level percent-of- payroll financing.**

Readers desiring a more complete understanding of the actuarial condition of ATRS are encouraged to obtain and read the complete actuarial valuation reports. The complete reports also contain certain very important disclosures mandated by Actuarial Standards of Practice. The material in the Actuarial Section and Financial Sections of this CAFR contains some, but not all of, the information in the actuarial reports.

Future actuarial measurements may differ significantly from the current measurements presented in this information due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law. This information does not contain an analysis of the potential range of such future measurements.

This information has been prepared by actuaries who have substantial experience valuing public employee retirement systems. Judith A. Kermans, Brian B. Murphy, and Heidi G. Barry are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,

Judith A. Kermans, EA, FCA, MAAA

Brian B. Murphy, FSA, EA, FCA, MAAA

Heidi G. Barry, ASA, FCA, MAAA

JAK/BBM/HGB:sc

## EXHIBIT 1 COMPUTED ACTUARIAL LIABILITIES

AS OF JUNE 30, 2017

Actuarial Present Value of	(1) Total Present Value	Entry Age Actuarial Cost Method	
		(2) Portion Covered by Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1)-(2)
Age and service retirement allowances based on total service likely to be rendered by present active members.	\$ 8,035,249,926	\$ 2,182,371,955	\$ 5,852,877,971
Age and service retirement allowances based on total service likely to be rendered by present T-DROP members.	2,214,644,163	31,602,868	2,183,041,295
Vested Deferred Benefits likely to be paid present active and inactive members.	1,156,454,706	343,142,634	813,312,072
Survivor benefits expected to be paid on behalf of present active members.	212,276,017	79,246,103	133,029,914
Disability Benefits expected to be paid on behalf of present active members.	207,864,749	102,992,128	104,872,621
Refunds of Member contributions expected to be paid on behalf of present active members.	19,199,225	145,112,904	(125,913,679)
Benefits payable to present retirees and beneficiaries.	11,337,222,705	0	11,337,222,705
<b>Total</b>	<b>\$ 23,182,911,491</b>	<b>\$ 2,884,468,592</b>	<b>\$20,298,442,899</b>
Applicable Assets	16,131,466,927	0	16,131,466,927
<b>Liabilities to be Covered by Future Contributions</b>	<b>\$ 7,051,444,564</b>	<b>\$ 2,884,468,592</b>	<b>\$ 4,166,975,972</b>

## EXHIBIT 2 DETERMINATION OF AMORTIZATION PERIOD

AS OF JUNE 30, 2017 AND JUNE 30, 2016

Computed Contributions for	Percents of Active Member Payroll			
	June 30, 2017			June 30, 2016
	Teachers	Support	Combined	Combined
<b>Normal Cost</b>				
Age & Service Annuities	10.37%	6.85%	<b>9.29%</b>	8.90%
Deferred Annuities	1.18%	2.07%	<b>1.45%</b>	1.77%
Survivor Benefits	0.36%	0.27%	<b>0.33%</b>	0.18%
Disability Benefits	0.48%	0.37%	<b>0.45%</b>	0.46%
Refunds of Member Contributions	0.46%	1.10%	<b>0.66%</b>	0.52%
<b>Total</b>	12.85%	10.66%	<b>12.18%</b>	11.83%
Average Member Contributions	6.41%	4.90%	<b>5.94%</b>	5.05%
Net Employer Normal Cost	6.44%	5.76%	<b>6.24%</b>	6.78%
Unfunded Actuarial Accrued Liabilities			<b>8.76%</b>	7.22%
<b>Employer Contribution Rate</b>			<b>15.00%</b>	14.00%
<b>Amortization Years</b>			<b>29</b>	29

The calculated amortization period of 29 years is based on anticipated increases in the employer and member contribution rates. The current employer and member contribution rates are 14% and 6%, respectively. The employer and member rates are scheduled to increase by 0.25% increments beginning in Fiscal Year 2020 and ending in Fiscal Year 2023. The ultimate employer and member contribution rates will be 15% and 7%, respectively.

The amortization period is the number of years it will take to pay off the unfunded liability of \$4.2 billion assuming that the employer contribution rate increases to 15% according to the schedule described above. Since 2000, the period has varied from a low of 19 years to a high of over 100 years. Unless there is an investment gain in FY 2018, the amortization period is likely to increase in the next valuation.



## SCHEDULE OF ACTIVE MEMBER VALUATION DATA

Valuation Date June 30,	Active Members in Valuation*		Average Annual Pay	
	Number	Annual Payroll (Millions)	Amount	% Change
2017	72,148	\$2,814	\$38,997	1.1%
2016	72,232	\$2,785	\$38,557	1.2%
2015	72,919	\$2,777	\$38,088	2.7%
2014	74,352	\$2,758	\$37,092	1.9%
2013	74,925	\$2,727	\$36,400	0.0%
2012	75,627	\$2,714	\$35,891	1.0%
2011	76,780	\$2,728	\$35,534	7.7%
2010	72,208	\$2,381	\$32,980	0.5%
2009	70,655	\$2,318	\$32,804	1.5%
2008	70,172	\$2,268	\$32,319	2.1%

\* Beginning with the June 30, 2011 valuation, active member information includes T-DROP participation.

## SCHEDULE OF RETIREES AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS

Year	Estimated Number		Total Retirees	Annual Allowances (Millions)	% Increase in Annual Allowances	Average Annual Allowances
	Added	Removed				
2017	2,996	999	45,092	\$1,044.74	6.2%	\$23,169
2016	3,272	925	43,095	\$983.87	7.3%	\$22,830
2015	3,326	1,056	40,748	\$916.62	11.5% <sup>@</sup>	\$22,495
2014	3,156	932	38,478	\$822.19	7.7%	\$21,368
2013	3,039	945	36,254	\$763.76	7.7%	\$21,067
2012	2,932	871	34,160	\$709.17	7.9%	\$20,760
2011	2,394	882	32,099	\$657.08	7.2%	\$20,470
2010	2,588	819	30,587	\$612.77	8.5%	\$20,034
2009	2,721	704	28,818	\$564.59	9.5%	\$19,591
2008	1,703	513	26,801	\$515.56	6.4%	\$19,237

@ Increased percent due to T-DROP annuities included in 2015.

