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# Arkansas Judicial Retirement System



**Annual Financial Report**  
as of June 30, 2019



# **Arkansas Judicial Retirement System Annual Financial Report**

For the Fiscal Year Ended June 30, 2019

Duncan Baird, Executive Director

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# Introduction

A Brief History  
System Highlights  
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AJRS Senior Staff  
Professional Service Providers



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## A BRIEF HISTORY

### Arkansas Judicial Retirement System

With the passage of Act 365 on March 28, 1953, the Arkansas General Assembly created the Arkansas Judicial Retirement System (AJRS or the System).

The statutes providing for and governing AJRS may be found in Chapters 2 and 8 of Title 24 of the Arkansas Code Annotated (A.C.A.). The administration and control of the System is vested in the Board of Trustees of the Arkansas Judicial Retirement System (the Board). The Board is appointed by the Arkansas Judicial Council.

The System provides for the retirement of all circuit judges, court of appeals judges, and Arkansas Supreme Court justices. Act 399 of 1999 created a Tier II benefit plan for all persons who become members of the System after August 1, 1999. Any active member of the System prior to August 1, 1999 had until the end of the term in office in which the member is serving on the effective date to elect coverage under Tier II.

Act 744 of 2009 permits Tier I judges with at least 20 years of judicial service to continue making 6% employee contributions in exchange for a 2.5% increase in benefits for each additional year of service. The maximum benefit payable is 75% of final salary.

This annual financial report, which covers the period from July 1, 2018 through June 30, 2019, provides comprehensive information about the System including statements of financial condition, investment objectives and policy, an actuarial report, historical and statistical information on active members, annuitants and benefit payments, as well as a description of the retirement plan.

## SYSTEM HIGHLIGHTS (as of June 30, 2019)

### Active Members

| Number | Average Age (yrs.) | Average Service (yrs.) | Average Annual Salary |
|--------|--------------------|------------------------|-----------------------|
| 140    | 60.5               | 17.8                   | \$ 168,591            |

### 2019 Retirees

| Number | Average Age (yrs.) | Average Service (yrs.) | Average Monthly Benefit |
|--------|--------------------|------------------------|-------------------------|
| 2      | 65.5               | 0                      | \$ 5,475                |

### All Retired Members

| Number | Average Age (yrs.) | Average Service (yrs.) | Average Monthly Benefit |
|--------|--------------------|------------------------|-------------------------|
| 149    | 76.8               | NA                     | \$ 7,446                |

## LETTER OF TRANSMITTAL



124 West Capitol, Suite 400 • Little Rock, AR 72201-3704

501-682-7800 • 1-800-682-7377 • [www.apers.org](http://www.apers.org)

Dear AJRS Members:

The Arkansas Judicial Retirement System (AJRS) is pleased to present the Annual Financial Report for the period ending June 30, 2019. The report is designed to provide a clear and concise picture of the financial conditions of the System. The report includes the following sections:

- Introduction
- Financial
- Investment
- Actuarial
- Statistical

### Accounting System

The accrual basis of accounting is used to record the assets, liabilities, revenues, and expenses of the Arkansas Judicial Retirement System Trust Fund. Revenues are recognized in the accounting period in which they are earned, without regard to date of collection, and expenses are recorded when incurred, regardless of when payment is made. Investments are reported at market values determined by the custodial agent. The agent's determination of market value includes, among other things, using pricing services or prices quoted by independent brokers at current exchange rates.

### Funding

The System is funded through contributions from the state and employees as well as investment income. The general financial objective of the System is to establish and receive contributions which, expressed as a percentage of active member payroll, will remain approximately level from generation to generation.

### Investments

In accordance with the Investment Code contained in A.C.A. Title 24, Chapter 2, the Board is required to invest the funds in conformity with the "prudent investor rule." The Investment Code permits the Board to establish an investment policy based upon certain investment criteria and allows the Board to retain professional investment advisors to assist the Board in making investments. The Board has established an investment policy that reflects the level of risk that is deemed appropriate for the fund. The investment advisor retained by the Board is listed in the schedule of professional services contractors.

## Professional Services

Professional services are provided to AJRS by a firm selected by the Board to aid in the efficient and effective management of the System. A listing for this firm as well as other professional services contractors retained by AJRS is shown on page 12 of this report.

## Acknowledgments

This report is the result of the combined efforts of the AJRS staff under the direction of the Board. Its purpose is to provide complete and reliable information as a basis for making management decisions, as a means for determining compliance with legal provisions, and as a means for determining responsible stewardship over the assets contributed by the members and employers.

Judge Robert Edwards

A handwritten signature in blue ink that reads "Robert Edwards".

Chairman, AJRS Board

Duncan Baird

A handwritten signature in blue ink that appears to read "Duncan Baird".

Executive Director

## BOARD OF TRUSTEES

The Honorable Robert Edwards, Chair  
Circuit Judge  
1600 E. Booth, Suite 500  
Searcy, AR 72143

The Honorable Raymond Abramson  
Arkansas Court of Appeals Judge  
625 Marshall Street  
Little Rock, AR 72201-1080

The Honorable Mark Hewett  
Retired Circuit Judge  
7201 Highland Park  
Fort Smith, AR 72916

The Honorable Charles Yeargan  
Retired Circuit Judge  
P.O. Box 820  
Murfreesboro, AR 71958

The Honorable Marcia Hearnberger  
Circuit Judge  
501 Ouachita Avenue, Room 304  
Hot Springs, AR 71901

## AJRS SENIOR STAFF

Duncan Baird  
Executive Director

Jason Willett  
Chief Financial Officer

Carlos Borromeo  
Chief Investment Officer

Laura Gilson  
Chief Legal Counsel

Allison Woods  
Director of Benefits Administration

Phillip Norton  
Director of Information Technology

Abbi Bruno  
Director of Operations

Jacobia Twiggs  
Manager, Educational Outreach

Jennifer Taylor  
Manager, Member and Retiree Services Section

Jon Aucoin  
Manager, Communications Section

John Owens  
Internal Auditor

Usha Doolabh  
Accounting Operations Manager, Investments

## OUTSIDE PROFESSIONAL SERVICE PROVIDERS

### Custodian Bank

The Bank of New York Mellon  
Pittsburgh, PA 15258

### Actuary

Gabriel, Roeder, Smith & Co.  
Southfield, MI 48076

### Investment Consultant

Callan Associates, Inc.  
Chicago, IL 60602

### Investment Managers

QS Investors, LLC  
Boston, MA 02116

Baillie Gifford  
Edinburgh, Scotland

Invesco Real Estate  
Dallas, TX 75240

MacKay Shields  
New York, NY 10105

Boston Partners  
Boston, MA 02108

Wellington Management Company  
Boston, MA 02210

# Financial

Management's Discussion and Analysis

Statement of Fiduciary Net Position

Statement of Changes in Fiduciary Net Position

Notes to the Financial Statements

Note 1: Plan Description

Note 2: Summary of Significant Accounting Policies

Note 3: Legally Required Reserves

Note 4: Deposits and Investments

Note 5: Net Pension Liability

Required Supplementary Information

Schedule of Employer Contributions

Schedule of Funding Progress

Schedule of Changes in Net Pension Liability and  
Related Ratios

Schedule of Net Pension Liabilities

Schedule of Investment Returns

Notes to Required Supplementary Information

Schedule of Administrative Expenses

Schedule of Investment Expenses

Schedule of Payments for Professional Consultants

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## MANAGEMENT'S DISCUSSION AND ANALYSIS

To help facilitate a better understanding of the financial condition of the Arkansas Judicial Retirement System (AJRS or the System) as of June 30, 2019, management has prepared this narrative analysis. This narrative is intended to supplement the System's financial statements, and, as such, should be read in conjunction with these statements, which are presented beginning on page 16.

### Revenues

The revenue from employer and employee contributions in fiscal year 2019 totaled \$8.75 million. This amount is \$97,731 less than fiscal year 2018.

Net investment income for fiscal year 2019 was \$14.66 million after investment expenses of \$1,276,110, a decrease of \$4.51 million from fiscal year 2018. Overall, the System's total additions decreased by \$4.68 million from fiscal year 2018. The primary reason for this decrease was the lower investment return achieved in fiscal year 2019.

### Expenses

Benefit payments for fiscal year 2019 were \$12.98 million, or \$210,594 more than fiscal year 2018. Administrative expenses were \$147,062, of which \$31,500 was for professional fees and \$110,050 was transferred to the Arkansas Public Employment Retirement System (APERS) for indirect administrative costs.

## STATEMENT OF FIDUCIARY NET POSITION

(as of June 30, 2019)

|   | 2019                  | 2018                  |
|---|-----------------------|-----------------------|
| <b>Assets</b>                                       |                       |                       |
| Cash and Cash Equivalents                           | \$ 2,504,651          | \$ 6,979,395          |
| Receivables   |                       |                       |
| Contributions                                       | 0                     | 161,407               |
| Deceased Retirant Receivable                        | 0                     | 0                     |
| Investment Principal Receivable                     | 1,595,574             | 618,582               |
| Accrued Investment Income Receivable                | 820,101               | 706,260               |
| Total Receivables                                   | 2,415,675             | 1,486,249             |
| Investments, At Fair Value                          |                       |                       |
| Government Securities                               |                       |                       |
| U.S. Government Securities                          | 9,977,739             | 17,333,142            |
| U.S. Government Agency Securities                   | 28,291,627            | 10,213,314            |
| Futures   | 110,900               | (32,594)              |
| Corporate Securities                                |                       |                       |
| High Income Yield Fund                              | 10,647,409            | 14,488,347            |
| Collateralized Obligations                          | 5,702,039             | 425,791               |
| Corporate Bonds                                     | 33,865,001            | 35,321,825            |
| Common Stock  | 56,666,833            | 57,070,526            |
| Domestic Equity Commingled                          | 45,754,564            | 44,207,418            |
| International Securities                            |                       |                       |
| Global Commingled                                   | 40,723,576            | 40,582,467            |
| Global Corporate Fixed Income                       | 6,306,100             | 5,810,786             |
| Forwards  | 0                     | 0                     |
| Global Equity                                       | 0                     | 0                     |
| Global Government Fixed                             | 0                     | 0                     |
| Emerging Markets                                    | 391,820               | 490,308               |
| Real Estate   | 23,993,350            | 22,772,116            |
| Commercial Loans                                    | 2,626,108             | 4,585,316             |
| Total Investments                                   | 265,057,066           | 253,268,764           |
| <b>Total Assets</b>                                 | <b>269,977,391</b>    | <b>261,734,407</b>    |
| <b>Liabilities</b>                                  |                       |                       |
| Accrued Expenses and Other Liabilities              | 339,416               | 327,764               |
| Investment Principal Payable                        | 2,358,489             | 4,898,512             |
| <b>Total Liabilities</b>                            | <b>2,697,905</b>      | <b>5,226,277</b>      |
| <b>Net Position Restricted for Pension Benefits</b> | <b>\$ 267,279,487</b> | <b>\$ 256,508,130</b> |

Totals may not add due to rounding.  
The accompanying notes are an integral part of these financial statements.  
A schedule of funding progress is on page 39.

## STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

(as of June 30, 2019)

|  | 2019           | 2018           |
|--|----------------|----------------|
| <b>Additions</b>                               |                |                |
| Contributions                                  |                |                |
| Employer                                       | \$ 7,722,374   | \$ 7,834,355   |
| Employee                                       | 1,030,430      | 1,016,180      |
| Court Fees                                     | 511,585        | 586,818        |
| Total Contributions                            | 9,264,390      | 9,437,353      |
| Investment Income                              |                |                |
| Interest                                       | 3,466,397      | 3,159,611      |
| Dividends                                      | 2,695,533      | 2,696,384      |
| Currency Gain/(Loss)                           | 0              | 0              |
| Investment Gain/(Loss)                         | 9,769,986      | 14,575,383     |
| Total Investment Income                        | 15,931,915     | 20,431,379     |
| Less: Investment Expense                       | 1,276,110      | 1,268,777      |
| Net Investment Income                          | 14,655,805     | 19,162,602     |
| Other Additions                                |                |                |
| Miscellaneous Additions                        | 16             | 12             |
| <b>Total Additions</b>                         | 23,920,211     | 28,599,967     |
| <b>Deductions</b>                              |                |                |
| Benefits                                       | 12,979,769     | 12,769,175     |
| Refunds of Contributions                       | 22,024         | 0              |
| Administrative Expenses                        | 147,062        | 142,311        |
| <b>Total Deductions</b>                        | 13,148,855     | 12,911,485     |
| <b>Net Increase (Decrease)</b>                 | 10,771,356     | 15,688,482     |
| <b>Net Position Held in Trust for Benefits</b> |                |                |
| Beginning of Year                              | 256,508,130    | 240,819,648    |
| End of Year                                    | \$ 267,279,487 | \$ 256,508,130 |

Totals may not add due to rounding.

The accompanying notes are an integral part of these financial statements.

## NOTES TO THE FINANCIAL STATEMENTS

### Note 1: Plan Description

AJRS is a single-employer, defined benefit pension plan established on March 28, 1953.

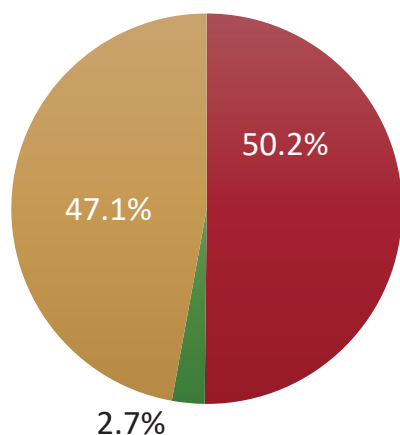
The System provides for the retirement of all circuit judges, court of appeals judges, and Supreme Court justices. The laws governing operations of AJRS are set forth in Arkansas Code of 1987 Annotated (A.C.A.) §§ 24-8-201 through 24-8-228 and §§ 24-8-701 through 24-8-717. The administration and control of the System is vested in the Board of Trustees of the Arkansas Judicial Retirement System (the Board), which includes five members selected by the Arkansas Judicial Council.

#### Membership

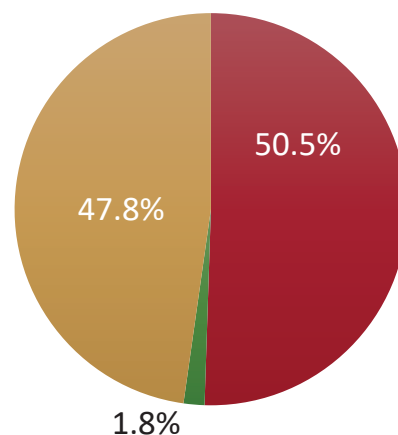
As of June 30, 2019 and 2018, membership was as follows:

| Membership   | 2019 | 2018 |
|--|------|------|
| Retirees and Beneficiaries Receiving Benefits                      | 149  | 147  |
| Terminated plan members entitled to but not yet receiving benefits | 8    | 5    |
| Active Plan Members  | 140  | 139  |
| Total  | 297  | 291  |

**Membership 2019**



**Membership 2018**



Note: Totals may not add due to rounding.

### Contributions

Contribution provisions are established by state law and may be amended only by the Arkansas General Assembly. The contribution rate of each member of the System is 6% of annual salary for Tier I (A.C.A. § 24-8-209) and 5% of annual salary for Tier II (A.C.A. § 24-8-706). When a judge is certified as eligible for retirement, no further contribution is required of that member for Tier I (A.C.A. § 24-8-211) or for Tier II (A.C.A. § 24-8-708). The employer contribution rate is 12% of salaries paid.

In addition to the 12% employer rate and the statutory fees, the Chief Fiscal Officer of the State is required to transfer from the Constitutional and State Central Services Fund an amount that is equal to the difference between the mandatory contribution rate and the actuarially determined rate necessary to fund the plan (A.C.A. § 24-8-210).

### Plan Administration

Costs for administering the plan are paid out of investment earnings.

### Benefits

An active member in Tier I with a minimum of 10 years of credited service may voluntarily retire upon reaching 65 years of age or thereafter upon filing a written application with the Board. Any other Tier I member who has a minimum of 20 years of credited service may retire regardless of age, and any judge or justice who has served at least 14 years is eligible for benefits upon reaching age 65. In all cases of age and service retirement for judges or justices elected after July 1, 1983 and remaining in Tier I, the member must have a minimum of 8 years of actual service as a justice of the Arkansas State Supreme Court or a judge of the circuit courts or the Arkansas Court of Appeals (A.C.A. § 24-8-215). An active or former member in Tier II may retire at age 65 with 8 or more years of actual service or after 20 years of actual service regardless of age (A.C.A. § 24-8-710).

## Increases after Retirement

For any person who was a member on or before June 30, 1983, the retirement benefits are increased or decreased from time to time as the salary for the particular judicial office is increased or decreased. For all judges or justices first elected on or after July 1, 1983, and who have received retirement benefits from the System for at least 12 full calendar months, the retirement benefits are increased each July 1st by 3%. Post retirement increases for members are authorized in A.C.A. sections as follows:

Tier I judges first elected prior to July 1, 1983: § 24-8-218 (c) (1) (B)

Tier I judges first elected after July 1, 1983: § 24-8-223

Tier II judges: § 24-8-717

## Funded Status and Funding Progress

The funded status of the plan as of June 30, 2019, the most recent actuarial date, is as follows (dollar amounts in thousands):

| Valuation Date | (1)<br>Actuarial<br>Value of<br>Assets | (2)<br>Actuarial<br>Accrued<br>Liability<br>(AAL) | (3)<br>Unfunded<br>AAL<br>(UAAL)<br>(2) - (1) | (4)<br>Funded<br>Ratio<br>(1)/(2) | (5)<br>Annual<br>Covered<br>Payroll | (6)<br>UAAL as a<br>Percentage of<br>Covered<br>Payroll<br>[(2-1)/(5)] |
|----------------|--|---|---|-----------------------------------|-------------------------------------|--|
| 6/30/2019      | \$ 260,671                             | \$ 284,488  | \$ 23,817                                     | 91.6%                             | \$ 23,603                           | 101%   |

## Note 2: Summary of Significant Accounting Policies

### Basis of Accounting

AJRS accounts and records are maintained using fund accounting principles, and its financial statements are prepared using the accrual basis of accounting. Contributions and other revenues are recorded in the accounting period in which they are earned, and expenses are recognized when due and payable in accordance with the terms of the System.

### Use of Estimates

The preparation of the System's financial statements in conformity with accounting principles generally accepted in the U.S. requires the System administrator to make significant estimates and assumptions that affect various data in the report, including the following:

- The net position restricted for pensions at the date of the financial statements
- The net pension liability and other actuarial information presented in Note 5
- The required supplementary information as of the benefit information date
- The changes in fiduciary net position during the reporting period

Estimates may also be involved in formulating disclosures of contingent assets and liabilities at the date of the financial statements. Actual results could differ from these estimates.

### Cash and Cash Equivalents

Cash and cash equivalents include demand accounts, cash in state treasury, and short-term investment funds (STIF). The STIF accounts are created through daily sweeps of excess cash by the System's custodian bank into a bank-sponsored commingled fund that is invested in U.S. Government and agency securities and other short-term instruments.

### Risks and Uncertainties

Certain data in this report – including contributions to the System and the net pension liability, as well as other actuarial information in Note 5 and the required supplementary information – has been formulated based on certain projections about interest rates, inflation rates, and employee compensation and demographics. Due to the dynamic nature of these factors, it is possible that these projections will need to be revised in the near term. Moreover, because of the uncertainties inherent in making such projections, the effect of any such changes could be material to the financial statements.

**Note 3: Legally Required Reserves**

A description of reserve accounts and their balances for the years ended June 30, 2019 and 2018 are as follows:

The Members' Deposit Account (MDA) represents members' contributions held in trust until each member's retirement, at which time contributions are transferred to the Retirement Reserve Account, described below.

The Employers' Accumulation Account accumulates employers' contributions to be used in providing the reserves required for transfer to the Retirement Reserve Account as members retire or become eligible for disability benefits.

The Deferred Annuity Account is the reserve account established to cover estimated retirement benefits to inactive vested members who are not currently receiving benefit payments.

The Retirement Reserve Account is the account to which member contributions, interest on those contributions, and employer contributions are transferred upon member retirement.

|  | 2019                  | 2018                  |
|--|-----------------------|-----------------------|
| Members Deposit Account                  | \$ 14,957,126         | \$ 14,195,822         |
| Members Deposit Account Interest Reserve | 698                   | 698                   |
| Employer Accumulation Account            | 91,988,913            | 82,546,830            |
| Retirement Reserve Account               | 158,101,491           | 157,363,456           |
| Deferred Annuity Account                 | 2,231,259             | 2,401,325             |
| Total                                    | <u>\$ 267,279,487</u> | <u>\$ 256,508,130</u> |

Totals may not add due to rounding.



## Note 4: Deposits and Investments

The deposits and investments of the System are exposed to risks that have the potential to result in losses. The following information discloses risks related to credit, interest rate and foreign currency risks, as well as policies related to these risks.

