FY2018

Comprehensive Annual Financial Report

IPERS®

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
A PENSION TRUST FUND OF THE STATE OF IOWA
FOR THE FISCAL YEAR ENDED JUNE 30, 2018

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

FY2018 Comprehensive Annual Financial Report

A PENSION TRUST FUND OF THE STATE OF IOWA FOR THE FISCAL YEAR ENDED JUNE 30, 2018

Prepared by Iowa Public Employees' Retirement System

Donna M. Mueller, Chief Executive Officer

Fiscal Year 2018 Highlights

Membership

Active Members	**170,378**
Inactive Members	**70,047**
Retired Members*	**120,987**
Total	**361,412**

Contributions

Employee	**$481,405,756**
Employer	**$716,752,781**
Service Purchases	**$4,629,646**

Distributions

Benefits Paid	**$2,052,427,745**
Refunds Paid	**$58,924,612**

Investments

Net Investment and Securities Lending Income	**$2,458,968,900**
Investment Rate of Return	**7.97%**

Financial

Total Pension Liability	**$38,642,833,653**
Fiduciary Net Position	**$32,314,588,595**
Net Pension Liability	**$6,328,245,058**
Ratio of Fiduciary Net Position to Total Pension Liability	**83.62%**

Funding

Ratio of Actuarial Assets to Actuarial Liabilities	**82.36%**

*Unless specifically noted, references to retirees throughout this report include beneficiaries.

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INTRODUCTION

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Kim Reynolds
GOVERNOR

Adam Gregg
LT. GOVERNOR

IPERS
Donna M. Mueller
CHIEF EXECUTIVE OFFICER

December 10, 2018

To the Governor and the General Assembly of the State of Iowa:

We are pleased to submit the Comprehensive Annual Financial Report (CAFR) of the Iowa Public Employees' Retirement System (IPERS, System, or plan) for the fiscal year ended June 30, 2018 (FY2018). This report presents a thorough discussion of IPERS' activities and financial status.

This publication fulfills the requirements set forth in Iowa Code section 97B.4(4)(a). The preparation of this report and the financial statements are the result of the combined effort of the System's staff under the direction of the management and CEO, who are responsible for the contents of the report.

IPERS' objective is to provide reasonable, rather than absolute, assurance that the financial statements are free of any material misstatements since the cost of internal control should not exceed the benefits obtained. To that end, IPERS' administration maintains an internal accounting control system. It ensures that transactions are executed as intended by the administration, assets are accounted for, and the records of transactions are sufficient to permit preparation of the financial statements. Financial statements must be consistent with generally accepted accounting principles (GAAP) for governmental accounting and reporting. GAAP are pronounced or adopted by the Governmental Accounting Standards Board (GASB).

The Auditor of State is required by the Iowa Code to conduct an annual audit of the financial statements. The audit has been completed in accordance with generally accepted auditing standards, State law, and *Government Auditing Standards*. The Auditor's report is contained in the Financial section.

The Financial section also contains Management's Discussion and Analysis. This is intended to satisfy the GASB requirement that the System provide a narrative introduction, overview, and analysis to accompany the basic financial statements. This letter of transmittal complements Management's Discussion and Analysis and should be read in conjunction with it.

Membership numbers in the Actuarial section differ from those in other sections because the Actuarial section reflects projections of future costs. Therefore, member deaths that occurred during the last month of the fiscal year are not counted in the membership numbers of that section. However, because there is a financial obligation for some of these members, they are included in the membership numbers in the remainder of this report.

System Overview

IPERS was established by the Iowa Legislature on July 4, 1953, to replace the Iowa Old-Age and Survivors' Insurance System (IOASI). At that time, the Legislature also voted to include Iowa's public employees in the federal Social Security plan retroactive to 1951.

Iowa Code chapter 97B was the chapter created to govern IPERS and the IPERS Trust Fund (the Fund). The Code establishes IPERS as an independent agency within the Executive Branch of State Government. The Governor and the Iowa Legislature, as creators of the plan, are the plan sponsors.

Initially, IPERS was a money purchase system that calculated benefits based on contributions. Today, IPERS is a cost-sharing, contributory defined benefit plan with benefits based on a formula using a member's years of service, average salary, and a multiplier. IPERS is diligent in maintaining its tax qualification under the Internal Revenue Code. IPERS benefits are designed to provide an adequate retirement income when combined with Social Security benefits and individual savings.

IOWA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

7401 Register Drive P.O. Box 9117 Des Moines, IA 50306-9117 **1-800-622-3849** ***www.ipers.org***

PHONE 515-281-0020 BENEFITS FAX 515-281-0053 LEGAL & INVESTMENTS FAX 515-281-0045 E-MAIL info@ipers.org

Most public employees in Iowa become members of IPERS when they start employment with a covered employer, which includes schools, state agencies, counties, cities, townships, and other public entities. Public employees not covered by IPERS are judges, peace officers in the Iowa Department of Public Safety, police and fire personnel covered by the Municipal Fire and Police Retirement System of Iowa (MFPRSI), and university and community college personnel who elect other coverage.

As a multiple-employer, cost-sharing pension plan with 361,412 members, IPERS is the largest public pension system in Iowa. In FY2018, the IPERS Trust Fund paid $2.052 billion in benefits. Of that, $1.810 billion was paid to Iowans. One in ten Iowans is an IPERS member.

Major Initiatives

In FY2017, IPERS conducted an economic assumption study. This year the System completed its scheduled quadrennial experience study of demographic assumptions. The adopted changes in assumptions are further detailed in the Actuarial section and in the Funding comments on the following page.

For the past several years, IPERS has been engaged in a major upgrade to its pension administration software system. The upgrade launched in November 2018. It includes enhanced security measures for the member and retiree online account access portal (known as My Account). Going forward, new online account access will be granted only by use of usernames and passwords assigned by IPERS. Previously, members were able to establish their own online access using personal data. The upgraded system will also require two-factor authentication as part of the login process.

IPERS added these security measures in response to an "account takeover" incident in October 2017. Using personal data stolen elsewhere, criminals registered for My Account for 103 retirees. They then redirected benefit payments to a different financial institution. While some of the erroneous benefit payment bank deposits were recovered, approximately $200,000 was not recovered. IPERS ensured all retirees received their rightful monthly benefit payments, and contacted the FBI, which is investigating the crime.

Membership Services

Members and employers have access to information online, over the phone, and in print. IPERS' website contains news and announcements, publications, videos, forms, and retirement calculators. Members have online access to their benefits statements, which are updated quarterly and mailed each spring. Members and employers can stay in touch with IPERS and learn about benefits on IPERS' Facebook page and Twitter account.

Fiscal Year 2018

Preretirement counseling sessions	11,395
Phone inquiries	89,780
E-mail replies	10,699
Benefit estimates prepared	31,594
Service purchase cost quotes prepared	1,614
Service purchases made	115

IPERS publishes easy-to-read booklets to explain benefits at various career stages as well as a comprehensive Member Handbook. Annually, IPERS mails members information about benefits, plan changes, finances, and performance. IPERS also offers one-on-one retirement counseling to members preparing to retire.

IPERS' 1,956 employers receive training and assistance to comply with IPERS' requirements. Employers also receive newsletters, a handbook of procedures and reporting requirements, and a help guide on the online employer reporting system. IPERS' compliance officers conduct frequent employer audits.

Investments

IPERS manages a large and diversified investment portfolio using external investment advisors. IPERS' long-term horizon allows it to maximize investment returns and lower transaction costs on behalf of its members in a way an individual investor cannot.

A staff of professional investment officers oversees IPERS' investments. These investment officers, most of whom have earned the respected Chartered Financial Analyst (CFA) or Certified Public Accountant (CPA) designation, oversee all asset classes in which IPERS invests. IPERS' investment officers and investment consultant make recommendations concerning asset allocation, investment policies, investment strategies, and contractor selection to the IPERS Investment Board, which makes the final decisions.

IPERS' investment staff also manages the competitive selection process, negotiates detailed service contracts, and monitors contractors' compliance with their IPERS service agreements. The investment management firms select individual investments in the IPERS portfolio. See page 48 of the Financial section for information on expenses related to these investment management firms and page 63 of the Investments section for a Schedule of Brokerage Commissions Paid.

Financial Highlights

Total Net Position

Total net position restricted for pensions increased from $30.779 billion on June 30, 2017, to $32.315 billion on June 30, 2018. These assets consist of capital assets owned by IPERS and investment portfolio assets. An overview and analysis of IPERS' financial activities for FY2018 is in Management's Discussion and Analysis, which begins on page 18 in the Financial section of this report.

In FY2018, employee and employer contributions, including service purchases, totaled $1.203 billion, while total member benefits equaled $2.111 billion (monthly benefits, lump-sum retirement benefits, death benefits, refunds, and dividend payments). The resulting $908 million contribution shortfall was funded with earnings and sales proceeds from the investment portfolio.

Investment Portfolio Assets

Investment portfolio assets are based on fair value, but are calculated according to industry standards that are different from the financial statement reporting requirements of GASB Statement No. 67, *Financial Reporting for Pension Plans,* which reports the investments at fair value as shown in the Financial section of this report. In fiscal year 2018, IPERS' investment expenses were 0.21 percent of the portfolio's total quarterly average fair value.

At the close of FY2018, IPERS' net investment portfolio assets had a fair value of $32.261 billion. The change in fair value represents an increase of $1.540 billion from the $30.721 billion net investment asset fair value as of June 30, 2017. The increase was mainly attributable to the investment portfolio return of 7.97 percent in fiscal year 2018, which was due to a combination of strong capital market returns and some value added from active management.

IPERS' 7.97 percent investment return for the fiscal year exceeded the actuarial assumed investment return of 7 percent and the policy benchmark return of 7.79 percent. IPERS' return also far exceeded the year's Consumer Price Index (CPI) of 2.87 percent and the estimated –5.65 percent return on IPERS' liabilities in fiscal year 2018. Return on liabilities is estimated using a market-valued liability proxy developed by IPERS and its investment consultant.

Funding

The ultimate test of any pension system's financial soundness is whether it is funding all of its promised benefits payable today and in the decades ahead. Funding progress is typically expressed as a funded ratio of actuarial assets to actuarial liabilities. The goal of a funding plan is to steer toward a funded ratio of 100 percent. However, since a funding plan utilizes assumptions of future performance and experience, the plan's actual experience is annually reviewed and variances from assumptions are taken into account in the annual valuation process. As a result, the funded ratio will vary from year to year as experience is taken into account. In addition to determining the funded ratio as a measurement of progress toward full funding, the annual valuation process also determines the required contribution rates that, together with investment earnings, will keep the funding plan on track.

Periodically, the assumptions used in the valuation process are reviewed and adjusted as needed. In fiscal year 2018, the IPERS Investment Board engaged the actuary in a quadrennial demographic experience study. Demographic assumptions reviewed included mortality tables, retirement rates, disability rates, termination rates, and deferred benefit elections. The changes in the demographic assumptions are detailed in the Actuarial section of this report.

The changes made to mortality assumptions affect normal cost and actuarial liabilities more than other assumption changes. The new mortality assumptions are based on the RP-2014 tables with the MP-2017 improvement scale, plus additional adjustments based on observed membership experience. The impact of the new mortality assumptions is different for IPERS' three membership groups. For Regular members, there is a slight increase in normal cost and an increase in the unfunded actuarial liability (UAL) of $63 million. However, the opposite occurred for the two Special Service groups who saw a reduction in normal cost and the UAL. According to IPERS' Actuarial Amortization Method, increases and decreases in the UAL are amortized over a closed 20-year period.

In addition to the demographic assumption changes, the System experienced strong investment gains plus other liability experience gains. The net result was an overall reduction in the UAL of $153 million and an increase in the funded ratio to 82.36 percent. IPERS remains on schedule to be fully funded in 26 years.

Applying the new demographic assumptions and annual experience, a minimum actuarial contribution rate is calculated for each membership group. For FY2020 the actuarial contribution rates are less than FY2019 required contribution rates. However, according to the Contribution Rate Funding Policy, the required contribution rates cannot be lowered unless the group is 95 percent funded or better.

The Regular membership group is less than 95 percent funded so the required contribution rates will remain steady for fiscal year 2020. Both Special Service groups are better than 95 percent funded; therefore, their required contribution rates will be reduced 0.50 percentage point. All three membership groups will contribute more than the minimum actuarial contribution rates as allowed by the Contribution Rate Funding Policy. This supports staying on the path to full funding and provides stability in contribution rates.

Independent Performance Evaluations

To maintain a focus on effectively administering the plan, IPERS completed voluntary reviews of its performance during fiscal year 2018. CEM Benchmarking Inc., an independent company that reviews pension systems worldwide, conducted a benchmarking study on IPERS' benefits administration for the previous year. For the tenth consecutive year, IPERS was lowest in costs when compared to its peers, while continuing to receive high ratings for its services.

CEM also conducted a benchmarking study of IPERS' investment program that compared the Trust Fund's costs and investment performance to results for peers in CEM's extensive pension fund database. The study covered a 5-year period that ended December 31, 2017. IPERS' investment program was rated by CEM as a low-cost program and IPERS' net value added was 0.2 percent for the 5-year period, which was in line with peer public pension funds.

Wilshire Associates, IPERS' investment consultant, reviews IPERS' investment performance against a peer group of U.S. public pension funds. IPERS' 1-year investment return for FY2018 ranked in the 71st percentile of funds in the Wilshire Trust Universe Comparison Service (TUCS) Public Funds > $1 Billion Index, while IPERS' 10-year return ranked in the 48th percentile. IPERS' low 1-year ranking was due mainly to its comparatively conservative investment structure in a year when the markets rewarded risk-taking. However, investment returns alone do not tell the whole story because they do not account for how much risk was taken in pursuit of those returns. Wilshire's data shows that IPERS' Sharpe ratio (a risk-adjusted measure of return used to evaluate a portfolio's performance) ranked in the top 16 percent versus its peers in the TUCS Public Funds > $1 Billion Index for the 10-year period ended June 30, 2018.

Professional Awards

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to IPERS for its Comprehensive Annual Financial Report for the fiscal year ended June 30, 2017. A Certificate of Achievement is valid for only one year; this was the 25th consecutive year IPERS has earned this prestigious award. To receive a Certificate of Achievement, a governmental entity must publish an easy-to-read and efficiently organized CAFR that satisfies both generally accepted accounting principles and applicable legal requirements. We believe our current CAFR continues to meet the Certificate of Achievement Program's requirements, and we are submitting it to the GFOA to determine its eligibility for another certificate.

In addition, IPERS' Summary Annual Financial Report for fiscal year 2017 earned the GFOA's Award for Outstanding Achievement in Popular Annual Financial Reporting. This was the first year IPERS had applied for the award, which is valid for a period of one year only. We are preparing our current summary report in alignment with the award requirements, and intend to apply for the award again this year.

For the tenth consecutive year, IPERS received the Public Pension Standards Award for the fiscal year ended June 30, 2018, from the Public Pension Coordinating Council (PPCC), in recognition of meeting the professional standards for plan funding and administration as set forth in the Public Pension Standards. The PPCC is a confederation of the National Association of State Retirement Administrators (NASRA), the National Conference on Public Employee Retirement Systems (NCPERS), and the National Council on Teacher Retirement (NCTR).

Acknowledgments

This report is available online or in hard copy by request. It is provided to the Governor, legislative leadership, IPERS Investment Board members, IPERS Benefits Advisory Committee members, and state fiscal staff in the Executive and Legislative Branches. IPERS also publishes an annual summary of the information contained in this report, which is offered to members, employers, policymakers, and others.

This report is intended to provide complete and reliable information as a basis for management decisions, legal compliance, and stewardship of the System's assets. We appreciate the dedication and commitment of IPERS' Board members and staff to provide the highest possible level of service to members and retirees.

Respectfully submitted,

Donna M. Mueller

Darla Iverson

Donna M. Mueller
Chief Executive Officer

Darla Iverson
Chief Financial Officer

Professional Awards

Administration

IPERS' primary purposes are to provide a secure core retirement benefit to Iowa's former and current public employees, and to attract and retain quality employees in public service. The activities of the administration are designed to accomplish these purposes and include:

- Offering counseling services and retirement information to active and retired members.
- Paying retirement, disability, and death benefits to members and beneficiaries.
- Providing refunds to members, which may be rolled over to other IRS-qualified retirement plans.
- Collecting employer contributions, employee contributions, and employee wage information in accordance with State law and IPERS' administrative rules.
- Making recommendations to the Governor and General Assembly on plan design adjustments.
- Overseeing the investment of the System's funds in accordance with the Investment Policy and Goal Statement adopted by the Investment Board.

Iowa Public Employees' Retirement System
Donna M. Mueller, Chief Executive Officer

Investments Division
Karl C. Koch, Chief Investment Officer

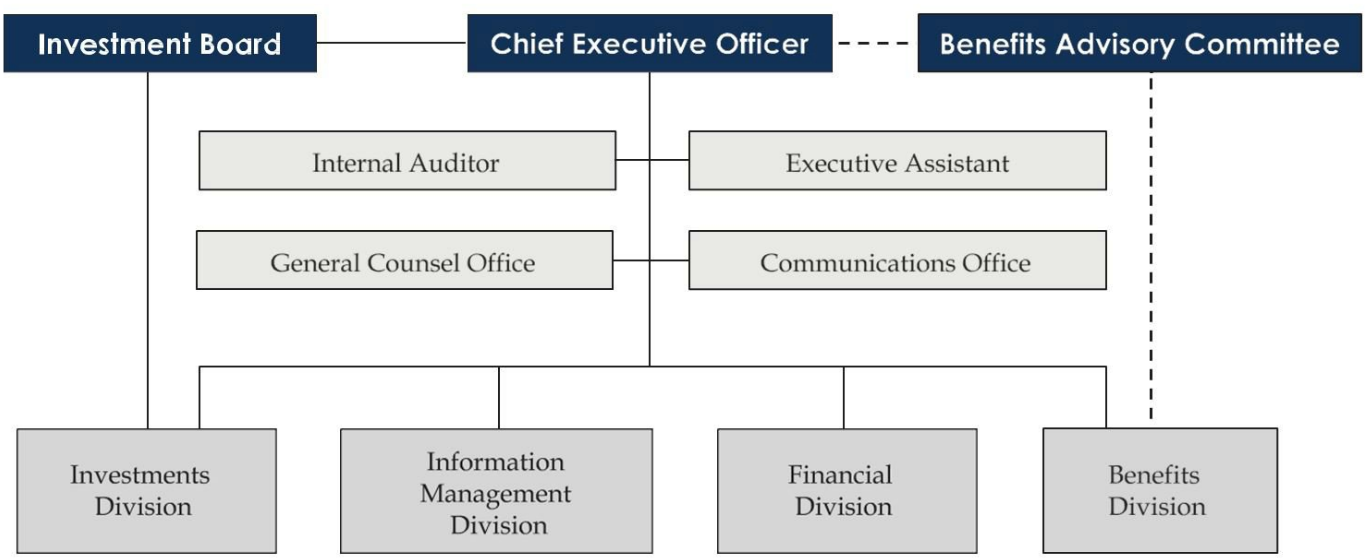
Benefits Division
David Martin, Chief Benefits Officer

General Counsel Office
Gregg A. Schochenmaier, General Counsel

Financial Division
Darla Iverson, Chief Financial Officer

Information Management Division
Rick Hindman, Chief Technology Officer

Table of Organization



Investment Board

The IPERS Investment Board is designated as the Fund's trustee. The Board has eleven members: seven voting members and four nonvoting members. The following voting members serve six-year terms:

- Three public members appointed by the Governor and confirmed by the Iowa Senate.
- Three members of the System appointed by the Governor and confirmed by the Iowa Senate.

The State Treasurer is an ex officio voting member. The nonvoting members include two state representatives and two state senators.

APPOINTED BY THE GOVERNOR:

Wayne Walter, Chairperson
Active IPERS Member
Term Ends: April 30, 2019

David Creighton
Public Member
Term Ends: April 30, 2021

Phyllis Peterson
Retired IPERS Member
Term Ends: April 30, 2022

Marlene Sprouse
IPERS Educational Member
Term Ends: April 30, 2023

Lisa Stange
Public Member
Term Ends: April 30, 2023

Mike Warmuth
Public Member
Term Ends: April 30, 2019

EX OFFICIO MEMBER:

Michael Fitzgerald, Vice Chairperson
State Treasurer

APPOINTED BY THE HOUSE SPEAKER AND MINORITY LEADER:

Representative Mary Mascher
State Representative
Term Ends: January 13, 2019

Representative Dawn Pettengill
State Representative
Term Ends: January 13, 2019

APPOINTED BY THE SENATE MAJORITY AND MINORITY LEADERS:

Senator Mark Lofgren
State Senator
Term Ends: January 13, 2019

Senator Matt McCoy
State Senator
Term Ends: January 13, 2019

Benefits Advisory Committee

The IPERS Benefits Advisory Committee (BAC) members represent major member, employer, and retiree associations; and have extensive experience in education, public safety, workforce development, human resources, and other disciplines. While Iowa law names the constituent groups to serve on the BAC, each association chooses its BAC representative.

Len Cockman, Chairperson
Employer Representative
Iowa Association of School Boards

Bradley Hudson, Vice Chairperson
Member Representative
Iowa State Education Association

Susanna Brown
Member Representative
State Police Officers Council

Matt Carver
Member Representative
School Administrators of Iowa

Matt Cosgrove
Employer Representative
Iowa State Association of Counties

Lowell Dauenbaugh
Public Member

Andrew Hennesy
Member Representative
IPERS Improvement Association

Steve Hoffman
Member Representative
Iowa State Sheriffs and Deputies Association

Danny Homan
Member Representative
American Federation of State, County and Municipal Employees

Janet Phipps
Ex Officio Employer Representative
Iowa Department of Administrative Services

Philip Tetzloff
Member Representative
Retired School Personnel Association

Jon Thomas
Member Representative
International Brotherhood of Teamsters

Mark Tomb
Employer Representative
Iowa League of Cities

Sandy Tryon
Employer Representative
Iowa Association of Community College Trustees

Professional and Consulting Services

Actuary
- Cavanaugh Macdonald Consulting LLC

Legal Counsel
- Foster Pepper PLLC
- Ice Miller LLP

Securities Litigation Monitoring Counsel
- Barrack, Rodos & Bacine
- Cohen Milstein
- Kessler Topaz Meltzer Check

Investment Management Consultant
- Wilshire Associates Inc.

Master Custodian
- The Bank of New York Mellon

Securities Lending Agent
- Deutsche Bank AG

Overlay Management Services
- Parametric Portfolio Associates LLC

Liquid Absolute Return Strategies Administrator
- Northstar Financial Services Group LLC

Information Technology Consultant
- Vitech Systems Group Inc.

Benchmarking Consultant
- CEM Benchmarking Inc.

Investment Managers

Domestic Equity
- BlackRock Institutional Trust Company NA
- BNY Mellon Asset Management North America Corporation
- Columbia Management Investment Advisers LLC
- Fisher Investments
- Janus Capital Management LLC
- J.P. Morgan Investment Management Inc.
- PanAgora Asset Management Inc.
- Wellington Management Company LLP

International Equity
- BlackRock Institutional Trust Company NA
- BNY Mellon Asset Management North America Corporation
- GAM USA Inc.
- Quantitative Management Associates LLC
- Wellington Management Company LLP

Global Smart Beta Equity
- UBS Asset Management (Americas) Inc.