T-DROP participants are classified as active members for purposes of the valuation and are not included in this schedule.





## SHORT CONDITION TEST

ATRS' funding objective is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percent of member payroll. If the contributions to the System are level in concept and soundly executed, the System will **pay all promised benefits when due - the ultimate test of financial soundness**. Testing for level contribution rates is the long-term test.

A **short condition test** is one means of checking a system's progress under its funding program. In a short condition test, the plan's present assets (cash and investments) are compared with: 1) Member contributions on deposit; 2) The liabilities for future benefits to present retired lives; 3) The liabilities for service already rendered by members. In a system that has been following the discipline of level percent-of-payroll financing, the liabilities for member contributions on deposit (liability 1) and the liabilities for future benefits to present retired lives (liability 2) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by members (liability 3) will be partially covered by the remainder of present assets. The larger the funded portion of liability 3, the stronger the condition of the system. Liability 3 being fully funded is unusual.

The schedule below illustrates the history of liability 3 of the System and is indicative of the ATRS objective of following the discipline of level percent-of-payroll financing.

Val. Date June 30,	(1) Member Contrib.	(2) Retirees and Benef.	(3) Active and Inactive Members (Employer Financed Portion)	Present Valuation Assets	Portion of Present Values Covered by Present Assets			
					(1)	(2)	(3)	Total
\$ Millions								
2017**	\$1,254	\$11,337	\$7,707	\$16,131	100%	100%	46%	79%
2016	1,184	10,430	7,198	15,239	100%	100%	50%	81%
2015	1,128	9,778	7,230	14,434	100%	100%	49%	80%
2014	1,077	8,777	7,456	13,375	100%	100%	47%	77%
2013#	1,027	8,181	7,514	12,247	100%	100%	40%	73%
2012	981	7,649	7,509	11,484	100%	100%	38%	71%
2011*#	929	7,132	7,460	11,146	100%	100%	41%	72%
2010#	848	6,516	7,333	10,845	100%	100%	47%	74%
2009	790	6,041	7,188	10,617	100%	100%	53%	76%
2008#	732	5,544	7,058	11,319	100%	100%	71%	85%

\* Revised actuarial assumptions or methods.

# Legislated benefit or contribution rate change.



## SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

An actuarial valuation is based upon an actuarial cost method, an asset valuation method, and actuarial assumptions. These methods and assumptions are chosen by the Board of Trustees after consultation with the Actuary and other advisors.

The actuarial cost method is called the Entry Age Actuarial Cost Method. This method is consistent with the Board's level percent-of-payroll funding objective. With this method, the level percent-of-payroll is determined that will fund a member's retirement benefit over the member's entire working lifetime, from date of hire (Entry Age) to date of exit from the active member population. Differences in the past between assumed and actual experience become part of unfunded actuarial accrued liabilities and are amortized with level percent-of-payroll contributions. This cost method was first used in the **June 30, 1986** valuation.

The asset valuation method is a four-year smoothed market value method in which assumed investment return is recognized immediately each year and differences between actual and assumed investment return are phased-in over a closed four-year period. This asset valuation method is intended to give recognition to the long-term accuracy of market values while filtering out and dampening short-term market swings. This method was first used in the **June 30, 1995** valuation. It was modified in conjunction with the 2002 valuation to include a corridor. Assets were set to market value in 2012 to reduce future volatility.

The actuarial assumptions used in producing the valuation fall into two broad classes: economic assumptions, and demographic assumptions. Economic assumptions refer to long term rates of investment return, wage growth, covered population growth, and inflation. Demographic assumptions refer to retirement rates, turnover rates, disability rates and mortality rates. The current assumptions are based upon a 2010-2015 study of experience of the Arkansas Teacher Retirement System. The assumptions are reviewed from time to time to keep them reasonably current with expected experience.

### Economic Assumptions

The **price inflation** assumption is 2.50% although no specific Price Inflation is needed for this valuation. It is assumed that the 3% COLA will always be paid.

The **wage inflation** assumption is 2.75%. This consists of 2.50% related to pure price inflation and 0.25% related to general economic improvements.

**The investment return rate** used in the valuation was 7.50% per year, compounded annually (net after administrative expenses). This rate of return is not the assumed real rate of return. The real rate of return over wage inflation in this valuation is defined to be the portion of investment return which is more than the wage inflation rate. Considering wage inflation recognition of 2.75%, the 7.50% rate translates to an assumed real rate of return over wage inflation of 4.75%. This rate was first used for the June 30, 2017 valuation. The assumed real rate of return over price inflation is 5%.

**Pay increase assumptions** for individual active members are shown in Tables IV and V. Part of the assumption for each age is for a merit and/or seniority increase, and the other 2.75% recognizes wage inflation. These rates were first used for the **June 30, 2017** valuation.

The Active Member Group size is assumed to remain at its present level.

**Total active member payroll** is assumed to increase 2.75% a year, which is the portion of the individual pay increase assumptions attributable to wage inflation. This rate was first used for the **June 30, 2017** valuation.

### Non-Economic Assumptions

**The mortality table** used were the RP-2014 Healthy Annuitant, Disabled Annuitant and Employee Mortality headcount weighted tables for males and females. Mortality rates were adjusted for future mortality improvements using projection scale MP-2017 from 2006. Related values are shown in Table I. These tables were first used for the **June 30, 2017** valuation.