### Deposits

Deposits are carried at cost and are included in "cash and cash equivalents." Cash and cash equivalents consisted of cash deposits with financial institutions of \$5,199, STIF accounts in the amount of \$2,499,138, and \$314 cash in state treasury. State Treasury Management Law governs the management of funds held in the State Treasury (cash in state treasury) and it is the responsibility of the Treasurer of State to ensure the 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 financial institution, the System will not be able to recover deposits or collateral securities held by an outside party. The System's deposit policy is to place deposits only in collateralized or insured accounts. As of June 30, 2019, the System's only deposits exposed to potential custodial credit risk would be any holdings in any foreign currency. As of June 30, 2019, the system had no foreign currency balances. The System holds foreign currency in banks outside the United States as a result of transactions by international investment managers.

### Investments

Arkansas Code Annotated §§ 24-2-601 through 24-2-619 authorize the Board to have full power to invest and reinvest monies of the System and to hold, purchase, sell, assign, transfer or dispose of any of the investments, or proceeds of the investment in accordance with the prudent investor rule. Security transactions and any resulting gains or losses are accounted for on a trade basis. Net investment income includes net appreciation in the fair value of investments, interest income, dividend income, and total investment expense, which includes fees for investment management, custodial fees, and all other significant investment related costs.

Arkansas Code Annotated § 24-2-608 also states the System shall seek to invest not less than 5% or more than 10% of the System's portfolio in Arkansas-related investments. AJRS recognizes a legal responsibility to seek to invest in the Arkansas economy, while realizing its primary, legal, and fiduciary commitment is to beneficiaries of the retirement system. As stated in A.C.A. § 24-2-608 (d), "nothing in this section shall in any way limit or impair the responsibility of a fiduciary to invest in accordance with the prudent investor rule set forth in §§ 24-2-610 – 24-2-619."

Asset allocation guidelines have been established as follows:

| Asset Allocation       | Target | Lower Limit | Upper Limit |
|------------------------|--------|-------------|-------------|
| Domestic Equities      | 37 %   | 32 %        | 42 %        |
| International Equities | 15 %   | 10 %        | 20 %        |
| Fixed Income           | 40 %   | 35 %        | 45 %        |
| Real Estate            | 8 %    | 3 %         | 13 %        |

Investments are reported at fair value as determined by the custodian bank. The custodian bank's determination of fair values includes, among other things, using pricing services or quotes by independent brokers at current exchange rates, as available.

As of June 30, 2019, the System had the following investments:

| Investment Type                   | Fair Value*                  |
|-----------------------------------|------------------------------|
| <b>Government Securities</b>      |                              |
| U.S. Government Securities        | \$ 9,977,739                 |
| U.S. Government Agency Securities | 28,291,627                   |
| Futures                           | 110,900                      |
| <b>Corporate Securities</b>       |                              |
| Fixed Income Commingled           |                              |
| High Yield Income Fund            | 10,647,409                   |
| Collateralized Obligations        | 5,702,039                    |
| Corporate Bonds                   | 33,865,001                   |
| Common Stock                      | 56,666,833                   |
| Domestic Equity Commingled        | 45,754,564                   |
| <b>International Securities</b>   |                              |
| Global Commingled                 | 40,723,576                   |
| Global Corporate Fixed Income     | 6,306,100                    |
| Forwards                          | 0                            |
| Global Equity                     | 0                            |
| Global Govt Fixed                 | 0                            |
| Emerging Markets                  | 391,820                      |
| <b>Real Estate</b>                | 23,993,350                   |
| <b>Commercial Loans</b>           | 2,626,108                    |
| <b>Total</b>                      | <u><u>\$ 265,057,066</u></u> |

\* Principal only. Totals may not add due to rounding.

### Custodial Credit Risk

Custodial credit risk for investments is the risk that, in the event of failure of the counterparty to a transaction, the System will not be able to recover the value of its investments or collateral securities that are in the possession of an outside party. Investment securities are exposed to custodial credit risk if the securities are (a) uninsured, (b) not registered in the name of the government, and (c) held by either the counterparty or the counterparty's trust department or agent but not in the System's name. As of June 30, 2019, there were no investments exposed to custodial credit risk.

### Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of investments. Investments can be highly sensitive to changes in interest rates due to their terms or characteristics. Interest rate risk is the greatest risk faced by an investor in the debt securities market since the price of a debt security will often move in the opposite direction of the change in interest rates.

The System's external fixed income investment manager uses the measurement of effective duration to mitigate the interest rate risk of the fixed income investments. The fixed income investment manager monitors and reports the effective duration on a monthly basis. The effective duration of the investment portfolio is required to be +/- 10% of the benchmark's duration. The benchmark for the U.S. fixed income markets is the Barclays Capital U.S. Aggregate Bond Index.

As of June 30, 2019, the System had the following debt security investments and maturities (see overleaf):

| Investment Type                       | Investment Maturity (In Years) |                     |                      |                      |                      |                         |
|---------------------------------------|--------------------------------|---------------------|----------------------|----------------------|----------------------|-------------------------|
|                                       | Fair Value*                    | Less than<br>1      | 1 - 5                | 6 - 10               | More than 10         | Fund - No<br>Maturities |
| <b>Government Securities</b>          |                                |                     |                      |                      |                      |                         |
| U.S. Government Securities            | \$ 9,977,739                   | \$ 0                | \$ 0                 | \$ 2,026,787         | \$ 7,950,951         | \$ 0                    |
| Agency CMO                            | 6,230,174                      | 0                   | 0                    | 0                    | 6,230,174            | 0                       |
| Agency Pooled                         | 21,556,757                     | 0                   | 0                    | 0                    | 21,556,757           | 0                       |
| U.S. Fixed Futures                    | 110,900                        | 110,900             | 0                    | 0                    | 0                    | 0                       |
| <b>Total Government Securities</b>    | <b>37,875,571</b>              | <b>110,900</b>      | <b>0</b>             | <b>2,026,787</b>     | <b>35,737,883</b>    | <b>0</b>                |
| <b>Corporate Securities</b>           |                                |                     |                      |                      |                      |                         |
| Collateralized Obligations            | 5,440,431                      | 0                   | 1,269,556            | 392,648              | 3,778,227            | 0                       |
| U.S. Corporate Bonds                  | 32,029,764                     | 1,034,039           | 9,047,241            | 13,800,449           | 8,148,034            | 0                       |
| <b>Total Corporate Securities</b>     | <b>37,470,195</b>              | <b>1,034,039</b>    | <b>10,316,798</b>    | <b>14,193,097</b>    | <b>11,926,261</b>    | <b>0</b>                |
| <b>International Securities</b>       |                                |                     |                      |                      |                      |                         |
| Emerging Market                       | 542,259                        | 0                   | 0                    | 0                    | 542,259              | 0                       |
| Global Government Fixed               | 8,389,327                      | 0                   | 3,780,545            | 3,816,561            | 792,221              | 0                       |
| <b>Total International Securities</b> | <b>8,931,586</b>               | <b>0</b>            | <b>3,780,545</b>     | <b>3,816,561</b>     | <b>1,334,480</b>     | <b>0</b>                |
| <b>Commercial Loans</b>               | <b>2,626,108</b>               | <b>0</b>            | <b>2,111,230</b>     | <b>514,878</b>       | <b>0</b>             | <b>0</b>                |
| <b>High Yield Income Fund</b>         | <b>10,647,409</b>              | <b>0</b>            | <b>0</b>             | <b>0</b>             | <b>0</b>             | <b>10,647,409</b>       |
| <b>Grand Total</b>                    | <b>\$ 97,550,868</b>           | <b>\$ 1,144,939</b> | <b>\$ 16,208,572</b> | <b>\$ 20,551,323</b> | <b>\$ 48,998,624</b> | <b>\$ 10,647,409</b>    |

\* Principal only  
Totals may not add due to rounding.

## Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment. The System does not have a formal policy for foreign currency risk. All foreign currency investments are in equities, fixed income, cash and forward contracts.

## Credit Risk

Credit risk of investments is the risk that the issuer or other counterparty will not meet its obligation. This credit risk is measured by the credit quality of investments in debt securities as described by nationally recognized statistical rating organizations. The System has a formal investment policy for credit risk. Exposure to a single issuer is limited to 5%. The Bank of New York Mellon provided the detail of Standard & Poor's (S&P) and Moody's ratings (see overleaf).

The System's exposure to credit risk as of June 30, 2019, was as follows:

### Moody's Credit Rating Dispersion Detail by Credit Rating

| Investment Type and Fair Value        | Aaa                  | Aa                  | A                    |
|---------------------------------------|----------------------|---------------------|----------------------|
| <b>Government Securities</b>          |                      |                     |                      |
| U.S. Government Securities            | \$ 9,977,739         | \$ 0                | \$ 0                 |
| Agency CMO                            | 6,230,174            | 0                   | 0                    |
| Agency Pooled                         | 21,556,757           | 0                   | 0                    |
| U.S. Fixed Futures                    | 0                    | 0                   | 0                    |
| <b>Total Government Securities</b>    | <b>37,764,670</b>    | <b>0</b>            | <b>0</b>             |
| <b>Corporate Securities</b>           |                      |                     |                      |
| Collateralized Obligations            | 2,143,712            | 0                   | 293,009              |
| U.S. Corporate Bonds                  | 756,383              | 1,930,391           | 9,038,197            |
| <b>Total Corporate Securities</b>     | <b>2,900,095</b>     | <b>1,930,391</b>    | <b>9,331,206</b>     |
| <b>International Securities</b>       |                      |                     |                      |
| Emerging Market                       | 0                    | 0                   | 0                    |
| Global Corporate Fixed                | 0                    | 0                   | 2,215,061            |
| <b>Total International Securities</b> | <b>0</b>             | <b>0</b>            | <b>2,215,061</b>     |
| <b>Commercial Loans</b>               | <b>0</b>             | <b>0</b>            | <b>0</b>             |
| <b>High Yield Income Fund</b>         | <b>0</b>             | <b>0</b>            | <b>0</b>             |
| <b>Grand Total</b>                    | <b>\$ 40,664,765</b> | <b>\$ 1,930,391</b> | <b>\$ 11,546,267</b> |

### S&P's Credit Rating Dispersion Detail by Credit Rating

| Investment Type and Fair Value        | AAA                 | AA                   | A                   |
|---------------------------------------|---------------------|----------------------|---------------------|
| <b>Government Securities</b>          |                     |                      |                     |
| U.S. Government Securities            | \$ 0                | \$ 9,977,739         | \$ 0                |
| Agency CMO                            | 0                   | 6,230,174            | 0                   |
| Agency Pooled                         | 0                   | 21,556,757           | 0                   |
| U.S. Fixed Futures                    | 0                   | 0                    | 0                   |
| <b>Total Government Securities</b>    | <b>0</b>            | <b>37,764,670</b>    | <b>0</b>            |
| <b>Corporate Securities</b>           |                     |                      |                     |
| Collateralized Obligations            | 2,061,771           | 147,015              | 0                   |
| U.S. Corporate Bonds                  | 1,239,325           | 1,845,610            | 7,680,475           |
| <b>Total Corporate Securities</b>     | <b>3,301,096</b>    | <b>1,992,624</b>     | <b>7,680,475</b>    |
| <b>International Securities</b>       |                     |                      |                     |
| Emerging Market                       | 0                   | 0                    | 0                   |
| Global Corporate Fixed                | 0                   | 0                    | 1,922,775           |
| <b>Total International Securities</b> | <b>0</b>            | <b>0</b>             | <b>1,922,775</b>    |
| <b>Commercial Loans</b>               | <b>0</b>            | <b>0</b>             | <b>0</b>            |
| <b>High Yield Income Fund</b>         | <b>0</b>            | <b>0</b>             | <b>0</b>            |
| <b>Grand Total</b>                    | <b>\$ 3,301,096</b> | <b>\$ 39,757,295</b> | <b>\$ 9,603,249</b> |

\* Principal only  
Totals may not add due to rounding.

| Baa                  | Ba                  | B                   | Caa or below      | NR                   | Fair Value*          |
|----------------------|---------------------|---------------------|-------------------|----------------------|----------------------|
| \$ 0                 | \$ 0                | \$ 0                | \$ 0              | \$ 0                 | \$ 9,977,739         |
| 0                    | 0                   | 0                   | 0                 | 0                    | 6,230,174            |
| 0                    | 0                   | 0                   | 0                 | 0                    | 21,556,757           |
| 0                    | 0                   | 0                   | 0                 | 110,900              | 110,900              |
| 0                    | 0                   | 0                   | 0                 | 110,900              | 37,875,571           |
| 0                    | 0                   | 0                   | 147,604           | 2,856,106            | 5,440,431            |
| 14,453,609           | 2,890,949           | 481,484             | 0                 | 2,478,751            | 32,029,764           |
| 14,453,609           | 2,890,949           | 481,484             | 147,604           | 5,334,857            | 37,470,195           |
| 542,259              | 0                   | 0                   | 0                 | 0                    | 542,259              |
| 4,283,553            | 1,280,226           | 0                   | 0                 | 610,488              | 8,389,327            |
| 4,825,812            | 1,280,226           | 0                   | 0                 | 610,488              | 8,931,586            |
| 0                    | 651,486             | 812,814             | 0                 | 1,161,808            | 2,626,108            |
| 0                    | 0                   | 0                   | 0                 | 10,647,409           | 10,647,409           |
| <u>\$ 19,279,420</u> | <u>\$ 4,822,661</u> | <u>\$ 1,294,297</u> | <u>\$ 147,604</u> | <u>\$ 17,865,462</u> | <u>\$ 97,550,868</u> |
| BBB                  | BB                  | B                   | CCC or below      | NR                   | Fair Value*          |
| \$ 0                 | \$ 0                | \$ 0                | \$ 0              | \$ 0                 | \$ 9,977,739         |
| 0                    | 0                   | 0                   | 0                 | 0                    | 6,230,174            |
| 0                    | 0                   | 0                   | 0                 | 0                    | 21,556,757           |
| 0                    | 0                   | 0                   | 0                 | 110,900              | 110,900              |
| 0                    | 0                   | 0                   | 0                 | 110,900              | 37,875,571           |
| 0                    | 0                   | 0                   | 147,604           | 3,084,042            | 5,440,431            |
| 17,756,985           | 2,053,153           | 226,406             | 0                 | 1,227,811            | 32,029,764           |
| 17,756,985           | 2,053,153           | 226,406             | 147,604           | 4,311,853            | 37,470,195           |
| 542,259              | 0                   | 0                   | 0                 | 0                    | 542,259              |
| 5,354,470            | 1,112,082           | 0                   | 0                 | 0                    | 8,389,327            |
| 5,896,729            | 1,112,082           | 0                   | 0                 | 0                    | 8,931,586            |
| 562,521              | 994,289             | 1,069,298           | 0                 | 0                    | 2,626,108            |
| 0                    | 0                   | 0                   | 0                 | 10,647,409           | 10,647,409           |
| <u>\$ 24,216,234</u> | <u>\$ 4,159,524</u> | <u>\$ 1,295,704</u> | <u>\$ 147,604</u> | <u>\$ 15,070,162</u> | <u>\$ 97,550,868</u> |

## Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributed to the magnitude of the System's investment in a single issuer (not including investments issued or guaranteed by the U.S. Government or investments in mutual funds or external investment pools). Each investment manager retained by the System has its own individualized investment policy regarding the concentration of credit risk. None of the System's investments in any one issuer (other than those issued or guaranteed by the U.S. Government) represented more than 5% of total investments.

## Mortgage-Backed Securities

The System invests in mortgage-backed securities (MBSs) which are reported at fair value in the Statement of Fiduciary Net Position. MBSs entitle their holders to receive both principal and interest payments from the payments made by the borrowers of the underlying mortgages over the lives of those loans. An MBS depends on the underlying pool of mortgage loans to provide cash flow to make principal and interest payments on the security. The life of a mortgage that underlies an MBS can be shortened by several economic events, including borrower refinancing. When interest rates decline and remain low, borrowers may refinance their existing loans which causes MBS holders to be repaid more quickly than originally anticipated, and is known as prepayments. Prepayments reduce the weighted average life of the security and are a form of market risk assumed by the holders of MBSs. Alternatively, when interest rates rise, the refinancing of existing mortgages slows. If interest rates remain high for long periods of time fewer borrowers refinance their mortgages. As a result MBS holders are repaid over longer periods of time, which is known as extension risk. Extension risk increases the weighted average life of the security and is another form of market risk assumed by holders of MBSs.

A collateralized mortgage obligation (CMO) is an MBS that is composed of classes of bonds created by prioritizing the cash flows of the underlying mortgage pool. This redistributes prepayment risk and credit risk among the various bond classes in the CMO structure. Income is derived from payments and prepayments of principal and interest generated from collateral mortgages. CMOs may be collateralized by whole-loan mortgages, mortgage pass-through securities, or stripped mortgage-backed securities. As of June 30, 2019 the System held approximately \$5.072 million of collateralized obligations.

The System invests in MBSs and CMOs for diversification and to enhance fixed income returns. In addition to the risks outlined above, MBSs are subject to credit risk, the risk that the borrower will be unable to meet its obligations.

As of June 30, 2019, the System held approximately \$27.786 million in mortgage-backed securities, none of which were considered as highly sensitive to changes in interest rates.



### Asset-Backed Securities

As of June 30, 2019, the System did not have any asset-backed securities. Asset-backed securities (ABSs) are bonds or notes backed by loan paper or accounts receivable originated by banks, credit card companies, or other credit providers. The originator of the loan or accounts receivable paper sells it to a specially created trust, which repackages it as securities. Similar to the collateralized mortgage obligations described above, ABSs have been structured as pass-through securities and as structures with multiple bond classes. The System's ability to recover the amount of principal invested in these securities depends on the performance and quality of the trust assets.

### Corporate Bonds

As of June 30, 2019, the System held corporate bonds with a fair value of approximately \$33.865 million. Corporate bonds are a debt security issued by a corporation. The backing for the bond is usually the ability of the company to pay the debt, which is typically based on money to be earned from future operations. In some cases, the company's physical assets may be used as collateral for bonds. Such bonds usually have a fixed term maturity and can have either a fixed or variable interest rate. Variable interest rate bonds have adjustments that are made periodically and vary directly with movements in interest rates.

### Pooled Funds

AJRS has approximately \$40.723 million invested in international pooled funds. AJRS could be indirectly exposed to credit and market risks associated with currency forward contracts to the extent that these pooled funds hold currency forward contracts for purposes of managing exposure to fluctuations in foreign exchange rates.

### Derivative Instruments

Derivative instruments are financial contracts or agreements whose values depend on the values of one or more underlying assets, reference rates, or financial indexes. Derivative instruments include futures contracts, forward contracts, swap contracts, options contracts, and forward foreign currency exchange. At any given time, AJRS, through its external investment managers, may hold such instruments. The external investment managers may enter into these investments on behalf of AJRS, primarily to enhance the performance and reduce the volatility of its portfolio. The external investment managers may enter into swaps and futures contracts to gain or hedge exposure to certain markets and to manage interest rate risk. AJRS' external investment managers seek to control this risk by evaluating the counterparties before approval, establishing credit limits for each counterparty, and employing procedures for monitoring exposure to credit risk. AJRS' external investment managers anticipate that the counterparties will be able to satisfy their obligations under the contracts. Investments in limited partnerships and commingled funds may include derivatives that are not shown in any derivative totals.

The external investment manager invests in MBSs, which are reported at fair value in the Statement of

Fiduciary Net Position. Because MBSs are based on the cash flows from interest and principal payments of the underlying mortgages, they are sensitive to prepayments on mortgages in a declining interest rate environment that could reduce the value of the securities. The external investment manager may invest in MBSs to diversify AJRS' portfolio and increase return while minimizing the extent of risk.

As of June 30, 2019, the System had the following U.S. Treasury futures:

| Future Description               | Maturity Date | Notional Value      | Fair Value       | Unrealized Gain/(Loss) |
|----------------------------------|---------------|---------------------|------------------|------------------------|
| U.S. 2-year Treasury Note        | Sept 2019     | \$ 3,629,633        | 3,658,055        | \$ 28,422              |
| U.S. 5-year Treasury Note        | Sept 2019     | (4,294,195)         | (4,371,781)      | (77,586)               |
| U.S. 10-year Treasury Note       | Sept 2019     | 3,862,406           | 3,967,031        | 104,625                |
| U.S. 10-year Ultra Treasury Note | Sept 2019     | (137,766)           | (138,125)        | (359)                  |
| U.S. Long Bond Treasury          | Sept 2019     | (1,633,783)         | (1,711,531)      | (77,748)               |
| U.S. Ultra Bond Treasury         | Sept 2019     | 2,352,328           | 2,485,875        | 133,547                |
|                                  |               | <u>\$ 3,778,623</u> | <u>3,889,523</u> | <u>\$ 110,900</u>      |

### Fair Value Measurements

AJRS categorizes its fair value measurements within the fair value hierarchy by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset and give the highest priority to unadjusted quoted prices in active markets for identical assets of liabilities (Level 1 measurements) and the lower priority to unobservable inputs (Level 3 measurements).

- 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.

Investments that are measured at fair value using the net asset value per share (or its equivalent) as a practical expedient are not classified in the fair value hierarchy.