Core-Plus Fixed Income
- BlackRock Financial Management Inc.
- BNY Mellon Asset Management North America Corporation
- MacKay Shields LLC
- PGIM Inc.
- Principal Global Investors LLC
- TCW Asset Management Company LLC
- Western Asset Management Company LLC

Public Real Assets
- BlackRock Institutional Trust Company NA
- BNP PARIBAS ASSET MANAGEMENT USA Inc.
- CenterSquare Investment Management Inc.
- Harvest Fund Advisors LLC
- State Street Global Advisors

Public Credit
- Aegon USA Investment Management LLC
- Oaktree Capital Management LP
- PGIM Inc.

Private Credit
- Blackstone Real Estate Debt Strategies Associates II LP
- Monroe Capital Private Credit Fund I LP
- PGIM Real Estate Global Debt LP
- Principal Real Estate Debt Fund LP
- Principal Real Estate Debt Fund II LP
- TCP Direct Lending Fund VIII-A LLC

Private Equity/Debt
- Pathway Capital Management LP

Private Real Assets
- Clarion Partners LLC
- Forest Investment Associates LP
- Invesco Real Estate
- RREEF America LLC
- UBS Farmland Investors LLC
- UBS Realty Investors LLC

Liquid Absolute Return Strategies
- Berenberg Asset Management LLC
- Fort LP
- Graham Capital Management LP
- IPM Informed Portfolio Management AB
- P/E Global LLC
- Quantmetrics Capital Management LLP
- Wadhwani Asset Management LLP

Transition Management Services
- BlackRock Institutional Trust Company NA
- Russell Investments Implementation Services LLC
- State Street Bank and Trust Company

FINANCIAL

FINANCIAL

OFFICE OF AUDITOR OF STATE
STATE OF IOWA

Mary Mosiman, CPA
Auditor of State

State Capitol Building
Des Moines, Iowa 50319-0004

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Independent Auditor's Report

To the Members of the Iowa Public Employees' Retirement System Investment Board:

Report on the Financial Statements

We have audited the accompanying Statement of Fiduciary Net Position of the Iowa Public Employees' Retirement System (IPERS) as of June 30, 2018, and the related Statement of Changes in Fiduciary Net Position for the year then ended and the related Notes to Financial Statements, which collectively comprise the Iowa Public Employees' Retirement System's basic financial statements listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles. This includes the design, implementation and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with U.S. generally accepted auditing standards and the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to IPERS' preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of IPERS' internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of IPERS at June 30, 2018, and the changes in its fiduciary net position for the year then ended in accordance with U.S. generally accepted accounting principles.

Emphasis of Matters

As discussed in Note 1, the financial statements present the financial position and the changes in financial position of only that portion of the reporting entity of the State of Iowa that is attributable to the transactions of IPERS. They do not purport to, and do not, present fairly the financial position of the State of Iowa as of June 30, 2018, and the changes in its financial position and its cash flows, where applicable, for the year then ended in conformity with U.S. generally accepted accounting principles.

As discussed in Note 1, IPERS adopted new accounting guidance related to Governmental Accounting Standards Board (GASB) Statement No. 75, Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions. Our opinion is not modified with respect to this matter.

Report on Summarized Comparative Information

We have previously audited the financial statements of IPERS for the year ended June 30, 2017, and we expressed an unmodified audit opinion on those audited financial statements in our report dated December 8, 2017. In our opinion, the summarized comparative information presented herein as of and for the year ended June 30, 2017 is consistent, in all material respects, with the audited financial statements from which it has been derived.

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require Management's Discussion and Analysis, the Schedule of Changes in the Employers' Net Pension Liability and Related Ratios, the Schedule of Employers' Contributions, the Schedule of Investment Returns and the Schedule of IPERS' Proportionate Share of the Total OPEB Liability on pages 18 through 20 and 43 through 46 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board which considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic or historical context. We have applied certain limited procedures to the required supplementary information in accordance with U.S. generally accepted auditing standards, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise IPERS' basic financial statements. The supplementary information included in Schedules 1 and 2 on pages 47 and 48 is presented for purposes of additional analysis and is not a required part of the basic financial statements.

The supplementary information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with U.S. generally accepted auditing standards. In our opinion, the supplementary information is fairly stated in all material respects in relation to the basic financial statements taken as a whole.

Other Information

We did not audit the data included in the Introduction, Investments, Actuarial and Statistical sections and, accordingly, we express no opinion on the information presented in those sections.

Other Reporting Required by Government Auditing Standards

Our report on IPERS' internal control over financial reporting and our tests of its compliance with certain provisions of laws, regulations, contracts and other matters required by Government Auditing Standards will be issued under separate cover. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing and not to provide an opinion on the effectiveness of IPERS' internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with Government Auditing Standards in considering IPERS' internal control over financial reporting and compliance.

Mary Mosiman

MARY MOSIMAN, CPA
Auditor of State

December 7, 2018

Management's Discussion and Analysis

This discussion and analysis of the Iowa Public Employees' Retirement System provides an overview of the retirement system's financial activities for the fiscal year ended June 30, 2018. It is intended to be used in conjunction with the transmittal letter and IPERS' financial statements and notes, which begin on page 21 of this report.

Using This Financial Report

This Comprehensive Annual Financial Report reflects the activities of the Iowa Public Employees' Retirement System as reported in the Statement of Fiduciary Net Position and the Statement of Changes in Fiduciary Net Position (see pages 21 – 22). These statements are presented on an accrual basis and reflect all Trust Fund activities as incurred. The Notes to Financial Statements are an integral part of the financial statements and include additional information not readily evident in the statements themselves. The Required Supplementary Information and Supplementary Information following the Notes to Financial Statements provide historical information and additional details considered useful in evaluating the condition of the plan. Investment data in the Financial section are presented at fair value. See the Actuarial section of this report for a detailed discussion of the actuarial value of assets and liabilities and the funded ratio.

Financial Highlights

IPERS' net position restricted for pensions increased by $1.536 billion during fiscal year 2018. On June 30, 2018, total plan assets (including capital assets of $16.5 million) were $34.042 billion. These assets, along with deferred outflows of resources of $30,000, exceeded total liabilities of $1.728 billion and deferred inflows of resources of $4,000, resulting in a net position restricted for pensions of $32.315 billion.

- Covered wages, from which both employee and employer contributions are calculated, increased $120.1 million, or 1.53 percent, over the last fiscal year and totaled $7.983 billion. In comparison, fiscal year 2017 wages totaled $7.863 billion, a 4.06 percent increase from the prior fiscal year's wages of $7.557 billion.
- Additions from employee and employer contributions totaled $1.198 billion in fiscal year 2018, an increase of 1.70 percent. In comparison, fiscal year 2017 saw a 2.94 percent increase in contributions. Growth in covered payroll increased contributions in both years.
- Contribution rates held steady for the Regular members and the protection occupation members in FY2018, FY2017, and FY2016. Contribution rates decreased for the sheriffs and deputies in both FY2018 and FY2017.
- Service purchase contributions for FY2018 were $4.6 million, an 8.40 percent increase over the prior year. In contrast, service purchase contributions were $4.3 million for FY2017, an 86.71 percent decrease from the FY2016 amount of $32.1 million. The large fluctuations in service purchases are related to an administrative rule change mandating that, effective January 1, 2016, service purchases can be made only at the time of retirement.
- Net investment and securities lending income, after all investment-related expenses, was $2.459 billion in FY2018, $3.280 billion in FY2017, and $624.9 million in FY2016. These differences are explained by the disparity in IPERS' investment returns — the FY2018 return was 7.97 percent, while the returns for FY2017 and FY2016 were 11.70 percent and 2.15 percent, respectively.
- Investment management expenses were $68.7 million for FY2018. In comparison, investment management expenses were $67.9 million (corrected from $68.1 million) for FY2017 and $60.6 million for FY2016. The increase in investment management expenses in FY2018 was primarily due to higher brokerage commissions paid, particularly related to futures commissions associated with the liquid absolute return strategies. However, the System's ratio of investment management expenses to the portfolio's quarterly average fair value of assets under management was 0.21 percent for FY2018, down from ratios of 0.23 percent for FY2017 and 0.22 percent for FY2016.
- Total contributions, investments, and other income resulted in total additions to the Fund of $3.662 billion in fiscal year 2018. This compares to total additions of $4.462 billion in FY2017 and $1.802 billion in FY2016. The fluctuating additions correlate with the market returns in these years.
- FY2018 benefit payments increased $109.3 million and refunds increased $8.5 million. Benefit payments increased due to an increased number of retirees, as well as higher average monthly payments to new retirees. Benefit and refund payments increased from $1.890 billion in FY2016, to $1.994 billion in FY2017, to $2.111 billion in FY2018.
- Administrative expenses totaled $14.8 million in FY2018, compared to $15.9 million for FY2017 and $14.9 million for FY2016. Costs related to

improvements in the IPERS building drove much of the increased expense in FY2017. Administrative expenses remained steady, though, at 0.05 percent of the value of net position in all three fiscal years.
- In FY2018, capital assets decreased from $18.7 million to $16.5 million, mostly as a result of depreciation. Capital assets decreased from $20.8 million at the end of FY2016 to $18.7 million at the end of FY2017 for the same reason.

Analysis of Net Position

The investment rates of return for the current and preceding two fiscal years were 7.97 percent, 11.70 percent, and 2.15 percent, respectively. IPERS' total net position increased 4.99 percent in FY2018 and 8.66 percent in FY2017, and decreased 0.36 percent in FY2016, primarily as a result of these market returns. The following table contains the fiscal year 2018 performance of each asset class and its respective benchmark, as well as the Fund's allocation to each asset class as a percentage of total Fund market value at June 30, 2018. (See also the Investments section of this report beginning on page 49 for more information on rates of return.)

Investment Returns and Allocations

Fiscal Year Ended June 30, 2018

Asset Class	Return (%)	Benchmark (%)	Allocation (%)
Domestic equity	15.46	14.66	22.93
International equity	7.51	7.79	14.68
Global smart beta equity	10.34	9.97	3.03
Core-plus fixed income	-0.24	-0.28	27.72
Public credit	0.61	1.02	3.53
Public real assets	2.88	2.05	7.41
Cash	4.59	1.36	0.86
Private equity	18.92	18.92	12.83
Private real assets	9.42	9.42	6.15
Private credit	9.25	9.25	0.86
Total Fund	**7.97**	**7.79**	**100.00**

The two tables on the next page present condensed summaries of IPERS' net position and a breakdown of the changes in the net position with comparison to the previous two fiscal years.

A large percentage of total assets, 97 percent, is represented by investments held to provide retirement, death, and disability benefits to qualified members and their beneficiaries. Other assets, including cash and cash equivalents, receivables from employee and employer contributions, receivables from investment-related transactions, and capital assets, make up 3 percent of total assets.

Total liabilities in the following table represent current liabilities and do not reflect the actuarial liabilities discussed in other sections of this report. These current liabilities chiefly consist of amounts owed for investment-related transactions, including the value of rebates and collateral due back to borrowers of securities at the conclusion of securities lending transactions, amounts owed to members or their beneficiaries, and amounts owed to contractors and vendors. Total liabilities decreased $134.4 million from fiscal year 2017 to 2018. In comparison, liabilities decreased by $1.048 billion between fiscal years 2016 and 2017. These decreases are primarily related to investment payables.

Benefits paid out exceeded contributions received by $908.6 million, $811.2 million, and $713.3 million for fiscal years 2018, 2017, and 2016, respectively. This excess of benefits paid relative to contributions received is characteristic of a mature pension plan such as IPERS.

Fiduciary Net Position

(Dollar Values Expressed in Thousands)
Fiscal Years Ended June 30

	2018	2017	2018/2017 Percentage Change	2016	2017/2016 Percentage Change
Cash and investments at fair value	$33,247,956	$31,962,524	4.0	$29,436,328	8.6
Receivables	776,570	659,813	17.7	1,778,545	(62.9)
Capital assets	16,494	18,681	(11.7)	20,755	(10.0)
Other assets	1,357	315	330.8	704	(55.3)
Total assets	**34,042,377**	**32,641,333**	**4.3**	**31,236,332**	**4.5**
Deferred outflows of resources	**30**	**—**	**NA**	**—**	**NA**
Total liabilities	**1,727,814**	**1,862,217**	**(7.2)**	**2,909,898**	**(36.0)**
Deferred inflows of resources	**4**	**—**	**NA**	**—**	**NA**
Total net position	**$32,314,589**	**$30,779,116**	**5.0**	**$28,326,434**	**8.7**

Changes in Fiduciary Net Position

(Dollar Values Expressed in Thousands)
Fiscal Years Ended June 30

	2018	2017	2018/2017 Percentage Change	2016	2017/2016 Percentage Change
Additions					
Contributions and service purchases	$1,202,788	$1,182,392	1.7	$1,176,667	0.5
Net investment and securities lending income	2,458,969	3,279,743	(25.0)	624,854	424.9
Total additions	**3,661,757**	**4,462,135**	**(17.9)**	**1,801,521**	**147.7**
Deductions					
Benefits and refunds	2,111,352	1,993,554	5.9	1,889,983	5.5
Administrative expenses	14,754	15,899	(7.2)	14,939	6.4
Total deductions	**2,126,106**	**2,009,453**	**5.8**	**1,904,922**	**5.5**
Increase/(decrease) in net position	**$1,535,651**	**$2,452,682**	**(37.4)**	**($103,401)**	**2,472.0**

See Note 1, page 23, regarding FY2017 reclassifications and the restatement of beginning net position for FY2018.

Request for Information

This financial report is designed to provide the Governor and Iowa Legislature (plan sponsors), the Investment Board, the Benefits Advisory Committee, the System's membership, contributors, taxpayers, and creditors with a general overview of the System's finances and to demonstrate the System's accountability for the money it manages. Questions about this report or requests for additional financial information should be directed to the Iowa Public Employees' Retirement System by e-mail at info@ipers.org, by phone at 515-281-0020 or 1-800-622-3849, or by mail at P.O. Box 9117, Des Moines, IA 50306-9117.

Basic Financial Statements

Statement of Fiduciary Net Position

June 30, 2018, and 2017

	2018	2017
ASSETS		
Cash and cash equivalents	**$331,397,027**	**$1,255,490,965**
Receivables		
Contributions	76,880,142	74,215,215
Accrued interest and dividends	95,752,315	85,329,550
Investment sales	486,464,256	417,082,235
Foreign exchange contracts	116,472,676	83,167,851
Miscellaneous	1,000,289	18,132
Total receivables	**776,569,678**	**659,812,983**
Investments at fair value		
Core-plus fixed income	9,427,069,907	9,004,375,394
Public credit	1,124,102,923	1,085,253,314
Domestic equity	7,382,158,711	7,068,334,533
International equity	4,699,028,459	4,634,947,860
Public real assets	2,386,877,341	2,208,100,648
Global smart beta equity	971,719,750	—
Private real assets	1,985,560,818	1,983,758,201
Private credit	276,077,905	242,274,083
Private equity	4,137,566,248	3,647,787,106
Total investments at fair value	**32,390,162,062**	**29,874,831,139**
Securities lending collateral pool	**526,397,431**	**832,202,102**
Capital assets		
Depreciable assets, net of accumulated depreciation	15,993,601	18,180,695
Nondepreciable assets: land	500,000	500,000
Total capital assets	**16,493,601**	**18,680,695**
Other assets	**1,357,108**	**315,416**
Total assets	**34,042,376,907**	**32,641,333,300**
DEFERRED OUTFLOWS OF RESOURCES		
Other postemployment benefits	**30,000**	**—**
LIABILITIES		
Accounts payable and accrued expenses	41,543,632	32,670,987
Investment purchases payable	1,047,006,383	912,451,415
Rebates and collateral payable	526,212,392	831,920,192
Foreign exchange contracts payable	113,051,905	85,174,380
Total liabilities	**1,727,814,312**	**1,862,216,974**
DEFERRED INFLOWS OF RESOURCES		
Other postemployment benefits	**4,000**	**—**
Net position restricted for pensions (Note 7, page 42)	**$32,314,588,595**	**$30,779,116,326**

See Note 1, page 23, regarding FY2017 reclassifications and the restatement of beginning net position for FY2018.

Notes to Financial Statements begin on page 23.

Statement of Changes in Fiduciary Net Position

Years Ended June 30, 2018, and 2017

	2018	2017
ADDITIONS		
Contributions		
Employer contributions	$716,752,781	$704,766,114
Employee contributions	481,405,756	473,354,932
Service purchases	4,629,646	4,271,054
Total contributions	**1,202,788,183**	**1,182,392,100**
Investments		
Interest	403,121,850	361,490,893
Dividends	144,518,841	127,100,409
Real assets and private equity	70,756,392	82,890,939
Net appreciation in fair value of investments	1,906,245,120	2,773,012,316
Recaptured commissions	60,536	74,847
Investment management expenses	(68,681,956)	(67,858,429)
Net investment income	**2,456,020,783**	**3,276,710,975**
Securities lending		
Securities lending income	2,138,309	3,311,850
Securities lending rebates/(expenses)	809,808	(279,102)
Net securities lending income	**2,948,117**	**3,032,748**
Total net investment income	**2,458,968,900**	**3,279,743,723**
Total additions	**3,661,757,083**	**4,462,135,823**
DEDUCTIONS		
Benefit payments	2,052,427,745	1,943,103,208
Member refunds	58,924,612	50,450,949
Administrative expenses	14,753,842	15,898,996
Total deductions	**2,126,106,199**	**2,009,453,153**
Net increase	**1,535,650,884**	**2,452,682,670**
Net position restricted for pensions, beginning of year*	30,778,937,711	28,326,433,656
Net position restricted for pensions (Note 7, page 42)	**$32,314,588,595**	**$30,779,116,326**

See Note 1, page 23, regarding FY2017 reclassifications and the restatement of beginning net position for FY2018.

Notes to Financial Statements begin on page 23.

Notes to Financial Statements
June 30, 2018, and 2017

(1) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

IPERS, a public employee retirement system, was created by the Iowa Legislature. IPERS is an integral part of the primary government of the State of Iowa and, accordingly, is included as a pension trust fund in the Iowa Comprehensive Annual Financial Report (CAFR) as well as having its own stand-alone CAFR. The State's CAFR may be viewed on the Iowa Department of Administrative Services' website.

For financial reporting purposes, IPERS considers all potential component units for which it is financially accountable and other organizations for which the nature and significance of their relationship with IPERS is such that exclusion would cause IPERS' financial statements to be misleading or incomplete. The GASB has set forth criteria to be considered in determining financial accountability. These criteria are (1) whether IPERS could appoint a voting majority of an organization's governing body, (2) the ability of IPERS to impose its will on that organization, and (3) the potential for the organization to provide specific benefits to or impose specific financial burdens on IPERS. IPERS has no component units that meet the GASB criteria.

A. Basis of Accounting

IPERS' financial statements have been prepared using the accrual basis of accounting in conformity with U.S. generally accepted accounting principles (GAAP) as applied to governmental accounting for fiduciary funds. The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, and expenses. Actual amounts could differ from those estimates.

The System is funded through a combination of employee and employer contributions and investment income. Revenues are recognized when they are earned and become measurable. Employee contributions are recognized in the period in which the contributions are due. Employer contributions are recognized when due and the employer has made a formal commitment to provide them.

Expenses are recognized when the liability is incurred. Benefits and refunds are recognized when due and payable according to the terms of the plan.

Investment sales and purchases are recorded as of their trade date. All investments are reported at fair value. The determination of fair value is generally based on published market prices and quotations from major investment brokers. Investments without quoted market prices are valued based on yields and maturities currently available on comparable securities of similar issue. Fair values for real estate investments are based on periodic assessments or appraisals of the underlying investments. Private equities and three private credit investments (Blackstone Real Estate Debt Strategies, TCP Direct Lending Fund, and Monroe Capital Private Credit Fund) are valued based on March 31 net asset values plus or minus purchases, sales, and cash flows from April 1 through June 30 of the reporting year. Futures contracts are valued daily with the resulting adjustments recorded as realized gains/losses arising from the daily settlement of the variation margin.

B. New Accounting Pronouncement, Restatement, and Reclassifications

IPERS has implemented GASB Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*. This statement is effective for financial reporting periods beginning after June 15, 2017. This standard replaces the requirements of GASB Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*, as amended.

The revised requirements establish new financial reporting requirements for state and local governments that provide their employees with other postemployment benefits (OPEB), including additional note disclosures and required supplementary information. In addition, GASB 75 requires a state or local government employer to use the entry age normal actuarial cost method, and requires deferred outflows of resources and deferred inflows of resources that arise from other types of events related to OPEB to be recognized.

During the transition year, as permitted, beginning balances for deferred outflows of resources and deferred inflows of resources are not reported because the information needed was not available. Beginning net position at June 30, 2017, was restated to retroactively report the change in valuation of the beginning total OPEB liability, as shown in the following table.

Net position at June 30, 2017, as previously reported	**$30,779,116,326**
Net OPEB obligation measure under previous standards	538,385
Total OPEB liability at June 30, 2017	(717,000)
Net position at July 1, 2017, as restated	**$30,778,937,711**

In addition, certain line items for FY2017 have been reclassified with no impact to net position restricted for pensions. FY2017 investment expenses and interest income both decreased $202,656. Cash was increased and receivables were decreased $1,705,979 to reclassify deposits at the bank on June 30 but not yet posted to the state accounting system.

C. Cash and Cash Equivalents

For the purpose of financial reporting, cash and cash equivalents represent cash and money market investments with an original maturity of three months or less held by the System's administration, and cash allocated to the System's investment managers for investment.

D. Foreign Exchange Contracts

The System's investment managers enter into forward foreign exchange contracts to obtain or short an exposure to foreign currencies or to minimize the short-term impact of currency fluctuations on their foreign investments. The gains or losses on these contracts are recorded in the period in which the exchange rates change.

E. Investments

Iowa Code section 97B.7 requires the IPERS Investment Board to establish investment policies. These policies are documented in the Investment Policy and Goal Statement, and reviewed at least annually by the Investment Board. The Investment Policy and Goal Statement in effect on June 30, 2018, is located on pages 64 – 70.

IPERS' Investment Policy and Goal Statement was revised twice in fiscal year 2018. The first revision created a 3 percent allocation to global smart beta equity, with funding coming from a 2 percent reduction in the domestic equity allocation and a 1 percent reduction in the international equity allocation. This revision became effective July 1, 2017, when the funding of the asset class occurred.

The second revision was undertaken by three Investment Board members and the chief investment officer. This committee was tasked with comparing the Investment Policy and Goal Statement to other pension fund policies, reducing the overall length of the document, and clarifying key policies and duties of the Board and staff. Substantial revisions were recommended by the committee and adopted by the Investment Board in September 2017. Below is a summary of the revisions:

- Descriptions of the alpha and beta portfolios were removed as they did not communicate policy.
- Asset class definitions were removed since each asset class is defined by its benchmark in the Asset Allocation Policy on page 70.
- A section on decision making was inserted that clearly states the decisions that are the responsibility of the Board, and clarifies that the Board delegates to the chief investment officer all other decision-making relating to the investment of IPERS assets, subject to the guidelines established in the Statement and any statutory requirements or prohibitions.
- The existing stand-alone risk management policy was eliminated and the key principles were incorporated into a risk management section, including the active risk budget.
- The existing investment manager monitoring and retention policy was eliminated and instead the chief investment officer is now required to provide the Board with a quarterly summary of active manager performance and must report any concerns regarding a manager's performance, personnel turnover, or changes in the organization or its investment process.
- The 15 percent limit on how much IPERS could invest with one firm was eliminated, and the 20 percent limit on how much IPERS can invest in an investment manager's actively managed strategies is now calculated on total active assets under management.
- The section on derivatives was greatly reduced by clarifying the four key risk controls and requiring the chief investment officer to adopt written policies and procedures concerning derivatives use by IPERS investment managers.
- The section on continuing education for Board members was eliminated, since continuing education is voluntary.
- The section on divestment programs was eliminated because it did not communicate policy.
- A section clarifying the use of leverage in investment strategies was inserted.
- The statutory responsibilities of the Investment Board and staff were summarized in an appendix for easier reference.