A limited fluctuation credibility procedure was used to determine the appropriate scaling factor of each gender and each member classification (see the 2010-2015 Experience Study), and are shown below:

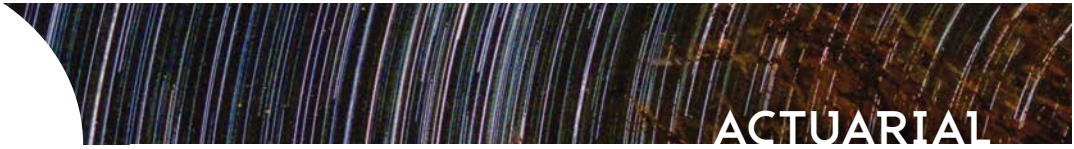
	<u>Scaling Factor</u>
Healthy Male Retirees	101%
Healthy Female Retirees	91%
Disabled Male Retirees	99%
Disabled Female Retirees	107%
Male Active Members	94%
Female Active Members	84%

**The probabilities of retirement** for members eligible to retire are shown on Tables II and III. The rates for full retirement and reduced retirement were first used in the **June 30, 2017** valuation.

**The probabilities of withdrawal** from service, **death-in-service**, and **disability** are shown for sample ages in Tables IV and V. These rates were first used in the **June 30, 2017** valuation.

**The data about persons now covered and about present assets** was furnished by the System’s administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary. Members whose dates of birth were not supplied were assumed to be 40 years old on the valuation date.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as: plan experience differing from that anticipated by the economic and demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan’s funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuary’s assignment, the actuary did not perform an analysis of the potential range of such future measurements.



**TABLE I**  
**SINGLE LIFE RETIREMENT VALUES**

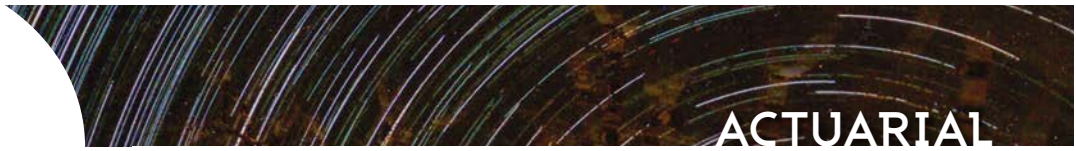
Sample Attained Ages in 2017*	Present Value of \$1.00 Monthly for Life		Present Value of \$1.00 Monthly for Life Increasing 3.0% Annually		Future Life Expectancy (Years)		Percent Dying within Next Year	
	Men	Women	Men	Women	Men	Women	Men	Women
40	\$150.63	\$154.11	\$198.39	\$204.91	42.44	46.72	0.32%	0.28%
45	146.61	151.28	190.86	199.17	37.65	41.91	0.42%	0.32%
50	141.34	147.34	181.46	191.61	32.94	37.09	0.54%	0.36%
55	134.64	141.90	170.05	181.80	28.37	32.31	0.72%	0.45%
60	126.34	134.84	156.54	169.71	23.99	27.65	0.98%	0.60%
65	116.25	125.74	140.94	154.99	19.86	23.15	1.37%	0.82%
70	103.94	114.03	122.97	137.25	15.96	18.80	1.99%	1.26%
75	89.30	99.87	102.87	117.08	12.33	14.75	3.13%	2.09%
80	73.14	83.85	81.95	95.60	9.13	11.14	5.20%	3.54%
85	56.94	67.04	62.12	74.34	6.49	8.07	8.90%	6.20%
Base	2635x1.01	2636x0.91	2635x1.01	2636x0.91				
Projection	939	940	939	940				

Sample Attained Ages	Benefit Increasing 3.0% Yearly	Portion of Age 60 Lives Still Alive	
		Men	Women
60	\$100.00	100%	100%
65	115.00	95%	97%
70	130.00	87%	92%
75	145.00	78%	86%
80	160.00	66%	77%
Ref:		2635x1.01	2636x0.91



**TABLE II**  
**PROBABILITIES OF RETIREMENT FOR MEMBERS**

Retirement Ages	% of Active Participants Retiring with Unreduced Benefits			
	Education		Support	
	Male	Female	Male	Female
48	8%	7%	8%	6%
49	8%	7%	8%	6%
50	8%	7%	8%	6%
51	8%	7%	8%	6%
52	8%	7%	8%	6%
53	8%	7%	8%	6%
54	8%	7%	8%	6%
55	8%	9%	8%	6%
56	8%	9%	8%	6%
57	8%	11%	8%	11%
58	8%	11%	8%	11%
59	17%	14%	8%	15%
60	17%	17%	13%	13%
61	24%	17%	13%	15%
62	24%	29%	28%	23%
63	27%	26%	25%	19%
64	27%	24%	25%	23%
65	54%	50%	47%	50%
66	54%	53%	47%	44%
67	54%	39%	47%	38%
68	54%	39%	47%	38%
69	54%	39%	47%	38%
70	54%	39%	47%	38%
71	54%	39%	47%	38%
72	54%	39%	47%	38%
73	54%	39%	47%	38%
74	54%	39%	47%	38%
75	100%	100%	100%	100%
Ref:	2634	2635	2636	2637



## TABLE III PROBABILITIES OF REDUCED RETIREMENT FOR MEMBERS

Retirement Ages	% of Active Participants Retiring with Reduced Benefits			
	Education		Support	
	Male	Female	Male	Female
50	1.5%	1.0%	0.5%	1.5%
51	1.5%	1.0%	1.0%	1.5%
52	1.5%	1.5%	1.5%	2.0%
53	1.5%	2.0%	2.0%	2.0%
54	2.0%	2.0%	2.5%	2.0%
55	2.5%	2.5%	3.0%	2.0%
56	3.0%	2.5%	3.5%	2.0%
57	5.0%	2.5%	4.5%	2.5%
58	5.0%	2.5%	4.5%	2.5%
59	3.5%	2.5%	4.5%	2.5%
Ref:	2640	2638	2641	2639

## DURATION OF T-DROP FOR MEMBERS

Present T-DROP members are assumed to remain in T-DROP according to the following table:

Entry Age	Assumed Duration Years
50-56	7
57	6
58	5
59+	4

## TABLE IV TEACHERS

### SEPARATIONS FROM ACTIVE EMPLOYMENT BEFORE AGE AND SERVICE RETIREMENT & INDIVIDUAL PAY INCREASES

Sample Ages in 2017	Percent of Active Members Separating within the Next Year						
	Service	Death		Disability		Other	
		Men	Women	Men	Women	Men	Women
	0					17.80%	12.60%
	1					13.10%	11.10%
	2					12.10%	10.10%
	3					8.60%	8.70%
	4					5.70%	6.50%
25	5 & Up	0.06%	0.02%	0.03%	0.03%	4.50%	5.40%
30		0.06%	0.02%	0.03%	0.03%	3.60%	4.30%
35		0.07%	0.03%	0.03%	0.04%	2.70%	2.90%
40		0.08%	0.05%	0.05%	0.09%	2.00%	2.00%
45		0.12%	0.07%	0.16%	0.19%	1.60%	1.60%
50		0.20%	0.12%	0.40%	0.43%	1.30%	1.40%
55		0.33%	0.19%	0.86%	0.73%	1.10%	1.20%
60		0.56%	0.28%	1.15%	1.00%	0.90%	1.00%
65	0.97%	0.40%	1.15%	1.00%	0.70%	0.80%	
Ref:						1029	1030
		2633x0.94	2634x0.84	747x1	748x1	1381	1382



**TABLE IV (Continued)  
TEACHERS**

**SEPARATIONS FROM ACTIVE EMPLOYMENT BEFORE AGE AND SERVICE  
RETIREMENT & INDIVIDUAL PAY INCREASES**

Age	Pay Increase Assumptions for an Individual Member		
	Merit & Seniority	Base (Economic)	Increase Next Year
20	5.00%	2.75%	7.75%
25	2.90%	2.75%	5.65%
30	2.40%	2.75%	5.15%
35	1.90%	2.75%	4.65%
40	1.40%	2.75%	4.15%
45	0.70%	2.75%	3.45%
50	0.30%	2.75%	3.05%
55	0.00%	2.75%	2.75%
60	0.00%	2.75%	2.75%
65	0.00%	2.75%	2.75%
Ref:	472		





## TABLE V SUPPORT EMPLOYEES

### SEPARATIONS FROM ACTIVE EMPLOYMENT BEFORE AGE AND SERVICE RETIREMENT & INDIVIDUAL PAY INCREASES

Sample Ages in 2017	Percent of Active Members Separating within the Next Year						
	Service	Death		Disability		Other	
		Men	Women	Men	Women	Men	Women
	0					49.90%	47.50%
	1					30.10%	28.30%
	2					19.40%	19.10%
	3					15.30%	14.90%
	4					11.80%	12.10%
25	5 & Up	0.06%	0.02%	0.03%	0.02%	9.20%	9.70%
30		0.06%	0.02%	0.09%	0.04%	7.30%	6.90%
35		0.07%	0.03%	0.09%	0.05%	5.60%	5.00%
40		0.08%	0.05%	0.10%	0.07%	4.50%	4.40%
45		0.12%	0.07%	0.22%	0.16%	3.70%	4.00%
50		0.20%	0.12%	0.51%	0.34%	3.30%	3.60%
55		0.33%	0.19%	0.86%	0.59%	3.30%	3.30%
60		0.56%	0.28%	1.11%	0.76%	3.30%	2.80%
65		0.97%	0.40%	1.11%	0.80%	2.80%	2.10%
Ref:						1031	1032
		2633x0.94	2634x0.84	749x1	750x1	1383	1384



## TABLE V (Continued) SUPPORT EMPLOYEES

### SEPARATIONS FROM ACTIVE EMPLOYMENT BEFORE AGE AND SERVICE RETIREMENT & INDIVIDUAL PAY INCREASES

Age	Pay Increase Assumptions for an Individual Member		
	Merit & Seniority	Base (Economic)	Increase Next Year
20	5.00%	2.75%	7.75%
25	3.75%	2.75%	6.50%
30	2.60%	2.75%	5.35%
35	2.40%	2.75%	5.15%
40	2.10%	2.75%	4.85%
45	1.00%	2.75%	3.75%
50	0.50%	2.75%	3.25%
55	0.00%	2.75%	2.75%
60	0.00%	2.75%	2.75%
65	0.00%	2.75%	2.75%
Ref:	473		

## ACTUARIAL GAIN (LOSS) BY RISK AREA

During the Period July 1, 2016 to June 30, 2017

Type of Risk Area	Gain (Loss) in Period	
	\$ Millions	Percent of Liabilities
<b>ECONOMIC RISK AREAS</b> Pay increases. <b><i>If there are smaller pay increases</i></b> than assumed, there is a gain. If greater increases, a loss.	\$ 80.6	0.40%
Gross Investment Return. <b><i>If there is greater investment</i></b> return recognition than assumed, there is a gain. If less return recognition, a loss.	251.9	1.25%
<b>NON-ECONOMIC RISK AREAS</b> Retirements. <b><i>If members retire at older</i></b> ages, there is a gain. If younger ages, a loss.	6.0	0.03%
Disability Retirements. <b><i>If there are fewer disabilities</i></b> than assumed, there is a gain. If more, a loss.	1.5	0.01%
Death-in-Service Benefits. <b><i>If there are fewer</i></b> than assumed, there is a gain. If more, a loss.	(0.7)	0.00%
Withdrawal. <b><i>If more liabilities are released by other</i></b> separations than assumed, there is a gain. If smaller releases, a loss.	10.6	0.05%
Death After Retirement. <b><i>If there are more deaths</i></b> than assumed, there is a gain. If fewer, a loss.	(22.0)	(0.11)%
<b>ACTUARIAL GAIN (LOSS) DURING PERIOD</b>	327.9	1.63%
<b>BEGINNING OF YEAR ACCRUED LIABILITIES*</b>	\$20,123.1	100.0%

\*Adjusted for change in Assumptions.