In instances where inputs used to measure fair value fall into different levels in the fair value hierarchy, fair value measurements in their entirety are categorized based on the lowest level input that is significant to the valuation. The System assessment of the significance of particular inputs to these fair value measurements requires judgment and considers factors specific to each asset or liability. The table(s) on

the following pages shows the fair value leveling of the investments for the System.

Assets classified in Level 1 of the fair value hierarchy are valued directly from a predetermined primary external pricing vendor. Assets classified in Level 2 are subject to pricing by an alternative pricing source due to lack of information available by the primary vendor. Real estate, timberland, and Partnership assets classified in Level 3, due to lack of an independent pricing source, are valued using an internal fair value as provided by the investment manager.

The categorization of investments within the hierarchy is based upon the pricing transparency of the instrument(s) and should not be perceived as the particular investment's risk.

#### Investments and Derivative Instruments Measured at Fair Value (as of June 30, 2019)

|  | Fair Value            | Level 1              | Level 2              | Level 3             |
|--|-----------------------|----------------------|----------------------|---------------------|
| <b>Investments at Fair Value</b>       |                       |                      |                      |                     |
| U.S. Domestic Equities                 | \$ 57,034,708         | \$ 56,666,833        | \$ 367,875           | \$ 0                |
| Fixed Income                           |                       |                      |                      |                     |
| U.S. Government Securities             | 27,933,946            | 0                    | 27,933,946           | 0                   |
| Collateralized Obligations             | 6,645,845             | 0                    | 6,645,845            | 0                   |
| Futures                                | 0                     | 0)                   | 0                    | 0                   |
| Global Corporate Fixed                 | 8,389,327             | 0                    | 8,389,327            | 0                   |
| Emerging Markets                       | 542,259               | 0                    | 542,259              | 0                   |
| Corporate Bonds                        | 30,677,335            | 0                    | 30,677,335           | 0                   |
| Commercial Loans                       | 2,626,108             | 0                    | 0                    | 2,626,108           |
| <b>Total Investments at Fair Value</b> | <u>\$ 133,849,528</u> | <u>\$ 56,666,833</u> | <u>\$ 74,556,587</u> | <u>\$ 2,626,108</u> |

#### Investments at the Net Asset Value (NAV)

|   |                       |
|---|-----------------------|
| Defensive Bond Fund                       | \$ 8,601,872          |
| High Yield Core Fund                      | 2,045,536             |
| Baillie Gifford International Choice Fund | 40,723,576            |
| Invesco Core Real Estate Fund             | 23,993,350            |
| Wellington Diversified Growth Fund        | 45,754,564            |
| <b>Total Investments at the NAV</b>       | <u>\$ 121,118,899</u> |

Investments classified as level 1 in the preceding table 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.

Investments classified as level 2 in the preceding table include publicly traded debt securities and exchange traded stocks in inactive markets. Investments in this category are sourced from reputable pricing vendors using pricing 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. These prices are obtained from various pricing sources by AJRS' custodian bank which maintains the book of record for all investments.

Totals may not add due to rounding.

Investments classified as level 3 in the preceding table are unobservable, meaning that the assets lack an independent pricing source. Values are provided by the investment manager or an external pricing source such as an independent appraiser.

### Investments Measured at the Net Asset Value (NAV)

The fair value of investments that are organized as commingled funds or limited partnerships have no readily ascertainable fair value. The value is determined by using the net asset value per share or its equivalent. Commingled fund values are based on each investor's proportionate share of the total underlying assets in the fund less any liabilities for client withdrawals, investment purchases or other accrued expenses. Limited partnership values are based on the capital account balance 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 and published market prices for certain securities. Even though the limited partnerships and commingled funds issue annual financial statements audited by independent auditors, the year-end for the State and these entities do not always agree.

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. With certain exceptions, mainly the equity and the fixed income funds, these investments cannot be redeemed, or, have certain restrictions regarding redemption. The real estate investments distributions are through the liquidation of the underlying assets or net operating cash flows. Each investment has a different redemption frequency and notice period as noted in the following table.

|   | Fair Value            | Strategy Type                  | Fund Life of Non-redeemable Mandates | Unfunded Commitments | Redemption Frequency (if currently eligible) | Redemption Notice Period | Other Redemption Restrictions | Restriction Time Remaining |
|---|-----------------------|--------------------------------|--------------------------------------|----------------------|--|--------------------------|-------------------------------|----------------------------|
| Defensive Bond Fund                       | \$ 8,601,872          | Income Oriented                | N/A                                  | none                 | daily  | T + 1                    | N/A                           | N/A                        |
| High Yield Core Fund                      | 2,045,536             | Active High Yield Fixed Income | N/A                                  | none                 | daily  | T + 1                    | N/A                           | N/A                        |
| Baillie Gifford International Choice Fund | 40,723,576            | International Equities         | N/A                                  | none                 | daily  | T + 3                    | N/A                           | N/A                        |
| Invesco Core Real Estate Fund             | 23,993,350            | Core Real Estate               | N/A                                  | none                 | quarterly                                    | T + 45                   | N/A                           | N/A                        |
| Diversified Growth Fund                   | 45,754,564            | U.S. Large Cap Growth stocks   | N/A                                  | none                 | daily  | T + 1                    | N/A                           | N/A                        |
| Total                                     | <u>\$ 121,118,899</u> |                                |                                      |                      |  |                          |                               |                            |

Totals may not add due to rounding.

### Baillie Gifford International Choice Fund

The Choice Fund aims to deliver good long-term performance to shareholders by investing in a portfolio of 60-90 international growth stocks with up to 15% in emerging markets. The portfolio is built through bottom-up stock selection. It differs from the benchmark and looks for businesses that seek to outperform the market over the long term. Portfolio guidelines ensure a level of diversification across sectors and regions.

### Invesco Core Real Estate (ICRE)

The ICRE strategy is a portfolio of U.S. properties diversified by property type and geographic location, with an emphasis on attractive current income returns and the opportunity for both income and capital growth. It is based on top-down economic fundamentals combined with bottom-up local market intelligence.

### Defensive Bond Arbitrage Fund

The Defensive Bond Arbitrage Fund's investment objective is to exploit different sources of return in high yield corporate securities in a way that generates risk-adjusted returns superior to those available from conventional high yield securities. The investment strategy is based on the assumption and observation that numerous market inefficiencies exist throughout the capital markets (particularly in the high yield bond markets) and that the prudent, active, and systematic exploitation of these inefficiencies can generate returns consistent with these objectives.

### High Yield Income Fund

The High Yield Active Core philosophy is centered on the belief that the best risk-adjusted returns and, ultimately, the best absolute returns are generated by a strategy of yield capture and error avoidance.

### Wellington CIF II Diversified Growth Fund

The investment objective of the Diversified Growth Fund is to provide long-term returns above those of the Russell 1000 Growth Index by investing primarily in large U.S. companies that are projected to grow faster than other large-cap stocks.

## Note 5: Net Pension Liability

The components of the net pension liability of the System at June 30, 2019, were as follows:

|                             |                      |
|-----------------------------|----------------------|
| Total Pension Liability     | \$ 284,488,459       |
| Plan Fiduciary Net Position | \$ 267,279,487       |
| Net Pension Liability       | <u>\$ 17,208,972</u> |

|  |        |
|--|--------|
| Plan fiduciary net position as a percentage of total pension liability | 93.95% |
|--|--------|

## Long-Term Expected Return on Plan Assets

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 asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return were provided by the plan's investment consultant. For each major asset class that is included in the pension plan's target asset allocation as of June 30, 2019 these best estimates, provided by the plan's investment consultant, are summarized in the following table:

| Asset Class                                  | Target Allocation | Long-Term Expected Real Rate of Return |
|--|-------------------|--|
| Broad Domestic Equity                        | 37%               | 6.21%                                  |
| International Equity                         | 15                | 6.79                                   |
| Real Estate                                  | 8                 | 5.02                                   |
| Cash Equivalents                             | 0                 | 0.25                                   |
| Domestic Fixed                               | 40                | 1.56                                   |
| <b>Total</b>                                 | <u>100%</u>       |  |
| Total Real Rate of Return                    |                   | 4.34%                                  |
| Plus: Price Inflation - Actuary's Assumption |                   | 2.50                                   |
| Less: Admin and Investment Expenses*         |                   | <u>0.00</u>                            |
| <b>Net Expected Return</b>                   |                   | 6.84%                                  |

\* This may overstate the investment expense as the investment market assumptions are based upon passive management. Our assumption for investment expense includes the cost of active management.

### Annual Money-Weighted Rate of Return

For the year ended June 30, 2019, the annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was 5.72%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

### Discount Rate

A single discount rate of 5.75% 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 5.75%. 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 made at rates equal to the difference between actuarially determined contribution rates and the member rate. 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.

### Sensitivity of the Net Pension Liability

The following table presents the net pension liability of the System, calculated using the discount rate of 5.75%, as well as what the System's net pension liability would be if it were calculated using a discount rate of one percentage point lower (4.75%) or one percentage point higher (6.75%) than the current rate.

|                       | 1% Decrease   | Current Discount Rate | 1% Increase     |
|-----------------------|---------------|-----------------------|-----------------|
|                       | 4.75%         | 5.75%                 | 6.75%           |
| Net Pension Liability | \$ 51,551,276 | \$ 17,208,972         | \$ (11,880,456) |

The Board engages an independent firm of actuaries to (1) estimate the present value of actuarial accrued liabilities (AALs) and pension benefit obligations so they can then (2) determine the reserves and employer contribution rates that are required to meet the System's obligations to current and terminated participants, retired individuals, and beneficiaries.

AALs are those future periodic payments including lump sum distributions that are attributable to the service employees have rendered to date and the plan provisions of the System. The present value of AALs is calculated based on the entry age actuarial cost method with benefits based on projected salary increases. The actuarial assumed investment rate of return of 5.75% was allocated to appropriate actuarial accrued liabilities.

### Actuarial Gains and Losses

Actuarial gains and losses result from the differences between the AAL amount computed by the actuary and those same amounts reflected in the required supplemental schedules as of the date of the actuarial report. The net actuarial gain or loss increases or decreases the unfunded AAL based on the annual actuarial valuation. The 2019 actuarial gains and losses were due to routine adjustments of actuarial assumptions and methodology, as well as normal experience gains and losses. The resulting actuarial gain was \$5,577,710.

### Actuarial Computed Liabilities

The total unfunded actuarial computed liability of the System as adjusted to fair value, based on entry age normal cost method which is the projected benefit method with a supplemental cost, used for determining required contributions as appears in the actuarial valuation, was \$23,817,084 as of June 30, 2019.

| ACTUARIAL PRESENT VALUE OF  | (1)<br>Total<br>Present<br>Value | (2)<br>Portion Covered<br>By Future Normal<br>Cost Contributions | (3)<br>Actuarial Accrued<br>Liabilities<br>(1)-(2) |
|---|----------------------------------|--|--|
| Benefits to be paid to current retirees, beneficiaries, and future beneficiaries of current retirees                            | \$ 160,858,411                   | \$ 0   | \$ 160,858,411                                     |
| Age and service allowances based on total service likely to be rendered by present active members                               | 166,487,962                      | 48,790,594   | 117,697,368  |
| Separation benefits (refunds of contributions and deferred allowances) likely to be paid to present active and inactive members | 4,672,287                        | 2,504,814  | 2,167,473  |
| Disability benefits likely to be paid to present active members   | 1,256,433                        | 1,932,035  | (675,602)  |
| Death-in-service benefits likely to be paid on behalf of present active members   | 7,337,358                        | 2,896,549  | 4,440,809  |
| Total   | \$ 340,612,451                   | \$ 56,123,992  | \$ 284,488,459                                     |
| Applicable Assets (Funding Value)   | 260,671,375                      | 0  | 260,671,375  |
| Liabilities to be covered by future contributions   | \$ 79,941,076                    | \$ 56,123,992  | \$ 23,817,084                                      |



## REQUIRED SUPPLEMENTARY INFORMATION

The historical trend information designed to provide information about the System's progress made in accumulating sufficient assets to pay benefits when due is required supplementary information.

### Schedule of Employer Contributions

| Year Ended<br>June 30 | Annual Required<br>Contribution | Percent<br>Contributed |
|-----------------------|---------------------------------|------------------------|
| 2010                  | \$ 4,667,612                    | 100%                   |
| 2011                  | 5,220,623                       | 100                    |
| 2012                  | 5,465,079                       | 100                    |
| 2013                  | 5,672,291                       | 100                    |
| 2014                  | 6,117,327                       | 100                    |
| 2015                  | 5,690,381                       | 100                    |
| 2016                  | 5,561,289                       | 100                    |
| 2017                  | 8,485,361                       | 100                    |
| 2018                  | 8,421,173                       | 100                    |
| 2019                  | \$ 8,233,959                    | 100%                   |

Source: actuarial valuations as of 6/30/2019

The percentage contributed amounts are included per Act 922 of 1983, which authorizes an annual transfer from the Constitutional Officers Fund and the State Central Services Fund to provide full actuarial funding for the System. Because of the timing of this annual transfer, the actual percentage contributed in any single fiscal year may vary from the annual required contribution amount.

### Schedule of Funding Progress

| Actuarial<br>Valuation<br>Date | Actuarial Value<br>of Assets<br>(a) | Entry Age<br>(AAL)<br>(b) | UAAL*<br>(b) - (a) | Funded Ratio<br>(a)/(b) | Annual<br>Covered<br>Payroll<br>(c) | UAAL* as a<br>Percentage of<br>Covered Payroll<br>[(b-a)/(c)] |
|--------------------------------|-------------------------------------|---------------------------|--------------------|-------------------------|-------------------------------------|---|
| 6/30/10                        | \$ 165,244                          | \$ 182,912                | \$ 17,668          | 90.3%                   | \$ 18,630                           | 95%   |
| 6/30/11                        | 165,377                             | 186,635                   | 21,258             | 88.6                    | 19,338                              | 110   |
| 6/30/12                        | 167,796                             | 195,455                   | 27,658             | 85.8                    | 19,202                              | 144   |
| 6/30/13                        | 182,596                             | 203,134                   | 20,537             | 89.9                    | 19,586                              | 105   |
| 6/30/14                        | 201,792                             | 208,006                   | 6,213              | 97.0                    | 19,782                              | 31  |
| 6/30/15                        | 215,448                             | 254,714                   | 39,266             | 84.6                    | 22,308                              | 176   |
| 6/30/16                        | 225,254                             | 260,522                   | 35,268             | 86.5                    | 22,308                              | 158   |
| 6/30/17                        | 238,956                             | 270,382                   | 31,426             | 88.4                    | 22,918                              | 137   |
| 6/30/18                        | 249,096                             | 279,175                   | 30,078             | 89.2                    | 23,435                              | 128   |
| 6/30/19                        | \$ 260,671                          | \$ 284,488                | \$ 23,817          | 91.6%                   | \$ 23,603                           | 101%  |

\* UAAL is unfunded actuarial accrued liability. Dollars in thousands

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

| Year Ended June 30   | 2019                  | 2018                  |
|--|-----------------------|-----------------------|
| <b>Total Pension Liability</b>   |                       |                       |
| Service Cost   | \$ 6,919,400          | \$ 6,927,257          |
| Interest   | 15,877,675            | 15,378,982            |
| Benefit Changes  | 0                     | 0                     |
| Differences Between Expected And Actual Experience                           | (4,481,503)           | (743,902)             |
| Assumption Changes   | 0                     | 0                     |
| Benefit Payments   | (12,979,769)          | (12,769,175)          |
| Refunds  | (22,024)              | 0                     |
| <b>Net Change In Total Pension Liability</b>                                 | <b>\$ 5,313,779</b>   | <b>\$ 8,793,162</b>   |
| <b>Total Pension Liability, Beginning of Year</b>                            | <b>\$ 279,174,680</b> | <b>\$ 270,381,518</b> |
| <b>Total Pension Liability, End of Year (A)</b>                              | <b>\$ 284,488,459</b> | <b>\$ 279,174,680</b> |
| <b>Fiduciary Net Position</b>  |                       |                       |
| Contributions - Employer   | \$ 8,233,959          | \$ 8,421,173          |
| Contributions - Member   | 988,612               | 1,016,180             |
| Net Investment Income  | 14,655,787            | 19,162,603            |
| Benefit Payments   | (12,979,769)          | (12,769,175)          |
| Other  | 41,854                | 11                    |
| Refunds  | (22,024)              | 0                     |
| Administrative Expense   | (147,062)             | (142,311)             |
| <b>Net Change In Fiduciary Net Position</b>                                  | <b>10,771,357</b>     | <b>15,688,482</b>     |
| <b>Fiduciary Net Position, Beginning of Year</b>                             | <b>\$ 256,508,130</b> | <b>\$ 240,819,648</b> |
| <b>Fiduciary Net Position, End of Year (B)</b>                               | <b>\$ 267,279,487</b> | <b>\$ 256,508,130</b> |
| <b>Net Pension Liability, End of Year (A) - (B)</b>                          | <b>\$ 17,208,972</b>  | <b>\$ 22,666,550</b>  |
| <b>Fiduciary Net Position as a Percentage of the Total Pension Liability</b> | <b>93.95%</b>         | <b>91.88%</b>         |
| Covered-Employee Payroll   | \$ 23,602,735         | \$ 23,434,639         |
| Net Pension Liability as a Percentage of Covered-Employee Payroll            | 72.91%                | 96.72%                |

Totals may not add due to rounding.

| 2017                  | 2016                  | 2015                  | 2014                  |
|-----------------------|-----------------------|-----------------------|-----------------------|
| \$ 7,221,153          | \$ 7,230,267          | \$ 5,342,168          | \$ 5,319,836          |
| 16,121,127            | 15,770,309            | 14,883,382            | 14,607,426            |
| 0                     | 0                     | 0                     | 0                     |
| (3,462,751)           | (5,184,045)           | 12,969,853            | (5,751,106)           |
| 2,369,244             | 0                     | 24,290,229            | 0                     |
| (12,310,422)          | (12,007,538)          | (10,762,871)          | (9,966,020)           |
| (79,011)              | (800)                 | (14,320)              | (18,836)              |
| <u>\$ 9,859,340</u>   | <u>\$ 5,808,193</u>   | <u>\$ 46,708,441</u>  | <u>\$ 4,191,300</u>   |
| <u>\$ 260,522,178</u> | <u>\$ 254,713,985</u> | <u>\$ 208,005,544</u> | <u>203,814,244</u>    |
| <u>\$ 270,381,518</u> | <u>\$ 260,522,178</u> | <u>\$ 254,713,985</u> | <u>\$ 208,005,544</u> |
| <br>                  |                       |                       |                       |
| \$ 8,485,361          | \$ 5,561,289          | \$ 5,690,381          | \$ 6,117,327          |
| 1,016,646             | 1,011,372             | 946,149               | 925,324               |
| 28,044,374            | (1,744,085)           | 9,971,823             | 29,793,113            |
| (12,310,422)          | (12,007,538)          | (10,762,871)          | (9,966,020)           |
| 45,832                | 0                     | 0                     | 0                     |
| (79,011)              | (800)                 | (14,320)              | (18,836)              |
| (168,701)             | (158,420)             | (137,951)             | (130,529)             |
| <u>25,034,079</u>     | <u>(7,338,182)</u>    | <u>5,693,211</u>      | <u>26,720,379</u>     |
| <u>\$ 215,785,569</u> | <u>\$ 223,123,751</u> | <u>\$ 217,430,540</u> | <u>\$ 190,710,161</u> |
| <u>\$ 240,819,648</u> | <u>\$ 215,785,569</u> | <u>\$ 223,123,751</u> | <u>\$ 217,430,540</u> |
| <u>\$ 29,561,870</u>  | <u>\$ 44,736,609</u>  | <u>\$ 31,590,234</u>  | <u>\$ (9,424,996)</u> |
| <br>                  |                       |                       |                       |
| 89.07%                | 82.83%                | 87.60%                | 104.53%               |
| <br>                  |                       |                       |                       |
| \$ 22,917,870         | \$ 22,308,000         | \$ 22,308,000         | \$ 19,781,628         |
| <br>                  |                       |                       |                       |
| 128.99%               | 200.54%               | 141.61%               | (47.65)%              |

### Schedule of Net Pension Liabilities

| FY Ending<br>June 30 | Total Pension<br>Liability | Plan Net<br>Position | Net Pension<br>Liability | Plan Net<br>Position as<br>a % of Total<br>Pension<br>Liability | Covered Payroll | Net Pension<br>Liability as a<br>% of Covered<br>Payroll |
|----------------------|----------------------------|----------------------|--------------------------|---|-----------------|--|
| 2014                 | \$ 208,005,544             | \$ 217,430,541       | \$ (9,424,997)           | 104.53%   | \$ 19,781,628   | (47.65)%   |
| 2015                 | \$ 254,713,985             | \$ 223,123,751       | \$ 31,590,234            | 87.60%  | \$ 22,308,000   | 141.61%  |
| 2016                 | \$ 260,522,178             | \$ 215,785,569       | \$ 44,736,609            | 82.83%  | \$ 22,308,000   | 200.54%  |
| 2017                 | \$ 270,381,518             | \$ 240,819,648       | \$ 29,561,870            | 89.07%  | \$ 22,917,870   | 128.99%  |
| 2018                 | \$ 279,174,680             | \$ 256,508,130       | \$ 22,666,550            | 91.88%  | \$ 23,434,705   | 96.72%   |
| 2019                 | \$ 284,488,459             | \$ 267,279,487       | \$ 17,208,972            | 93.95%  | \$ 23,602,735   | 72.91%   |

### Schedule of Investment Returns

Annual money-weighted rate of return, net of investment expense

|      |         |
|------|---------|
| 2014 | 15.63%  |
| 2015 | 4.60%   |
| 2016 | (0.79)% |
| 2017 | 12.93%  |
| 2018 | 7.94%   |
| 2019 | 5.72%   |

## NOTES TO REQUIRED SUPPLEMENTARY INFORMATION

## Schedule of Administrative Expenses

|                                      | 2019              | 2018              |
|--------------------------------------|-------------------|-------------------|
| Communications                       |                   |                   |
| Printing and Advertising             | \$ 1,992          | \$ 2,626          |
| Travel                               | 1,240             | 1,519             |
| Services and Charges                 |                   |                   |
| Professional Fees and Services       | 31,500            | 24,700            |
| Bank & Federal Service Charges       | 2,280             | 5,165             |
| Total Services and Charges           | 33,780            | 29,865            |
| Transfer to APERS for Administration | 110,050           | 108,301           |
| Total Administrative Expenses        | <u>\$ 147,062</u> | <u>\$ 142,311</u> |

NOTE: Administrative expenses will change once pension expense amount is adjusted based upon actuarially determined net pension liability.