The investment activities of the System are designed to provide a return on the Fund that, when coupled with the periodic contributions of the membership and employers, will meet or exceed the funding requirements of the plan over time while staying within the Investment Board's tolerance for risk as expressed in the Investment Policy and Goal Statement. Of primary consideration is maintaining adequate funding to provide for the payment of the plan's benefits over time. The following are the Investment Board's adopted asset allocation targets as of June 30, 2018.

Target Allocations

As of June 30, 2018

Asset Class	Target Allocation
Domestic equity	22.0%
International equity	15.0%
Global smart beta equity	3.0%
Core-plus fixed income	27.0%
Public credit	3.5%
Public real assets	7.0%
Cash	1.0%
Private equity	11.0%
Private real assets	7.5%
Private credit	3.0%

For the fiscal year ended June 30, 2018, the annual money-weighted rate of return on pension plan investments, net of pension plan investment expenses, was 8.12 percent. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

The Treasurer of State is the statutory custodian of the System, and in this capacity, has arranged to have the custodial bank account collateralized or covered by the State Sinking Fund. The Treasurer of State selected the Bank of New York Mellon, a bank rated AA by Fitch Ratings, to serve as the custodian bank for IPERS.

Consistent with the System's investment policy, the investment securities are held by the System's custodian and registered in the System's name. All of IPERS' investment securities are held by the System's custodial bank in the System's name, except for securities and cash held at brokers as collateral for derivatives, investment securities on loan with brokers for cash collateral, investments in mutual and commingled funds, real estate properties, and limited partnerships, which, by nature, are not required to be categorized. Investments in the Short-Term Investment Funds (STIF) are held in a collective trust fund offered through the System's custodial bank. The fair value of the position in the trust fund equals the value of the fund shares.

IPERS has categorized its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure the fair value of the asset and gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (level 1 measurements) and the lowest priority to unobservable inputs (level 3 measurements).

Fair Value Hierarchy Levels

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 (NAV) 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's 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 on page 26 shows the fair value leveling of the investments for the System.

Short-term securities generally include investments in money market–type securities reported at cost plus accrued interest, which approximates fair value.

Debt, equity, and derivative securities classified in Level 1 are valued using prices quoted in active markets for those securities. Derivative securities classified in Level 2 are securities whose values are either derived daily from associated traded securities or are determined by using a market approach that considers benchmark interest rates.

Debt and debt derivative securities classified in Level 2 and Level 3 are valued using either a bid evaluation or a matrix pricing technique. Bid evaluations may include market quotations, yields, maturities, call features, and ratings. Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices. Level 2 debt securities have nonproprietary information that is readily available to market participants, from multiple independent sources, which are known to be actively involved in the market. Level 3 debt securities are solely composed of bank loans and these investments use proprietary information or single-source pricing.

Other real assets and private real estate separate accounts classified in Level 3 are investments generally valued using one or a combination of the following accepted valuation approaches: market, cost, or income. Independent third-party appraisals are required every three years. Annual appraisals are done internally by the advisors and all portfolios have audited financials completed at fiscal year-end.

Investments and Derivative Instruments Measured at Fair Value

(Dollar Values Expressed in Thousands)
June 30, 2018

Investment Type	Total Fair Value	Fair Value Measurements Using: Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Collateral at broker	**$50,397**	**—**	**$50,397**	**—**
Cash equivalents	**(44)**	**—**	**(44)**	**—**
Equity investments				
Common stocks	6,054,109	$6,054,109	—	—
Real estate investment trusts	524,563	524,563	—	—
Master limited partnerships	253,896	253,896	—	—
Preferred stock	75,972	7,982	67,990	—
Other equities	37,641	37,641	—	—
Total equity investments	**6,946,181**	**6,878,191**	**67,990**	**—**
Fixed-income investments				
U.S. Treasuries	2,044,936	—	2,044,936	—
Agencies	1,635,362	—	1,635,362	—
Collateralized mortgage-backed securities	249,419	—	249,419	—
Collateralized mortgage obligations	35,012	—	35,012	—
Other government mortgage-backed securities	10,143	—	10,143	—
Other government fixed income	483,394	2,405	480,989	—
Corporate bonds	3,310,889	—	3,178,440	$132,449
Corporate asset-backed securities	212,225	—	212,225	—
Private placements	1,623,746	—	1,623,746	—
State and local obligations	28,949	—	28,949	—
Convertible bond	2,376	—	2,376	—
Total fixed-income investments	**9,636,451**	**2,405**	**9,501,597**	**132,449**
Other investments				
Private real estate separate accounts	1,783,217	—	—	1,783,217
Other real assets	202,344	—	—	202,344
Total other investments	**1,985,561**	**—**	**—**	**1,985,561**
Total investments by fair value level	**$18,618,546**	**$6,880,596**	**$9,619,940**	**$2,118,010**
Investments measured at the net asset value				
Equity commingled funds				
Developed markets	$6,266,306			
Emerging markets	438,894			
Invested securities lending collateral				
Overnight repurchase agreements	232,408			
Money market funds	76,916			
REIT commingled funds	206,609			
Fixed-income commingled funds	1,971,305			
Pooled funds and mutual funds	757,404			
Private equity funds	4,120,755			
Private real estate debt funds	276,872			
Total investments measured at the NAV	**$14,347,469**			
Total investments measured at fair value	**$32,966,015**			
Investment derivative instruments				
Futures	$696	$696	—	—
Options	(279)	(181)	($98)	—
Swaps				
Credit default	(280)	—	(280)	—
Interest rate	(2,291)	—	(2,291)	—
Total investment derivative instruments	**($2,154)**	**$515**	**($2,669)**	**—**

The valuation method for investments measured at the net asset value per share, or equivalent, is presented in the table below.

Investments Measured at the Net Asset Value

(Dollar Values Expressed in Thousands)
June 30, 2018

Investment Type	Fair Value	Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
Equity commingled funds				
Developed markets[1]	$6,266,306		Daily	2 days
Emerging markets[1]	438,894		Weekly	2 days
Invested securities lending collateral				
Overnight repurchase agreements	232,408		NA	NA
Money market funds	76,916		Daily	NA
REIT commingled funds[1]	206,609		Daily	15 days
Fixed-income commingled funds[1]	1,971,305		Daily	2 days
Pooled funds and mutual funds	757,404		Daily	NA
Private equity funds[2]	4,120,755	$2,235,884		
Private real estate debt funds[3]	276,872	523,374		
Total investments measured at the NAV	**$14,347,469**	**$2,759,258**		

[1]Consists of two bond funds, four domestic equity funds, five international equity funds, and one real estate investment fund that are considered to be commingled in nature. Each are valued at the net asset value of the units held at the end of the period based upon the fair value of the underlying investments.
[2]IPERS' private equity portfolio consists of 183 active partnerships within the legacy program and a fund-of-one investment, which invests primarily in buyout funds, with some exposure to venture capital, special situations, and distressed debt funds. The fair values of these funds and the fund-of-one have been determined using net assets valued one quarter in arrears plus current quarter cash flows. These funds are not eligible for redemption. Distributions are received as underlying investments within the funds are liquidated, which on average can occur over the span of 5 to 10 years.
[3]IPERS' private credit portfolio consists of six active partnerships. Four of the partnerships invest primarily in high-yield real estate debt while the other two partnerships invest primarily in middle market corporate debt. Three of the funds — Blackstone Real Estate Debt, Monroe Capital Private Credit Fund I, and TCP Direct Lending Fund VII-A — determine fair value by utilizing net asset values from one quarter in arrears plus current quarter cash flows. The other three funds — Principal Real Estate Debt I, Principal Real Estate Debt II, and PGIM Real Estate Global Debt — determine fair value by utilizing net asset values from the current quarter. These funds are not eligible for redemption. Distributions are received as underlying investments are liquidated, which on average can occur over the span of 3 to 7 years.

GASB Statement No. 40, *Deposit and Investment Risk Disclosures*, is an amendment to GASB Statement No. 3, *Deposits With Financial Institutions, Investments (Including Repurchase Agreements), and Reverse Repurchase Agreements*. GASB 40 addresses common deposit and investment risks related to credit risk, concentration of credit risk, custodial credit risk, interest rate risk, and foreign currency risk. Each risk identified in GASB 40, as it relates to the System, is discussed in the remainder of this note. No System-wide formal policy exists specific to investment-related risks identified in GASB 40. Each portfolio is managed in accordance with an investment contract that identifies and seeks to control the various types of investment-related risks.

Prior-year disclosures for investment type, credit risk quality ratings, and effective duration have not been included because the information is not believed to be of continuing significance.

Invested Assets

(Dollar Values Expressed in Thousands)
June 30, 2018

Investment Type	Total Fair Value	Fair Value on Loan
Cash	**$38,299**	**—**
Cash collateral at broker	**82,081**	**—**
Pooled funds and mutual funds	757,404	—
Treasuries	128,994	—
Short-term investments	**886,398**	**—**
Common stocks	6,054,109	$282,317
Real estate investment trusts	524,563	7,806
Master limited partnerships	253,896	15,097
Preferred stock	75,972	5,483
Other equities	37,641	1,386
Equity investments	**6,946,181**	**312,089**
U.S. TIPS	736,666	—
U.S. Treasury notes	1,179,276	40,645
Ginnie Mae	335,310	—
Freddie Mac	454,578	—
Fannie Mae	839,034	—
Other government agencies	6,440	—
Collateralized mortgage-backed securities	249,419	—
Collateralized mortgage obligations	35,012	—
Other government mortgage-backed securities	10,143	—
Other government fixed income	483,394	13,110
Corporate bonds	3,310,889	102,605
Corporate asset-backed securities	212,225	298
Private placements	1,623,746	41,522
State and local obligations	28,949	—
Convertible bond	2,376	—
Fixed-income investments	**9,507,457**	**198,180**
Derivatives	**(2,154)**	**—**
Equity commingled funds	6,705,200	—
Fixed-income commingled funds	1,971,305	—
REIT commingled funds	206,609	—
Commingled funds	**8,883,114**	**—**
Special equity	3,356,248	—
Venture capital	764,507	—
Private equity	**4,120,755**	**—**
Private real assets	**1,985,561**	**—**
Private credit	**276,872**	**—**
Total	**$32,724,564**	**$510,269**
Total from above	**$32,724,564**	
Blackstone return of capital accrual	(794)	
Cash in managers' accounts	(333,608)	
Investments on Statement of Fiduciary Net Position	**$32,390,162**	

Credit Risk

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations to IPERS. Credit risk associated with all fixed-income holdings, including collateral for repurchase agreements and securities lending collateral, has been included in this report.

The tables summarize IPERS' fixed-income portfolio exposure levels and credit quality ratings. The following table includes $3.303 billion of U.S. Treasury obligations and $228.1 million of Ginnie Mae obligations. These securities are explicitly guaranteed by the U.S. government and represent 28.6 percent of the total Fund's fixed-income exposure. Therefore, as of June 30, 2018, IPERS' fixed-income assets that are not explicitly government-guaranteed represented 71.4 percent of the fixed-income portfolio.

As a matter of practice, there are no overarching limitations or policies for credit risk exposures within the overall fixed-income portfolio. Each fixed-income portfolio is managed in accordance with an investment contract that is specific as to permissible credit quality ranges and the average credit quality of the overall portfolios. In circumstances where downgrades occurred subsequent to purchase, investment managers are permitted to hold a downgraded security if the manager believes it is prudent to do so. Credit risk for derivative instruments held by the System results from counterparty risk assumed by IPERS. This is essentially the risk the counterparty will be unable to meet its obligation. Information regarding IPERS' credit risk related to derivatives is found under the derivatives disclosures on pages 31 – 33 of these notes. Policies related to credit risk pertaining to IPERS' securities lending program are found under the securities lending disclosures on page 33 of these notes.

Credit Risk: S&P Quality Ratings

(Dollar Values Expressed in Thousands)
June 30, 2018

Investment Type	Total	TSY	AGY	AAA	AA	A	BBB	BB	B	CCC & Below	NR
Pooled funds and mutual funds	$757,404	—	—	—	—	—	—	—	—	—	$757,404
Treasuries	128,994	$128,994	—	—	—	—	—	—	—	—	—
Short-term investments	**886,398**	**128,994**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**757,404**
U.S. TIPS	736,666	736,666	—	—	—	—	—	—	—	—	—
U.S. Treasury notes	1,179,276	1,179,276	—	—	—	—	—	—	—	—	—
Ginnie Mae	335,310	—	$228,144	—	—	—	—	—	—	—	107,166
Freddie Mac*	454,578	—	—	$399	$396,294	—	—	—	—	—	57,885
Fannie Mae*	839,034	—	—	—	660,682	—	—	—	—	—	178,352
Other government agencies	6,440	—	—	—	6,440	—	—	—	—	—	—
Collateralized mortgage-backed securities	249,419	—	—	18,398	249	$368	—	—	$294	$164	229,946
Collateralized mortgage obligations	35,012	—	—	503	11,535	2,526	$4,669	$1,335	—	9,959	4,485
Other government mortgage-backed securities	10,143	—	—	1,593	—	—	—	—	—	—	8,550
Other government fixed income	483,394	—	—	—	12,281	44,855	143,930	50,707	104,126	10,397	117,098
Corporate bonds	3,310,889	—	—	112,114	145,999	720,717	1,371,158	471,343	259,345	40,459	189,754
Corporate asset-backed securities	212,225	—	—	36,990	67,668	46,508	10,277	1,273	—	10,866	38,643
Private placements	1,623,746	—	—	109,211	107,042	109,403	308,668	358,668	306,485	38,303	285,966
State and local obligations	28,949	—	—	5,973	16,782	1,594	4,600	—	—	—	—
Convertible bond	2,376	—	—	—	—	—	—	—	—	—	2,376
Fixed-income investments	**9,507,457**	**1,915,942**	**228,144**	**285,181**	**1,424,972**	**925,971**	**1,843,302**	**883,326**	**670,250**	**110,148**	**1,220,221**
Commingled bond funds	**1,971,305**	**1,258,546**	**18,790**	**382,729**	**40,049**	**123,934**	**147,257**	**—**	**—**	**—**	**—**
Total	**$12,365,160**	**$3,303,482**	**$246,934**	**$667,910**	**$1,465,021**	**$1,049,905**	**$1,990,559**	**$883,326**	**$670,250**	**$110,148**	**$1,977,625**

*Freddie Mac and Fannie Mae mortgage pools consist of thousands of mortgages. Because of the complexity of these pools, hiring ratings agencies to rate each pool is cost-prohibitive. With no explicit ratings given to the pools, investors consider the ratings to be the same as the issuer's long-term rating, and the pools were reported as such in this table.

Concentration of Credit Risk

Concentration of credit risk is the risk of loss that may be attributed to the magnitude of investment in a single issuer. IPERS' guidelines for each investment manager establish limits on investments in any corporate entity. The System has no separate account investment in any specific stock or bond issues of any commercial or industrial organization other than the U.S. government and its instrumentalities whose fair value exceeds 5 percent of IPERS' net position restricted for pensions.

Custodial Credit Risk

Custodial credit risk is the risk that, in the event of a failure of the counterparty, the System will not be able to recover the value of its investment or collateral securities that are in the possession of an outside party. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in IPERS' name, and are held by either the counterparty or the counterparty's trust department or agent but not in the System's name.

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of a fixed-income investment. This risk is measured using the effective duration (or option-adjusted) methodology. The methodology takes into account optionality on bonds and scales the risk of price changes on bonds depending upon the degree of change in rates and the slope of the yield curve.

There are no organization-wide policies for interest rate risk exposure within the overall fixed-income portfolio. The System's core-plus fixed-income investment contracts generally require the effective duration of the manager's portfolio to remain between 75 and 125 percent of the effective duration measure of a specific fixed-income index. However, two of IPERS' core-plus managers have authority under their contracts to reduce the interest rate sensitivity of their core-plus portfolios to less than 75 percent of the benchmark's effective duration (up to zero effective duration) if the managers forecast a period of rising interest rates. For high-yield bond portfolios, the effective duration must remain between 75 and 125 percent of the benchmark's effective duration. The reporting of effective duration found in the following table quantifies to the fullest extent possible the interest rate risk of the System's fixed-income assets. Interest rate risks associated with swaps and other derivative instruments are found in the derivatives disclosures. No interest rate futures or options positions will be established that affect the duration or weighted average maturity of a fixed-income managed account by more than one year.

Effective Duration

(Dollar Values Expressed in Thousands)
June 30, 2018

Investment Type	Fair Value	Effective Duration in Years
Pooled funds and mutual funds	$757,404	0.08
Treasuries	128,994	0.21
Short-term investments	**886,398**	**0.10**
U.S. TIPS	736,666	4.01
U.S. Treasury notes	1,179,276	9.36
Ginnie Mae	335,310	4.67
Freddie Mac	454,578	4.56
Fannie Mae	839,034	4.83
Other government agencies	6,440	4.44
Collateralized mortgage-backed securities	249,419	5.70
Collateralized mortgage obligations	35,012	0.16
Other government mortgage-backed securities	10,143	2.66
Other government fixed income	483,394	5.62
Corporate bonds	3,310,889	4.84
Corporate asset-backed securities	212,225	1.31
Private placements	1,623,746	3.25
State and local obligations	28,949	7.92
Convertible bond	2,376	0.00
Fixed-income investments	**9,507,457**	**5.02**
Commingled bond funds	**1,971,305**	**6.70**
Total	**$12,365,160**	**5.21**

Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of an investment. IPERS' currency policy is to allow its investment managers the discretion to hedge their foreign currency exposures. IPERS generally does not allow its investment managers to enter into currency positions greater than 100 percent or less than 0 percent of the underlying asset exposure in their respective portfolios. The only exceptions are (1) as it relates to specific cross-hedging activity, which may be permitted in certain investment manager contracts, and (2) in liquid absolute return strategies (LARS) where the managers are permitted to tactically allocate across several asset classes and strategies, including currency. The net foreign currency exposure of the LARS managers was less than 1 percent of the System's total foreign currency exposure on June 30, 2018.

Foreign Currency Risk by Investment Type

(Dollar Values Expressed in Thousands)
June 30, 2018

Currency	Total	Cash & Cash Equivalents	Derivatives	Equity	Fixed Income
Australian Dollar	$174,616	$246	($372)	$174,742	—
Brazilian Real	38,946	(1,299)	—	37,431	$2,814
British Pound	61,495	(3,362)	(1,305)	62,071	4,091
Canadian Dollar	16,325	830	(558)	16,053	—
Chilean Peso	2,490	17	—	2,473	—
Colombian Peso	940	—	—	940	—
Czech Koruna	7,193	28	—	7,165	—
Danish Krone	5,665	365	—	5,300	—
Egyptian Pound	467	18	—	449	—
Euro	296,690	(39,795)	(259)	297,913	38,831
Hong Kong Dollar	319,094	1,837	(522)	317,779	—
Hungarian Forint	10,297	51	—	10,246	—
Indian Rupee	63,589	278	—	63,311	—
Indonesian Rupiah	5,826	71	—	5,755	—
Israeli Shekel	3,653	12	—	3,641	—
Japanese Yen	614,604	13,357	(349)	601,596	—
Malaysian Ringgit	7,161	38	(4)	5,225	1,902
Mexican Peso	43,252	88	77	9,825	33,262
New Zealand Dollar	4,742	14	—	4,728	—
Norwegian Krone	3,642	120	8	3,514	—
Philippine Peso	2,113	—	—	2,113	—
Polish Zloty	1,824	30	—	1,794	—
Qatari Riyal	502	—	—	502	—
Russian Ruble	5	5	—	—	—
Singapore Dollar	40,804	234	(13)	40,583	—
South African Rand	52,556	50	(64)	52,570	—
South Korean Won	86,048	(524)	—	86,572	—
Swedish Krona	15,708	129	192	15,387	—
Swiss Franc	10,991	928	(67)	10,130	—
Taiwanese Dollar	68,452	(339)	—	68,791	—
Thai Baht	5,804	—	81	5,723	—
Turkish Lira	8,531	57	212	8,262	—
United Arab Emirates Dirham	7,644	—	—	7,644	—
Total	**$1,981,669**	**($26,516)**	**($2,943)**	**$1,930,228**	**$80,900**

Derivatives

GASB Statement No. 53, *Accounting and Financial Reporting for Derivative Instruments*, requires the fair value of financial arrangements called "derivatives" or "derivative instruments" to be reported in the financial statements of state and local governments. The statement further requires derivatives to be categorized as either a hedging derivative or an investment derivative. All of the System's derivative exposures at June 30, 2018, are categorized as investment derivatives and therefore the hedge accounting provisions of GASB 53 are not applicable.

Some of the System's external investment managers may be permitted through their individual investment contracts to use derivative instruments, subject to the System's derivative policy contained in its Investment Policy and Goal Statement. Derivatives are contracts or securities whose returns are derived from the returns of other securities, indexes, or derivatives. While this definition includes the most common type of derivative, collateralized mortgage obligations (which typically make up a portion of the System's fixed-income portfolio), it is also intended to include (but not be limited to) futures, forwards, options, options on futures, swaps, and swaptions. The

System's managers are not permitted to utilize derivatives for speculative purposes, but may use them to efficiently access desired markets and to control and manage portfolio risk. Examples of appropriate applications of derivative strategies include hedging interest rate and currency risk, maintaining exposure to a desired asset class while effecting asset allocation changes, managing duration risk, augmenting index fund performance through index arbitrage, and implementing portable alpha strategies, including liquid absolute return strategies.

The various derivatives utilized by the System's investment managers are described below. Although the notional values associated with these derivative instruments are not recorded in the financial statements, the fair value amounts of exposure (unrealized gains/losses) are reported in the Statement of Fiduciary Net Position. IPERS holds investments in limited partnerships and commingled investment funds, which may utilize derivatives from time to time for hedging purposes; however, any derivatives held by these types of investment vehicles are not included in this Note. IPERS could be exposed to risk if the counterparties to derivatives contracts are unable to meet the terms of the contracts. IPERS' investment managers seek to control this risk through counterparty credit evaluations and approvals, counterparty credit limits, exposure monitoring procedures, and in some cases the collateralization of gains or losses. IPERS anticipates the counterparties will be able to satisfy their obligations under the contracts. Limited partnerships and commingled investment vehicles in which IPERS invests may also have exposure to counterparty risk from the use of derivatives for hedging purposes.

Futures and Options Contracts

IPERS had investments in various futures and options in FY2018. The Statement of Fiduciary Net Position reports these contracts at fair value.