## COMMENTS

**General Financial Objective.** Section 24-7-401(a) of the Arkansas Code provides as follows (emphasis added):

“6.01. (i) The general financial objective of each Arkansas public employee retirement plan shall be to **establish and receive contributions which, expressed as percents of active member payroll, will remain approximately level from generation to generation of Arkansas citizens.** More specifically, contributions received each year shall be sufficient both to (i) fully cover the costs of benefit commitments being made to members for their service being rendered in such year, and (ii) make a level payment which if paid annually over a reasonable period of future years will fully cover the unfunded costs of benefit commitments for service previously rendered...”

**Arkansas Teacher Retirement System Status:** Based upon the results of June 30, 2017 actuarial valuations, *ATRS is satisfying the financial objective of level-contribution-percent financing.*

**The amortization period this year is 29 years**, unchanged from last year’s period of 29 years. This result was affected by the assumption changes, benefit changes, and contribution rate changes described in the valuation report. In particular, it is heavily dependent upon member and employer rates increasing in accordance with the following schedule:

Fiscal Year	Contribution Rate	
	Member	Employer
2018-2019	6.00%	14.00%
2019-2020	6.25%	14.25%
2020-2021	6.50%	14.50%
2021-2022	6.75%	14.75%
2023 and Later	7.00%	15.00%

While 29 years is a reasonable period that meets statutory requirements, use of such a period will result in unfunded liabilities that are projected to increase in dollar amount for approximately the next 10 years. This condition is called “negative amortization” and is falling out of favor. The ATRS has targeted 18 years as the threshold in recent legislation.

**The Arkansas Teacher Retirement System remains stable with a 79.5% funded position** as of June 30, 2017. Unless there is an investment gain in Fiscal Year 2018, the amortization period is likely to increase in the next valuation due to scheduled phase-in of investment losses.

**The rate of investment return was 15.98%#** this year. Investment gains and losses that occur each year are smoothed in over a 4-year period. After considering smoothing, the recognized return this year was 9.68%, compared to an assumed 8.0% return for Fiscal 2017. The smoothing is expected to introduce upward pressure on the amortization period next year, although as of June 30, 2017, the market value of assets exceeded the actuarial value of assets by approximately \$153 million.

# This investment return figure was calculated by the actuary and may not exactly match your investment consultant’s figure.



## STATISTICS

### SCHEDULE OF RETIRED MEMBERS BY TYPE OF BENEFIT

Monthly Benefit	No. of Retirees	Type of Retirement*					Option Selected#			
		1	2	3	4	5	Life	Opt. A	Opt. B	Opt. C
\$1-250	4,666	4,205	115	97	227	22	3,904	613	40	109
\$251-500	5,419	4,642	103	131	503	40	4,494	729	90	106
\$501-750	3,809	3,233	68	97	379	32	3,100	512	117	80
\$751-1,000	2,697	2,246	68	70	277	36	2,136	391	120	50
\$1,001-1,250	2,276	1,859	86	40	262	29	1,715	365	155	41
\$1,251-1,500	1,930	1,587	81	33	202	27	1,447	308	132	43
\$1,501-1,750	1,907	1,579	73	30	203	22	1,383	329	158	37
\$1,751-2,000	1,967	1,689	53	33	170	22	1,436	338	149	44
Over \$2,000	20,178	19,000	401	167	546	64	14,950	3,021	1,932	275
<b>Total</b>	<b>44,849</b>	<b>40,040</b>	<b>1,048</b>	<b>698</b>	<b>2,769</b>	<b>294</b>	<b>34,565</b>	<b>6,606</b>	<b>2,893</b>	<b>785</b>

\*Type of Retirement

1. Normal retirement for age and service
2. Survivor payment - normal or early retirement
3. Survivor payment - death-in-service
4. Disability retirement
5. Survivor payment - disability retirement

# Option Selected at Retirement

- Life - Straight life annuity
- Opt. A - 100% survivor annuity
- Opt. B - 50% survivor annuity
- Opt. C - Annuity for 10 years certain and life thereafter

Excludes Act 793 and Act 808 retirees.



## STATISTICS

### SCHEDULE OF AVERAGE BENEFIT PAYMENTS

Retirement Effective Dates		Service at Retirement						
July 1, 2007 to June 30, 2017*		0-4 <sup>#</sup>	5-9	10-14	15-19	20-24	25-29	30+
7/1/07 - 6/30/08	Average Monthly Benefit	\$299	\$290	\$526	\$954	\$1,440	\$2,303	\$2,778
	Average Final Salary	\$25,406	\$20,153	\$25,808	\$36,169	\$41,295	\$45,077	\$42,414
	Number of Active Retirees	12	402	187	187	180	518	217
7/1/08 - 6/30/09	Average Monthly Benefit	\$162	\$248	\$532	\$902	\$1,378	\$2,399	\$2,949
	Average Final Salary	\$24,871	\$22,873	\$26,844	\$33,190	\$40,876	\$47,821	\$46,900
	Number of Active Retirees	47	360	265	235	235	654	245
7/1/09 - 6/30/10	Average Monthly Benefit	\$169	\$234	\$545	\$939	\$1,519	\$2,473	\$3,115
	Average Final Salary	\$31,970	\$21,380	\$26,941	\$34,607	\$44,270	\$47,853	\$49,724
	Number of Active Retirees	54	415	335	252	249	827	192
7/1/10 - 6/30/11	Average Monthly Benefit	\$157	\$274	\$568	\$1,019	\$1,584	\$2,543	\$3,031
	Average Final Salary	\$29,025	\$25,410	\$28,010	\$37,744	\$45,054	\$49,358	\$50,203
	Number of Active Retirees	47	471	295	246	248	764	135
7/1/11 - 6/30/12	Average Monthly Benefit	\$160	\$262	\$588	\$994	\$1,537	\$2,529	\$3,122
	Average Final Salary	\$31,339	\$24,705	\$29,042	\$37,456	\$44,664	\$50,784	\$51,737
	Number of Active Retirees	47	558	423	295	350	879	150
7/1/12 - 6/30/13	Average Monthly Benefit	\$168	\$272	\$634	\$980	\$1,482	\$2,453	\$3,053
	Average Final Salary	\$40,573	\$24,799	\$30,499	\$36,168	\$42,688	\$49,266	\$51,813
	Number of Active Retirees	50	551	429	301	377	1,038	120
7/1/13 - 6/30/14	Average Monthly Benefit	\$144	\$294	\$626	\$1,034	\$1,481	\$2,553	\$3,195
	Average Final Salary	\$41,396	\$26,223	\$30,235	\$37,996	\$42,612	\$50,577	\$54,193
	Number of Active Retirees	42	497	472	336	358	1,060	122
7/1/14 - 6/30/15	Average Monthly Benefit	\$144	\$306	\$684	\$1,069	\$1,518	\$2,540	\$3,270
	Average Final Salary	\$40,803	\$27,540	\$32,878	\$38,857	\$44,433	\$52,059	\$56,908
	Number of Active Retirees	64	564	529	375	375	1,106	138
7/1/15 - 6/30/16	Average Monthly Benefit	\$112	\$293	\$669	\$1,064	\$1,466	\$2,522	\$3,490
	Average Final Salary	\$38,048	\$25,892	\$31,763	\$37,947	\$43,044	\$51,671	\$60,041
	Number of Active Retirees	48	494	600	389	387	1,122	109
7/1/16 - 6/30/17	Average Monthly Benefit	\$133	\$282	\$682	\$1,011	\$1,448	\$2,530	\$3,289
	Average Final Salary	\$38,412	\$25,606	\$31,940	\$36,516	\$42,814	\$52,510	\$57,847
	Number of Active Retirees	53	468	499	393	368	1,012	107