## Schedule of Investment Expenses (as of June 30, 2019)

|                           | 2019                | 2018                |
|---------------------------|---------------------|---------------------|
| Custodian Bank Fees       | \$ 14,669           | \$ 10,750           |
| Investment Consultant Fee | 64,338              | 61,864              |
| Investment Manager Fees*  | 1,197,103           | 1,196,163           |
| Transaction Fees          | 0                   | 0                   |
| Total Investment Expenses | <u>\$ 1,276,110</u> | <u>\$ 1,268,777</u> |

\* For fee paid to investment managers, please see the schedule of investment fees shown on page 67.

## Schedule of Payments for Professional Consultants (as of June 30, 2019)

|                                  | 2019      | 2018      |
|----------------------------------|-----------|-----------|
| Gabriel, Roeder, Smith & Company | \$ 31,500 | \$ 24,700 |

Totals may not add due to rounding.

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# Investments

Chief Investment Officer's Report

Investment Consultant's Report

Investment Policy Summary

Asset Allocation

Manager Distribution

Schedule of Comparative Investment Results by Year

Schedule of Comparative Annualized Investment Results

Portfolio Characteristics

Ten Largest Holdings

Schedule of Brokerage Commissions

Schedule of Investment Fees

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## CHIEF INVESTMENT OFFICER'S REPORT

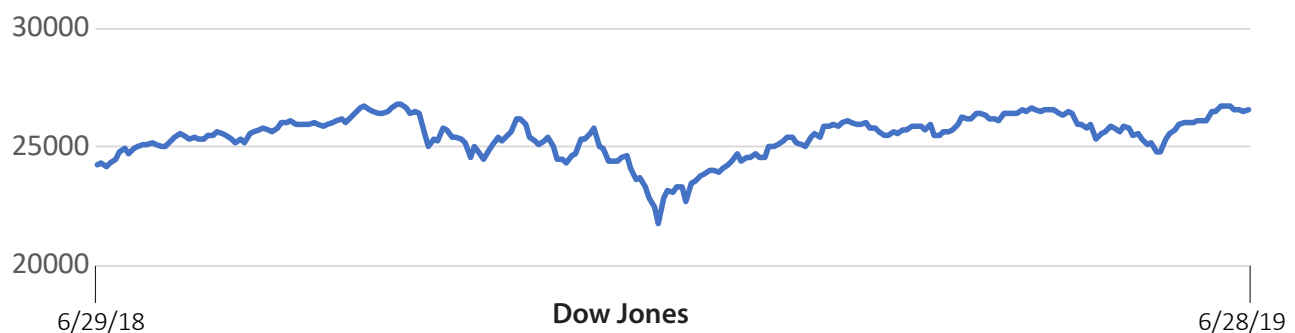
Dear Members,

On behalf of the APERS Investment Department, it is my pleasure to present the Investment Section of the AJRS' Annual Financial Report for the fiscal year ended June 30, 2019.

### Performance and Stability

For fiscal year 2019, the AJRS investment portfolio closed with total investments and cash of \$267,613,390. The investment return for the fiscal year was 6.14%.

The strength of the return was largely driven by the exposure to domestic equities, diversified strategies, and domestic fixed income, as you will read in my Financial Market Recap which follows. Domestic Equities as an Asset Class contributed 8.12% to the total performance of the investment fund as the Dow Jones set a new record high in January 2019 of 26,616.



Diversified Strategies as an asset class contributed 10.20% to the total performance of the investment fund. Domestic Fixed Income as an asset class contributed 8.57% to the total performance of the investment fund. Interest rates tried to grind higher but the Federal Reserve changed its tune from hawkish to dovish going into the end of the second quarter of 2019.



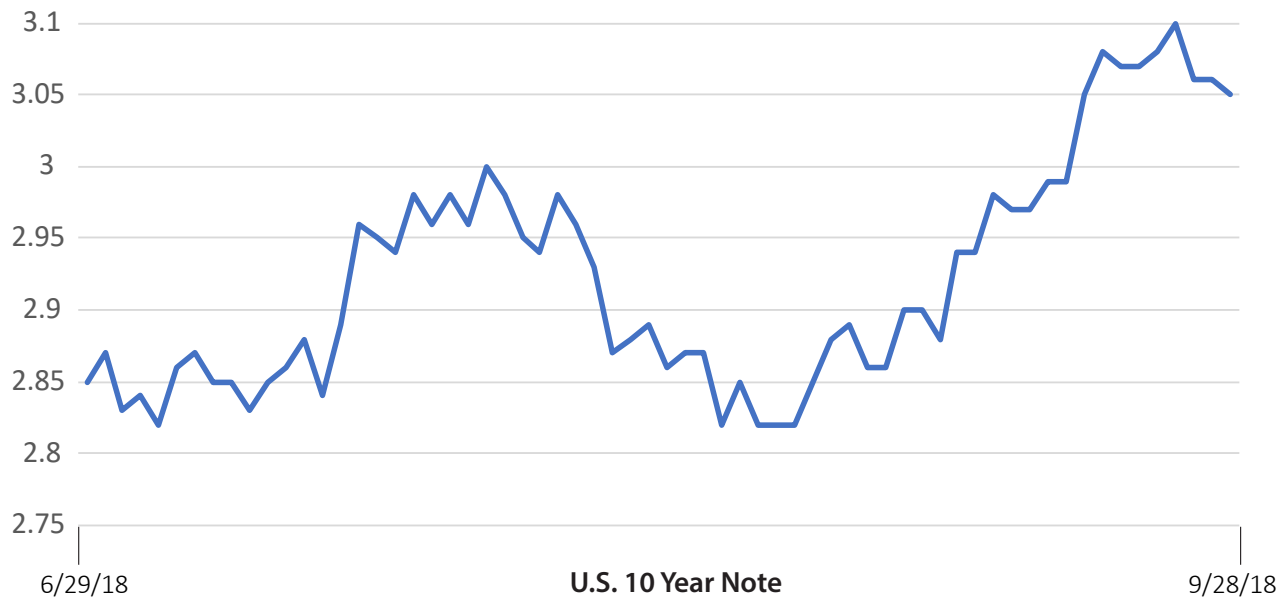
## Fiscal Year 2018-2019 Global Financial Market Recap

Last year I wrote that the final quarter of fiscal year 2018 (2Q of 2018) could have been called a lot of things, but, boring was not one of them. If you recall, the potential for a trade war between China and the United States heated up as President Trump continued to threaten tariffs on a range of imports from China, Mexico, Canada, and Europe. China then responded by issuing the same magnitude of tariffs on American exports. There were political elections in Italy along with divisions within Germany's ruling coalition government that further rattled market sentiment as populist anti-establishment, anti-immigrations movements threatened the stability of the Euro. Mexico elected Lopez Obrador in a landslide vote. Turkey saw President Erdogan consolidate power and the markets braced for authoritarian rule. Domestically, the Federal Reserve raised rates by 25bps again, to 2.00% and maintained a hawkish stance.

I also wrote that the first quarter of fiscal year 2019 (3Q of 2018) was a strong quarter for domestic equities. The markets continued to receive favorable economic indicators and encouraging corporate earnings reports. However, towards the end of September there was a new round of reciprocal tariffs. Neither the U.S. or China was ready to flinch, so there's an economic stand-off between the two largest economies in the world. The U.S. imposed an additional \$200 billion in tariffs on Chinese goods and in return, China imposed \$60 billion in tariffs on U.S. products. The stock market reacted in kind.



Interest rates continue to move higher as the debt load adds pressure, as well as views on inflation, and the economy. The 2-year Treasury rose 29bps to 2.82% and the benchmark 10-year note rose 21bps to 3.06%.

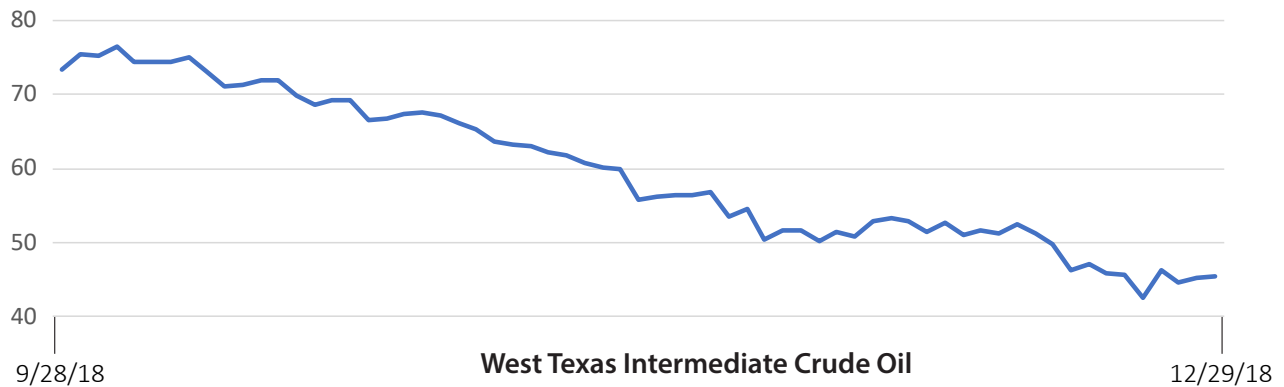


Commodity prices pushed higher led by strength in crude oil. The European Central Bank (ECB) announced that it would remain committed to ending its bond purchases by the end of 2018 although it was more reticent towards raising the target interest rate. The Bank of Japan (BOJ) signaled that its ultra-accommodative monetary policy would remain intact but it will allow flexibility around its 0% target on the 10-year JGB. Italian elections added to global market volatility as Italy announced an aggressive budget deficit target which led to a sharp sell-off in the Italian government bond market. Italy's debt level of over 130% of GDP is currently the second highest in the European Union, behind Greece at 180% of GDP. As the quarter closed, the upcoming November mid-term elections in the U.S. were the focus. Significant policy measures such as fiscal reform, trade, regulation, and policy measures were all hanging in balance.

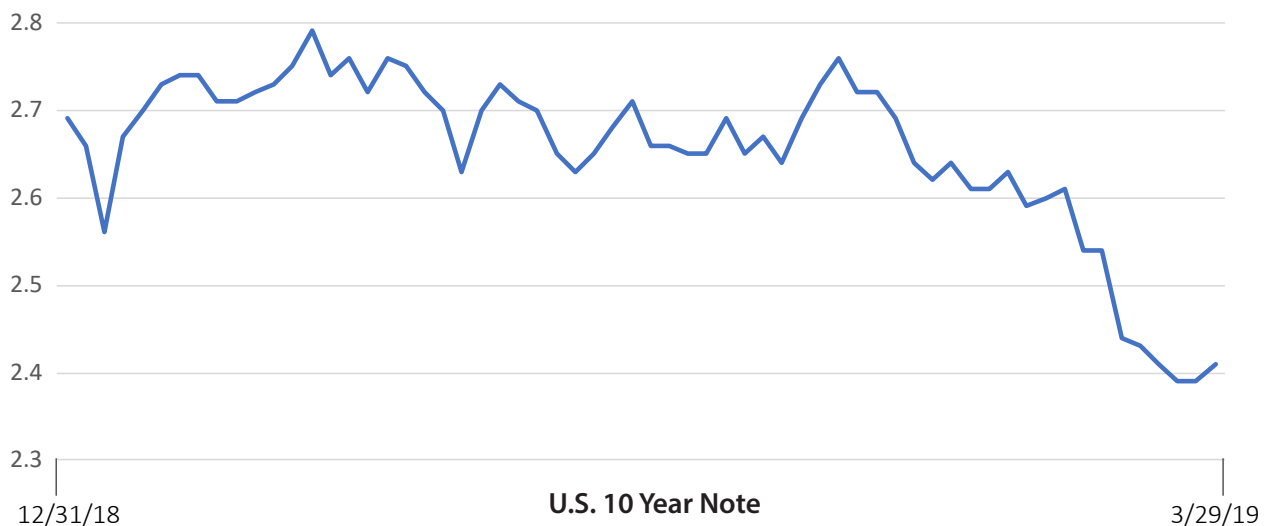
The second quarter of the fiscal year (4Q of 2018) was a bit calmer. Fed Chairman Powell made comments that suggested that interest rates were "just below" the range for the neutral rate, whereas only a month earlier he had communicated that interest rates were "a long way" from neutral. The markets interpreted his statement as a signal for a potential "pause" on interest rate hikes in 2019. However, the Federal Reserve did hike rates 25bps, from 2.25% to 2.50%. This was the ninth rate hike dating back to December 2015. US Treasuries rallied significantly in the fourth quarter while credit and equities sold off on fears of weaker global growth and restrictive US Fed policy. Specifically, slower growth in China, Japan, and the European Union. Also helping treasuries rally were public criticism of the Federal Reserve and Fed Chairman Powell from the US Administration, concerns about a trade war with China, Brexit negotiation uncertainty, mid-term elections, and the potential for a US government shutdown. US 10-year treasury fell almost 60bps from its mid-November high to close the year at 2.65%.



More disconcerting was the inversion of the front-end of the yield curve. Granted the inversion seemed to be driven by strong technicals which are associated with flight-to-quality, but it is worth mentioning that an inverted yield curve has historically been a strong indicator of an economic slowdown. Crude oil prices fell roughly \$40 to close the year at \$45.41.



The third quarter of the fiscal year (1Q 2019) saw US treasuries continuing to rally, along with the credit markets. The S&P 500 had one of its strongest starts to the year with a 13.1% return. The US 10-year treasury fell 28bps to 2.41%.



During the quarter the yield curve inverted between the 3-month treasury bill out to the 10-year note, the first time since 2007. The Federal Reserve adopted a dovish stance in March. Chairman Powell cited the risks of a slowing economy over the next few years and waning fiscal stimulus from tax cuts. First quarter GDP was revised lower to 2.1% from the initial estimates of 2.6%, while inflation fell from 2.0% to 1.8%. Weak manufacturing Purchasing Managers' Index (PMI) in Europe fueled growth concerns and propelled sovereign bond yields into negative territory.

By the end of the quarter, approximately \$9.7 trillion in global debt was yielding negative interest rates. The European Central Bank (ECB) lowered its growth forecast in March and provided dovish forward guidance. The ECB also announced the launch of a new quarterly TLTRO (targeted longer-term refinancing operations) to provide liquidity to the markets. The term of the financing will be 2 years at a rate indexed to the refinancing rate, and it will commence in September 2019 through March 2021. The original Brexit date was extended to April 12th by the European Union to allow the UK Parliament to either approve Prime Minister Theresa May's withdrawal agreement or "indicate a way forward." If a deal was accepted the new Brexit date would have been May 22.

The fourth quarter of the fiscal year (2Q 2019) saw the US economic expansion break the previous streak of 120 consecutive months of economic growth from March 1991 to March 2001. US Treasuries rallied during the second quarter of the year and the yield curve inverted. The 3-month rate fell 29bps to 2.10%. The 2-year, 5-year, and 10-year rates all fell between 41 and 43bps. The 10-year closed the quarter at 2.01%.



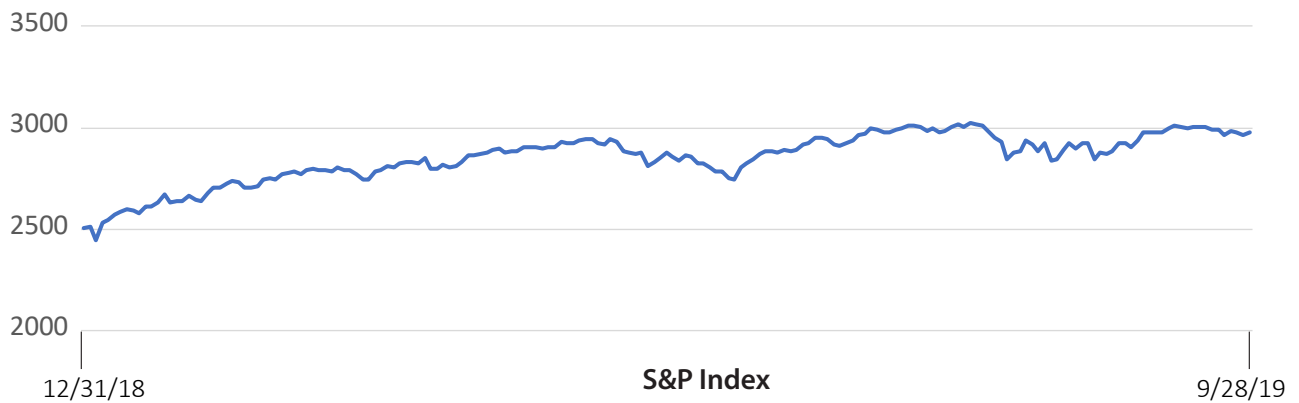
US equity markets gained 4.3% during the quarter, bringing the year-to-date return up to 18.5%, helped by accommodative monetary policy and positive sentiment regarding the US-China trade talks. Crude oil prices rose amid the extension of production cuts between Russia and Saudi Arabia. Crude rose to \$65.06. In Europe, U.K. and Italian 10-year yields fell while German yields remained negative. Theresa May resigned, and Britain's Conservative Party Leader Boris Johnson was positioned to become the next U.K. Prime Minister. Mr. Johnson was supportive of a "no-deal" Brexit, which left uncertainty for preparations to leave the European Union. Meanwhile, the Bank of Japan (BoJ), Bank of Canada (BoC), Reserve Bank of Australia (RBA), and the

Reserve Bank of New Zealand (RBZ) all turned to more accommodative policy, which further corroborated the global central banks' shift towards easy monetary policies, setting up a potential coordinated global rate cut campaign during the second half of 2019.

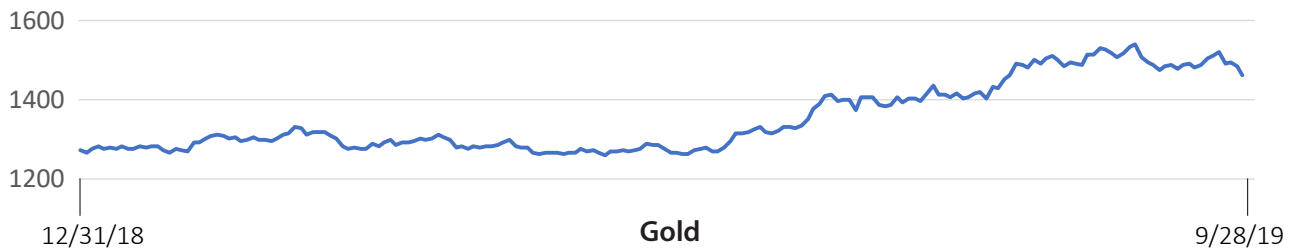
As I write my CIO letter, the third quarter of 2019 has closed. The Federal Reserve lowered the Fed funds rate target to the 1.75 – 2.00% range. U.S. Treasury rates fell across all maturities. Just in the third quarter, the 10-year yield fell 33bps and the 30-year yield dropped 41bps.



Despite the Fed funds rate cuts, the yield curve remained inverted during the quarter. The S&P 500 Index returned 1.70% for the quarter, which brings the year-to-date return to an impressive 20.55% despite volatility.



U.S. crude oil and global Brent crude oil prices fell. Gold broke \$1,500 during the quarter as investors sought traditional safe-haven assets amid the global economic uncertainty.



The U.S. labor markets added 430,000 nonfarm payroll jobs to the economy in the third quarter which showed job growth but at a continuingly slow rate. Outside of the U.S., signals of a global growth slowdown continued through the quarter. Manufacturing in Europe continued to contract and ended the quarter at nearly a seven-year low. Uncertainty ahead of a “no deal Brexit” weighed on the global markets as did the frenzied tariff war between the U.S. and China. Negotiations that began in the quarter were unproductive. Both sides increased tariffs in August, and in September there were reports that the U.S. would target Chinese companies on the U.S. exchanges. Negotiations were expected to continue into the last quarter of the year. With no deal in sight, and increased tariffs still in place, the prolonged trade tensions will continue to be a major factor.