A summary of contracts by sector that were outstanding at June 30, 2018, follows. Futures and options can potentially offer lower-cost, more efficient alternatives to buying the underlying securities or currency. They can also serve to minimize certain unwanted risks within the portfolio. The market, currency, and credit risk of the futures were the same as if IPERS had owned the underlying securities or currency.

Futures Exposure Summary

(Dollar Values Expressed in Thousands)
June 30, 2018

	Number of Contracts	Notional Value	Fair Value	% of Total Fund NAV
Long Futures				
Agriculture	186	$5,201	($228)	(0.00071)
Currency	1,643	135,062	(973)	(0.00302)
Energy	325	26,191	1,462	0.00453
Index	5,051	439,323	(7,358)	(0.02281)
Interest	22,180	5,519,238	9,443	0.02927
Metal	499	35,921	(1,934)	(0.00599)
Total	**29,884**	**$6,160,936**	**$412**	**0.00127**
Short Futures				
Agriculture	(308)	($6,708)	$189	0.00059
Currency	(3,775)	(357,532)	1,521	0.00471
Energy	(81)	(2,907)	(51)	(0.00016)
Index	(1,679)	(186,524)	3,017	0.00935
Interest	(9,798)	(2,236,280)	(5,736)	(0.01778)
Metal	(650)	(47,692)	1,344	0.00416
Total	**(16,291)**	**($2,837,643)**	**$284**	**0.00087**

Options Exposure Summary

(Dollar Values Expressed in Thousands)
June 30, 2018

	Fair Value	% of Total Fund NAV
Options Purchased		
Index	—	—
Interest	$2,187	0.00678
Total	**$2,187**	**0.00678**
Options Written		
Index	($1,612)	(0.00499)
Interest	(854)	(0.00265)
Total	**($2,466)**	**(0.00764)**

Credit Default Swaps

The System had investments in credit default swaps during the year. The credit default swaps held by the System are derivative instruments that are used to hedge or to replicate investments in debt obligations of corporate bond issuers. The risk of the credit default swap is comparable to the credit risk of the reference security. At June 30, 2018, the net notional value of the credit default swaps held in the System's fixed-income portfolio was –$4.3 million. The credit default swaps are reported at a fair value of –$316,980 in the Statement of Fiduciary Net Position.

Interest Rate Swaps

Interest rate swaps are transactions between two parties in which interest payments from different indexes are swapped. Interest rate swaps are often used to alter the portfolios' exposure to interest rate fluctuations, by swapping fixed-rate obligations for floating-rate obligations, or swapping floating-rate obligations for fixed-rate obligations. By utilizing interest rate swaps, IPERS' investment managers are able to alter their interest rate exposure and bring it in line with their strategic objectives for interest rate risk. At June 30, 2018, the net notional value of the interest rate swaps held in the System's fixed-income portfolio was $221.3 million. All interest rate swaps held by the System are reported at a fair value of –$2.2 million in the Statement of Fiduciary Net Position.

Mortgage-Backed Securities

The System invests in mortgage-backed securities, which are reported in the Statement of Fiduciary Net Position at fair value based on estimated future cash flows from the interest and principal payments of the underlying mortgages. Mortgage-backed securities prices are sensitive to prepayments by mortgagees, a scenario that is more likely in declining-interest-rate environments. The System invests in mortgage-backed securities to diversify the portfolio and earn the return premium associated with prepayment risk. Details on interest rate risks for these investments are included in the interest rate risk disclosures on page 30.

Securities Lending

IPERS participates in the securities lending program administered by the Treasurer of State. Deutsche Bank, a bank rated BBB+ by Fitch Ratings, serves as the lending agent for IPERS' securities lending program. In this capacity, Deutsche Bank is responsible for operating the program and is permitted to lend IPERS' securities to broker-dealers and other entities in exchange for collateral.

Deutsche Bank is permitted to accept collateral in the form of cash in U.S. dollars, U.S. government securities, or irrevocable letters of credit. A borrower is required to initially deliver collateral in an amount equal to 102 percent of the fair value of any U.S. securities lent or 105 percent of the fair value of any non-U.S. securities lent. Borrowers are required to provide additional collateral anytime the value of the collateral drops below 100 percent of the value of the security lent plus accrued investment income.

At fiscal year-end, IPERS had $447,001 in risk exposure to borrowers because the amounts they owed IPERS exceeded the amount IPERS owed them on 25 separate loans. The contract with Deutsche Bank requires it to indemnify IPERS only if (1) a borrower becomes insolvent, or (2) a loss is incurred from an investment of collateral in an overnight repurchase agreement.

The securities lending contract does not allow IPERS to pledge or sell any collateral securities unless the borrower defaults. As of June 30, 2018, IPERS had securities on loan, including accrued interest income, with a fair value (carrying value) of $510.3 million against cash and non-cash collateral, including borrower rebate, with total fair values (carrying values) of $309.3 million and $216.9 million respectively.

The majority of securities loans are open loans, that is, one-day maturity, where the rebate rate due to the borrower is renegotiated daily. Either IPERS or the borrower can terminate all securities loans on demand.

Cash collateral received from borrowers is invested in a cash collateral investment account, which is managed by Deutsche Bank in accordance with investment guidelines established by the Treasurer of State and reviewed by IPERS. The investment guidelines do not require a matching of investment maturities with loan maturities, but do establish minimum levels of liquidity and other investment restrictions designed to minimize the risks associated with not matching the maturity of the investments with the maturity of the loans. The effective duration of the cash collateral account at June 30, 2018, was 0.00. Credit quality and years-to-maturity statistics for the cash collateral account at June 30, 2018, are shown in the table below.

Securities Lending Cash Collateral Account

(Dollar Values Expressed in Thousands)
June 30, 2018

		Credit Risk: S&P Quality Rating				
Investment Type	**Fair Value**	**AAA**	**A-1**	**A-2**	**Not Rated**	**Investment Maturity (Years)**
Overnight repurchase agreements	$76,916	$76,916	—	—	—	Less than 1
Money market funds	232,408	—	$107,675	$15,000	$109,733	Less than 1
Total	**$309,324**	**$76,916**	**$107,675**	**$15,000**	**$109,733**	

F. Capital Assets

The IPERS headquarters at 7401 Register Drive, Des Moines, Iowa is held as a capital asset. Building and land are recorded at cost, including the costs of acquisition and remodeling. The building is being depreciated using the straight-line method and a useful life of 39 years. Land, a nonexhaustible asset, is not depreciated. Other capital assets consist primarily of office equipment, data processing equipment, and software. All purchased equipment is recorded at cost.

Depreciation on equipment is computed using the straight-line method based on estimated useful lives ranging from 3 to 10 years. Software is depreciated over 15 years.

Total depreciation expense for the year ended June 30, 2018, was $2.5 million. Of that amount, $37,524 was reclassified as an investment-related expense on the Schedule of Investment-Related Expenses on page 48. In FY2018, capital asset additions of $416,598 were capitalized.

Summary of Capital Assets

As of June 30, 2018, and 2017

Capital Assets	Land	Building and Improvements	Land Improvements	Furniture, Equipment, and Software	Total Capital Assets
Balances as of June 30, 2017	$500,000	$7,067,648	$413,226	$26,104,706	$34,085,580
Additions	—	—	—	416,598	416,598
Deletions	—	—	—	(186,301)	(186,301)
Balances as of June 30, 2018	500,000	7,067,648	413,226	26,335,003	34,315,877
Accumulated Depreciation					
Balances as of June 30, 2017	—	2,511,784	61,984	12,831,117	15,404,885
Depreciation expense	—	212,150	13,774	2,315,216	2,541,140
Deletions	—	—	—	(123,749)	(123,749)
Balances as of June 30, 2018	—	2,723,934	75,758	15,022,584	17,822,276
Net capital assets as of June 30, 2018	**$500,000**	**$4,343,714**	**$337,468**	**$11,312,419**	**$16,493,601**

G. Compensated Absences

IPERS staff members, as State of Iowa employees, participate in the benefits available to all State of Iowa employees. Expenses related to accumulated vacation and sick leave earned by IPERS employees are recorded when earned.

IPERS has recorded liabilities of $809,128 related to the Sick Leave Insurance Program (SLIP). The SLIP calculates a dollar value based on the unused sick leave balance to be credited to a retiree's account and used to pay the employer's share of the selected State group health insurance premium.

H. Other Postemployment Benefits

IPERS has recorded liabilities for OPEB provided through the State of Iowa OPEB Plan (State OPEB Plan). These accrued liabilities are included in accounts payable and accrued expenses in the Statement of Fiduciary Net Position on page 21.

Plan Description

The State OPEB Plan is a cost-sharing, multiple-employer defined benefit OPEB plan administered by the State of Iowa. There are 75 active and three retired IPERS participants in the plan.

The State of Iowa provides access to postretirement medical benefits to all retirees as required by Iowa Code chapter 509A.13. Although the retirees generally must pay 100 percent of the premium rate, GASB 75 requires that employers recognize the implicit rate subsidy that exists in postretirement medical plans provided by governmental employers.

Implicit rate subsidy refers to the concept that retirees under the age of 65 (and thus not eligible for Medicare) generate higher claims on average than active participants. When a medical plan is self-insured or fully insured through a third-party administrator, a premium is usually determined by analyzing the claims of the entire population in the plan and adjusting for administrative costs. The resulting premium is called a blended premium because it blends the claims of active and retired participants. Since individuals generally have more and higher claims as they get older, the blended premium paid for retirees is lower than their expected claims. Another way of considering this is that if the retirees were removed from the plan, the premium for the active group would be lower; therefore, the retirees' premiums are being subsidized by the active group. Since the employer generally pays a large portion or all of the premiums for the active group, this subsidy creates a liability for the employer. The difference between the expected claims for the retiree group and the blended premium is called the implicit rate subsidy.

Plan Benefits

The State OPEB Plan currently offers three plans to participants: the Iowa Choice Plan, the National Choice Plan, and the State Police Officers Council Plan.

The contribution requirements of the plan participants are established and may be amended by the Iowa Legislature. The State currently finances the retiree benefit plan on a pay-as-you-go basis.

Liability, Expense, Deferred Outflows, and Deferred Inflows of Resources

At June 30, 2018, IPERS reported a liability of $790,000 for its proportionate share of the total OPEB liability. The total OPEB liability was measured as of June 30, 2018, determined by an actuarial valuation performed as of January 1, 2018, and rolled forward to June 30, 2018, using generally accepted actuarial principles. IPERS' proportion of the total OPEB liability was based on the ratio of IPERS' active employees in relation to all active employees of the State of Iowa OPEB Plan. At June 30, 2018, IPERS' proportion was 0.42 percent.

For the year ended June 30, 2018, IPERS recognized OPEB expense of $47,000. At June 30, 2018, IPERS reported deferred outflows of resources and deferred inflows of resources related to OPEB from the following sources:

	Deferred Outflows of Resources ($000)	Deferred Inflows of Resources ($000)
Differences between expected and actual experience	—	$4
Changes in proportion and differences in employer contributions and IPERS' proportionate share of contributions	$20	—
Assumption changes	10	—
Total	**$30**	**$4**

The net $26,000 reported as deferred outflows and deferred inflows of resources related to OPEB will be recognized in pension expense, with $4,000 recognized annually from FY2019 through FY2023 and the remaining $6,000 recognized thereafter.

Actuarial Methods and Assumptions

The total OPEB liability in the June 30, 2018, measurement was determined using the following actuarial assumptions and inputs, applied to all periods included in the measurement.

Actuarial cost method	Entry age normal
Discount rate	3.87%
Inflation rate	2.6%
Healthcare cost trend rates	6.4% – 6.6% initial, decreasing to 4.1% ultimate

The discount rate is based on the 20-year Bond Buyer GO Index as of the end of June 2018.

The majority of State of Iowa employees are participants in IPERS. For this reason, the assumptions for individual salary increase, mortality withdrawal, retirement, and age of spouse are based on the assumptions used for the IPERS actuarial valuation report as of June 30, 2017. The assumptions for State OPEB Plan participation and coverage election at retirement are based upon the recent experience of the State of Iowa Postretirement Medical Plan.

Changes in the Total OPEB Liability

There are no assets accumulated in a trust that meets the criteria in paragraph 4 of GASB 75.

	Increase/ (Decrease) ($000)
Total OPEB liability at June 30, 2017	**$717**
Service cost	55
Interest	28
Differences between expected and actual experience	(5)
Assumption changes	11
Changes in proportionate share	23
Implicit employer contributions	(39)
Net changes in total OPEB liability	**73**
Total OPEB liability at June 30, 2018	**$790**

Sensitivity of IPERS' Total OPEB Liability to Changes in the Discount Rate

GASB 75 requires the disclosure of the sensitivity of the total OPEB liability to changes in the discount rate. The table below shows the total OPEB liability if it were calculated using discount rates of 2.87 percent and 4.87 percent, which are 1 percentage point lower and 1 percentage point higher than the current discount rate.

1% Decrease: 2.87% ($000)	Current Discount Rate: 3.87% ($000)	1% Increase: 4.87% ($000)
$844	$790	$739

Sensitivity of IPERS' Total OPEB Liability to Changes in the Healthcare Cost Trend Rates

The proportionate share of the total OPEB liability was calculated using a healthcare cost trend rate of 6.4 percent to 6.6 percent, as well as a healthcare cost trend rate that is 1 percentage point lower (5.4 percent to 5.6 percent) or 1 percentage point higher (7.4 percent to 7.6 percent) than the current rate. The sensitivity of the proportionate share of the total OPEB liability to changes in the healthcare cost trend rate is shown in the table below.

1% Decrease: 5.4% – 5.6% ($000)	Healthcare Cost Trend Rate: 6.4% – 6.6% ($000)	1% Increase: 7.4% – 7.6% ($000)
$707	$790	$888

Payables to the OPEB Plan

There were no amounts due to the State OPEB Plan at June 30, 2018.

(2) PLAN DESCRIPTION

A. Administration

IPERS is a cost-sharing, multiple-employer, contributory defined benefit public employee retirement system. Administrative expenses are appropriated each year by the Iowa Legislature and paid from the Trust Fund.

The IPERS Investment Board is designated as the Fund's trustee. It sets investment policies and oversees the System's actuarial program. The Board holds public meetings regularly to review actuarial findings and investment performance, and to formalize policies with the administration.

Eleven members serve on the Investment Board: seven voting members and four nonvoting members.

The voting members include:

- Three public members, appointed by the Governor, who have substantial institutional investment or financial experience and are not IPERS members.
- Three members, appointed by the Governor, who are members of IPERS: an active member who is an employee of a school district, area education agency, or merged area; an active member who is not an employee of a school; and a retired member of IPERS.
- The Treasurer of State.

The nonvoting members include:

- Two state representatives (one appointed by the speaker of the Iowa House of Representatives, and one appointed by the minority leader of the Iowa House).
- Two state senators (one appointed by the majority leader of the Iowa Senate, and one appointed by the minority leader of the Iowa Senate).

Gubernatorial appointees serve six-year terms, and must be confirmed by the Iowa Senate.

The IPERS Benefits Advisory Committee is statutorily charged to make benefit and service recommendations to IPERS and the General Assembly.

The Committee is composed of representatives of constituent groups concerned with the System, and includes representatives of all major employer groups and major active and retired member associations.

B. Membership

IPERS participation is mandatory for most employees of the State of Iowa and its political subdivisions, including public school systems. Exceptions include those employees covered by a retirement system other than Social Security, supported at least partially by public contributions. Membership is optional for the members of the Iowa General Assembly and certain other individuals.

At June 30, 2018, IPERS had 170,378 contributing (active) members, employed by 1,956 public employers. The number of active members increased by 0.28 percent in FY2018. The Plan Membership tables and pie charts provide further information.

Plan Membership

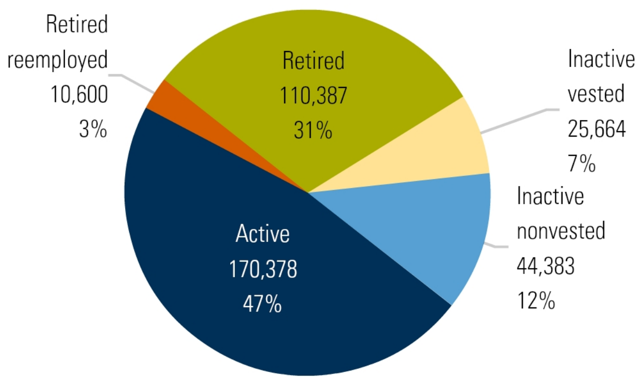
Fiscal Years Ended June 30

Members	2018	2017
Retirees and beneficiaries	120,987	117,759
Active vested	102,222	103,324
Inactive vested	25,664	25,984
Active nonvested	68,156	66,586
Inactive nonvested	44,383	41,978
Total	**361,412**	**355,631**

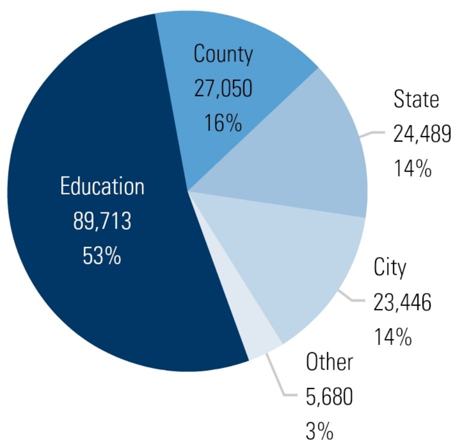
Note: Retired reemployed members are included in the number of retirees and beneficiaries. Retired reemployed members consist of all retirees who have at any time returned to covered employment but have not subsequently requested a refund or a benefit recalculation.

Employer Type	2018 Number of Entities	2018 Covered Wages	2017 Number of Entities	2017 Covered Wages
City	958	$1,011,373,747	959	$988,810,806
Education	359	3,920,650,823	357	3,840,238,120
County	349	1,357,365,346	348	1,324,214,773
Other	157	135,077,214	160	133,057,523
Utilities	132	108,377,335	131	105,857,823
State	1	1,450,375,062	1	1,470,981,398
Total	**1,956**	**$7,983,219,527**	**1,956**	**$7,863,160,443**

Membership Status



Active Members by Major Employer Type



C. Benefit Plan

IPERS benefits are established under Iowa Code chapter 97B and the administrative rules thereunder. Chapter 97B and the administrative rules are the official plan documents. The following brief description is for general informational purposes only. The plan documents contain more information.

Vesting

Regular members who complete seven years of covered service or reach the age of 65 while in IPERS-covered employment become vested. Special Service members who complete four years of covered service or reach the age of 55 while in IPERS-covered employment become vested.

Service Purchases

At retirement, members who have reached the years-of-service requirement for vesting may purchase service. These members may restore (buy back) previously refunded member service, purchase (buy in) IPERS service credit for employment elsewhere or time spent away from work, or convert (buy up) Regular service credit to Special Service credit.

Refunds

IPERS members who terminate public employment for any reason may request a full refund of their accumulated contributions. Vested members requesting a refund also receive a portion of their accumulated employer contributions. Acceptance of the refund automatically terminates IPERS membership and all claims to future benefits. If an employee works in covered employment for less than six months, the employer may file a wage adjustment and the applicable IPERS contributions will be refunded to the individual and employer.

Eligibility for Pensions

A Regular member may retire at normal retirement age and receive monthly benefits without an early-retirement reduction. Normal retirement age is age 65, anytime after reaching age 62 with 20 or more years of covered employment, or when the member's years of service plus the member's age at the last birthday equals or exceeds 88, whichever comes first. (These qualifications must be met on the member's first month of entitlement to benefits.) Members cannot begin receiving retirement benefits before age 55.

Members who are age 70 and working for an IPERS-covered employer may apply to begin receiving IPERS retirement benefits while still employed.

Special Service members are eligible for retirement benefits if they are vested, no longer working for an IPERS-covered employer, and reach age 55. Sheriffs and deputies are eligible for retirement benefits at age 50 if they have 22 years of qualified service.

Pension Benefit Formula

The formula used to calculate a Regular member's monthly IPERS benefit includes:

- A multiplier (based on years of service).
- The member's highest five-year average salary. (For members with service before June 30, 2012, the highest three-year average salary as of that date will be used if it is greater than the highest five-year average salary.)
- An early-retirement reduction, only if the benefit is first paid before the member reaches normal retirement age.

If a Regular member receives benefits before normal retirement age, a permanent early-retirement reduction will apply. For service earned before July 1, 2012, a reduction of 3 percent a year is applied for each year the benefit is paid before normal retirement age. For service earned after June 30, 2012, the reduction is 6 percent for each year of retirement before age 65.

The formula used to calculate a Special Service member's monthly IPERS benefit includes:

- A multiplier (based on years of service).
- The member's highest three-year average salary.

Benefit Options

Upon retirement, an IPERS member may choose from six benefit options. Each of the six options provides a lifetime benefit for the IPERS member. The amount of the member's benefits and the amount and availability of death benefits vary according to the option selected.

Option 1

A member receives a lifetime monthly benefit. At retirement, the member specifies a lump-sum death benefit amount, in an increment of $1,000, to be paid to a designated beneficiary upon the death of the member. The death benefit cannot exceed the member's accumulated contributions. The death benefit cannot lower the monthly benefit as calculated under Option 2 by more than 50 percent.

Option 2

A member receives a lifetime monthly benefit. When the member dies, the designated beneficiary receives a lump-sum refund of the excess, if any, of the member's accumulated contributions minus the amount of all retirement benefits paid to the member prior to death.

Option 3

A member receives the maximum lifetime monthly benefit. No payment is made to a beneficiary upon the member's death.

Option 4

A member receives a lifetime monthly benefit actuarially reduced to provide for a lifetime monthly benefit to the contingent annuitant upon the member's death. The age of the contingent annuitant can affect the cost of the lifetime payments to the member based on actuarial tables. The contingent annuitant can receive 100 percent, 75 percent, 50 percent, or 25 percent of the member's monthly benefit. The choice in percentages is limited if the contingent annuitant is not the member's spouse and is more than ten years younger than the member.

Option 5

A member receives a lifetime benefit with a ten-year guarantee. If the member dies before ten full years have passed (120 monthly payments are made), the member's designated beneficiary will receive a monthly benefit for the remainder of the ten years. If the beneficiary dies before the ten years expire, the beneficiary's estate will receive a commuted lump-sum settlement. If the member designates more than one beneficiary, payments will be made in a lump sum only. Members who have attained age 90 as of the first month of entitlement are not allowed to select this option.

Option 6

The member receives a reduced monthly benefit so that a lifetime monthly benefit may be provided after the member's death to the person named by the member as the contingent annuitant. In addition, the monthly amounts are reduced to pay for a pop-up feature. The pop-up feature provides that if the contingent annuitant dies before the member, the member's benefit will pop back up to what it would have been under IPERS Option 2, and death benefits may be payable to the member's designated beneficiary if certain conditions are met.

Level Payment Options

Special Service members may choose to apply a level payment feature to Options 1 – 5. Level payment options provide for a lifetime monthly benefit that will be permanently reduced when the member reaches age 62. Level payment options allow members to receive approximately equal payments before and after they begin receiving Social Security benefits. The death benefit provisions for each level payment option match the provisions of the corresponding “normal” option.

Dividend Payments

Once a member selects a benefit option, a monthly benefit is calculated and remains the same for the rest of the member's lifetime.