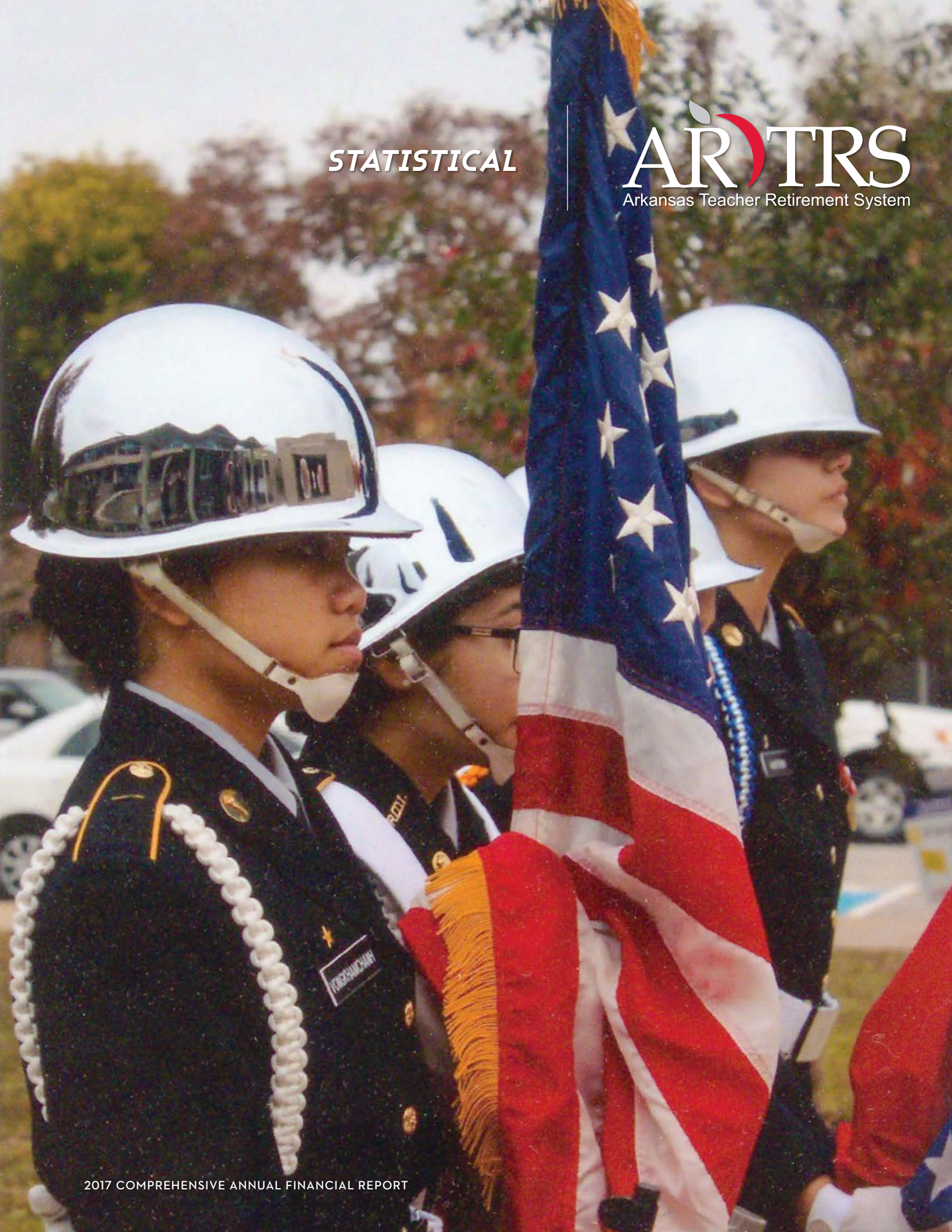
# May include cases where the service was not reported.

\* May not match page 64. Page 64 also includes new retirees with retirement dates prior to the applicable fiscal year.

The figures in this chart are figures that are relevant to one specific year of retirement. They have not been updated for certain changes in COLAs that occurred after retirement.