I would like to thank each of the Trustees, the ultimate fiduciaries of APERS, for embracing the current investment structure that allowed APERS to achieve strong results for our members and the Arkansas taxpayers. APERS’ staff is committed to placing the system in the best position to continue to face the challenges of the global financial markets and to ensure that the APERS assets are positioned to provide long-term financial stability for you, the members.

Respectfully yours,

Carlos Borrromeo  
Chief Investment Officer

## INVESTMENT CONSULTANT'S REPORT

Callan

Callan LLC  
120 North LaSalle Street  
Suite 2400  
Chicago, IL 60602

Main 312.346.3536  
Fax 312.346.1356

[www.callan.com](http://www.callan.com)

September 23, 2019

Dear Trustees:

AJRS' investment program objective is to provide plan participants with retirement benefits. This is accomplished by the implementation of a carefully planned and executed long-term investment program. The Board of Trustees (Board) has exclusive control of all retirement system investments and is responsible for establishing investment objectives, strategies and policies.

The Board is charged with the responsibility of investing the Systems' assets to provide for the benefits of the members of the systems. To achieve that goal the Board follows a policy of preserving capital while seeking means of enhancing revenues and protecting against undue losses in any particular investment area. The Board diversifies the investment of the assets among classes of securities to reduce risk while maximizing the long-range return.

**Asset Allocation**

Based on its analysis of capital and investment market return patterns, both historical and projected, the Board considers the following asset allocation targets to be consistent with the return requirements and risk tolerance of the fund:

|                       |     |
|-----------------------|-----|
| Domestic Equity       | 37% |
| International Equity  | 15% |
| Domestic Fixed Income | 40% |
| Real Estate           | 8%  |

The Fund benchmark is the return that would have been achieved if the Fund had been invested: 37% in the Russell 3000 Index, 15% in the Morgan Stanley Capital International Europe, Australia, Far East Index, 40% in the Bloomberg Aggregate Bond Index and 8% in the NCREIF Fund Index - Open End Diversified Core Equity Real Estate Index.

**Total Fund Goals**

The System's primary funding goal is to achieve and maintain a funded status that provides for the security of retirement income to participants in the Plan.

The Board's investment objective, as per the Investment Policy Statement, shall be to achieve a rate of return on the System's assets of at least two and one-half percent (2.5%) above the rate of inflation and a total return of the actuarially assumed rate of five and three-quarters percent (5.75%).



## Callan

2

### **Total Fund Returns**

For the fiscal year 2019 AJRS produced a return of 6.14%. This return underperformed the fund benchmark, as described above, which returned 7.76%.

The five-year annualized return of 6.41% outperformed the Fund's benchmark return of 6.22%. In the Callan Public Fund Universe, AJRS' total fund performance ranks at the 22<sup>nd</sup> percentile for five years. The five year return exceeded the actuarially assumed interest rate of 5.75%.

The performance calculations presented above were prepared by Callan LLC using a time-weighted rate of return methodology based upon the market value of assets and are GIPS compliant.

Sincerely,

A handwritten signature in dark ink, appearing to read "B. Weymouth". The signature is fluid and cursive, with a long horizontal stroke at the end.

Brianne R. Weymouth, CAIA  
Senior Vice President

## INVESTMENT POLICY SUMMARY

### Introduction

The basic policy of the Board of Trustees of the Arkansas Judicial Retirement System (the Board) shall be to provide all the benefits specified by law to the members of the Arkansas Judicial Retirement System (AJRS or the System) and their beneficiaries.

At all times acting solely in the best interest of the beneficiaries of the System, the Board shall manage the System's funds as provided by Arkansas Code of 1987 Annotated (A.C.A.) §§ 24-2-601 through 24-2-619, operating on the principles of the prudent investor rule. This will include devoting careful consideration to the following factors:

- both the funded and unfunded AALs,
- the period of time necessary to amortize all unfunded AALs,
- the anticipated long term return from both equities and bonds,
- the need for short term liquidity for disbursements to beneficiaries,
- the general economic conditions,
- the effects of inflation or deflation, and
- any other material, actuarial, fiscal, or economic factors.

### Investment Objectives

The Board's investment objective shall be to achieve a rate of return on the System's assets of at least 2.5% above the rate of inflation which results in an assumed investment return rate for purposes of the actuarial valuation of 5.75%.

In pursuing this objective the Board shall attempt to maximize the total return in both income and capital appreciation but with greater emphasis on capital appreciation. However, the effort to obtain maximum returns must be consistent with prudent risk-taking, and short-term fluctuations in market value should be considered secondary to long-term results. The Board shall review individual investment decisions as follows:

- in the context of the entire trust fund,
- as a part of an overall investment strategy, and
- with reasonable objectives for risk and return.

### Asset Allocation

The Board, with advice by investment consultants and investment managers, shall cause the System's funds to be invested primarily in equities and fixed income securities.

The System frequently has cash from dividends, interest, sale of securities, and contributions, and it is invested in very short-term, or overnight, investments. The Board is authorized to delegate its investment functions.

Accordingly, the Board has employed investment managers that invest in both equities and fixed income securities and has employed a custodian bank that makes overnight investments with cash.

The Board, after consultation with investment consultants and investment managers, periodically will determine the allocation to be made with the System's assets. The Board has a targeted allocation of 37% to domestic equity investments, 40% to domestic fixed income securities, 15% to international equities, and 8% to real estate with ranges of plus or minus 5% to be tolerated as transitory occurrences. Thus, the current asset allocation is to be as follows:

| Asset Class            | Range      |
|------------------------|------------|
| Domestic Equities      | 32% to 42% |
| International Equities | 10% to 20% |
| Fixed Income           | 35% to 45% |
| Real Estate            | 3% to 13%  |

## Review of Investment Processes

The Board is authorized to directly manage the System's funds or to delegate its investment function. Currently the Board has delegated its investment function to investment managers and has delegated investment discretion to the managers by separate contract. The duties and responsibilities of each of the investment managers hired by the Board shall include the following:

- A. Each must manage the assets it holds in accordance with the policy guidelines and objectives expressed in this statement. If some deviation from this statement is deemed prudent and desirable by both the Board and manager, they may accordingly modify this policy statement in writing.
- B. Each must demonstrate satisfactory performance in investing the System's funds. In evaluating a manager's performance the Board will give consideration to the investment conditions during the evaluation period, to the manager's style of investment, and to these investment guidelines. The Board will determine the length of a reasonable demonstration period, but each manager's performance will be reviewed at least annually. The manager's performance will be compared against a neutral benchmark of 37% Russell 3000 Index and 40% Barclays Aggregate Index, 15% MSCI EAFE Index, and 8% NFI-ODCE Equal Weight net, as well as against a universe of similarly managed funds in the Investment Consultant's database. The Board may also consider how proxies are voted, which stockbrokers the investment manager employs, and what commissions are paid to them.
- C. Managers must keep the Board apprised of their progress in meeting the investment objectives set forth in this statement and must promptly inform the Board of significant changes in any of the following:
  - 1. the manager's investment strategy or portfolio structure,
  - 2. the market value of managed assets, and
  - 3. the ownership, affiliations, organizational structure, financial condition, professional personnel staffing, or clientele of the manager.
- D. Each manager must comply with all of the duties and responsibilities the manager has as a fiduciary. In addition, the System's assets are to be invested with the care, skill, prudence, and diligence that a prudent professional investment manager would use in similar circumstances.

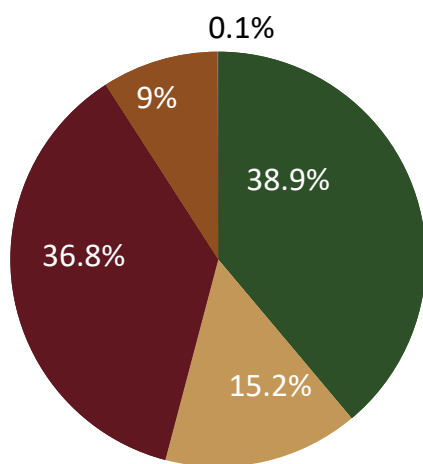
**ASSET ALLOCATION**

(as of June 30, 2019)

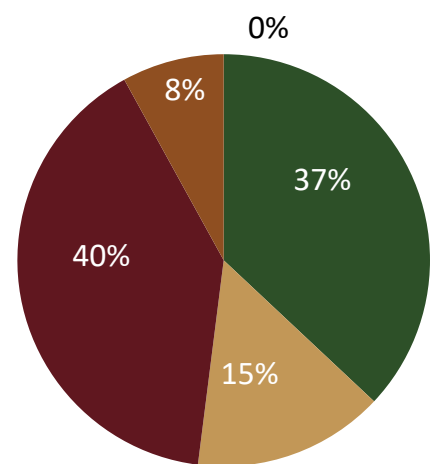
**Actual versus Target Asset Allocation**

AJRS' actual asset allocation is within the target range set by its investment policy. This target should be confirmed based on AJRS' ongoing asset allocation discussions. The current target allocation is as follows:

Actual Asset Allocation



Target Asset Allocation



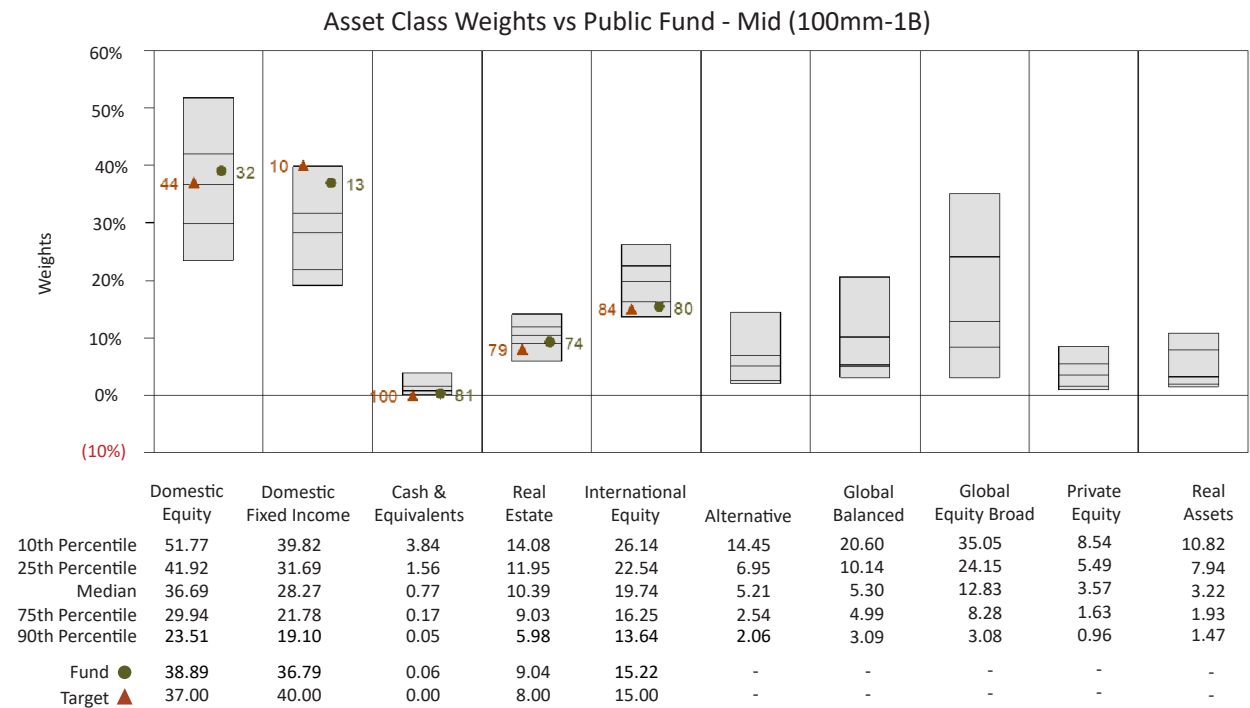
| Asset Class           | Actual*           | Percent Actual | Percent Target | Percent Difference | Difference* |
|-----------------------|-------------------|----------------|----------------|--------------------|-------------|
| Domestic Equity       | \$ 104,068        | 38.9%          | 37.0%          | 1.9%               | \$ 5,051    |
| International Equity  | 40,724            | 15.2           | 15.0           | 0.2                | 582         |
| Domestic Fixed Income | 98,452            | 36.8           | 40.0           | (3.2)              | (8,593)     |
| Real Estate           | 24,205            | 9.0            | 8.0            | 1.0                | 2,796       |
| Cash & Equivalents    | 165               | 0.1            | 0.0            | 0.1                | 165         |
| Total*                | <u>\$ 256,670</u> | <u>100.0%</u>  | <u>100.0%</u>  |                    |             |

\*Dollars in thousands

Total asset class does not include cash at local bank and non-investment receivables. Totals may not add due to rounding.

### Public Plan Sponsor Database

The illustration below shows the average percentage of asset allocations by asset type for the Public Plan Sponsor Database. Because different public funds allocate assets differently, percentages will not equal 100%.



**MANAGER DISTRIBUTION**

(as of June 30, 2019)

| <b>Asset Allocation</b>                   | <b>Strategy</b>        | <b>Market Value</b>   | <b>Percent of Total</b> |
|---|------------------------|-----------------------|-------------------------|
| <b>DOMESTIC EQUITY</b>                    |                        |                       |                         |
| QS Batterymarch Financial                 | Core Equity            | \$ 14,761,475         | 5.52 %                  |
| Boston Partners                           | Value Equity           | 43,551,425            | 16.27                   |
| Wellington Management Co.                 | Growth Equity          | 45,754,644            | 17.10                   |
|   |                        | <u>104,067,544</u>    |                         |
| <b>INTERNATIONAL EQUITY</b>               |                        |                       |                         |
| Baillie Gifford International Choice Fund | International Equity   | 40,723,576            | 15.22                   |
| <b>DOMESTIC FIXED INCOME</b>              |                        |                       |                         |
| MacKay Shields LLC                        | Core Plus Fixed Income | 98,452,249            | 36.79                   |
| <b>REAL ESTATE</b>                        |                        |                       |                         |
| Invesco Core Real Estate                  | Core Real Estate       | 24,205,367            | 9.04                    |
| <b>CASH &amp; CASH EQUIVALENTS</b>        |                        |                       |                         |
| AJRS General Fund                         | Short Term Investments | 164,654               | 0.06                    |
| <b>TOTAL</b>                              |                        | <u>\$ 267,613,390</u> | <u>100.00 %</u>         |

Totals may not add due to rounding.

## SCHEDULE OF COMPARATIVE INVESTMENT RESULTS BY YEAR

(fiscal years ended 2014 through 2019)

|  | 2019  | 2018   | 2017   | 2016     | 2015    | 2014   |
|--|-------|--------|--------|----------|---------|--------|
| <b>Total Fund</b>                            |       |        |        |          |         |        |
| Arkansas Judicial Retirement System          | 6.14% | 8.23%  | 13.35% | (0.27)%  | 5.06%   | 16.09% |
| Callan Total Public Fund Median              | 6.19  | 8.04   | 12.50  | 0.34     | 3.12    | 16.03  |
| Inflation (Consumer Price Index)             | 1.65  | 2.87   | 1.50   | 0.64     | (0.38)  | 2.04   |
| <b>Equities</b>                              |       |        |        |          |         |        |
| Arkansas Judicial Retirement System          | 6.19% | 15.72% | 19.99% | (1.81)%  | 9.18%   | 23.49% |
| Callan Total Equity Database Median          | 7.74  | 15.36  | 18.92  | 1.01     | 7.37    | 24.78  |
| Russell 3000 Index                           | 8.98  | 14.78  | 18.51  | 2.14     | 7.29    | 25.22  |
| <b>International Equities</b>                |       |        |        |          |         |        |
| Arkansas Judicial Retirement System          | 0.35% | 9.12%  | 25.17% | (12.15)% | (1.41)% | 21.28% |
| Callan Total Non-U.S. Equity Database Median | 0.50  | 8.23   | 20.73  | (8.88)   | (3.22)  | 20.83  |
| MSCI - ACWI-ex U.S. Index                    | 1.80  | 7.79   | 20.27  | (10.16)  | (4.22)  | 23.57  |
| <b>Fixed Income</b>                          |       |        |        |          |         |        |
| Arkansas Judicial Retirement System          | 8.31% | 0.29%  | 3.90%  | 3.92%    | 1.16%   | 7.55%  |
| Callan Total Fixed Income Database Median    | 7.54  | (0.12) | 1.09   | 4.87     | 1.70    | 5.10   |
| Bloomberg Aggregate Index                    | 7.87  | (0.40) | (0.31) | 6.00     | 1.86    | 4.37   |

Source: Callan Associates Inc. Returns are reported gross of fees.



## SCHEDULE OF COMPARATIVE ANNUALIZED INVESTMENT RESULTS

(for the current fiscal year and the preceding 3-year and 5-year rates of return)

|  | 2019  | Annualized<br>3-Year | 5-Year |
|--|-------|----------------------|--------|
| <b>Total Fund</b>                            |       |                      |        |
| Arkansas Judicial Retirement System          | 6.14% | 9.20%                | 6.41%  |
| Callan Total Public Fund Median              | 7.76  | 8.26                 | 6.22   |
| Inflation (Consumer Price Index)             | 1.65  | 2.05                 | 1.45   |
| <b>Equities</b>                              |       |                      |        |
| Arkansas Judicial Retirement System          | 6.19% | 13.82%               | 9.59%  |
| Callan Total Equity Database Median          | 7.74  | 13.89                | 9.83   |
| Russell 3000 Index                           | 8.98  | 14.02                | 10.19  |
| <b>International Equities</b>                |       |                      |        |
| Arkansas Judicial Retirement System          | 0.35% | 11.08%               | 3.49%  |
| Callan Total Non-U.S. Equity Database Median | 0.50  | 9.69                 | 2.97   |
| MSCI - ACWI-ex U.S. Index                    | 1.80  | 9.91                 | 2.65   |
| <b>Fixed Income</b>                          |       |                      |        |
| Arkansas Judicial Retirement System          | 8.31% | 4.11%                | 3.48%  |
| Callan Total Fixed Income Database Median    | 7.54  | 2.95                 | 3.18   |
| Bloomberg Aggregate Index                    | 7.87  | 2.31                 | 2.95   |

Source: Callan Associates Inc. Returns are reported gross of fees.

## PORTFOLIO CHARACTERISTICS

(fiscal years ended June 30, 2018 and 2019)

|   | 2019      | 2018      |
|---|-----------|-----------|
| <b>Selected Bond Characteristics</b>          |           |           |
| Yield to Maturity (Market)                    | 3.07%     | 3.90%     |
| Current Yield                                 | 3.15%     | 2.67%     |
| Average Coupon Rate                           | 3.48%     | 3.23%     |
| Average Maturity                              | 7.80 yrs. | 8.74 yrs. |
| <b>Quality Breakdown</b>                      |           |           |
| AAA (Includes Govts. & Agencies)              | 45.60%    | 32.00%    |
| AA  | 1.40%     | 1.60%     |
| A   | 11.10%    | 13.60%    |
| BAA   | 34.40%    | 34.40%    |
| Below BAA                                     | 7.50%     | 16.40%    |
| <b>Selected Stock Characteristics</b>         |           |           |
| Average P/E Ratio                             | 22.90x    | 23.52x    |
| Estimated Earnings Growth Rate (Next 5 Years) | 16.24%    | 17.17%    |
| Current Yield                                 | 1.46%     | 1.59%     |

\* Includes short term investment fund

Source: Callan Associates

**TEN LARGEST HOLDINGS** (as of June 30, 2019)**Fixed Income Holdings (by market value)**

|    | Par          | Description                     | Market Value         |
|----|--------------|---------------------------------|----------------------|
| 1  | \$ 3,950,000 | U.S. Treasury 3.00% 02/15/2049  | \$ 4,338,206         |
| 2  | 2,065,000    | U.S. Treasury 4.375% 11/15/2039 | 2,745,645            |
| 3  | 1,452,048    | U.S. TIP 0.875% 01/15/2029      | 1,528,367            |
| 4  | 1,273,164    | FNMA 4.000% 09/01/2048          | 1,322,932            |
| 5  | 1,037,422    | FNMA 4.500% 10/01/2048          | 1,089,749            |
| 6  | 851,851      | FNMA 3.500% 02/01/2048          | 876,478              |
| 7  | 615,000      | U.S. Treasury 5.00% 05/15/2037  | 867,101              |
| 8  | 460,000      | Citigroup 8.125% 07/15/2039     | 735,825              |
| 9  | 672,047      | FHLMC 3.00% 04/01/2047          | 680,992              |
| 10 | \$ 647,495   | FNMA 3.50% 02/01/2048           | 663,618              |
|    |              |                                 | <u>\$ 14,848,913</u> |

**Domestic Equity Holdings (by market value)**

|    | Shares | Description             | Market Value         |
|----|--------|-------------------------|----------------------|
| 1  | 9,501  | Berkshire Hathaway Inc. | \$ 2,025,328         |
| 2  | 10,748 | Johnson & Johnson       | 1,496,981            |
| 3  | 51,516 | Bank of America Corp.   | 1,493,964            |
| 4  | 30,172 | Comcast Corp.           | 1,275,672            |
| 5  | 9,567  | Proctor & Gamble Co.    | 1,049,022            |
| 6  | 18,146 | Verizon Communications  | 1,036,681            |
| 7  | 14,144 | Citigroup Inc.          | 990,504              |
| 8  | 18,009 | Cisco Systems Inc.      | 985,633              |
| 9  | 7,802  | Chevron Corp.           | 970,881              |
| 10 | 22,305 | Pfizer Inc.             | 966,253              |
|    |        |                         | <u>\$ 12,290,919</u> |

**International Equity Holdings (by market value)**

|    | Shares  | Description         | Market Value        |
|----|---------|---------------------|---------------------|
| 1  | 4,652   | Naspers             | \$ 1,128,144        |
| 2  | 5,965   | Alibaba             | 1,010,803           |
| 3  | 38,782  | Hargreaves Lansdown | 947,187             |
| 4  | 24,168  | TSMC ADR            | 946,643             |
| 5  | 6,418   | Cochlear            | 931,635             |
| 6  | 12,285  | Shiseido            | 926,026             |
| 7  | 85,560  | AIA Group           | 922,679             |
| 8  | 26,180  | HDFC Corp.          | 831,402             |
| 9  | 2,740   | Shopify 'A'         | 822,393             |
| 10 | 119,058 | Rightmove           | 810,203             |
|    |         |                     | <u>\$ 9,277,115</u> |

Totals may not add due to rounding.