However, for retirees who began receiving benefits prior to July 1990, a guaranteed dividend is included with the November benefit payment. The dividend payable in any given year is the sum of the dollar amount of the dividend payable in the previous November and a dividend adjustment. The dividend adjustment, set out in Iowa Code section 97B.49F(1)(b), is calculated by multiplying the total of the retiree's monthly benefit payments and the dividend payable to the retiree in the previous calendar year by the applicable percentage, up to 3 percent.

For retirees who began receiving benefits after June 30, 1990, a Favorable Experience Dividend (FED) may be paid if there are funds in the FED reserve account. There are currently no funds in the FED reserve account. Pursuant to Iowa Code section 97B.49F(2)(c)(5), IPERS cannot transfer additional funds to the FED reserve account until the Trust Fund is 100 percent funded and would remain so after the transfer.

Disability Benefits

Vested members who are awarded federal Social Security disability or Railroad Retirement disability benefits are eligible for IPERS disability benefits. Disability benefits are not reduced for early retirement.

Special Service members who retire because of a disability may meet the requirements for IPERS Regular or Special Service disability benefits.

Death Benefits

Preretirement Death Benefits

If an IPERS member dies before retirement, the member's designated beneficiary may receive a lump-sum payment based on the greater of the following two formulas:

$$\textbf{Death benefit} = \text{The actuarial present value of the member's accrued benefit as of date of death}$$

$$\textbf{Death benefit} = \text{Member's accumulated contributions} + \left[\text{Member's highest annual covered wage} \times \frac{\text{Years of service}}{30^{*}} \right]$$

*The denominator is 22 for all Special Service members.

If the member's designated beneficiary is a sole individual, the beneficiary will be offered a choice between a lump sum or a lifetime annuity.

Postretirement Death Benefits

If an IPERS member dies after retirement, payment is made to the beneficiary according to the option selected by the member at the time of retirement.

(3) ACTUARIAL CONTRIBUTIONS COMPARED TO CONTRIBUTIONS PAID

Each year, IPERS' actuary performs a valuation of the liabilities and assets of the IPERS Trust Fund in accordance with Iowa Code section 97B.4(4)(d). The actuary also calculates an actuarial contribution rate for each membership group, which is the contribution rate necessary to fully fund the benefits provided under Iowa Code chapter 97B.

IPERS' Contribution Rate Funding Policy requires that the actuarial contribution rate be determined using the entry age normal actuarial cost method and the actuarial assumptions and methods approved by the IPERS Investment Board. The actuarial contribution rate covers normal cost plus an unfunded actuarial liability payment. The payment to amortize the unfunded actuarial liability is determined as a level percentage of payroll based on the actuarial amortization method adopted by the Investment Board.

Although the actuarial contribution rates were calculated each year for all three membership groups, the contribution rates for the Regular membership were set in law through June 30, 2012. From FY2002 through FY2013, the rate allowed by statute was less than the actuarial rate, in spite of rate increases passed by the Iowa Legislature in 2006 and 2010. Effective July 1, 2012, as a result of a 2010 law change, the contribution rates are established by IPERS following the annual actuarial valuation, which applies IPERS' Contribution Rate Funding Policy and actuarial amortization method. Statute limits the amount rates can vary each year to 1 percentage point for Regular members.

In FY2014, the contribution rate for Regular members equaled the actuarial rate and in fiscal years 2015 – 2018, it exceeded the actuarial rate. According to the Contribution Rate Funding Policy, the contributions paid will not decline to a lowered actuarial contribution rate unless two conditions are met: the funded ratio is at least 95 percent and the actuarial contribution rate is at least 50 basis points lower than the contribution rate paid in the previous year.

Iowa statute authorizes the contribution rates for the Special Service groups to be set pursuant to the Contribution Rate Funding Policy. Therefore, these groups have paid the rates needed to fully fund their benefits each year through FY2014. In fiscal years 2015 – 2018, the rates for the Special Service members exceeded the actuarial rates.

Contribution Rates

Fiscal Year 2018

	Employee	Employer	Total
Regular members	5.95%	8.93%	14.88%
Sheriffs and deputies	9.38%	9.38%	18.76%
Protection occupation members	6.56%	9.84%	16.40%

Contributions are remitted by participating employers. IPERS, as a participating employer, is subject to paying contributions at the Regular membership rate.

Wages were covered up to the Internal Revenue Code section 401(a)(17) compensation limits of $270,000 for calendar year 2017 and $275,000 for calendar year 2018. A detailed Schedule of Employers' Contributions encompassing ten years can be found on page 44 of the Required Supplementary Information following these notes.

(4) NET PENSION LIABILITY

The components of the net pension liability (NPL) at June 30, 2018, were as follows:

Total pension liability	$38,642,833,653
Plan fiduciary net position	$32,314,588,595
Employers' net pension liability	$6,328,245,058
Plan fiduciary net position as a percentage of the total pension liability	83.62%

The total pension liability (TPL) was determined by an actuarial valuation as of June 30, 2018. Actuarial valuations involve projections of benefit payments, contributions, and other amounts decades into the future. These projections are based on actuarial assumptions and methods adopted by the IPERS Investment Board.

Experience studies assist IPERS in evaluating the accuracy with which the assumptions predict actual experience. An experience study of the System's demographic assumptions was presented to the Investment Board in June 2018. This study included information on mortality, retirement, disability, and termination rates, as well as salary trends, for the period of July 1, 2013 – June 30, 2017.

The Board's review of IPERS' economic assumptions took place approximately a year ahead of schedule, in March 2017. As a result, the Investment Board voted to reduce the actuarial assumed investment return from 7.5 percent to 7 percent.

Several factors are considered in evaluating the actuarial assumed investment return including long-term historical data, estimates inherent in current market data, along with estimates of variability and correlations for each asset class, and an analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of investment expense and inflation) were developed by the System's investment consultant. These ranges were combined to develop the actuarial assumed investment return by weighting the expected future real rates of return by the target asset allocation percentage and then adding expected inflation. The actuarial assumed investment return reflects the anticipated returns on current and future plan assets, and provides a discount rate to determine the present value of future benefit payments.

The Investment Board adopted and approved the use of the assumptions and methods shown in the following table. These are the assumptions the actuary used to comply with GASB 67. Additional methods and assumptions used in the actuarial valuation for funding purposes are listed in the Actuarial section of this report.

Actuarial Methods and Assumptions

Actuarial cost method	Entry age normal
Assumed investment return	7%
Projected salary increases	3.25% – 16.25% depending upon years of service
Mortality tables	RP-2014 Employee and Healthy Annuitant Tables with MP-2017 generational adjustments
Inflation rate	2.6%
Payroll increase assumption	3.25%

Best estimates of arithmetic real rates of return for each major asset class included in IPERS' target asset allocation as of June 30, 2018, are shown in the following table.

Target Allocations and Long-Term Expected Real Rates of Return

As of June 30, 2018

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic equity	22.0%	6.01%
International equity	15.0%	6.48%
Global smart beta equity	3.0%	6.23%
Core-plus fixed income	27.0%	1.97%
Public credit	3.5%	3.93%
Public real assets	7.0%	2.91%
Cash	1.0%	-0.25%
Private equity	11.0%	10.81%
Private real assets	7.5%	4.14%
Private credit	3.0%	3.11%

A. Discount Rate

The discount rate used to calculate the TPL is 7 percent. The projection of cash flows used to determine the discount rate assumed that contributions from employees and employers will be made at the contractually required rates, which are set by the Contribution Rate Funding Policy and derived from the actuarial valuation. Based on those assumptions, IPERS' fiduciary net position is projected to be available to make all projected future benefit payments of current plan members. Therefore, the actuarial assumed investment return was applied to all periods of projected benefit payments to determine the TPL.

B. Net Pension Liability Sensitivity

GASB 67 requires the disclosure of the sensitivity of the NPL to changes in the discount rate. The table below shows the NPL if it were calculated using discount rates 1 percentage point lower and 1 percentage point higher than the actuarial assumed investment return of 7 percent.

1% Decrease: 6%	Current Discount Rate: 7%	1% Increase: 8%
$11,040,164,173	$6,328,245,058	$2,376,004,440

C. Proportioning the Net Pension Liability

Many of IPERS' employers implemented GASB Statement No. 68, *Accounting and Financial Reporting for Pensions*, in FY2015. This standard requires employers following U.S. generally accepted accounting principles (GAAP) to record, on their financial statements, several measures related to IPERS and any other defined benefit pension plans administered through trusts in which they participate.

GASB 68 requires employers to report their proportionate share of IPERS' net pension liability, a measure of pension expense, deferred inflows of resources, and deferred outflows of resources. GASB 68 also requires additional note disclosures, as well as tables and related notes in the Required Supplementary Information. Previously, employers reported only their pension plan contributions paid.

IPERS, in association with the Auditor of State, provides information needed by the employers to comply with GASB 68. Employers with a June 30 fiscal year-end employ a one-year lag by using IPERS' June 30, 2017, information for their June 30, 2018, reporting, as allowed by the GASB. The FY2018 NPL of $6.328 billion will be apportioned to employers for their FY2019 financial reporting. The NPL is apportioned based on the amount of contributions paid by each employer in FY2018, expressed as a percentage of the total amount of employer contributions received by IPERS during the year.

(5) LITIGATION AND CONTINGENCIES

IPERS monitors, evaluates, and takes the necessary actions related to litigation for or against IPERS. This includes, but is not limited to, federal and state court actions and defending administrative appeals filed against IPERS. IPERS employs outside legal counsel, utilizes the legal services of Iowa's Office of the Attorney General, and utilizes in-house legal counsel to assert and defend claims for IPERS.

IPERS participates in federal securities class actions as the lead plaintiff, co-lead plaintiff, a named plaintiff, or a member of the class action. In FY2018, IPERS made 37 recoveries benefiting the Trust Fund in the amount of $1.3 million. The recoveries are reflected in the financial statements for the year ended June 30, 2018.

IPERS successfully defended several appeals filed under the Iowa Administrative Procedures Act. No administrative appeal resulted in a loss to the Trust Fund.

(6) COMMITMENTS

At June 30, 2018, IPERS had commitments to fund an additional $2.236 billion to various private equity/debt partnerships, $307.7 million to real estate debt partnerships, and $215.7 million to corporate debt partnerships.

Subsequent to the fiscal year end, an additional commitment of $250.0 million was made to a corporate debt partnership, KKR Goldfinch.

(7) NET POSITION RESTRICTED FOR PENSIONS

There is only one IPERS Trust Fund where all investment income, employee contributions, and employer contributions are pooled. However, IPERS' three distinct membership groups are characterized by different benefit levels and occupation types. Because of these varied characteristics, each group has its own contribution rate. To calculate contribution rates, it is necessary to separately identify the liabilities and assets associated with each group. Assets of members with service in more than one membership group are aggregated in a single group, as noted on the "transfers between groups" line in the following table. The end result is a closer match of liabilities with assets and therefore more refined contribution rates.

Allocation of Net Position Restricted for Pensions

Fiscal Year Ended June 30, 2018

	Regular Members	Sheriffs and Deputies	Protection Occupation Members	Total
Net position as of June 30, 2017	**$28,575,078,992**	**$649,668,861**	**$1,554,189,858**	**$30,778,937,711**
Additions				
Contributions	1,119,379,077	21,129,908	57,649,552	1,198,158,537
Service purchases	4,219,054	—	410,592	4,629,646
Investment and miscellaneous income	2,345,271,870	53,678,541	128,700,445	2,527,650,856
Total additions	**3,468,870,001**	**74,808,449**	**186,760,589**	**3,730,439,039**
Deductions				
Benefit payments	1,948,951,644	31,004,667	72,471,434	2,052,427,745
Member refunds	51,092,081	1,681,775	6,150,756	58,924,612
Administrative expenses	14,153,625	113,406	486,811	14,753,842
Investment expenses	63,726,309	1,458,567	3,497,080	68,681,956
Total deductions	**2,077,923,659**	**34,258,415**	**82,606,081**	**2,194,788,155**
Preliminary net position	**29,966,025,334**	**690,218,895**	**1,658,344,366**	**32,314,588,595**
Transfers between groups	**(3,120,215)**	**3,353,475**	**(233,260)**	**—**
Adjusted net position as of June 30, 2018	**$29,962,905,119**	**$693,572,370**	**$1,658,111,106**	**$32,314,588,595**

Note: Due to implementing GASB 75 requirements, the beginning net position for FY2018 has been restated by -$178,615 for Regular members and in total.

Required Supplementary Information

Schedule 1: Schedule of Changes in the Employers' Net Pension Liability and Related Ratios

Last 5 Fiscal Years

	2018	2017	2016	2015	2014
Total pension liability					
Service cost	$862,716,803	$822,363,095	$801,587,441	$775,968,193	$710,882,930
Interest	2,548,179,239	2,523,074,401	2,433,180,831	2,334,357,588	2,229,800,454
Differences between expected and actual experience	(131,727,462)	36,106,061	(95,355,071)	47,305,303	41,027,658
Assumption changes	34,635,401	1,432,643,482	—	—	214,545,272
Benefit payments, including member refunds	(2,111,352,357)	(1,993,554,157)	(1,889,982,785)	(1,791,768,441)	(1,812,184,860)
Net change in total pension liability	**1,202,451,624**	**2,820,632,882**	**1,249,430,416**	**1,365,862,643**	**1,384,071,454**
Total pension liability – beginning	**37,440,382,029**	**34,619,749,147**	**33,370,318,731**	**32,004,456,088**	**30,620,384,634**
Total pension liability – ending	**$38,642,833,653**	**$37,440,382,029**	**$34,619,749,147**	**$33,370,318,731**	**$32,004,456,088**
Plan fiduciary net position					
Employer contributions	$716,752,781	$704,766,114	$684,664,998	$656,911,160	$639,001,548
Employee contributions	481,405,756	473,354,932	459,854,052	441,213,236	429,195,536
Service purchases	4,629,646	4,271,054	32,147,862	17,475,633	14,324,144
Net investment income, including net securities lending income	2,458,968,900	3,279,743,723	624,853,651	1,080,045,104	3,904,373,624
Benefit payments, including member refunds	(2,111,352,357)	(1,993,554,157)	(1,889,982,785)	(1,791,768,441)	(1,812,184,860)
Administrative expenses	(14,753,842)	(15,898,996)	(14,938,951)	(12,591,756)	(14,866,128)
Net change in plan fiduciary net position	**1,535,650,884**	**2,452,682,670**	**(103,401,173)**	**391,284,936**	**3,159,843,864**
Plan fiduciary net position – beginning*	**30,778,937,711**	**28,326,433,656**	**28,429,834,829**	**28,038,549,893**	**24,878,706,029**
Plan fiduciary net position – ending	**$32,314,588,595**	**$30,779,116,326**	**$28,326,433,656**	**$28,429,834,829**	**$28,038,549,893**
Net pension liability – ending	**$6,328,245,058**	**$6,661,265,703**	**$6,293,315,491**	**$4,940,483,902**	**$3,965,906,195**
Plan fiduciary net position as a percentage of the total pension liability	**83.62%**	**82.21%**	**81.82%**	**85.19%**	**87.61%**
Covered payroll	**$7,983,219,527**	**$7,863,160,443**	**$7,556,515,720**	**$7,326,348,141**	**$7,099,277,280**
Employers' net pension liability as a percentage of covered payroll	**79.27%**	**84.71%**	**83.28%**	**67.43%**	**55.86%**

*Due to implementing GASB 75 requirements, the beginning net position for FY2018 has been restated by -$178,615.

Note: Schedule is intended to show a 10-year trend. Additional years will be reported as they become available.

Schedule 2: Schedule of Employers' Contributions

Last 10 Fiscal Years

Fiscal Year	Membership Group	Actuarial Contributions	Contributions Paid*	Contribution Deficiency (Excess)	Covered Payroll	Contributions Paid as a Percentage of Covered-Employee Payroll
2018	Regular members	$641,386,156	$671,598,096	($30,211,940)	$7,519,889,472	8.93%
	Sheriffs and deputies	9,753,998	10,564,954	(810,956)	112,757,464	9.37%
	Protection occupation members	33,724,988	34,589,731	(864,743)	350,572,591	9.87%
	Total	**$684,865,142**	**$716,752,781**	**($31,887,639)**	**$7,983,219,527**	**8.98%**
2017	Regular members	$628,387,062	$659,859,251	($31,472,189)	$7,403,850,371	8.91%
	Sheriffs and deputies	9,507,927	10,464,153	(956,226)	108,818,023	9.62%
	Protection occupation members	33,623,646	34,442,710	(819,064)	350,492,049	9.83%
	Total	**$671,518,635**	**$704,766,114**	**($33,247,479)**	**$7,863,160,443**	**8.96%**
2016	Regular members	$618,051,508	$640,913,485	($22,861,977)	$7,117,418,476	9.00%
	Sheriffs and deputies	9,427,481	10,407,096	(979,615)	104,042,502	10.00%
	Protection occupation members	32,612,466	33,344,417	(731,951)	335,054,742	9.95%
	Total	**$660,091,455**	**$684,664,998**	**($24,573,543)**	**$7,556,515,720**	**9.06%**
2015	Regular members	$602,423,393	$613,976,718	($11,553,325)	$6,899,669,544	8.90%
	Sheriffs and deputies	9,588,844	9,817,386	(228,542)	99,568,974	9.86%
	Protection occupation members	32,548,775	33,117,056	(568,281)	327,109,623	10.12%
	Total	**$644,561,012**	**$656,911,160**	**($12,350,148)**	**$7,326,348,141**	**8.97%**
2014	Regular members	$596,983,323	$596,983,323	—	$6,683,171,236	8.93%
	Sheriffs and deputies	9,583,512	9,583,512	—	96,396,464	9.94%
	Protection occupation members	32,434,713	32,434,713	—	319,709,580	10.15%
	Total	**$639,001,548**	**$639,001,548**	**—**	**$7,099,277,280**	**9.00%**
2013	Regular members	$573,480,969	$560,587,243	$12,893,726	$6,473,445,372	8.66%
	Sheriffs and deputies	9,246,766	9,246,766	—	93,426,040	9.90%
	Protection occupation members	32,118,873	32,118,873	—	313,259,722	10.25%
	Total	**$614,846,608**	**$601,952,882**	**$12,893,726**	**$6,880,131,134**	**8.75%**
2012	Regular members	$528,525,785	$518,075,221	$10,450,564	$6,384,444,604	8.11%
	Sheriffs and deputies	8,999,273	8,999,273	—	92,082,564	9.77%
	Protection occupation members	30,864,449	30,864,449	—	309,631,552	9.97%
	Total	**$568,389,507**	**$557,938,943**	**$10,450,564**	**$6,786,158,720**	**8.22%**
2011	Regular members	$530,692,453	$429,936,439	$100,756,014	$6,187,127,465	6.95%
	Sheriffs and deputies	7,994,058	7,994,058	—	89,378,089	8.94%
	Protection occupation members	29,711,050	29,711,050	—	298,367,165	9.96%
	Total	**$568,397,561**	**$467,641,547**	**$100,756,014**	**$6,574,872,719**	**7.11%**
2010	Regular members	$467,839,274	$414,715,905	$53,123,369	$6,189,106,241	6.70%
	Sheriffs and deputies	6,725,778	6,725,778	—	87,535,984	7.68%
	Protection occupation members	27,328,184	27,328,184	—	294,539,780	9.28%
	Total	**$501,893,236**	**$448,769,867**	**$53,123,369**	**$6,571,182,005**	**6.83%**
2009	Regular members	$441,951,764	$383,886,018	$58,065,746	$6,060,164,555	6.33%
	Sheriffs and deputies	6,365,911	6,365,911	—	84,855,625	7.50%
	Protection occupation members	24,736,688	24,736,688	—	293,622,944	8.42%
	Total	**$473,054,363**	**$414,988,617**	**$58,065,746**	**$6,438,643,124**	**6.45%**

*Contributions paid and recognized by the System are the same as the contractually required contributions.

Schedule 3: Schedule of Investment Returns

Last 5 Fiscal Years

	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expense	8.12%	11.77%	2.23%	3.91%	15.96%

Note: Schedule is intended to show a 10-year trend. Additional years will be reported as they become available.

Schedule 4: Schedule of IPERS' Proportionate Share of the Total OPEB Liability

(Dollar Values Expressed in Thousands)
Fiscal Year Ended June 30, 2018

IPERS' proportion of the total OPEB liability	0.42%
IPERS' proportionate share of the total OPEB liability	$790
IPERS' covered payroll	$6,207
IPERS' proportionate share of total OPEB liability as a percentage of covered payroll	12.73%

Note: Schedule is intended to show a 10-year trend. Additional years will be reported as they become available.

Notes to Required Supplementary Information

Benefit terms, actuarial assumptions and methods, and funding policies affect the actuarial contribution rates. Changes over the past ten years that had a significant impact on the actuarial contribution rates are summarized below. More detail may be obtained from the annual valuation reports.

(1) CHANGES IN BENEFIT TERMS

Legislation passed in 2010 modified benefit terms for current Regular members. The definition of final average salary changed from the highest three to the highest five years of covered wages. The vesting requirement changed from four years of service to seven years. The early-retirement reduction increased from 3 percent for each year of retirement before a member's normal retirement age, to 6 percent for each year of retirement before age 65.

(2) CHANGES IN ACTUARIAL ASSUMPTIONS AND METHODS

The 2018 valuation, which is used to determine the contribution rates effective July 1, 2019, incorporated the following refinements after a demographic assumption study:

- Changed mortality assumptions to the RP-2014 mortality tables with mortality improvements modeled using Scale MP-2017.
- Adjusted retirement rates.
- Lowered disability rates.
- Adjusted the probability of a vested Regular member electing to receive a deferred benefit.
- Adjusted the merit component of the salary increase assumption.

The 2017 valuation incorporated the following refinements after an economic assumption study:

- Decreased the inflation assumption from 3.00 percent to 2.60 percent per year.
- Decreased the assumed rate of interest on member accounts from 3.75 percent to 3.50 percent per year.
- Decreased the investment return assumption from 7.50 percent to 7.00 percent.
- Decreased the wage growth assumption from 4.00 percent to 3.25 percent.
- Decreased the payroll growth assumption from 4.00 percent to 3.25 percent.

The 2014 valuation incorporated the following refinements after a quadrennial experience study:

- Decreased the inflation assumption from 3.25 percent to 3.00 percent per year.
- Decreased the assumed rate of interest on member accounts from 4.00 percent to 3.75 percent per year.
- Adjusted male mortality rates for retirees in the Regular membership group.
- Reduced retirement rates for sheriffs and deputies between the ages of 55 and 64.
- Moved from an open 30-year amortization period to a closed 30-year amortization period for the UAL beginning June 30, 2014. Each year thereafter, changes in the UAL from plan experience will be amortized on a separate closed 20-year period.

The 2010 valuation incorporated the following refinements after a quadrennial experience study:

- Adjusted retiree mortality assumptions.
- Modified retirement rates to reflect fewer retirements.
- Lowered disability rates at most ages.
- Lowered employment termination rates.
- Increased the probability that terminating members would eventually receive a retirement benefit.
- Modified salary increase assumptions based on various service durations.

(3) FUNDING POLICIES

The difference between the actuarial contribution rates and contributions paid through FY2013 was due entirely to statutorily set contributions that differed from the actuarial contribution rates. Special Service members have always paid at least the actuarial contribution rates.

Contribution rates for Regular members were set in statute at 9.45 percent from 1979 to 2007. In 2006, legislation allowed a 0.50 percentage point increase for each of the following four years, leading to a rate of 11.45 percent effective for FY2011. In 2010, an additional contribution rate increase to 13.45 percent, effective in FY2012, was passed by the Legislature.