*STATISTICAL*

**AR TRS**  
Arkansas Teacher Retirement System





## Schedule of Revenue by Source

### Employer Contributions

Year Ending June 30,	Employer Contributions	% of Annual Covered Payroll	Member Contributions	Investment and Miscellaneous Income	Total
2007	\$ 331,891,210	14.1%	\$100,093,372	\$ 1,892,393,365	\$ 2,324,377,947
2008	350,319,504	15.4%	108,872,293	(477,579,443)	(18,387,646)
2009	359,061,671	15.5%	111,654,256	(1,996,871,185)	(1,526,155,258)
2010	389,296,432	16.4%	115,931,733	1,291,307,143	1,796,535,308
2011	400,330,902	14.7%	139,460,601	2,219,833,337	2,759,624,840
2012	398,822,946	16.3%	117,662,465	(118,654,190)	397,831,221
2013	400,933,872	14.3%	113,900,872	1,695,899,517	2,210,733,616
2014	404,920,441	14.2%	125,225,906	2,429,334,098	2,959,480,445
2015	408,230,472	14.2%	128,555,684	632,166,951	1,168,953,107
2016	410,358,229	14.2%	131,100,983	35,579,657	577,038,869
2017	414,954,939	14.2%	133,109,939	2,289,818,591	2,837,883,469





## Schedule of Expense by Type

Year Ending June 30,	Benefit Payments	Refunds	Administrative and other expenses	Total
2007	\$ 545,220,337	\$ 5,179,850	\$5,854,557	\$ 556,254,744
2008	587,319,942	6,462,122	6,676,667	600,458,731
2009	635,878,958	6,409,016	6,913,865	649,201,839
2010	701,562,784	7,165,354	7,229,398	715,948,536
2011	731,866,100	8,906,441	7,548,959	748,321,500
2012	791,844,923	9,225,151	7,752,975	808,023,049
2013	846,210,946	11,087,596	7,755,004	865,053,546
2014	914,250,015	10,485,103	8,034,235	932,769,353
2015	970,719,484	10,774,122	8,034,857	989,528,463
2016	1,035,958,950	10,145,471	8,059,030	1,054,163,451
2017	1,092,952,357	10,874,003	7,825,595	1,111,651,955



## Schedule of Benefit Expenses by Type

For the Year Ending June 30,

Type of Benefit	2017	2016	2015	2014	2013
Age and Service	\$907,314,702	\$852,695,640	\$795,518,171	\$739,571,020	\$683,699,899
Disability	38,833,696	37,812,689	36,188,748	34,639,050	33,164,746
Option	26,843,481	24,637,113	23,056,130	21,341,913	19,925,200
Survivor	10,470,562	9,946,290	9,626,726	9,025,326	8,699,159
Reciprocity	49,175,662	45,746,432	41,958,663	38,031,351	34,346,675
Active Members Death Benefits	474,719	357,921	404,248	493,957	326,748
T-DROP	42,969,143	52,760,622	50,656,897	54,408,232	59,031,639
Act 808	2,874,444	3,000,785	3,139,880	3,249,162	3,516,979
Cash Balance Disbursements	9,735,670	8,600,786	8,923,390	7,271,797	
Cash and Savings Help Program	4,260,278	400,673	1,246,632	6,218,208	3,499,902
<b>Total</b>	<b>\$1,092,952,357</b>	<b>\$1,035,958,951</b>	<b>\$970,719,485</b>	<b>\$914,250,015</b>	<b>\$846,210,947</b>

## Schedule of Participating Employers

As of June 30, 2017

Academics Plus Charter School	Batesville School District	Cutter Morning Star School District	Greenland School District
Alma School District	Bauxite School District	Danville School District	Greenwood School District
Alpena School District	Bay School District	Dardanelle School District	Gurdon School District
Arch Ford Education Service Co-Op	Bearden School District	Dawson Education Co-Op	Guy Fenter Education Co-Op
Arkadelphia School District	Beebe School District	Decatur School District	Guy-Perkins School District
Arkansas Activities Association	Benton School District	Deer/Mt. Judea School District	Haas Hall Academy - Bentonville
Arkansas Arts Academy	Bentonville School District	DeQueen School District	Haas Hall Academy - Fayetteville
Arkansas Association of Educational Administrators	Bergman School District	DeQueen-Mena Education Co-op	Hackett School District
Arkansas Connections Academy	Berryville School District	Dermott School District	Hamburg School District
Arkansas Correctional School	Bismarck School District	Des Arc School District	Hampton School District
Arkansas Department Of Career Education (Rehab)	Black River Technical College	DeWitt School District	Harmony Grove School District - Benton
Arkansas Department Of Career Education (Workforce)	Blevins School District	Dierks School District	Harmony Grove School District - Camden
Arkansas Department Of Education	Blytheville School District	Dollarway School District	Harrisburg School District
Arkansas Department Of Higher Education	Booneville School District	Dover School District	Harrison School District
Arkansas Department Of Human Services - Division of Youth Services	Boston Mountain Education Co-Op	Drew Central School District	Hazen School District
Arkansas Easter Seals	Bradford School District	Dumas School District	Heber Springs School District
Arkansas Economic Development Commission	Brinkley School District	E-Stem Public Charter School	Hector School District
Arkansas Educational TV Network	Brookland School District	Earle School District	Helena-West Helena School District
Arkansas Northeastern College	Bryant School District	East Arkansas Community College	Henderson State University
Arkansas River Education Co-Op	Buffalo Island Central School District	East End School District	Hermitage School District
Arkansas School Boards Association	Cabot School District	East Poinsett County School District	Highland School District
Arkansas School For Math, Sciences & Arts	Caddo Hills School District	El Dorado School District	Hillcrest School District
Arkansas School For The Blind	Calico Rock School District	Elkins School District	Hope School District
Arkansas School For The Deaf	Camden-Fairview School District	Emerson-Taylor-Bradley School District	Horatio School District
Arkansas State University - Beebe	Capital City Lighthouse Charter School	England School District	Hot Springs School District
Arkansas State University - Jonesboro	Carlisle School District	Eureka Springs School District	Hoxie School District
Arkansas State University - Mid South CC	Cave City School District	Exalt Academy	Huntsville School District
Arkansas State University - Mt. Home	Cedar Ridge School District	Farmington School District	Imboden Area Charter School
Arkansas State University - Newport	Cedarville School District	Fayetteville School District	Izard County Consolidated School District
Arkansas Teacher Retirement System	Centerpoint School District	First Student	Jackson County School District
Arkansas Tech University	Charleston School District	Flippin School District	Jacksonville Lighthouse Charter School
Arkansas Virtual Academy	Clarendon School District	Fordyce School District	Jacksonville-North Pulaski School District
Armored School District	Clarksville School District	Foreman School District	Jasper School District
Ashdown School District	Cleveland County School District	Forrest City School District	Jessieville School District
Atkins School District	Clinton School District	Fort Smith School District	Jonesboro School District
Augusta School District	College of the Ouachitas	Fouke School District	Jonesboro Vocational Center
Bald Knob School District	Concord School District	Fountain Lake School District	Junction City School District
Barton-Lexa School District	Conway School District	Future School of Fort Smith	Kipp Delta College Preparatory School
	Conway Vocational Center	Genoa Central School District	Kirby School District
	Corning School District	Gentry School District	Lafayette County School District
	Cossatot River School District	Glen Rose School District	
	Cotter School District	Gosnell School District	
	County Line School District	Gravette School District	
	Covenant Keepers Charter School	Great Rivers Education Co-Op	
	Cross County School District	Green Forest School District	
	Crossett School District	Greenbrier School District	
	Crowley's Ridge Education Co-Op	Greene County Tech School District	
	Crowley's Ridge Technical Institute		