## SCHEDULE OF BROKERAGE COMMISSIONS

(for the fiscal year ended June 30, 2019)

| Brokerage Firm                             | Number of<br>Shares Traded | Total<br>Commission | Commission<br>Per Share |
|--|----------------------------|---------------------|-------------------------|
| Goldman Sachs & Co., NY                    | 298,541                    | \$ 4,481            | \$ 0.02                 |
| J.P. Morgan Securities Inc., NY            | 177,526                    | 3,141               | 0.02                    |
| HSBC Brokerage (USA) Inc., NY              | 100,192                    | 2,959               | 0.03                    |
| Merrill Lynch Pierce Fenner Smith Inc., NY | 145,174                    | 2,452               | 0.02                    |
| Citigroup Global Markets/Solomon, NY       | 212                        | 2,417               | 11.40                   |
| Credit Suisse, NY                          | 106,117                    | 1,882               | 0.02                    |
| Morgan Stanley & Co., NY                   | 100,316                    | 1,493               | 0.01                    |
| Jefferies & Co. Inc., NY                   | 65,986                     | 1,337               | 0.02                    |
| Barclays Capital, NY                       | 66,047                     | 1,293               | 0.02                    |
| Barclays Capital, NJ                       | 129,152                    | 1,292               | 0.01                    |
| Citigroup Global Markets, NY               | 48,193                     | 1,083               | 0.02                    |
| Sanford Bernstein & Co., NY                | 85,804                     | 912                 | 0.01                    |
| J.P. Morgan Securities LLC, NY             | 54,922                     | 680                 | 0.01                    |
| UBS Securities LLC, Stamford               | 57,164                     | 635                 | 0.01                    |
| Deutsche Bank Securities Inc., NY          | 19,493                     | 423                 | 0.02                    |
| Instinet Corp., NY                         | 25,978                     | 260                 | 0.01                    |
| RBC Capital Markets LLC, NY                | 21,565                     | 245                 | 0.01                    |
| Investment Tech Group Inc., NY             | 14,808                     | 243                 | 0.02                    |
| SG Americas Securities LLC, NY             | 23,344                     | 233                 | 0.01                    |
| B Riley & Co. LLC, NY                      | 9,580                      | 192                 | 0.02                    |
| Others (19 brokerage firms)                | 50,822                     | 885                 | 0.02                    |
|  | <u>1,600,936</u>           | <u>\$ 28,537</u>    |                         |

Totals may not add due to rounding.

## SCHEDULE OF INVESTMENT FEES

(as of June 30, 2019)

| <b>Equities</b>                      | Market Value  | Fee                 | Basis Points |
|--------------------------------------|---------------|---------------------|--------------|
| Batterymarch Financial Management    | \$ 14,761,475 | \$ 125,313          | 0.85         |
| Wellington Management Co.            | 45,754,644    | 249,021             | 0.55         |
| Robeco Boston Partners               | 43,551,425    | 231,566             | 0.58         |
| <b>Fixed Income</b>                  |               |                     |              |
| MacKay Shields LLC                   | \$ 98,452,249 | \$ 281,143          | 0.30         |
| <b>Real Estate</b>                   |               |                     |              |
| Invesco Real Estate (Core)           | \$ 24,205,367 | \$ 164,251          | 0.80         |
| <b>International Equities</b>        |               |                     |              |
| Baillie Gifford                      | \$ 40,723,576 | 145,809             | 0.53         |
| <b>Total Investment Manager Fees</b> |               | \$ 1,197,103        |              |
| <b>Other Services</b>                |               |                     |              |
| Bank of New York Mellon (Custodian)  |               | \$ 14,669           |              |
| Callan Associates (Consultant)       |               | 64,338              |              |
| <b>Total Other Services</b>          |               | 79,007              |              |
| <b>Total Investment Fees</b>         |               | <u>\$ 1,276,110</u> |              |

Totals may not add due to rounding.

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# Actuarial

Actuary's Certificate Letter  
Summary of Actuarial Assumptions  
Supplementary Information  
Single-Life Retirement Values  
Decrement and Pay Increase Assumptions for Active Members  
Probabilities of Retirement for Members Eligible to Retire  
Computed Employer Contribution Rates  
Short Condition Test  
Short Condition Test: Ten-Year Comparative Statement  
Retirees and Beneficiaries by Attained Age  
Active Members by Attained Age and Years of Service - Tier One  
Active Members by Attained Age and Years of Service - Tier Two  
Analysis of Experience  
Analysis of Experience - Gains/(Losses) by Risk Area  
Summary of Plan Provisions

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## ACTUARY'S CERTIFICATE LETTER

800.521.0498 | P: 248.799.9000 | F: 248.799.9020 | [www.grsconsulting.com](http://www.grsconsulting.com)

November 22, 2019

Board of Trustees  
Arkansas Judicial Retirement System  
Little Rock, Arkansas

Dear Board Members:

***The basic financial objective of the Arkansas Judicial Retirement System (AJRS) as provided in the Arkansas Code is to establish and receive contributions which, expressed as percents of active member payroll, will remain approximately level from generation to generation of Arkansas citizens and when combined with present assets and future investment return will be sufficient to meet the financial obligations of AJRS to present and future benefit recipients.*** The progress towards meeting this financial objective is illustrated in the Schedule of Funding Progress and the Schedule of Employer Contributions.

We performed an actuarial valuation and issued an actuarial valuation report for AJRS as of June 30, 2019. The purpose of the June 30, 2019 annual actuarial valuation was to determine the contribution requirement for the fiscal year ending June 30, 2021 and to measure the System's funding progress. The actuarial valuation report should not be relied upon for any other purpose. The valuation process develops contribution rates that are sufficient to fund the plan's normal cost (i.e., the cost assigned by the valuation method to the year of service about to be rendered) as well as to fund unfunded actuarial accrued liabilities as a level percent of active member payroll over a period of up to 30 years. The most recent valuations were completed based upon population data, asset data, and plan provisions as of June 30, 2019. In addition, a separate report was issued (dated November 5, 2019) to provide actuarial information for GASB Statement No. 67 and GASB Statement No. 68.

The AJRS administrative staff provides the actuary with data for the actuarial valuation. The actuary relies on the data after reviewing it for internal and year-to-year consistency. The actuary summarizes and tabulates population data in order to analyze longer term trends. We are not responsible for the accuracy and completeness of the information provided by the administrative staff.

The actuarial valuation report and GASB Statement No. 67 and No. 68 report contain the following supporting schedules for use in the Actuarial and Financial Sections of the Comprehensive Annual Financial Report.

**Actuarial Section**

- Summary of Assumptions Used
- Summary of Actuarial Methods and Assumptions
- Active Member Valuation Data
- Short Condition Test
- Analysis of Financial Experience
- Analysis of Financial Experience – Gains and Losses by Risk Area

Board of Trustees  
Arkansas Judicial Retirement System  
November 22, 2019  
Page 2

### Financial Section

Schedule of Funding Progress  
Schedule of Changes in Net Pension Liability and Related Ratios  
Schedule of the Net Pension Liability  
Schedule of Contributions  
Notes to Schedule of Contributions

For actuarial valuation purposes, 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. These assumptions are adopted by the Board after considering the advice of the actuary and other professionals. The assumptions and the methods comply with the requirements of the Actuarial Standards of Practice. Each actuarial valuation takes into account all prior differences between actual and assumed experience in each risk area and adjusts the contribution rates as needed. The June 30, 2019 valuation was based upon assumptions that were recommended in connection with a study of experience through the period 2011-2016.

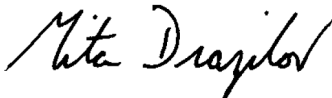
Future actuarial measurements may differ significantly from those presented in the annual valuations due to such factors as experience differing from that anticipated by actuarial assumptions, or changes in plan provisions, actuarial assumption/methods or applicable law. Due to the limited scope of the assignment, we did not perform an analysis of the potential range of future measurements.

The signing individuals are independent of the plan sponsor.

***On the basis of the June 30, 2019 actuarial valuation and the benefits and contribution rates then in effect, it is our opinion that the Arkansas Judicial Retirement System is satisfying the general financial objective of level-percent-of-payroll financing.***

Mita D. Drazilov 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.

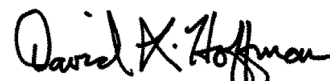
Respectfully submitted,



Mita D. Drazilov, ASA, FCA, MAAA



Heidi G. Barry, ASA, FCA, MAAA



David L. Hoffman

MDD/HGB/DLH:dj



## SUMMARY OF ACTUARIAL ASSUMPTIONS

### Economic Assumptions

The investment return rate used in making the valuation was 5.75% per year, compounded annually (net after investment expenses). Adopted 2017.

for individual active members are shown on page D-3. Part of the assumption for each age is for a merit and/or seniority increase, and the other 3.25% recognizes wage inflation. This wage inflation assumption consists of 2.50% for price inflation and 0.75% for real wage growth. Adopted 2015 and readopted 2017.

Total active member payroll is assumed to increase 3.25% a year, which is the portion of the individual pay increase assumptions recognizing inflation.

The number of active members is assumed to continue at the present number.

### Non-Economic Assumptions

The healthy mortality tables, for post-retirement mortality, used in evaluating allowances to be paid were the RP-2014 Healthy Annuitant table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The disabled retiree mortality tables, for post-retirement mortality, used in evaluating allowances to be paid were the RP-2014 disabled mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. The pre-retirement mortality tables used were the RP-2014 employees mortality table for males and females, adjusted for mortality improvement back to the observation period base year of 2006. It was assumed that 100% of pre-retirement deaths would be non-duty related. Mortality rates for a particular calendar year are determined by applying the MP-2016 improvement scale to the above described tables. Related values are shown on pages D-3 and D-5. Adopted 2017.

The probabilities of retirement for members eligible to retire are shown on page D-4. Adopted 2017.

The probabilities of withdrawal from service, death-in-service, and disability are shown for sample ages on page D-3. Adopted 2017.

Normal Cost and the allocation of benefit values between service rendered before and after the valuation date was determined using an individual entry-age actuarial cost method having the following characteristics.

- The annual normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and
- Each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

\*The data referenced in this section is taken from the actuary's report, Arkansas Public Employees Retirement System Actuarial Valuation and Experience Gain/(Loss) Analysis June 30, 2019, prepared by Gabriel Roeder Smith & Co. Unless otherwise noted, page number citations refer to that report. A PDF copy of the report is available for download at [www.apers.org](http://www.apers.org).

The normal cost, the present value of future normal cost and the present value of benefits are based on the benefit levels available to each member. The accrued liability is the difference between the present value of benefits and the present value of future normal cost.

Funding value of assets (cash & investments) was determined by phasing-in differences between actual market return and the assumed rate of return over a four-year period.

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.

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

## SUPPLEMENTARY INFORMATION

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest valuation date follows:

| Valuation Date   | June 30, 2019   |
|--|---|
| Actuarial Cost Method  | Entry Age   |
| Amortization Method  | Level Percent-of-Payroll  |
| Remaining Amortization Period                                      | Variable*   |
| Asset Valuation Method   | 4-Year smoothed market with 25% corridor  |
| Actuarial Assumptions:   |   |
| Investment Rate of Return  | 5.75%   |
| Projected Salary Increases   | 3.25%   |
| Including Price Inflation at                                       | 2.50%   |
| Cost-of-Living Adjustments   | Pre July 1, 1983 retirees: Increased with increases in active judges pay. Post June 30, 1983 retirees: 3% compound. |
| Retirees and Beneficiaries Receiving Benefits                      | 149   |
| Terminated Plan Members Entitled to But Not Yet Receiving Benefits | 8   |
| Active Plan Members  | 140   |
| Total  | <u>297</u>  |

\*See page A-3 of the actuary's report

## SINGLE-LIFE RETIREMENT VALUES

(as of June 30, 2019)

| Sample<br>Ages | Present Value of<br>\$1 Monthly for Life<br>Increasing 3% Annually |           | Future Life<br>Expectancy (Years) |       |
|----------------|--|-----------|-----------------------------------|-------|
|                | Men  | Women     | Men                               | Women |
| 50             | \$ 235.14  | \$ 245.25 | 34.68                             | 37.28 |
| 55             | 217.03   | 227.85    | 29.92                             | 32.34 |
| 60             | 196.52   | 207.82    | 25.35                             | 27.56 |
| 65             | 173.74   | 185.37    | 21.00                             | 22.99 |
| 70             | 148.93   | 160.43    | 16.92                             | 18.66 |
| 75             | 122.58   | 133.55    | 13.13                             | 14.61 |
| 80             | \$ 96.03   | \$ 106.05 | 9.75                              | 10.97 |

| Sample<br>Attained<br>Ages | \$100 Benefit<br>Increasing 3% Annually | Portion of Age 65<br>Lives Still Alive |       |
|----------------------------|---|--|-------|
|                            |   | Men                                    | Women |
| 65                         | \$ 100.00                               | 100%                                   | 100%  |
| 70                         | 115.93                                  | 94                                     | 95    |
| 75                         | 134.39                                  | 85                                     | 88    |
| 80                         | 155.80                                  | 73                                     | 79    |
| 85                         | 180.61                                  | 57                                     | 65    |

## DECREMENT AND PAY INCREASE ASSUMPTIONS FOR ACTIVE MEMBERS

(as of June 30, 2019)

| Sample<br>Ages | Years<br>Service | Percentage of Active Members<br>Separating Within the Next Year |            |        |            |            | Pay Increase Assumptions<br>For Individual Member |                   |                       |
|----------------|------------------|---|------------|--------|------------|------------|---|-------------------|-----------------------|
|                |                  | Male  |            | Female |            | Withdrawal | Merit &<br>Seniority                              | Base<br>(Economy) | Increase<br>Next Year |
|                |                  | Death   | Disability | Death  | Disability |            |   |                   |                       |
|                | 0                |   |            |        |            | 6.00%      |   |                   |                       |
|                | 1                |   |            |        |            | 6.00       |   |                   |                       |
|                | 2                |   |            |        |            | 6.00       |   |                   |                       |
|                | 3                |   |            |        |            | 6.00       |   |                   |                       |
|                | 4                |   |            |        |            | 6.00       |   |                   |                       |
| 30             | 5+               | 0.05%   | 0.04%      | 0.02%  | 0.05%      | 1.00%      | 0.00%   | 3.25%             | 3.25%                 |
| 35             |                  | 0.06  | 0.04       | 0.03   | 0.05       | 1.00       | 0.00  | 3.25              | 3.25                  |
| 40             |                  | 0.06  | 0.10       | 0.04   | 0.18       | 1.00       | 0.00  | 3.25              | 3.25                  |
| 45             |                  | 0.09  | 0.13       | 0.07   | 0.20       | 1.00       | 0.00  | 3.25              | 3.25                  |
| 50             |                  | 0.16  | 0.25       | 0.11   | 0.28       | 1.00       | 0.00  | 3.25              | 3.25                  |
| 55             |                  | 0.27  | 0.45       | 0.17   | 0.38       | 1.00       | 0.00  | 3.25              | 3.25                  |
| 60             |                  | 0.48  | 0.71       | 0.26   | 0.51       | 1.00       | 0.00  | 3.25              | 3.25                  |
| 65             |                  | 0.86  | 0.83       | 0.38   | 0.62       | 1.00       | 0.00  | 3.25              | 3.25                  |

The pay increase assumptions are age based only, and not service based.  
Probabilities of death are for calendar year 2019.

## PROBABILITIES OF RETIREMENT FOR MEMBERS ELIGIBLE TO RETIRE

(as of June 30, 2019)

### Early Retirement

| Retirement Ages | Percentage of Eligible Active Members      |
|-----------------|--|
|                 | Electing Early Retirement Within Next Year |
| 62              | 2%   |
| 63              | 2%   |
| 64              | 2%   |

### Normal Retirement

1. For ages under 70, a 4% probability of retirement is used.
2. For ages 70 and over
  - a. if the future year of consideration is an odd year, then a 4% probability of retirement is used.
  - b. if the future year of consideration is an even year,
    - i. for members under the age of 76, a 33% probability of retirement is used.
    - ii. for members ages 76 or older, a 100% probability of retirement is used.

For Tier One, a member was assumed eligible to retire at age 50 with 20 years of service or at age 65 with 10 years of service. A member was assumed eligible to retire early at age 62 with 14 years of service.

For Tier Two, a member was assumed eligible to retire at age 50 with 20 years of service or at age 65 with 8 years of service. A member was assumed eligible to retire early at age 62 with 8 years of service.



## COMPUTED EMPLOYER CONTRIBUTION RATES

### Historical Schedule

| Valuation<br>Date<br>June 30 | Active Members in Valuation |             |                   |           |  | UAAL<br>Financing<br>Period | Computed<br>Employer<br>Contribution Rate |
|------------------------------|-----------------------------|-------------|-------------------|-----------|--|-----------------------------|---|
|                              | Number                      | Average Pay | Averages in Years |           |  |                             |   |
|                              |                             |             | Age               | Service @ |  |                             |   |
| 2010                         | 136                         | \$ 136,984  | 57.1 yrs.         | 15.4 yrs. |  | 30 yrs.                     | 29.08%                                    |
| 2011                         | 141                         | 137,149     | 57.6              | 15.3      |  | 30                          | 29.93                                     |
| 2012 #                       | 140                         | 137,155     | 58.5              | 15.8      |  | 30                          | 31.46                                     |
| 2013                         | 140                         | 139,898     | 58.7              | 15.9      |  | 30                          | 29.12                                     |
| 2014 #                       | 140                         | 141,297     | 59.7              | 16.8      |  | 29                          | 25.09                                     |
| 2015 #                       | 139                         | 160,489     | 58.6              | 16.4      |  | 28                          | 37.99                                     |
| 2016                         | 139                         | 160,489     | 59.5              | 17.0      |  | 27                          | 37.37                                     |
| 2017 #                       | 140                         | 163,699     | 59.0              | 16.1      |  | 15/20                       | 35.87                                     |
| 2018                         | 139                         | 168,595     | 60.0              | 16.9      |  | *                           | 35.90                                     |
| 2019                         | 140                         | \$ 168,591  | 60.5 yrs.         | 17.8 yrs. |  | * yrs.                      | 34.85%                                    |

# Revised actuarial assumptions and/or methods.

@ Includes reciprocal service for Tier One members on and after June 30, 2006 and Tier Two members on and after June 30, 2009.

\* Unfunded actuarial accrued liabilities are amortized as described on page A-3 of the actuarial report.

Employer contributions are the total of all types of revenue to the System except member contributions by payroll deduction and investment return. Employer contributions include court fees and Act 922 transfers.

## SHORT CONDITION TEST

The AJRS 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

- member accumulated contributions
- the liabilities for future benefits to present retired lives
- the employer financed portion of liabilities for service already rendered by non-retired members.

In a system that has been following the discipline of level percent-of-payroll financing, active member contributions (liability 1) and the liabilities for future benefits to present retired lives (liability 2) will be fully covered by present assets. In addition, the liabilities for service already rendered by active 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.