The same legislation authorized IPERS to change the contribution rates by 1 percentage point each year, to bring them closer in line with the actuarial contribution rates, starting in FY2013. The FY2013 required contribution rate for Regular members was capped at 14.45 percent because of the statutory restriction. In FY2014, the contribution rate for Regular members equaled the actuarial contribution rate, and in FY2015 – FY2018, the rate exceeded the actuarial contribution rate.

The Contribution Rate Funding Policy adopted by the IPERS Investment Board establishes procedures for setting the contribution rates for all membership groups. The actuarial contributions in the Schedule of Employers' Contributions are calculated annually on each valuation date (June 30), and apply one year after the valuation. Accordingly, the actuarial methods and assumptions shown in the following table are from the June 30, 2016, actuarial valuation, which established the actuarially determined employer contributions for FY2018.

FY2016 Actuarial Methods and Assumptions

Actuarial cost method	Entry age normal
Amortization method	Level percentage of payroll, closed
Amortization period	2014 initial UAL: 28 years 2015 experience: 19 years 2016 experience: 20 years
Asset valuation method	Expected value plus 25% of difference between market value and expected value
Inflation rate	3%
Payroll increase assumption	4%
Projected salary increases	4% – 17%, including inflation, depending on years of service
Assumed investment return	7.5% compounded annually, net of investment expense and including inflation
Mortality tables	RP-2000 Generational Mortality Tables, with age setbacks and age set-forwards as well as other adjustments based on different membership groups. Future mortality improvements are anticipated using Projection Scale AA. Different adjustments apply to preretirement, postretirement, and postdisability mortality tables.

(4) OPEB IMPLICIT RATE SUBSIDY

There are no assets accumulated in a trust that meets the criteria in paragraph 4 of GASB 75 to pay the related benefits.

Changes in assumptions and other inputs reflect the effects of changes in the discount rate each period. A discount rate of 3.87 percent was used for the year ended June 30, 2018, and a discount rate of 4.50 percent was used for the year ended June 30, 2017.

Supplementary Information

Schedule 1: Schedule of Administrative Expenses

Fiscal Years Ended June 30, 2018, and 2017

	2018	2017
Personnel		
Salaries and wages	$6,574,291	$7,114,282
Travel	127,168	149,231
Professional and technical services		
Professional	649,399	1,575,799
Actuary	156,000	187,250
Computer support services	3,744,689	3,092,815
Auditing	157,644	148,360
Communications		
Telephone	175,382	150,048
Printing	120,395	124,333
Other expenses		
Supplies	351,100	801,843
Utilities	57,396	46,224
Depreciation	2,503,616	2,416,747
Loss on disposal of fixed assets	52,872	—
Miscellaneous	83,890	92,064
Total administrative expenses	**$14,753,842**	**$15,898,996**

Note: Administrative expenses related to investments do not appear here but are included in the investment expenses reported in the Schedule of Investment-Related Expenses on the next page.

Schedule 2: Schedule of Investment-Related Expenses

Fiscal Years Ended June 30, 2018, and 2017

	2018	2017
Aegon USA Investment Management LLC — Public credit	$982,560	$1,829,816
BlackRock Financial Management Inc. — Core-plus fixed income	712,047	739,640
BlackRock Institutional Trust Company NA — Domestic equity	4,876,885	624,614
BlackRock Institutional Trust Company NA — International equity	1,382,617	5,948,330
BlackRock Institutional Trust Company NA — Public real assets	121,764	107,227
Blackstone Real Estate Debt Strategies Associates II LP — Private credit	568,015	1,371,937
BNP PARIBAS ASSET MANAGEMENT USA Inc. — Public real assets	212,777	474,537
BNY Mellon Asset Management North America Corporation — Core-plus fixed income	(55,692)	(112,228)
BNY Mellon Asset Management North America Corporation — Domestic equity	(47,415)	(302,384)
BNY Mellon Asset Management North America Corporation — International equity	(71,788)	(128,014)
CenterSquare Investment Management Inc. — Public real assets	1,411,719	702,670
Clarion Partners LLC — Private real assets	2,754,672	3,198,452
Columbia Management Investment Advisors LLC — Domestic equity	388,367	364,083
Fisher Investments — Domestic equity	4,991,941	4,334,797
Forest Investment Associates LP — Private real assets	1,086,487	1,041,411
GAM USA Inc. — International equity	673,519	351,436
Harvest Fund Advisors LLC — Public real assets	2,676,414	2,247,412
Invesco Real Estate — Private real assets	2,048,715	1,950,976
Janus Capital Management LLC — Domestic equity	4,031,824	3,418,643
J.P. Morgan Investment Management Inc. — Domestic equity	523,968	475,210
LARS Investments — Liquid absolute return strategies	2,641,395	1,036,366
MacKay Shields LLC — Core-plus fixed income	1,314,004	1,233,041
Oaktree Capital Management LP — Public credit	937,006	985,724
Oechsle International Advisors LLC — International equity	454,187	952,764
PanAgora Asset Management Inc. — Domestic equity	738,115	641,228
Parametric Portfolio Associates LLC — Overlay management services	139,077	36,650
Pathway Capital Management LP — Private equity	7,261,503	6,761,472
PGIM Inc. — Core-plus fixed income	1,998,438	2,731,815
PGIM Inc. — Public credit	1,003,089	1,744,700
Principal Global Investors LLC — Core-plus fixed income	641,483	586,612
Principal Real Estate Debt Fund LP — Private credit	162,442	214,008
Principal Real Estate Debt Fund II LP — Private credit	49,020	—
Quantitative Management Associates LLC — International equity	1,061,608	1,142,044
RREEF America LLC — Private real assets	2,622,115	2,984,291
State Street Global Advisors — Public real assets	120,800	106,829
TCW Asset Management Company LLC — Core-plus fixed income	1,002,485	966,243
TCP Direct Lending Fund VIII-A LLC — Private credit	821,013	106,290
UBS Asset Management (Americas) Inc. — Global smart beta equity	414,850	—
UBS Farmland Investors LLC — Private real assets	254,510	125,859
UBS Realty Investors LLC — Private real assets	1,942,964	1,788,916
Western Asset Management Company LLC — Core-plus fixed income	1,708,530	1,719,429
Wellington Management Company LLP — Domestic equity	204,535	542,043
Wellington Management Company LLP — International equity	1,389,968	3,439,501
Total investment management fees	**58,152,533**	**58,484,390**
Wilshire Associates Inc. — Investment consultant	369,750	357,250
The Bank of New York Mellon — Custodian	757,375	772,398
Treasurer of State — Custodian	134,103	114,449
Commission expenses	6,901,753	5,659,528
Investment staff and Board expenses	1,434,575	1,379,645
Miscellaneous expenses	931,867	1,090,769
Total other investment fees	**10,529,423**	**9,374,039**
Total investment-related expenses	**$68,681,956**	**$67,858,429**

Note: FY2017 has been restated to reflect a decrease of $202,656.

INVESTMENTS

INVESTMENTS

Investment Overview

This section of the CAFR was compiled by IPERS' investment staff using information provided by Wilshire Associates and the Bank of New York Mellon. Except where noted otherwise, investment returns are based on investment asset fair value and calculated using time-weighted return calculation methodologies.

Investment returns play an important role in the funded ratio of the IPERS Trust Fund. The Investment Board has adopted an Investment Policy and Goal Statement, with the objective to benefit the members of the System by maximizing the total rate of return on investments within prudent risk parameters. IPERS' overall investment performance goal is to achieve an annualized rate of return which, when combined with employee and employer contributions, will meet or exceed the benefits and administrative funding requirements of the System. (See the Investment Policy and Goal Statement at the end of this section for more information concerning IPERS' investment return objectives.)

The System's investments are managed by professional investment management firms based upon statutory investment authority, the investment policies adopted by the Investment Board, and a detailed service contract with each manager. The investment staff coordinates and monitors the investment of the Trust Fund's assets and assists the Investment Board in the formulation and implementation of investment policies and long-term investment strategy.

IPERS' net investment portfolio fair values reported in this section, and used as the basis for calculating investment returns, differ from those shown in the Financial and Actuarial sections of this report. The values used in this section are the appropriate industry standard basis for investment return calculation. Compared to the fair values shown in this report's Financial and Actuarial sections, the values reflected in this Investments section are gross of investment receivables and cash in investment manager accounts, and net of payables and securities lending collateral.

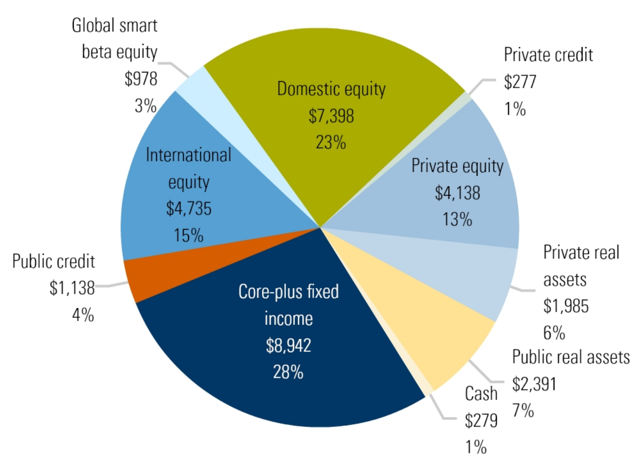
Asset Allocation and Diversification

Asset allocation is a process designed to construct an optimal long-term asset mix that achieves a specific set of investment objectives. The Investment Policy and Goal Statement establishes the System's asset allocation policy as designed to meet those objectives. The Investment Board revised its asset allocation categories in fiscal year 2017 in an attempt to make risks more transparent. As a result, asset classes are first categorized by whether the investments are traded in public markets or represent less liquid private market assets. Asset classes are then further categorized by the type of risk they represent: equity, fixed income (interest rates), real assets (inflation), or credit.

The asset allocation policy is adopted to provide for diversification of assets in an effort to maximize the investment return to IPERS consistent with prudent levels of market and economic risks. Of all the components of investment strategy formulation, the determination of asset allocation targets is the most important decision. The chart below illustrates the actual allocation to each type of investment, as of June 30, 2018.

Summary of Investments by Asset Class

(Fair Values in Millions)
As of June 30, 2018



Risk is further diversified by utilizing active and passive management, and using multiple investment management firms with a variety of investment styles. The investment performance at the total Fund level is not dependent upon the success of one particular investment style or manager.

The System also requires its investment managers to diversify their portfolios at the security level. Managers are required to diversify across sectors, industries, and individual securities. IPERS develops specific contractual investment guidelines for each manager that control the risk of high concentrations in a particular sector, industry, or security.

Diversification of the System's assets among various asset classes, investment management styles, and individual securities mitigates risk and enhances the potential of the IPERS investment portfolio to achieve its long-term objectives.

Capital Markets Commentary

The first half of fiscal year 2018 was characterized by low volatility as European key elections passed without major surprises and political news out of the U.S. was largely benign. This low volatility combined with strong macroeconomic data created an ideal environment for risk taking and global stock markets surged.

The second half of the fiscal year was much more volatile. Despite a strong global economic backdrop, U.S. policy uncertainty and the prospect of a growing global trade war led to a swift correction in stock valuations, with the U.S. stock market losing over 10 percent of its value from January 26 to February 8, 2018. However, as U.S. policies were clarified, global stock markets recovered, with U.S. stocks returning 14.66 percent and international stock markets returning 7.79 percent in U.S. dollars.

In contrast, U.S. bond markets had much less to cheer about in fiscal year 2018. The U.S. Federal Reserve Bank raised interest rates three times, and inflation, while still well subdued, rose to near the Fed's target inflation rate. This environment helped produce negative returns on low-risk fixed-income securities. For example, the Bloomberg Barclays Treasury Index returned –0.65 percent and the Citigroup High Grade Corporate Bond Index returned –1.04 percent.

Lower-quality fixed-income securities, which are less sensitive to interest rates and more sensitive to growth and credit conditions, did fairly well for the fiscal year. For example, the Bloomberg Barclays High Yield Index returned 2.62 percent in fiscal year 2018. The rising inflation environment did help increase returns on U.S. Treasury Inflation-Protected Securities (TIPS), as demonstrated by the Bloomberg Barclays TIPS Index producing a 2.11 percent return for the fiscal year.

The return on cash, as measured by the annual return on 91-day Treasury bills, was 1.36 percent. Private markets performed very well in FY2018, with private equity returning 16.10 percent and private real estate returning 7.51 percent.

Investment Portfolio Assets

At the close of fiscal year 2018, IPERS' net investment portfolio assets had a fair value of $32.261 billion. This represents an increase of $1.540 billion from the $30.721 billion net investment asset fair value as of June 30, 2017. The reason for the increase in net assets was the portfolio investment return of 7.97 percent for fiscal year 2018.

Investment Results

IPERS posted a total portfolio net-of-fees investment return of 7.97 percent for the fiscal year ended June 30, 2018. This return exceeded the 7.79 percent return of IPERS' policy benchmark, a set of market indexes and weightings to those indexes that reflect IPERS' asset class targets. The value added versus the policy benchmark was mainly due to outperformance by IPERS' active managers across all asset classes.

IPERS' 7.97 percent return exceeded the actuarial assumed investment return of 7 percent and exceeded the annual rate of inflation, as measured by the Consumer Price Index, which was 2.87 percent for the fiscal year. IPERS' annual investment return was also well ahead of the –5.65 percent estimated return of its liabilities, which is estimated based on a market-valued liability proxy developed by IPERS and its investment consultant, Wilshire Associates.

The following tables provide a historical perspective of IPERS' investment returns and performance over the last 10 years. IPERS' net-of-fees investment returns are shown for the total portfolio and for each asset class over various time periods. For comparison purposes, the benchmark for each asset class is also shown. Private equity was the highest-returning asset class in fiscal year 2018 at 18.92 percent, while core-plus fixed income had the lowest return at -0.24 percent.

IPERS' Investment Policy and Goal Statement was revised twice in fiscal year 2018. The first revision created a 3 percent allocation to global smart beta equity, with funding coming from a 2 percent reduction in the domestic equity allocation and a 1 percent reduction in the international equity allocation. This revision became effective July 1, 2017, when the funding of the asset class occurred.

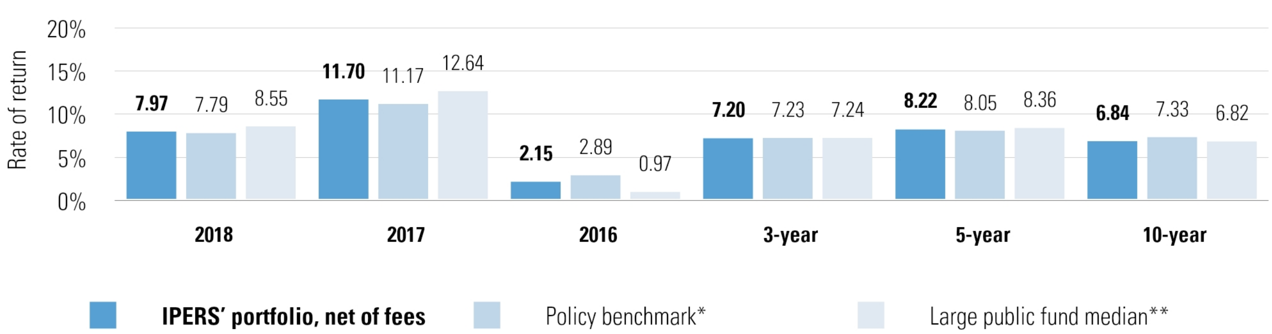
The second revision was effective October 1, 2017. It was undertaken by three Investment Board members and the chief investment officer. This committee was tasked with comparing the Investment Policy and Goal Statement to other pension fund policies, reducing the overall length of the document, and clarifying key policies and duties of the Board and staff. The committee recommended substantial revisions, and the Investment Board approved them at its September 21, 2017, Board meeting.

The result was a much slimmer policy of only 10 pages that focuses on communicating policy and clarifying the duties of the Board and staff. See Note 1, subsection E (Investments) on page 24 of the Financial section for a description of the revisions approved by the Board.

The total return an investment portfolio achieves over the long term is largely determined by the level of risk the investor is willing to accept. In general, the greater the risk, the higher the return has to be over long time periods to compensate the investor for accepting that risk. A pension fund's willingness to accept additional risk is often the result of its need to achieve or maintain an actuarially sound funded ratio. Given the disparities in funding levels and the resulting differences in asset allocation that exist among pension funds, it is often difficult, if not impossible, to make a meaningful comparison of a pension system's investment performance based solely on returns.

Investment Performance Summary

For the Periods Ended June 30



*A benchmark composed of market indexes with weightings reflective of IPERS' asset allocation targets.
**TUCS Public Funds with Total Market Value > $1 Billion Index.
Note: 3-, 5-, and 10-year results are annualized returns.

Rates of Return

For Periods Ended June 30, 2018[1]

	Annualized Returns (%)			
Asset Class	**1-Year**	**3-Year**	**5-Year**	**10-Year**
Total Fund				
IPERS	7.97	7.20	8.22	6.84
Policy benchmark[2]	7.79	7.23	8.05	7.33
CPI + 3 percentage points	5.87	4.83	4.54	4.42
Actuarial assumed investment return	7.00	7.17	7.30	7.40
TUCS Public Funds > $1 Billion Index median	8.55	7.24	8.36	6.82
Domestic equity				
IPERS	15.46	11.46	13.46	9.64
Wilshire 5000	14.66	11.85	13.36	10.23
International equity				
IPERS	7.51	5.33	6.55	3.04
Custom benchmark	7.79	5.56	6.48	3.01
Global smart beta equity				
IPERS	10.34	NA	NA	NA
Custom benchmark	9.97	NA	NA	NA
Core-plus fixed income				
IPERS	-0.24	2.43	2.83	4.45
Custom benchmark	-0.28	2.12	2.63	4.06
Public credit[3]				
IPERS	0.61	4.82	4.68	6.82
Custom benchmark	1.02	4.88	4.87	7.06
Public real assets[4]				
IPERS	2.88	NA	NA	NA
Custom benchmark	2.05	NA	NA	NA
Cash				
IPERS	4.59	1.80	1.12	0.87
U.S. Treasury bills	1.36	0.68	0.42	0.35
Private equity[5]				
IPERS	18.92	14.46	15.79	10.90
Custom benchmark	18.92	14.46	15.40	12.24
Private real assets[5]				
IPERS	9.42	NA	NA	NA
Custom benchmark	9.42	NA	NA	NA
Private credit[5]				
IPERS	9.25	NA	NA	NA
Custom benchmark	9.25	NA	NA	NA

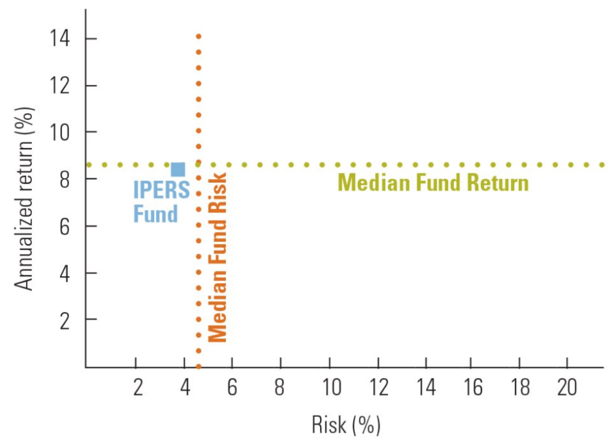
[1]All returns are time-weighted returns. All returns beyond one year are annualized.
[2]The policy benchmark on June 30, 2018, consisted of 22 percent Wilshire 5000, 15 percent MSCI ACWI ex U.S., 3 percent global smart beta equity custom benchmark; 27 percent Barclays Universal, 7 percent custom benchmark for public real assets, 3.5 percent custom public credit benchmark, 1 percent Treasury bills, 11 percent IPERS private equity portfolio, 7.5 percent custom private real assets, and 3 percent custom private credit benchmark. The composition of the policy benchmark has changed over the 10-year period.
[3]This benchmark index is defined as 67 percent Citigroup HY Cash Pay Capped Index and 33 percent JP Morgan EMBI Global Index.
[4]This benchmark index is defined as 67 percent [50 percent Barclays Capital U.S. TIPS Index and 50 percent Barclays Capital 1-10 U.S. TIPS Index] + 22 percent [Wilshire REIT Index] + 11 percent [S&P MLP Index].
[5]The benchmark index for each private market asset class is the return of the portfolio itself.

A more meaningful peer comparison can be made if returns are compared on the basis of how much return was earned for each unit of risk taken, where risk is measured by the volatility (standard deviation) of returns.

The following graph provides a comparison of IPERS' investment return per unit of risk taken for the last 5 years against the TUCS Public Funds > $1 Billion Index. The vertical line represents the median level of risk experienced by this universe of funds. The horizontal line represents the median rate of return earned by the group of funds. As shown in the graph, while the return on IPERS' investments for the 5 years ended June 30, 2018, was slightly lower than the median large public pension fund return, it was earned with less risk.

Risk vs. Total Return

Public Funds > $1 Billion Index
5 Years Ended June 30, 2018

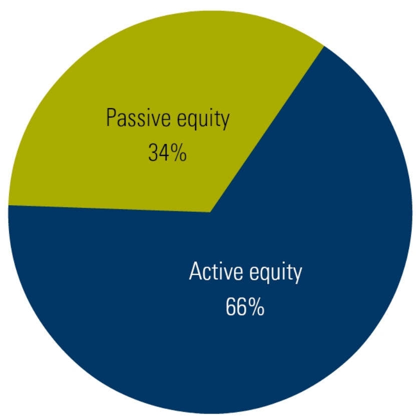


Domestic Equity

At June 30, 2018, 22.93 percent of IPERS' total portfolio was invested in domestic equities (U.S. stocks). The total net fair value of the domestic equity portfolio was $7.398 billion. The portfolio is widely diversified across various equity market sectors and industries. The IPERS domestic equity portfolio has two components:

Domestic Equity Portfolio

June 30, 2018



Active Equity

IPERS utilizes active management in small-, mid-, and large-capitalization stock strategies. The active portfolio is also invested in strategies that focus on different investment styles: a value portfolio, which focuses on companies undervalued relative to their prospective dividend and earnings growth; a growth portfolio, which focuses on companies whose earnings are expected to grow at rates exceeding that of the general economy; and a core portfolio, which seeks to add value across all sectors through stock selection. Each investment strategy is expected to exceed an appropriate style benchmark over a full market cycle.