## Schedule of Participating Employers (Continued)

**As of June 30, 2017**

Lake Hamilton School District	Newport School District	Quest Middle School - West Little Rock	Texarkana School District
Lakeside School District - Hot Springs	Norfolk School District	Quitman School District	Trumann School District
Lakeside School District - Lake Village	North Arkansas College	Rector School District	Two Rivers School District
Lamar School District	North Central Career Center	Rich Mountain Community College	University Of Arkansas - Cooperative Extension Service
Lavaca School District	North Little Rock School District	River Valley Career Academy	University Of Arkansas - Fayetteville
Lawrence County School District	Northcentral Arkansas Education Co-Op	Rivercrest School District	University Of Arkansas - Fort Smith
Lead Hill School District	Northeast Arkansas Education Co-Op	Riverside School District	University Of Arkansas - Little Rock
Lee County School District	Northwest Arkansas Classical Academy	Riverside Vocational Technical School	University Of Arkansas - Monticello
Lincoln Consolidated School District	Northwest Arkansas Community College	Riverview School District	University Of Arkansas - Pine Bluff
Lisa Academy - Little Rock	Northwest Arkansas Education Co-Op	Rockbridge Montessori	University Of Arkansas Community College - Batesville
Little Rock Preparatory Academy	Northwest Technical Institute	Rogers School District	University Of Arkansas Community College - Cossatot
Little Rock School District	Omaha School District	Rose Bud School District	University Of Arkansas Community College - Hope
Lonoke School District	Osceola School District	Russellville School District	University Of Arkansas Community College - Morrilton
Magazine School District	Ouachita River School District	Salem School District	University Of Arkansas For Medical Sciences
Magnet Cove School District	Ouachita School District	Scranton School District	University Of Central Arkansas
Magnolia School District	Ozark Montessori Academy	Searcy County School District	Valley Springs School District
Malvern School District	Ozark Mountain School District	Searcy School District	Valley View School District
Mammoth Spring School District	Ozark School District	Sheridan School District	Van Buren School District
Manila School District	Ozarka College	Shirley School District	Vilonia School District
Mansfield School District	Ozarks Unlimited Resource Education Co-Op	SIATech Charter School	Viola School District
Marion School District	Palestine-Wheatley School District	Siloam Springs School District	Waldron School District
Marked Tree School District	Pangburn School District	Sloan-Hendrix School District	Warren School District
Marmaduke School District	Paragould School District	Smackover-Norphlet School District	Warren Vocational Center
Marvell-Elaine School District	Paris School District	South Arkansas Community College	Watson Chapel School District
Mayflower School District	Parkers Chapel School District	South Arkansas Developmental Center	West Fork School District
Maynard School District	Pea Ridge School District	South Central Education Co-Op	West Memphis School District
McCrary School District	Perryville School District	South Conway County School District	West Side School District - Greers Ferry
McGehee School District	Phillips Community College - DeWitt	South Pike County School District	Western Yell County School District
Melbourne School District	Phillips Community College - U Of A	Southeast Arkansas College	Westside Consolidated School District - Jonesboro
Mena School District	Piggott School District	Southeast Arkansas Education Co-Op	Westside School District - Hartman
Metropolitan Vocational Center	Pine Bluff Lighthouse Charter School	Southern Arkansas University - East Camden	White County Central School District
Midland School District	Pine Bluff School District	Southern Arkansas University - Magnolia	White Hall School District
Mineral Springs School District	Pocahontas School District	Southside School District - Batesville	Wilbur D. Mills Education Co-Op
Monticello School District	Pottsville School District	Southside School District - Bee Branch	Wonderview School District
Monticello Vocational Center	Poyen School District	Southwest Arkansas Education Co-Op	Woodlawn School District
Mount Ida School District	Prairie Grove School District	Spring Hill School District	Wynne School District
Mountain Home School District	Premier High School Of Little Rock	Springdale School District	Yellville-Summit School District
Mountain Pine School District	Prescott School District	Star City School District	
Mountain View School District	Pulaski County Special School District	Strong-Huttig School District	
Mountainburg School District	Pulaski Technical College	Stuttgart School District	
Mt. Vernon-Enola School District	Quest Middle School - Pine Bluff	Texarkana Career And Technological Center	
Mulberry-Pleasant View Bi-County School District			
Nashville School District			
National Park Community College			
Nemo Vista School District			
Nettleton School District			
Nevada School District			



***ARKANSAS TEACHER RETIREMENT SYSTEM***

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