## SHORT CONDITION TEST: TEN-YEAR COMPARATIVE STATEMENT

| Valuation<br>Date<br>June 30 | Entry Age Accrued Liability |   |   | Present<br>Assets | Portion of Present Values<br>Covered By Present Assets |      |     |       | Market<br>Value Total |
|------------------------------|-----------------------------|---|---|-------------------|--|------|-----|-------|-----------------------|
|                              | (1)<br>Active<br>Member     | (2)<br>Retirees<br>and<br>Beneficiaries | (3)<br>Active Member<br>(Employer<br>Financed<br>Portion) |                   | (1)  | (2)  | (3) | Total |                       |
|                              | Contributions               | Beneficiaries                           | Portion)  |                   |  |      |     |       |                       |
| 2010                         | \$ 11,474                   | \$ 102,200                              | \$ 69,238   | \$ 165,244        | 100%   | 100% | 74% | 90%   | 78%                   |
| 2011                         | 11,822                      | 102,379                                 | 72,434  | 165,377           | 100  | 100  | 71  | 89    | 92                    |
| 2012(a)                      | 12,356                      | 107,413                                 | 75,685  | 167,796           | 100  | 100  | 63  | 86    | 87                    |
| 2013                         | 12,397                      | 114,770                                 | 75,967  | 182,596           | 100  | 100  | 73  | 90    | 94                    |
| 2014(a)                      | 13,310                      | 113,468                                 | 81,228  | 201,792           | 100  | 100  | 92  | 97    | 105                   |
| 2015(a)                      | 12,665                      | 143,898                                 | 98,150  | 215,448           | 100  | 100  | 60  | 85    | 88                    |
| 2016                         | 13,337                      | 142,743                                 | 104,441   | 225,254           | 100  | 100  | 66  | 86    | 83                    |
| 2017(a)                      | 13,261                      | 161,761                                 | 95,360  | 238,956           | 100  | 100  | 67  | 88    | 89                    |
| 2018                         | 14,196                      | 162,018                                 | 102,961   | 249,096           | 100  | 100  | 71  | 89    | 92                    |
| 2019                         | \$ 14,957                   | \$ 160,858                              | \$ 108,673  | \$ 260,671        | 100%   | 100% | 78% | 92%   | 94%                   |

(a) After changes in benefit provisions and/or actuarial assumptions and methods.  
Dollars in thousands

## RETIREEES AND BENEFICIARIES TABULATED BY ATTAINED AGE

| Attained<br>Ages | Retirees |                      | Survivor Beneficiaries |                      | Total |                      |
|------------------|----------|----------------------|------------------------|----------------------|-------|----------------------|
|                  | No.      | Annual<br>Allowances | No.                    | Annual<br>Allowances | No.   | Annual<br>Allowances |
| 56               | 2        | \$ 53,028            | 0                      | \$ 0                 | 2     | \$ 53,028            |
| 61               | 0        | 0                    | 4                      | 295,428              | 4     | 295,428              |
| 63               | 1        | 59,208               | 2                      | 123,672              | 3     | 182,880              |
| 64               | 2        | 193,164              | 2                      | 123,456              | 4     | 316,620              |
| 65               | 1        | 83,076               | 0                      | 0                    | 1     | 83,076               |
| 66               | 2        | 108,084              | 0                      | 0                    | 2     | 108,084              |
| 67               | 2        | 128,400              | 1                      | 53,136               | 3     | 181,536              |
| 68               | 3        | 373,884              | 2                      | 137,772              | 5     | 511,656              |
| 69               | 4        | 379,020              | 1                      | 70,284               | 5     | 449,304              |
| 70               | 5        | 475,032              | 2                      | 172,992              | 7     | 648,024              |
| 71               | 6        | 616,920              | 1                      | 100,716              | 7     | 717,636              |
| 72               | 3        | 290,076              | 1                      | 76,008               | 4     | 366,084              |
| 73               | 7        | 735,444              | 0                      | 0                    | 7     | 735,444              |
| 74               | 7        | 771,576              | 4                      | 285,252              | 11    | 1,056,828            |
| 75               | 5        | 395,796              | 2                      | 120,036              | 7     | 515,832              |
| 76               | 9        | 754,320              | 1                      | 73,980               | 10    | 828,300              |
| 77               | 4        | 470,952              | 2                      | 150,468              | 6     | 621,420              |
| 78               | 4        | 465,948              | 2                      | 135,912              | 6     | 601,860              |
| 79               | 3        | 138,732              | 2                      | 169,080              | 5     | 307,812              |
| 80               | 5        | 486,864              | 0                      | 0                    | 5     | 486,864              |
| 81               | 3        | 321,204              | 0                      | 0                    | 3     | 321,204              |
| 82               | 5        | 536,700              | 1                      | 70,884               | 6     | 607,584              |
| 83               | 3        | 303,816              | 1                      | 74,892               | 4     | 378,708              |
| 84               | 5        | 593,112              | 3                      | 213,372              | 8     | 806,484              |
| 85               | 3        | 325,440              | 2                      | 135,144              | 5     | 460,584              |
| 86               | 0        | 0                    | 1                      | 67,572               | 1     | 67,572               |
| 87               | 2        | 215,796              | 1                      | 75,612               | 3     | 291,408              |
| 88               | 1        | 107,832              | 1                      | 67,572               | 2     | 175,404              |
| 89               | 2        | 205,308              | 1                      | 80,208               | 3     | 285,516              |
| 90               | 1        | 113,628              | 1                      | 67,572               | 2     | 181,200              |
| 91               | 1        | 100,848              | 2                      | 135,144              | 3     | 235,992              |
| 92               | 0        | 0                    | 1                      | 70,308               | 1     | 70,308               |
| 93               | 1        | 160,428              | 1                      | 67,572               | 2     | 228,000              |
| 94               | 0        | 0                    | 1                      | 68,208               | 1     | 68,208               |
| 96               | 0        | 0                    | 1                      | 67,572               | 1     | 67,572               |
| Totals           | 102      | \$ 9,963,636         | 47                     | \$ 3,349,824         | 149   | \$ 13,313,460        |

## ACTIVE MEMBERS BY ATTAINED AGE AND YEARS OF SERVICE - TIER ONE

| Attained<br>Age | Years of Service to Valuation Date |          |          |          |           |          |          | Totals    |                      |
|-----------------|------------------------------------|----------|----------|----------|-----------|----------|----------|-----------|----------------------|
|                 | 0-4                                | 5-9      | 10-14    | 15-19    | 20-24     | 25-29    | 30 Plus  | No.       | Valuation<br>Payroll |
| 50-54           |                                    |          |          |          |           |          |          |           |                      |
| 55-59           |                                    |          |          |          | 2         |          |          | 2         | \$ 336,192           |
| 60              |                                    |          |          |          |           |          |          |           |                      |
| 61              |                                    |          |          |          |           |          |          |           |                      |
| 62              |                                    |          |          |          |           |          |          |           |                      |
| 63              |                                    |          |          |          |           |          |          |           |                      |
| 64              |                                    |          |          |          |           |          |          |           |                      |
| 65              |                                    |          |          |          |           |          |          |           |                      |
| 66              |                                    |          |          |          | 2         |          |          | 2         | 336,192              |
| 67              |                                    |          |          |          |           |          | 1        | 1         | 168,096              |
| 68              |                                    |          |          |          | 1         |          | 1        | 2         | 343,016              |
| 69              |                                    |          |          |          | 2         | 2        |          | 4         | 673,959              |
| 70              |                                    |          |          |          | 1         |          |          | 1         | 168,096              |
| 71              |                                    |          |          |          | 1         | 2        |          | 3         | 504,288              |
| 72              |                                    |          |          |          |           | 2        | 1        | 3         | 504,288              |
| 73              |                                    |          |          |          |           |          |          |           |                      |
| 74              |                                    |          |          |          |           |          | 1        | 1         | 168,096              |
| 75              |                                    |          |          |          |           |          |          |           |                      |
| 76              |                                    |          |          |          | 1         |          |          | 1         | 174,920              |
| Totals          | <u>0</u>                           | <u>0</u> | <u>0</u> | <u>0</u> | <u>10</u> | <u>6</u> | <u>4</u> | <u>20</u> | <u>\$ 3,377,143</u>  |

| Group    | No. | Averages |         |            |
|----------|-----|----------|---------|------------|
|          |     | Age      | Service | Annual Pay |
| Tier One | 20  | 68.6     | 26      | \$168,857  |

## ACTIVE MEMBERS BY ATTAINED AGE AND YEARS OF SERVICE - TIER TWO

| Attained<br>Age | Years of Service to Valuation Date |     |       |       |       |       |         | Totals |                      |
|-----------------|------------------------------------|-----|-------|-------|-------|-------|---------|--------|----------------------|
|                 | 0-4                                | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30 Plus | No.    | Valuation<br>Payroll |
| 35-39           | 3                                  |     |       |       |       |       |         | 3      | \$ 504,288           |
| 40-44           | 6                                  |     |       |       |       |       |         | 6      | 1,010,151            |
| 45-49           | 2                                  | 4   | 6     |       |       |       |         | 12     | 2,032,375            |
| 50-54           | 7                                  | 4   | 5     |       |       |       |         | 16     | 2,697,935            |
| 55-59           | 6                                  | 3   | 5     | 3     | 2     |       |         | 19     | 3,205,373            |
| 60              | 2                                  |     | 1     |       |       |       |         | 3      | 505,863              |
| 61              | 1                                  |     |       | 2     |       |       |         | 3      | 504,288              |
| 62              |                                    |     | 1     | 1     |       |       |         | 2      | 336,192              |
| 63              | 1                                  | 1   | 4     | 2     | 1     |       |         | 9      | 1,518,641            |
| 64              | 1                                  |     |       | 2     |       |       |         | 3      | 504,288              |
| 65              |                                    |     | 2     | 4     | 1     | 1     |         | 8      | 1,344,768            |
| 66              | 2                                  | 2   | 1     |       |       |       |         | 5      | 847,304              |
| 67              | 1                                  | 2   | 1     |       | 2     |       |         | 6      | 1,008,576            |
| 68              | 1                                  | 1   |       | 2     |       | 2     |         | 6      | 1,010,151            |
| 69              |                                    | 1   | 1     |       |       | 1     |         | 3      | 504,288              |
| 70              | 1                                  |     | 1     | 2     |       | 1     |         | 5      | 840,480              |
| 71              |                                    |     | 1     |       |       | 1     |         | 2      | 336,192              |
| 72              | 1                                  |     | 1     | 3     | 1     |       |         | 6      | 1,010,151            |
| 73              |                                    |     |       | 1     |       |       |         | 1      | 168,096              |
| 75              |                                    |     | 2     |       |       |       |         | 2      | 336,192              |
| Totals          | 35                                 | 18  | 32    | 22    | 7     | 6     | 0       | 120    | \$ 20,225,592        |

| Group    | No. | Averages |         |            |
|----------|-----|----------|---------|------------|
|          |     | Age      | Service | Annual Pay |
| Tier Two | 120 | 59.1     | 10.9    | \$ 168,547 |

## ANALYSIS OF EXPERIENCE

Actual experience will not (except by coincidence) coincide exactly with assumed experience. Gains and losses often cancel each other over a period of years, but sizable year-to-year fluctuations are common. Detail on the derivation of the experience gain (loss) is shown below.

|   | 2019           | 2018           |
|---|----------------|----------------|
| 1) UAAL* at Start of Year   | \$ 30,078,181  | \$ 31,426,009  |
| 2) Normal Cost from Last Valuation  | 5,888,508      | 5,726,585      |
| 3) Employer Contributions   | 8,233,959      | 8,421,173      |
| 4) Interest Accrual: $(1) \times .0575 + [(2) - (3)] \times .02875$                           | 1,662,064      | 1,729,526      |
| 5) Expected UAAL Before Changes: $(1) + (2) - (3) + (4)$                                      | 29,394,794     | 30,460,947     |
| 6) Changes in Benefits/Assumptions/Methods  | 0              | 0              |
| 7) Expected UAAL After Changes: $(5) + (6)$   | 29,394,794     | 30,460,947     |
| 8) Actual UAAL at End of Year   | 23,817,084     | 30,078,181     |
| 9) Gain(Loss): $(7) - (8)$  | \$ 5,577,710   | \$ 382,766     |
| 10) Gain(Loss) as Percent of Actuarial Accrued Liabilities<br>at Start of Year: \$270,381,518 | 2.0%           | 0.1%           |
| Last Year's Accrued Liability   | \$ 279,174,680 | \$ 270,381,518 |

\*Unfunded actuarial accrued liability.

## ANALYSIS OF EXPERIENCE - GAINS/(LOSSES) BY RISK AREA

(during the period July 1, 2018 to June 30, 2019)

| Type of Risk Area  | Gain (Loss) During Year |                        |
|--|-------------------------|------------------------|
|  | \$ in Millions          | Percent of Liabilities |
| <b>Economic Risk Areas</b>   |                         |                        |
| Pay Increases<br>If there are smaller pay increases than assumed, there is a gain, if greater increases, a (loss).   | \$ 3.8                  | 1.4 %                  |
| Investment Return<br>If there is greater investment return than assumed, there is a gain, if less return, a (loss).  | 1.2                     | 0.4                    |
| <b>Non-Economic Risk Areas</b>   |                         |                        |
| Age & Service Retirements<br>If members retire at older ages or with lower final average pays than assumed, there is a gain. If they retire at younger ages or with higher average pays, a (loss).   | 3.2                     | 1.1                    |
| Disability Retirements<br>If there are fewer disabilities than assumed, there is a gain, if more, a (loss).  | 0.1                     | 0.0                    |
| Death-in-Service Benefits<br>If there are fewer claims than assumed, there is a gain, if more, a (loss).   | 0.2                     | 0.1                    |
| Withdrawal<br>If more liabilities are released by other separations than assumed, there is a gain, if fewer are released, a (loss).  | 0.4                     | 0.1                    |
| Retiree Mortality / COLAs<br>If there are fewer deaths than assumed, there is a (loss), if more, a gain. This includes gains and losses related to Tier I pre-July 1, 1983 retired member increases. | (1.1)                   | (0.4)                  |
| Other<br>Gains and losses resulting from group size change, data adjustments, timing of financial transactions, additional contributions and miscellaneous unidentified sources.                     | (2.2)                   | (0.8)                  |
| <b>Experience Gains/(Losses)</b>   | <u>\$ 5.6</u>           | <u>2.0 %</u>           |



## SUMMARY OF PLAN PROVISIONS

| Tier One   | Tier Two   |
|--|--|
| Description  |  |
| Elected or appointed prior to the effective date of Act 399 of 1999 and who do not elect to participate in Tier Two.   | Elected or appointed after the effective date of Act 399 of 1999 or elected to participate in Tier Two.  |
| Regular Retirement   |  |
| An active member may retire at age 65 with 10 or more years of credited service, or after 20 years of credited service regardless of age. Persons who become members after June 30, 1983 must also have at least 8 years of actual service as a justice of the Supreme Court, or as a judge of the Circuit or Chancery Courts or the Court of Appeals.   | An active member or former member may retire at age 65 with 8 or more years of credited service, or after 20 years of credited service regardless of age.  |
| Compulsory Retirement  |  |
| Any judge or justice who attains 70 years of age during a term of office to which he has been elected may complete the term without forfeiting rights to retirement benefits. Any judge or justice who is not eligible to retire at age 70 may continue to serve as judge until completion of the term in which there has accrued sufficient credited service to retire. Otherwise, judges or justices must retire by their 70th birthday or lose their retirement benefits. | Any judge or justice who attains 70 years of age during a term of office to which he has been elected may complete the term without forfeiting rights to retirement benefits. Any judge or justice who is not eligible to retire at age 70 may continue to serve as judge until completion of the term in which there has accrued sufficient credited service to retire. Otherwise, judges or justices must retire by their 70th birthday or lose their retirement benefits. |
| Final Salary   |  |
| The annual salary for the last judicial office held.   | The annual salary for the last judicial office held.   |

| Tier One   | Tier Two  |
|--|---|
| <p style="text-align: center;"><b>Age and Service Annuity</b></p> <p>60% of the judge's final salary, for life.</p> <p>Each year of additional service after twenty (20) years of judicial service, the benefit shall be increased by two and one-half percent (2.5%) with a maximum benefit payable of seventy-five percent (75%) of the judge's final salary.</p>   |   |
| <p style="text-align: center;"><b>Deferred Retirement</b></p> <p>An inactive member who has 14 or more years of credited service and left judicial service before attaining age 65 will be entitled to an age and service annuity beginning at age 65. Persons who become members after June 30, 1983 must also have at least 8 years of actual service as a justice of the Supreme Court, or as a judge of the Circuit or the Chancery Courts or the Court of Appeals.</p> |   |
| <p style="text-align: center;"><b>Disability Retirement</b></p> <p>An active member with 3 or more consecutive years of credited service who becomes totally and permanently disabled may be retired and receive a disability annuity computed in the same manner as an age and service annuity. The 3 years of service is not required for persons who were members before July 1, 1983.</p>  |   |
|  | <p>3.2% of the salary of the last judicial office held multiplied by the number of years of service not to exceed 80% of the salary of the last judicial office held.</p>  |
|  | <p>An inactive member who has 8 or more years of credited service and left judicial service before attaining age 65 will be entitled to an age and service annuity beginning at age 65.</p>  |
|  | <p>An active member with 3 or more consecutive years of credited service who becomes totally and permanently disabled may be retired and receive a disability annuity computed in the same manner as an age and service annuity, except that the benefit shall not be less than 25.6% of final salary.</p> |

## Tier One

## Tier Two

**Early Retirement**

A member who became a member before July 1, 1983 and who has 18 but less than 20 years credited service may retire, regardless of age, and receive an immediate annuity. The amount is the full age and service amount reduced proportionately for service less than 20 years.

A member with 8 years of credited service may retire between ages 62 and 65 and receive an immediate annuity. The amount is the full age and service amount reduced 1/2 of 1% for each month retirement age is younger than age 65.

A member with 14 years of credited service may retire between ages 62 and 65 and receive an immediate annuity. The amount is the full age and service amount reduced 1/2 of 1% for each month that retirement age is younger than age 65. Persons who become members after June 30, 1983 must also have at least 8 years of actual service as a justice of the Supreme Court, or as a judge of the Circuit Court or Chancery Courts or the Court of Appeals.

**Survivor Benefits**

Upon the death of a member with 3 or more years of service, before or after retirement, an annuity of 67% of the judge's benefit is payable to the following survivors (shared if there is more than one eligible survivor):

- A surviving spouse married to the judge more than 1 year at the time of death.
- A minor child of the judge.

The 3-year service requirement is not required of those who became members prior to July 1, 1983.

Upon the death of a member with 3 or more years of service, before or after retirement, an annuity of 67% of the judge's benefit, but not less than 17.152% of final salary, is payable to the following survivors (shared if there is more than one eligible survivor):

- A surviving spouse married to the judge more than 1 year at the time of death.
- A minor child of the judge.

The 3-year service requirement is not required of those who became members prior to July 1, 1983.

## Tier One

## Tier Two

### Increases after Retirement

For any person who was a member on or before June 30, 1983, the retirement benefits are increased or decreased from time to time as the salary for the particular judicial office is increased or decreased. For all judges or justices first elected after June 30, 1983, and who have received retirement benefits from the System for at least 12 full calendar months, the retirement benefits are increased each July 1st by 3%.

For all judges or justices who have received retirement benefits from the System for at least 12 full calendar months, the retirement benefits are increased each July 1st by 3%.

### Member Contributions

Active members contribute 6% of their salaries. Members with 20 or more years of service and members age 65 or older with 10 or more years of service do not contribute to the Retirement System. At any time a member is accruing the additional 2.5% of final salary benefit, member contributions would be required. If a member leaves service before becoming eligible to retire, accumulated contributions may be refunded.

Active members contribute 5% of their salaries. Members with 25 or more years of service do not contribute to the Retirement System. If a member leaves service before becoming eligible to retire, accumulated contributions may be refunded.