Passive Equity

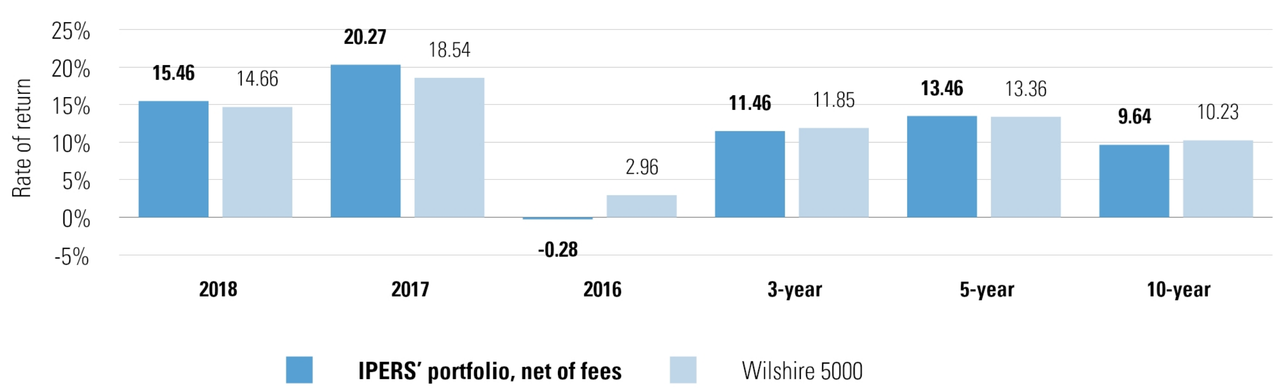
The passive component is divided into large-cap and small- to mid-cap strategies for management purposes and consists primarily of investments in commingled index funds, index futures, and short-term securities. The return objective for each passive strategy is to track, within a certain range, the returns of a broad market index. The passive component is designed to add diversity to the full portfolio while complementing the active investment styles of IPERS' other domestic equity portfolios. The passive component constitutes an efficient, low-cost means of obtaining market exposure to the domestic stock markets.

Results

For the year ended June 30, 2018, IPERS' domestic equity portfolio delivered a return of 15.46 percent, compared to 14.66 percent for its benchmark, the Wilshire 5000 Index. The outperformance was primarily driven by active management in the enhanced large-cap and small- to mid-cap strategies.

Domestic Equity Performance

For Periods Ended June 30



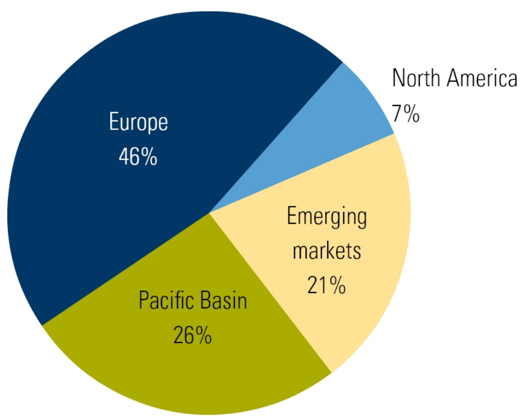
Note: 3-, 5-, and 10-year results are annualized returns.

International Equity

At June 30, 2018, the international equity portfolio had a net fair value of $4.735 billion, representing 14.68 percent of the total IPERS portfolio. IPERS' international equity portfolio is composed primarily of publicly traded common stocks or equity commingled funds, foreign exchange contracts, and cash. The portfolio assets are allocated across many regions, countries, industries, and securities for diversification purposes. Regional weights are maintained in the same proportions as reflected in the MSCI All Country World ex U.S. asset class benchmark. The international equity portfolio utilizes both active and passive management strategies.

International Equity Portfolio

June 30, 2018



Active Equity

This component is an actively managed diversified portfolio consisting primarily of equity securities issued by foreign companies in both developed and emerging countries. For purposes of investment management, a regional approach is used to invest in these international markets. The active equity portfolio's performance objective is to exceed the return of the MSCI All Country World ex U.S. Index.

Passive Equity

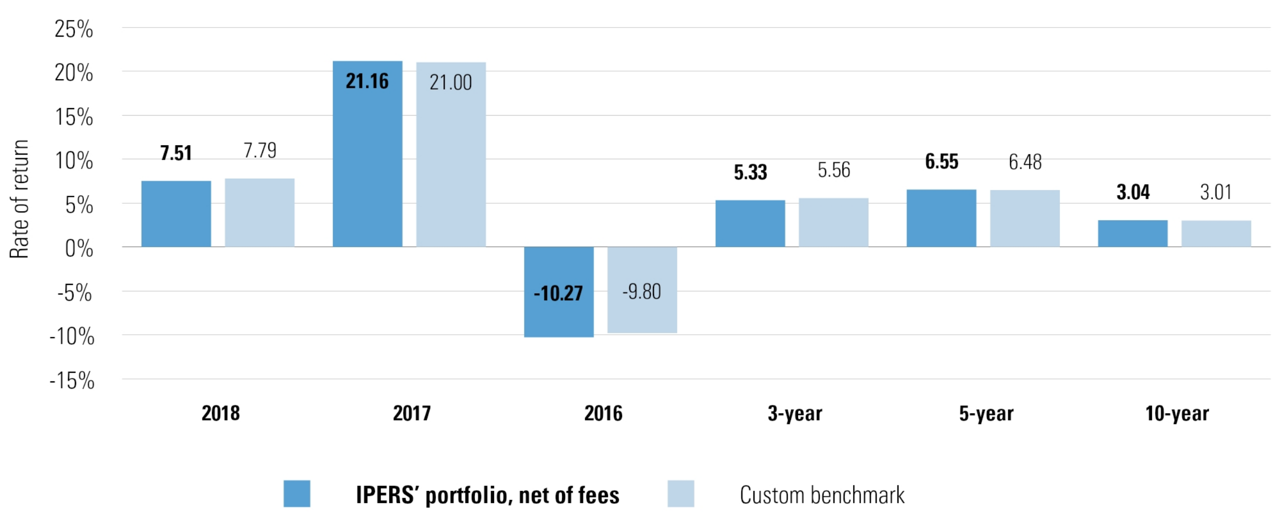
This component is a passively managed diversified portfolio consisting of commingled index fund investments in Canadian, European, EAFE (European, Australasian, and Far East), and global emerging market countries' corporate equity securities. The objective of the passive equity portfolios is to track the performance of the respective MSCI indexes for each region.

Results

The international equity market, as measured by the MSCI All Country World ex U.S. Index in U.S. dollars, returned 7.79 percent for the fiscal year ended June 30, 2018. IPERS' international equity portfolio trailed its benchmark in FY2018, returning 7.51 percent net of fees. A small amount of positive return generated by manager active decisions was offset by suballocation positioning. At June 30, 2018, the portfolio's 3-year net-of-fee return was 5.33 percent versus the 5.56 percent recorded for the asset class's composite benchmark, while on a 5-year basis the portfolio earned 6.55 percent, slightly outperforming the benchmark of 6.48 percent.

International Equity Performance

For Periods Ended June 30



Note: 3-, 5-, and 10-year results are annualized returns.

PUBLIC EQUITY PORTFOLIO: TOP TEN HOLDINGS

The top ten holdings within the public equity portfolio (domestic and international combined) at June 30, 2018, follow. The listing does not include the fair value of units held in commingled fund investments. A complete listing of the holdings, including commingled fund holdings, is available upon request.

Ten Largest Holdings at June 30, 2018	Fair Value ($000)	% of Total
Amazon.com, Inc.	$94,699	1.36
Microsoft Corporation	92,887	1.34
Apple, Inc.	74,426	1.07
Facebook, Inc.	73,308	1.06
Tencent Holdings Ltd.	48,975	0.70
Bank of America Corporation	48,697	0.70
Visa Inc.	48,640	0.70
UnitedHealth Group, Inc.	47,630	0.69
JPMorgan Chase & Co.	44,786	0.64
Alibaba Group Holding Ltd.	42,629	0.61
Total	**$616,677**	**8.87**

Global Smart Beta Equity

Effective July 1, 2017, IPERS established a strategic allocation of 3 percent to global smart beta equities. The program is global and seeks to maintain regional targets of 60 percent U.S., 30 percent developed markets ex U.S., and 10 percent emerging markets. The program creates a portfolio of stocks within each regional mandate that have positive exposures to a set of desired factors that have demonstrated a persistent ability to add value over long periods of time. Since the program is implemented passively, minimizing the tracking errors to the respective benchmark indexes is also critical. The Russell 1000 Comprehensive Factor Index is the benchmark for the U.S. region, the FTSE Developed Ex-U.S. Comprehensive Factor Index is the benchmark for the developed non-U.S. region, and the FTSE Emerging Markets Comprehensive Factor Index is the benchmark for the emerging markets region. For FY2018 the program posted a 10.34 percent return, net of fees, versus its custom benchmark return of 9.97 percent.

Fixed Income

IPERS has a significant allocation to fixed-income securities, with a target asset allocation of 27 percent to core-plus fixed-income securities and 3.50 percent to public credit strategies. At fiscal year-end, IPERS' core-plus portfolio was 27.72 percent of total Fund assets and the public credit portfolio was 3.53 percent of total Fund assets. The total return for the consolidated fixed-income portfolio (core-plus and public credit portfolios combined) for the year ended June 30, 2018, was –0.14 percent. The consolidated fixed-income portfolio fair value was $10.080 billion and the average bond rating for the portfolio was A.

Core-Plus Fixed Income

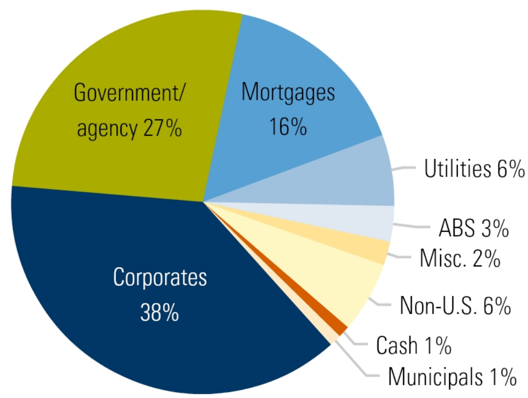
The objective of the core-plus fixed-income portfolio is to generate a return above the return of the core fixed-income market. Approximately 10 percent of the core-plus portfolio is dedicated to a passively managed "core" investment in an index fund designed to earn the return of the Bloomberg Barclays U.S. Aggregate Index (Aggregate Index), an index consisting of high-quality U.S. investment-grade fixed-income securities. The remainder of the core-plus portfolio is actively managed with the objective of exceeding the return of the Bloomberg Barclays U.S. Universal Index (Universal Index), net of fees, over a full market cycle. The Universal Index is a broader index, consisting of the core Aggregate Index plus other fixed-income sectors available to U.S. investors, such as high-yield bonds, dollar-denominated emerging market debt, and eurodollar bonds.

The core-plus portfolio is a diversified portfolio of fixed-income securities, utilizing cash and cash equivalents, forward foreign exchange contracts, swaps, currency options, financial futures, government and government agency bonds, eurobonds, nondollar bonds, nonconvertible preferred stock, options on fixed-income instruments, mortgage-backed bonds, corporate bonds, commercial mortgage-backed securities, private placement corporate bonds, and asset-backed securities. The actively managed portion of the core-plus portfolio is expected to have interest rate sensitivity similar to the Universal Index, and be diversified by industry, sector, and security issuers.

IPERS' core-plus fixed-income portfolio return of -0.24 percent slightly outperformed the Bloomberg Barclays Capital U.S. Universal Index return of -0.28 percent for the fiscal year ended June 30, 2018.

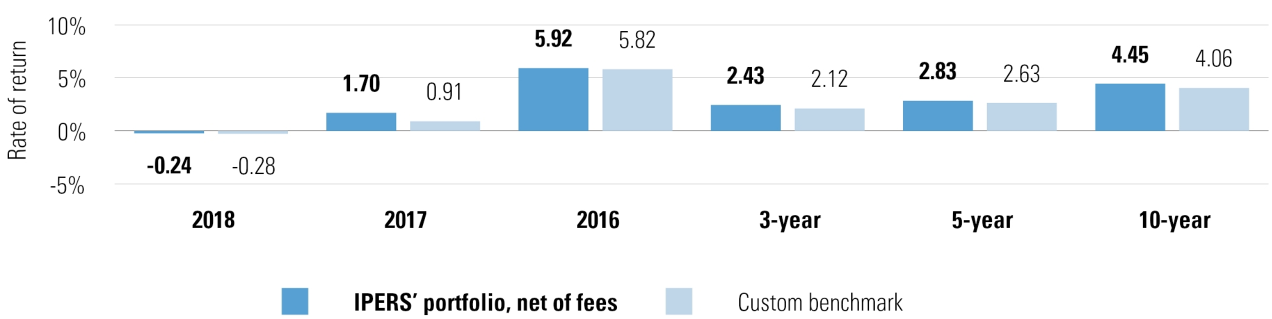
Core-Plus Fixed-Income Portfolio

June 30, 2018



Core-Plus Fixed-Income Performance

For Periods Ended June 30



Note: 3-, 5-, and 10-year results are annualized returns.

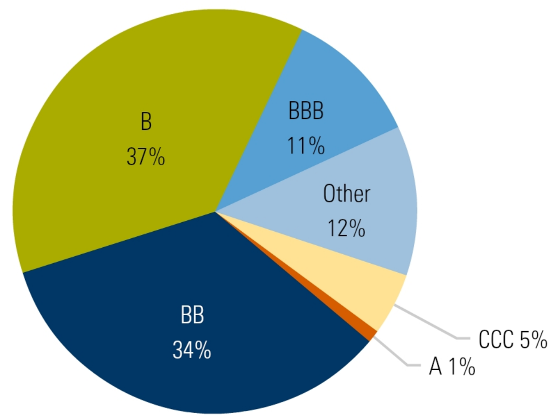
Public Credit Fixed Income

The objective of the public credit fixed-income portfolio is to enhance the long-term returns of the Fund, to provide current income, and to provide diversification benefits. Approximately two-thirds of the public credit portfolio is invested in high-yield securities, while approximately one-third is invested in emerging market debt securities.

IPERS' public credit fixed-income portfolio generated a return of 0.61 percent for fiscal year 2018 versus its custom benchmark return of 1.02 percent. The high-yield portion of the portfolio provided a return of 1.75 percent, underperforming versus the Citigroup High-Yield Cash-Pay Capped Index return of 2.75 percent. The emerging market debt portion of the portfolio generated a return of –1.65 percent through June 30, 2018, outperforming the J.P. Morgan EMBI Global Index return of –2.43 percent over the same time period.

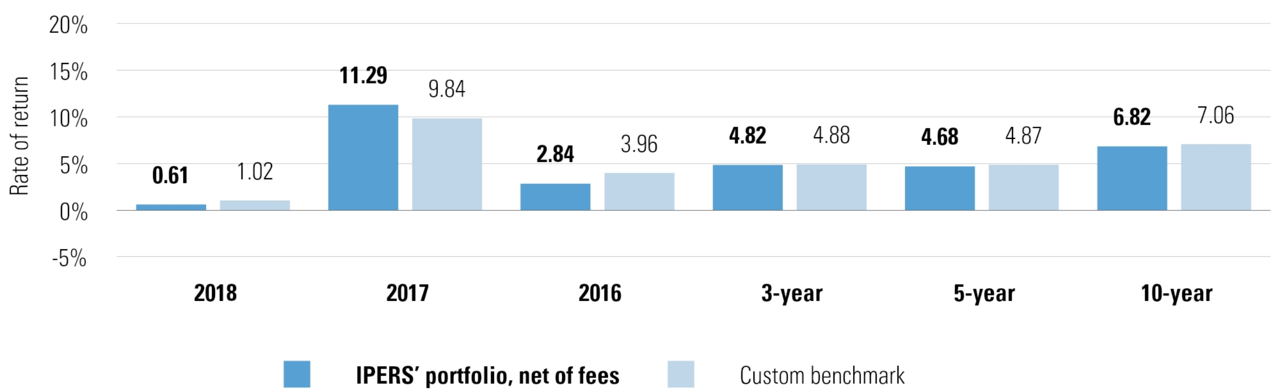
Public Credit Fixed-Income Portfolio

June 30, 2018



Public Credit Fixed-Income Performance

For Periods Ended June 30



Note: 3-, 5-, and 10-year results are annualized returns.

FIXED-INCOME PORTFOLIO: TOP TEN HOLDINGS

The top ten holdings within the consolidated fixed-income portfolio (core-plus and public credit combined) at June 30, 2018, are illustrated below. The listing does not include the fair value of units held in commingled fund investments. A complete listing of the holdings, including commingled fund holdings, is available upon request.

Ten Largest Holdings at June 30, 2018	Fair Value ($000)	% of Total
U.S. Treasury Bond – 3.125%, 5/15/48	$96,035	1.01
U.S. TIPS – 0.625%, 1/15/26	90,481	0.95
U.S. TIPS – 0.125%, 4/15/22	89,095	0.94
U.S. TIPS – 0.625%, 1/15/24	81,628	0.86
U.S. Treasury Note – 2.625%, 6/30/23	74,400	0.78
U.S. TIPS – 0.125%, 4/15/20	59,468	0.63
U.S. TIPS – 0.125%, 4/15/21	54,711	0.58
U.S. Treasury Note – 1.125%, 6/30/21	51,605	0.54
U.S. Treasury Note – 2.750%, 4/30/23	48,412	0.51
U.S. Treasury Bond – 3.750%, 11/15/43	46,298	0.49
Total	**$692,133**	**7.29**

Public Real Assets

Public real assets consist of investments in liquid, publicly traded securities that have an inflation-hedging component, such as U.S. Treasury inflation-protected securities (TIPS), real estate investment trusts (REITs), and master limited partnerships (MLPs) that provide funding for the development and improvement of America's energy infrastructure. At June 30, 2018, $2.391 billion, or 7.41 percent, of IPERS' total portfolio at fair value was invested in public real assets.

Treasury Inflation-Protected Securities

IPERS invests in U.S. TIPS to provide inflation protection and risk diversification. U.S. TIPS can also provide deflation risk protection because the securities cannot accrue a negative coupon even if the inflation rate is negative (which is a deflationary environment). IPERS utilizes one active U.S. TIPS manager that is benchmarked against the Bloomberg Barclays Capital U.S. TIPS 1–10 Year Index and one passive manager that is benchmarked against the broader Bloomberg Barclays Capital U.S. TIPS Index. IPERS' U.S. TIPS portfolio generated a return of 2.02 percent for the fiscal year, outperforming the blended custom benchmark return of 1.80 percent. The U.S. TIPS portfolio had a fair value of $1.565 billion as of June 30, 2018.

Real Estate Investment Trusts

IPERS invests in U.S. REITs to provide inflation protection and risk diversification. IPERS utilizes one active U.S. REIT manager that is benchmarked against the Wilshire REIT Index, and one passive manager that is benchmarked against the Dow Jones U.S. Select REIT Index. IPERS' U.S. REITs composite had a fair value of $566.2 million as of June 30, 2018, and returned 5.64 percent for the fiscal year versus its benchmark return of 3.88 percent.

Energy Infrastructure

IPERS invests in MLPs that fund pipelines, storage facilities, and transportation in the United States. Master limited partnerships provide access to inflation-protected revenue streams, a substantial dividend yield, and the liquidity of the public stock markets. The objective of the master limited partnership strategy is to achieve a return above the S&P Master Limited Partnership Total Return Index, net of fees. IPERS' master limited partnership portfolio had a fair value of $259.7 million as of June 30, 2018, and returned 1.93 percent for the fiscal year versus its benchmark return of –1.76 percent.

Private Equity

At June 30, 2018, IPERS' private equity/debt portfolio had a fair value of $4.138 billion, representing 12.83 percent of the total IPERS portfolio. From the inception of the private equity/debt portfolio through June 30, 2018, the System has committed $11.168 billion to 269 partnerships and one fund-of-one investment. During fiscal year 2018, IPERS committed a total of $778.3 million to the fund-of-one investment. At June 30, 2018, commitments of $2.236 billion remained to be called for investment.

IPERS began investing in private equity in 1985 and has, since January 1, 1993, utilized the services of a full-discretion investment management firm, Pathway Capital Management, LLP, to select partnerships and manage the portfolio of private equity funds. Beginning January 1, 2014, IPERS began utilizing a new structure for private equity investments by creating a fund-of-one partnership (Pathway Private Equity Fund XXV) with Pathway. The fund-of-one investment structure is expected to reduce IPERS' operational burden while allowing IPERS to more efficiently invest in secondary and co-investment opportunities. The new structure did not result in any changes to Pathway's existing contract, including fee arrangements.

IPERS seeks to minimize the risk associated with private equity by investing in a variety of top-tier partnerships with different investment styles and objectives. The portfolio is also diversified by industry focus, geographic location, and, most importantly, time, which means that capital is committed to partnerships over the full course of the business cycle and not concentrated in any one year.

IPERS' goal for the private equity/debt portfolio is to exceed the internal rate of return (IRR) of the Wilshire 5000 Index by 3 percentage points (net of investment management fees) over rolling 10-year periods. The internal rate of return is used because private equity investments are generally illiquid and cash inflows and outflows can be controlled by the general partner of the private equity partnership, making time-weighted returns inappropriate. Private equity investments typically span ten years or more, so a longer evaluation time horizon is appropriate.

The private equity/debt portfolio returned 9.93 percent (net IRR) versus its benchmark return of 13.24 percent for the 10-year period ended June 30, 2018. Since inception in 1985, IPERS' total private equity/debt portfolio has returned 14.19 percent, slightly underperforming the 14.78 percent asset class benchmark for private equity (Wilshire 5000 plus 3 percentage points).

"Distributions to paid-in capital" (DPI) ratios, which measure the ratio of cumulative distributions to cumulative paid-in capital for the time period, is another metric for evaluating private equity performance. Since 1985, the total private equity/debt portfolio's DPI was 1.24.

The Burgiss All Regions Private Equity Composite performance database includes data from thousands of partnerships and makes it possible to compare a portfolio to a universe of private equity partnerships that raised capital over the same time period. As explained in the Summary of Significant Accounting Policies in the Financial section of this report, IPERS utilizes a one-quarter valuation lag for its private equity/debt investments. All Burgiss information is as of October 2018, with data current for reporting periods ended March 31, 2018 (that is, it is also lagged by one quarter). Data is continuously updated and is therefore subject to change.

The following table compares the IRR and DPI of IPERS' private equity/debt portfolio to those calculated for all private equity partnerships in the Burgiss database for the period 1985 – 2018. The IPERS program compares favorably for this period.

Vintage Years 1985 – 2018	IRR	DPI
IPERS' private equity/debt portfolio	14.19%	1.24
Burgiss All Regions Private Equity Composite	13.97%	1.04

Private Real Assets

Private real assets consists of investments in private equity real estate, timberland, and farmland. At June 30, 2018, $1.985 billion, or 6.15 percent, of IPERS' total portfolio at fair value was invested in private real assets.

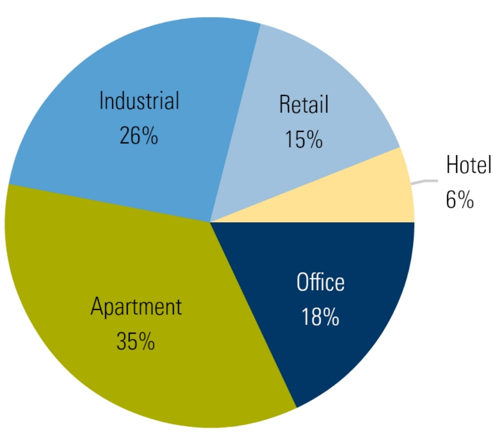
Real Estate

IPERS' real estate portfolio had a fair value of $1.783 billion at June 30, 2018. The real estate program serves three distinct purposes for IPERS: diversification, income production, and inflation protection. In order to mitigate risk, the real estate portfolio is diversified by both geographic location and property type, as shown in the following charts.