# Statistical

Schedule of Revenue by Source

Schedule of Expenses by Type

Schedule of Benefit Expenses by Type

Schedule of Retired Members by Type of Benefit

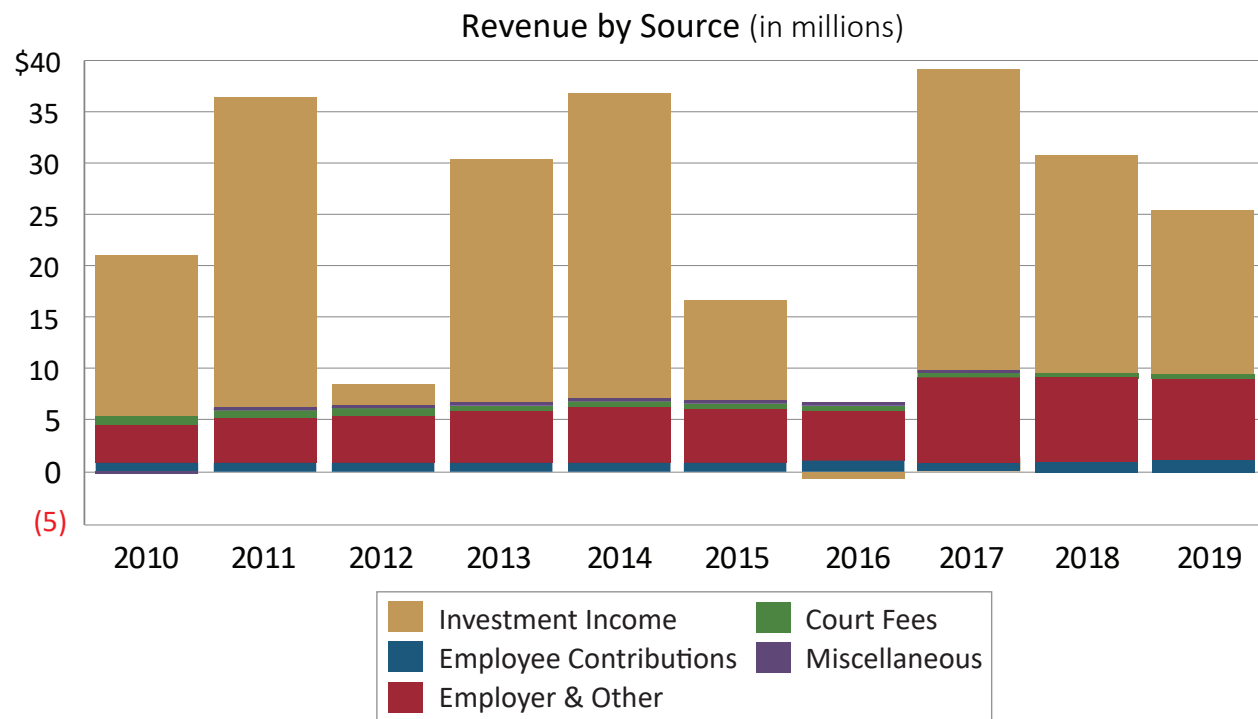
Statistical Graphs

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**SCHEDULE OF REVENUE BY SOURCE**

(for fiscal years ended June 30, 2010 through June 30, 2019)

| Year<br>Ending<br>June 30 | Employee<br>Contributions | Employer &<br>Other Entity<br>Contributions | Court Fees | Misc.      | Investment<br>Income | Total         |
|---------------------------|---------------------------|---|------------|------------|----------------------|---------------|
| 2010                      | \$ 871,330                | \$ 3,753,808                                | \$ 902,797 | \$ (1,193) | \$ 15,439,110        | \$ 20,965,852 |
| 2011                      | 860,565                   | 4,303,921                                   | 902,797    | 13,905     | 30,449,948           | 36,531,135    |
| 2012                      | 879,762                   | 4,640,182                                   | 814,993    | 9,904      | 2,148,975            | 8,493,816     |
| 2013                      | 886,685                   | 4,931,998                                   | 740,293    | 40,696     | 23,706,205           | 30,305,877    |
| 2014                      | 925,324                   | 5,345,572                                   | 764,883    | 6,873      | 29,793,113           | 36,835,765    |
| 2015                      | 946,149                   | 5,078,901                                   | 609,388    | 2,092      | 9,971,824            | 16,608,354    |
| 2016                      | 1,011,372                 | 4,962,144                                   | 586,818    | 12,328     | (581,835)            | 5,990,826     |
| 2017                      | 1,016,646                 | 7,898,543                                   | 586,818    | 45,833     | 29,157,400           | 38,705,240    |
| 2018                      | 1,016,180                 | 7,834,355                                   | 586,818    | 12         | 20,431,379           | 29,868,745    |
| 2019                      | \$ 1,030,430              | \$ 7,722,374                                | \$ 511,585 | \$ 16      | \$ 15,931,915        | \$ 25,196,320 |



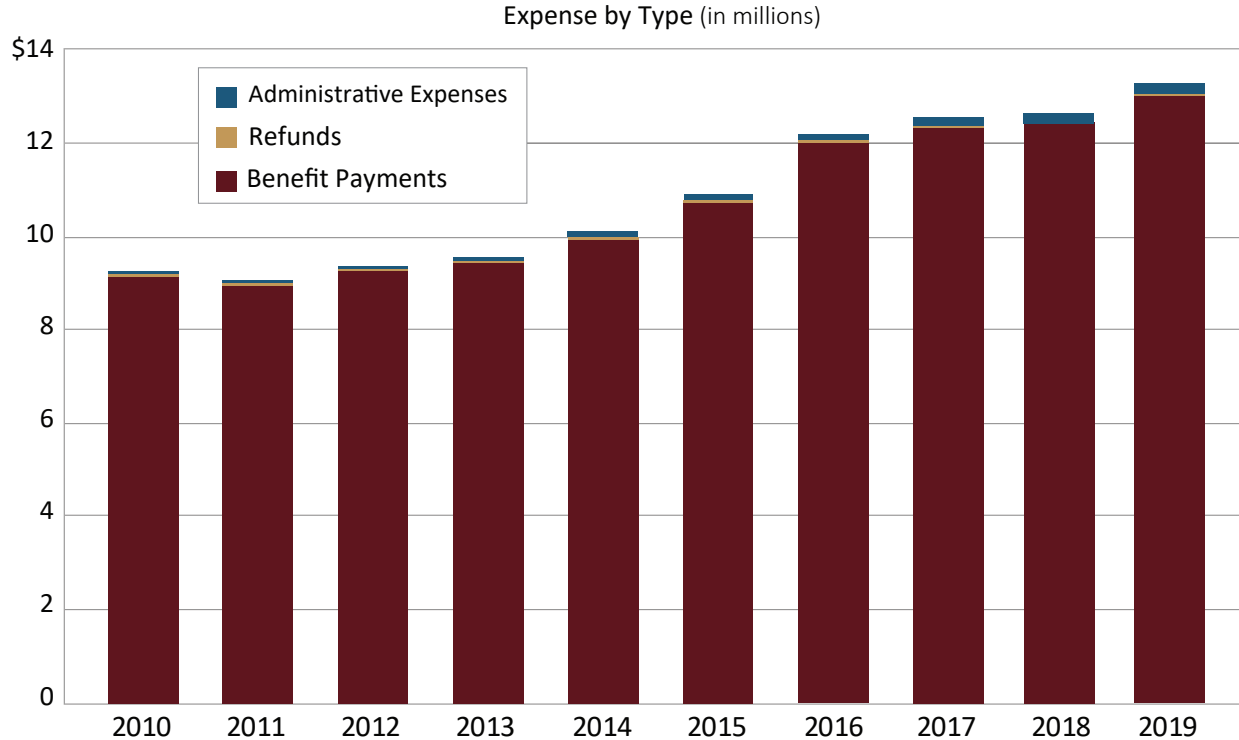
### SCHEDULE OF EXPENSES BY TYPE\*

(for the fiscal year ended June 30, 2019)

| Year Ending<br>June 30 | Benefit<br>Payments | Refunds   | Administrative<br>Expenses | Total         |
|------------------------|---------------------|-----------|----------------------------|---------------|
| 2010                   | \$ 9,125,873        | \$ 22,782 | \$ 49,021                  | \$ 9,197,676  |
| 2011                   | 8,983,419           | 15,823    | 48,919                     | 9,048,161     |
| 2012                   | 9,280,100           | 7,014     | 67,798                     | 9,354,912     |
| 2013                   | 9,448,550           | 27,593    | 55,591                     | 9,531,734     |
| 2014                   | 9,966,020           | 18,836    | 130,529                    | 10,115,385    |
| 2015                   | 10,762,871          | 14,320    | 137,951                    | 10,915,142    |
| 2016                   | 12,007,537          | 800       | 158,420                    | 12,166,757    |
| 2017                   | 12,310,422          | 79,011    | 168,702                    | 12,558,134    |
| 2018                   | 12,769,175          | 0         | 142,311                    | 12,911,485    |
| 2019                   | \$ 12,979,769       | \$ 22,024 | \$ 147,062                 | \$ 13,148,855 |

\* Expenses are annualized based on June 30 benefit amounts.

NOTE: Administrative expenses will change once the pension expense amount is adjusted based upon actuarially determined net pension liability.



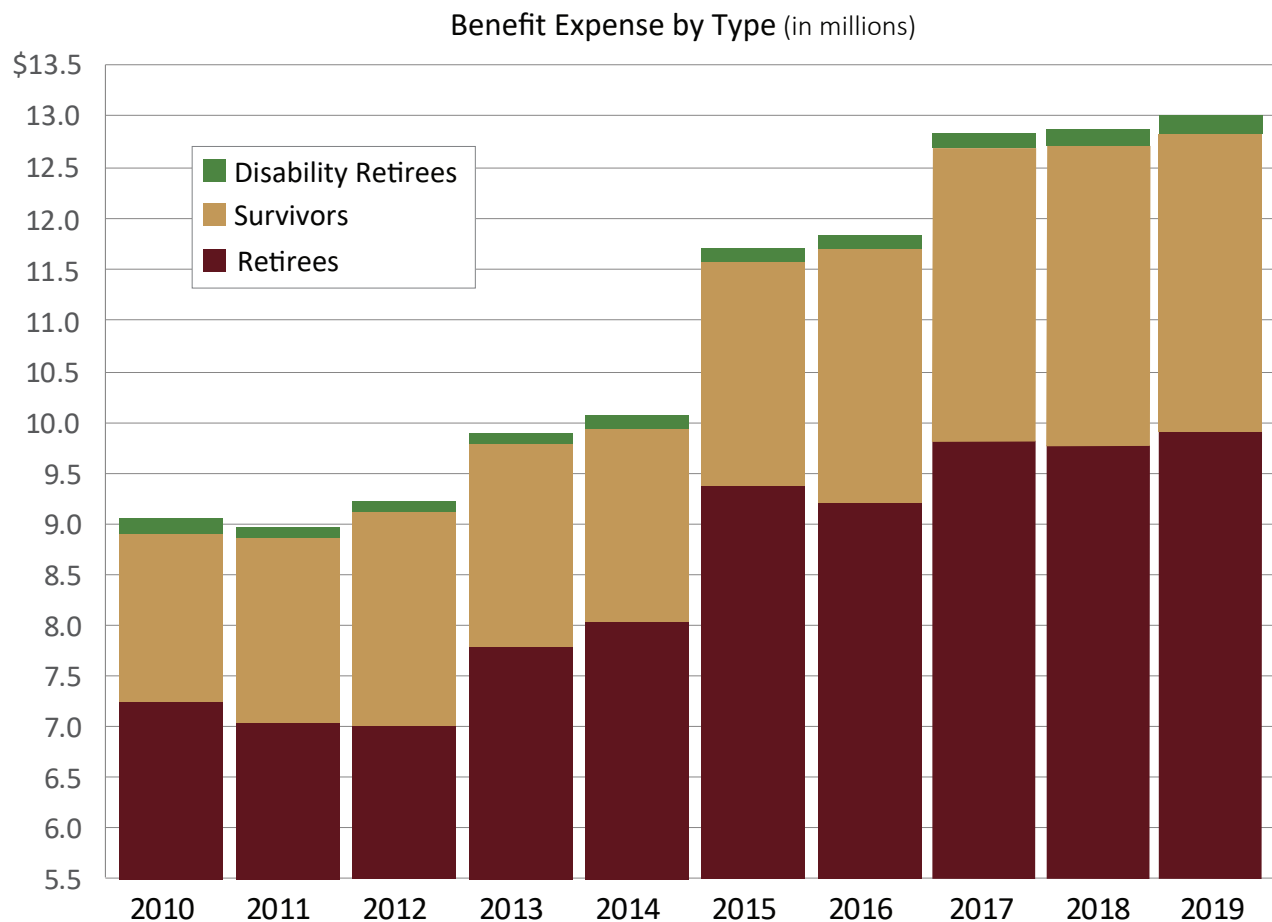


## SCHEDULE OF BENEFIT EXPENSES BY TYPE \*

(for the fiscal year ended June 30, 2019)

| Year Ended<br>June 30 | Age and Service |              | Disability |
|-----------------------|-----------------|--------------|------------|
|                       | Retirees        | Survivors    | Retirees   |
| 2010                  | \$ 7,254,889    | \$ 1,642,645 | \$ 159,842 |
| 2011                  | 7,032,265       | 1,824,181    | 110,829    |
| 2012                  | 7,010,699       | 2,096,331    | 114,154    |
| 2013                  | 7,783,179       | 1,992,752    | 117,579    |
| 2014                  | 8,020,300       | 1,916,865    | 121,106    |
| 2015                  | 9,377,001       | 2,206,257    | 124,740    |
| 2016                  | 9,194,076       | 2,516,580    | 128,482    |
| 2017                  | 9,746,437       | 2,856,225    | 132,336    |
| 2018                  | 9,620,977       | 3,014,896    | 136,306    |
| 2019                  | \$ 9,823,260    | \$ 3,095,064 | \$ 140,376 |

\* Expenses are annualized based on June 30 benefit amounts.



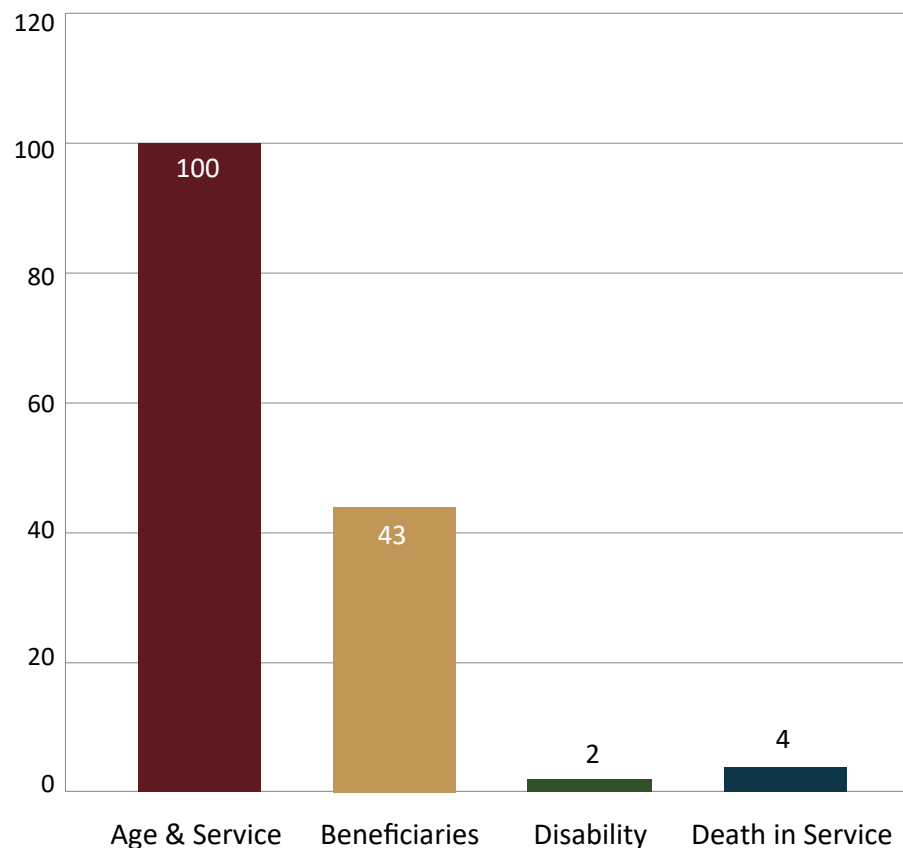
## SCHEDULE OF RETIRED MEMBERS BY TYPE OF BENEFIT

(as of June 30, 2019)

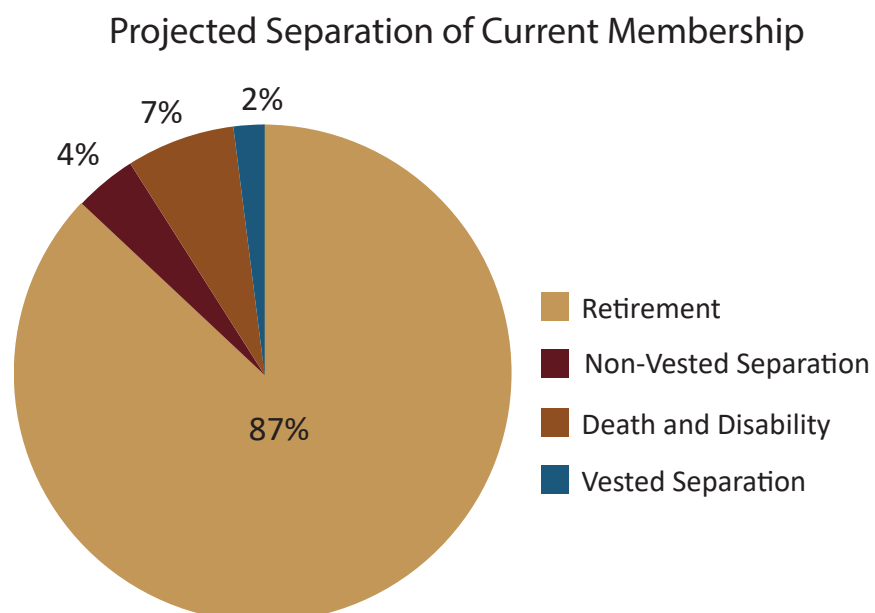
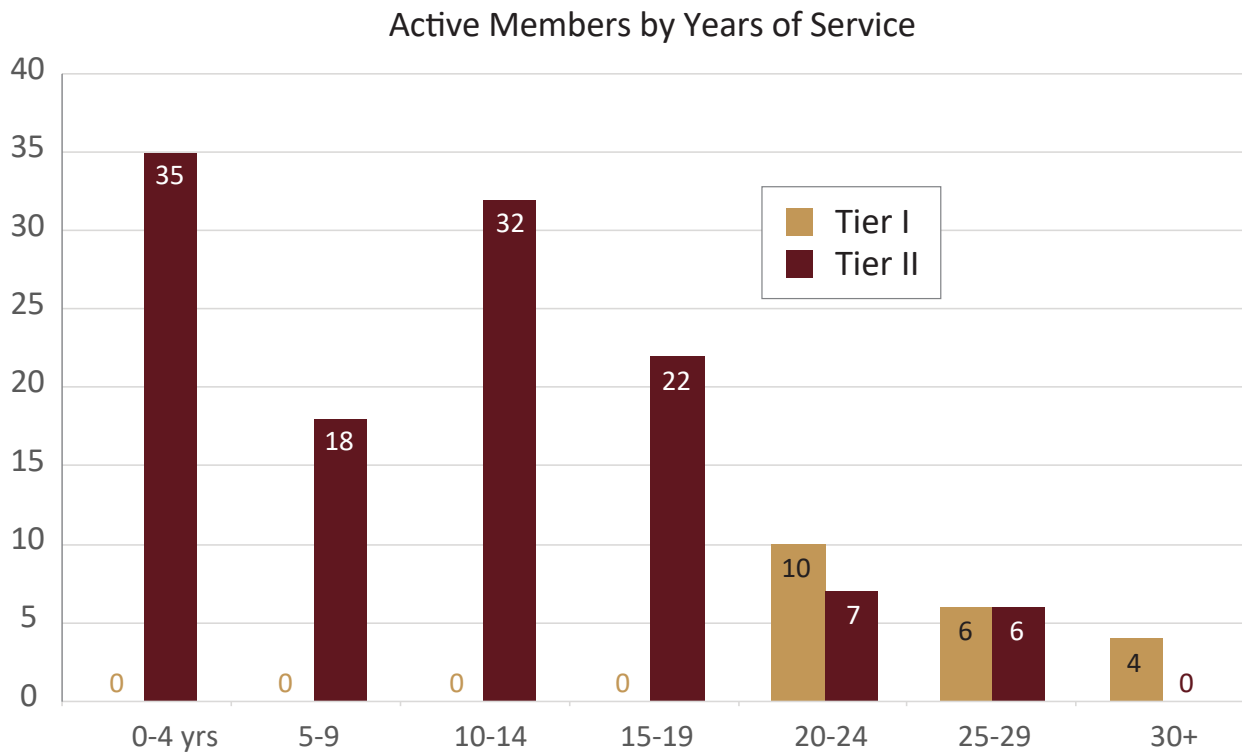
|   | Number | Annual Annuities | Annuity Liabilities |
|---|--------|------------------|---------------------|
| <b>Age and Service Retirees</b>                             |        |                  |                     |
| Life  | 11     | \$ 1,003,680     | \$ 10,190,356       |
| Life Continuing to Survivor                                 | 89     | 8,819,580        | 114,249,752         |
| Totals  | 100    | 9,823,260        | 124,440,108         |
| <b>Beneficiaries of Age &amp; Service Retirees</b>          | 43     | 3,095,064        | 31,100,550          |
| <b>Total Age &amp; Service Retirees &amp; Beneficiaries</b> | 143    | 12,918,324       | 155,540,658         |
| <b>Disability Retirees</b>                                  |        |                  |                     |
| Life  | 1      | 94,872           | 798,787             |
| Life Continuing to Survivor                                 | 1      | 45,504           | 638,116             |
| Totals  | 2      | 140,376          | 1,436,903           |
| <b>Beneficiaries of Disability Retirees</b>                 | 0      | 0                | 0                   |
| <b>Total Disability Retirees &amp; Beneficiaries</b>        | 2      | 140,376          | 1,436,903           |
| <b>Death-in-Service Beneficiaries</b>                       | 4      | 254,760          | 3,880,850           |
| <b>Total Retirees &amp; Beneficiaries</b>                   | 149    | \$ 13,313,460    | \$ 160,858,411      |

Totals may not add due to rounding.

Retired Members by Type of Benefit



## STATISTICAL GRAPHS





Arkansas Judicial Retirement System  
124 West Capitol Ave., Suite 400  
Little Rock, AR 72201