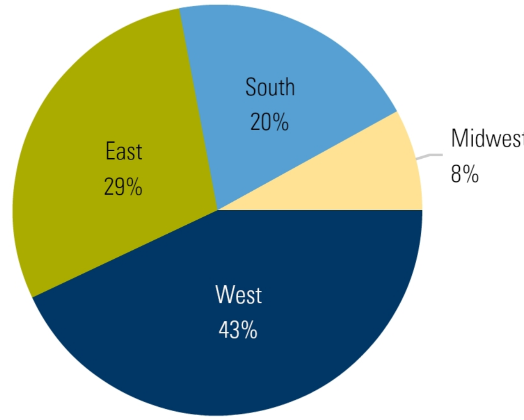
Real Estate Portfolio

June 30, 2018

By Property Type



By Property Location



The IPERS real estate portfolio benchmark is the NCREIF Open-End Diversified Core Index. For the fiscal year, IPERS' real estate program posted a return of 9.77 percent versus the benchmark return of 7.51 percent. As with the private equity/debt portfolio, the real estate program invests in assets with long holding periods and should be evaluated over a longer time horizon. For the 10 years ended June 30, 2018, the real estate portfolio returned 5.95 percent, net of fees, versus the portfolio's benchmark of 6.37 percent. The long-term underperformance is mainly attributable to the poor performance of one manager that was terminated in 2012.

Timberland

The objective of the timberland strategy is to achieve a 5 percent real return after inflation and manager fees. The portfolio is diversified by geography, species, and timber markets. The benchmark for the timberland portfolio is the Consumer Price Index plus 5 percentage points.

The IPERS timberland portfolio had a fair value of $170.2 million as of June 30, 2018, and returned 5.96 percent for the fiscal year versus its benchmark return of 8 percent.

Farmland

The objective of the farmland strategy is to achieve a 5 percent real return after inflation and management fees. The farmland portfolio made its first investment in fiscal year 2016, and will become more diversified by geography and crop types as acquisitions continue. The benchmark for the farmland portfolio is the Consumer Price Index plus 5 percentage points. As of June 30, 2018, the fair value of the farmland portfolio was $32.1 million. The farmland portfolio returned 8.55 percent for the fiscal year, well ahead of its benchmark return of 8 percent.

Private Credit

IPERS' private credit portfolio consists of investments in real estate debt funds and direct lending funds. The funds are structured as partnerships and are illiquid. The long-term return objective for IPERS' private credit program is to exceed the S&P/LSTA Leveraged Loan Index plus 1 percentage point, net of investment management fees, calculated on an internal rate of return basis over rolling 5-year periods. The private credit asset class was created in policy in fiscal year 2017 by combining previous investments made in real estate debt funds with newly funded direct lending funds.

As of June 30, 2018, the fair value of the private credit portfolio was $276.9 million with remaining commitments of $523.4 million. The portfolio produced a time-weighted return of 9.25 percent for the fiscal year, which exceeded the 5.37 percent return for the program objective over the same time period.

Cash

IPERS' cash allocation is invested in a liquidity account and a cash overlay account.

Liquidity Account

The liquidity account invests in the custodian bank's short-term investment fund (similar to a money market fund) and provides the cash needed to make benefit payments, fund investment purchases, and pay investment and administrative expenses. The liquidity account also receives deposits of employee and employer contributions, investment income distributions, and investment sales proceeds. The IPERS investment staff use cash flow forecasting and periodic withdrawals from other asset classes to raise cash as needed to pay bills when they come due.

The fair value of the liquidity account on June 30, 2018, was $212.7 million. The liquidity account earned a net-of-fees investment return of 1.73 percent for fiscal year 2018.

Cash Overlay Account

In FY2017, IPERS implemented a cash overlay investment program with the objectives of adding incremental return to the Fund and diversifying IPERS' investment strategies. The program, dubbed liquid absolute return strategies (LARS), is a multi-advisor–managed futures "fund" that allocates and reallocates its capital to different trading advisors implementing various trading programs primarily using futures and options on futures. IPERS created its own managed account platform within a limited liability structure (LARS Liquid Assets, LLC) to control custody risk. IPERS acts as the investment manager for LARS and in such capacity directs the allocation of assets to the trading advisors. As of June 30, 2018, LARS had allocated capital across seven different trading advisors and the fair value of the LARS program was $65.9 million. The LARS program produced a net-of-fees investment return of 10.27 percent for fiscal year 2018, well ahead of the 1.36 percent return of the 91-day Treasury bill and the 1.73 percent earned on cash in the liquidity account.

Beta Management

IPERS implemented a beta management overlay program in fiscal year 2017. The program is a systematic approach to rebalancing the public markets investment portfolio back to asset allocation targets using exchange-traded futures. The beta management overlay manager must rebalance the public markets portfolio back to its specified targets whenever a predefined deviation from a target allocation occurs. The gains or losses from this systematic rebalancing activity are recorded in each respective public market asset class, and therefore the investment returns for each asset class reflect any gains or losses from beta management rebalancing activity.

Investments in Iowa

Iowa Code section 97B.7A authorizes IPERS to invest the moneys of the Trust Fund in accordance with the Investment Policy and Goal Statement adopted by the Investment Board and subject to the "prudent person" rule. Section 97B.7A also directs that, where consistent with the aforementioned standards, IPERS will invest ". . . in a manner that will enhance the economy of the state, and in particular, will result in increased employment of the residents of the state."

At June 30, 2018, the System held investments of $1.993 billion in companies of Iowa interest.

Holdings in Companies of Iowa Interest

June 30, 2018

Asset Class	Amount
Stocks	$1,382,398,908
Bonds	590,938,312
Private equity/debt	19,968,900
Total	**$1,993,306,120**

Investment Fees and Brokerage Commissions

Schedule of Investment Fees

Fiscal Year Ended June 30, 2018

	Amount Paid	Average Quarterly Market Value
Domestic equity	$15,708,220	$7,290,783,250
International equity	4,890,111	4,916,184,750
Core-plus fixed income	7,321,295	8,867,593,750
Public credit	2,922,655	1,131,047,000
Public real assets	4,543,474	2,301,087,250
Global smart beta equity	414,850	994,146,000
Cash	2,780,472	347,924,000
Private equity	7,261,503	3,979,660,250
Private real assets	10,709,463	1,964,604,500
Private credit	1,600,490	270,071,750
Total	**$58,152,533**	**$32,063,102,500**

Note: See Schedule 2: Schedule of Investment-Related Expenses on page 48 for fees by manager.

Schedule of Brokerage Commissions Paid

Fiscal Year Ended June 30, 2018

PUBLIC EQUITY **Brokerage Firm**	Amount Paid	Shares Traded	Average Per Share
Merrill Lynch	$762,906	117,994,443	$0.006
Goldman Sachs & Co.	478,770	86,135,184	0.006
J.P. Morgan	381,003	110,652,467	0.003
Citigroup	369,917	72,647,600	0.005
Morgan Stanley & Co. Inc.	330,368	79,761,820	0.004
Deutsche Bank	268,633	97,747,163	0.003
SG Securities	164,233	57,291,851	0.003
UBS Securities	162,390	16,461,683	0.010
Credit Suisse	147,098	69,532,957	0.002
Jefferies & Co. Inc.	102,071	10,666,130	0.010
Friedman, Billings and Ramsey	98,456	3,281,844	0.030
Liquidnet	97,433	7,784,719	0.013
Sanford C. Bernstein & Co.	95,922	10,014,032	0.010
HSBC Securities	89,491	22,996,238	0.004
Barclays Capital, Inc.	73,548	6,324,081	0.012
Macquarie Securities	63,518	29,338,459	0.002
Credit Lyonnais Securities	61,851	8,720,156	0.007
Wells Fargo Securities LLC	61,665	3,492,851	0.018
Instinet Corporation	43,889	16,441,904	0.003
RBC Capital Markets LLC	40,608	2,992,680	0.014
BNP Paribas Securities Ltd.	37,931	2,560,090	0.015
Calyon Securities	34,909	4,706,329	0.007
Raymond James & Associates Inc.	32,579	1,132,925	0.029
Stifel Nicolaus	29,315	1,015,981	0.029
Renaissance Capital Ltd.	26,729	12,898,800	0.002
All others (includes 89 brokerage firms)	387,763	81,328,903	0.005
Total Public Equity	**$4,442,996**	**933,921,290**	**$0.005**

FUTURES AND OPTIONS **Brokerage Firm**	Amount Paid	Contracts Traded	Average Per Contract
Morgan Stanley & Co. Inc.	$1,825,248	818,726	$2.23
Newedge Group	399,067	348,871	1.14
Goldman Sachs & Co.	220,089	103,561	2.13
Citigroup	11,779	5,391	2.18
J.P. Morgan	1,456	856	1.70
Barclays Bank	1,118	621	1.80
Total Futures and Options	**$2,458,757**	**1,278,026**	**$1.92**
Total Commissions	**$6,901,753**		

Note: Brokerage commissions do not include commissions paid by external managers utilizing commingled fund structures.

Investment Policy and Goal Statement

The following excerpt from the Iowa Public Employees' Retirement System's Investment Policy and Goal Statement, as adopted by the IPERS Investment Board and last revised in September 2017, includes all Policy text, but excludes the addenda referenced in the Policy. IPERS' current investment policies are available online at www.ipers.org.

I. INTRODUCTION

The Iowa Public Employees' Retirement System (IPERS or System) is governed by Iowa Code chapter 97B. System assets are held in trust and invested for the exclusive purposes of providing benefits to participants and their beneficiaries, minimizing contributions, and defraying reasonable expenses of administering the System. The investment activities of the System are governed by the "prudent person" rules as defined in §97B.7A. The investment policy and the investment strategies will be periodically reviewed to ensure they conform to §§97B.7A and 97B.8A.

The Investment Board (Board) is the trustee of the IPERS Trust Fund (Fund). The Board shall establish the System's tolerance for investment risk, and shall diversify the System's investments to minimize the risk of unacceptable large losses and to maximize the rate of return, unless under the circumstances it is clearly not prudent to do so. The Board also adopts the actuarial assumptions and methods, approves the retention of service providers in matters relating to the actuarial valuation of the System's assets and liabilities, and adopts the System's contribution rate funding policy. A list of the statutory and administrative duties of the Board and staff is provided in Appendix A.

The chief investment officer (CIO), under the supervision of the chief executive officer (CEO), is responsible for the administration of the System's investment program pursuant to the policies of the Board.

II. INVESTMENT OBJECTIVES

The investment activities will be designed to provide a return on the Fund that, when coupled with the periodic contributions of the membership and employers, will meet or exceed the benefit funding requirements of the plan over time while staying within the Board's tolerance for risk expressed in this policy.

The objective of the CIO is to execute the asset allocation policy established by the Board (the policy benchmark defined in this policy), and to attempt to add value relative to the policy benchmark while staying within the Board's tolerance for active risk.

III. DECISION MAKING

The Board is responsible for establishing broad policy guidelines and benchmarks that will enable the Fund to achieve its investment objectives. Board decisions are required in the following areas:

1. Establish asset allocation targets through adoption of a policy benchmark
2. Establish acceptable ranges around the policy benchmark targets
3. Establish the Fund- and program-level benchmarks
4. Establish the active risk budget

Beyond these broad policy decisions, the Board delegates to the CIO all other decision-making relating to the investment of IPERS assets, subject to the guidelines established in this policy and any statutory requirements or prohibitions.

The Board may utilize the services of investment consultants to assist them in their decision-making. Such services include, but are not limited to, conducting asset-liability and asset allocation studies, investment performance reviews, policy reviews, and topical studies.

IV. ASSET ALLOCATION

The Board's asset allocation policy is established in the policy benchmark and the asset class ranges specified in Appendix B. The policy benchmark weights set the Board's target exposure to each asset class, measured on a market value basis, while the asset class ranges establish the ranges within which actual weights may fluctuate. Positioning within a specified asset class range is acceptable and constitutes compliance with the policy benchmark.

IPERS' assets are divided into two groups for allocation purposes: *private markets* and *public markets*. Private market assets are generally illiquid, infrequently priced investments with long horizons. The Board has established a private markets investment policy specifying investment objectives, benchmarks, etc. for these types of assets. (See Appendix C)

It is the responsibility of the CIO to manage the allocation weights within the public market asset class ranges and keep them close to target, unless the CIO decides to tactically over- or under-weight a particular public market asset class. However, staff cannot quickly rebalance private markets to target weights due to the illiquid nature of private market assets, so any excess or deficiency between actual and target allocation for private market assets as a whole will be proportionately reallocated across all public market asset classes when rebalancing occurs.

The policy benchmark return is the sum of the products of the policy benchmark weights and the respective policy benchmark index returns for the period, with the exception that IPERS' actual weights and actual returns for each private market asset class shall be used in the calculation. If staff utilizes derivatives for rebalancing or tactical allocation decisions, the notional amount of derivatives contracts shall be used in calculating compliance with policy benchmark weights and asset class ranges.

V. ACTIVE RISK ALLOCATION AND MANAGEMENT

"Alpha" is the excess return resulting from active management decisions. IPERS believes positive alpha can be earned by employing a combination of active strategies that have low return correlation with one another, exhibit low correlation with beta returns, and higher correlation to liability returns.

The Board has established an active risk budget in Appendix B as a means of controlling the active risk in the IPERS Trust Fund. The active risk budget consists of two components: risk allocated for external active management and risk allocated for internal active management through tactical allocation decisions. Active risk is measured as tracking error, which is the standard deviation of excess returns.

IPERS will seek to maintain a diversified alpha portfolio, and may utilize any strategy that in the discretion of the CIO will enhance the risk-adjusted return of the alpha portfolio, including but not limited to traditional long-only, long/short, portable alpha, derivative overlay, and leveraged strategies. The CIO must formally authorize any tactical allocation decisions, and each decision shall be documented and tracked for performance evaluation purposes. Tactical allocation decisions by staff shall not result in allocations that would violate the asset class ranges set by the Board.

IPERS' investment in an investment manager's actively managed strategies shall not exceed 20 percent of the manager's total actively managed assets under management. The CIO shall have discretion to determine what types of similar products offered by a manager can be included in the definition of "actively managed strategies" for purposes of this calculation.

Cost efficiency is important, and the CIO should seek to implement active strategies with a high conversion ratio of active return (after fees) to the risk deployed. Active strategies shall use performance incentive fee structures, where appropriate, to ensure the economic interests of IPERS and the manager are properly aligned.

Investment staff has authority to buy and sell exchange-traded futures contracts and exchange traded funds (ETFs) for the purpose of implementing risk management or tactical asset allocation strategies.

VI. EXTERNAL INVESTMENT MANAGEMENT

The Board shall approve the hiring of investment management and investment consulting services. The CIO has full authority to terminate investment manager contracts provided the Board is notified of the termination prior to the effective date of the termination. The CIO also has full authority to negotiate and renegotiate contract terms and fees.

The CIO is responsible for ensuring that adequate due diligence is being performed in the evaluation of potential and existing investment managers. The CIO may hire operational due diligence consultants, attorneys, auditors and other service providers as needed to assist in the due diligence and performance evaluation of external investment management firms.

External investment managers shall have full discretion to direct and manage the investment and reinvestment of assets allocated to their accounts in accordance with this document, applicable federal and state statutes and regulations, and the executed contracts. Each contract for a public market active management strategy shall clearly define investment objectives, permitted investments, concentration limits, risk budgeting parameters, and performance benchmarks.

Investment managers shall have full discretion to establish and execute trades through accounts with one or more securities broker/dealers as the managers may select. However, the System may require investment managers to clear trades through clearing brokers that are under contract to IPERS in order to control risk and costs. Investment managers will attempt to obtain "best execution" with respect to all transactions. Best execution is defined as the process and price that results in the best overall performance impact, taking into account market conditions at the time of the trade. IPERS will generally discourage a manager's use of soft dollar arrangements for IPERS' account, but may allow it if the usage is regularly monitored for reasonableness.

The CIO will provide the Board a summary of active management performance at least quarterly, and will highlight any concerns regarding performance, personnel turnover, or changes in the organization or investment process. The investment consultant will provide the Board semi-annual performance reviews of total Fund, asset class, and manager performance. To the extent possible, investment results will be reviewed in the context of risk-adjusted returns.

Any voting rights of securities held in any separate account, or any collective, common, or pooled fund will be exercised by the manager, trustees, or agents of said account or fund in accordance with their own proxy voting policies, provided that such policies have been reviewed by the System and deemed to be in the best economic interests of IPERS. The System shall periodically review each investment manager's proxy voting policy and its compliance with such policies.

VII. RISK MANAGEMENT

The Fund's risk management objectives are to: (1) maintain the asset allocation as close to the policy benchmark as possible through rebalancing, and (2) manage the active risk of the alpha portfolio such that its tracking error does not exceed the upper limit established in the active risk budget in Appendix B.

The CIO and Chief Risk Officer (CRO) shall develop appropriate policies and procedures for the measurement, monitoring, management, and reporting of risk to the Board, CEO, and staff. The CRO is responsible for obtaining and/or developing the appropriate systems, models, tools, and reporting processes that will allow for the timely and efficient management of investment risk. The CRO shall report any breach of risk limits established in this policy to the Board as soon as possible after the discovery of any material breach.

VIII. CUSTODY

The Treasurer of the State of Iowa (Treasurer) is the custodian of the Fund. The Treasurer will hold the System's assets in a custody/recordkeeping account in a master custody bank located in a national money center and in the international sub-custodian banks under contract to the custodian bank. The Treasurer shall consult with the Board prior to selecting the master custody bank. A formal written agreement shall be established between the

Treasurer and any third-party custodian. The custodian bank agreement shall be reviewed periodically by the CIO and Board.

Certain strategies involving derivatives may require the use of a prime broker or clearing broker who will hold the System's cash or securities per the terms of a collateral agreement or futures clearing agreement. IPERS shall seek to ensure that such brokers do not require IPERS to post margin amounts that materially exceed the minimum required margin amounts set by an exchange or the terms of a collateral agreement.

IX. SECURITIES LENDING

The primary objective of the securities lending program shall be to safely generate income from lending the System's securities to qualified borrowers. The program will only utilize lending agents that agree to indemnification provisions in the event of a counterparty insolvency.

Cash collateral received against loans of securities shall be prudently invested in a low-risk investment strategy that invests only in: (1) commingled funds or money market funds managed in accordance with the regulations and criteria specified in Rule 2(a)(7) promulgated under the Investment Company Act of 1940, or (2) separate accounts that have investment guidelines identical to those required of a 2(a)(7) fund, or (3) overnight repurchase agreements collateralized with obligations issued by the United States Treasury or obligations issued by agencies or government-sponsored entities of the United States government. The key investment objectives for investing the cash collateral shall be to: (1) safeguard principal; (2) maintain adequate liquidity; and (3) consistent with the foregoing objectives, optimize the spread between the collateral earnings and the rebate paid to the borrower of securities.

The Investment Board may select its own securities lending agent or authorize the Treasurer to manage the securities lending program in accordance with the risk guidelines established herein. Staff shall execute a formal written agreement between any lending agent (or the Treasurer, as the case may be) and IPERS stipulating the risk parameters and performance benchmarks of the program, which shall be in accordance with these guidelines. The securities lending program will be annually reviewed by the Board, and the ongoing operation of such program shall be subject to periodic reauthorization by the Board.

X. DERIVATIVES

The System recognizes that derivative instruments can be useful tools in portfolio and risk management, but can also introduce unique risks. The CIO shall develop written policies and procedures to control the risk associated with derivatives, but at a minimum such procedures shall require: (1) a counterparty credit rating equivalent to at least "A" for over-the-counter derivatives; (2) payment netting arrangements; (3) daily marking-to-market; and (4) collateralization of net amounts owed under the contracts after meeting minimum threshold for transfers.

The CIO shall ensure that the ensure that the derivatives policies and procedures are addressed in any external management services contract, as necessary. The CIO shall develop procedures for monitoring the use and exposure of derivatives within an investment manager's account. Mortgage-backed and asset-backed securities are not derivatives for the purpose of this policy.

XI. OTHER POLICIES

A. Social Investing

As fiduciaries, the IPERS Investment Board, staff, and investment managers must perform their duties for the exclusive benefit and in the best economic interest of the System's members and beneficiaries. The System and the Board will not support investment policies or strategies which seek to promote specific social issues or agendas through investment or divestment of IPERS' assets. To act otherwise could be construed as a violation of fiduciary duty and could endanger the System's tax-exempt status.

B. Securities Monitoring and Litigation

IPERS has a fiduciary duty to preserve trust assets to meet the retirement promises made to its members. Included in this duty is the obligation to recover investments in public securities that incur losses as a result of corporate mismanagement and/or fraud. To preserve trust assets, the Board has adopted a securities monitoring and litigation policy to guide the System's involvement in and monitoring of securities litigation. (See Appendix D)

C. Confidential Investment Information

Iowa Code §22.7 and §97B.17(2)e provide that certain records and information in IPERS' possession are considered confidential and thus are exceptions to Iowa's Open Records (chapter 22) laws. Included in the exceptions is information which, if released:

1. Could result in a loss to the System or to the provider of the information.
2. Would give advantage to competitors and serve no public purpose.
3. Would violate trade secrets which are recognized and protected by law.

While the staff shall provide the Board with all essential information about the investment program, communication of information that is confidential under the above Iowa Code provisions will be identified as such in the communication.

Iowa Code §97B.8A(5), an explicit exception to Iowa's Open Meetings (chapter 21) laws, reinforces the need and obligation to maintain the confidentiality of such information by expressly authorizing the Board to hold closed sessions for discussion of this information.

D. Ethics

Fiduciaries of the System must exercise the highest standards of care in acting for the exclusive benefit of the plan participants. IPERS has adopted an ethics policy to govern the activities of Board members, staff, consultants, and managers as it relates to the System. (See Appendix E)

If the CEO, CIO, CRO, any investment officer, or any IPERS attorney is in possession of information which would lead a reasonable person familiar with such matters to conclude that an investment, a commitment to an investment, or a decision to engage or terminate a contracted service provider, contradicts the fiduciary duties of the party or parties having the final authority to take such actions, it is the Board's expectation that the issue will be placed on a Board meeting agenda for review.

E. Leverage

The CIO may utilize leverage within staff tactical decisions up to the maximum negative allocation allowed by the asset class ranges for cash as specified in Appendix B. The CIO may also allow the use of leverage within external active investment management strategies and products consistent with the active risk budget. The private markets investment policy in Appendix C addresses the use of leverage for private market investments.

F. Board Meetings

Board meeting dates for the the fiscal year shall be set by members of the Board at the first meeting of the fiscal year. At the first meeting in each fiscal year, the voting Board members shall elect a chair and vice chair.

Parties wishing to present items for the Board's next meeting agenda shall file a written request with the chair at least five business days prior to the meeting. To the extent there is no law, statute, or administrative rule governing a procedure, Board meetings shall be governed by the procedural rules established in the latest version of *Robert's Rules of Order*.

APPENDIX A
STATUTORY RESPONSIBILITIES OF THE INVESTMENT BOARD AND STAFF

1. The Board shall annually adopt an Investment Policy and Goal Statement. *Iowa Code §§97B.7A and 97B.8A*
2. The Board shall at least annually conduct a review of the investment policies and procedures utilized by the System. *Iowa Code §97B.8A.2(a)*
3. The Board shall at least annually conduct a public meeting to review the policies and the investment performance of the Fund. *Iowa Code §97B.8A.2(a)*
4. With the approval of the Board, the Treasurer of State may conduct a program of lending securities in the IPERS portfolio. *Iowa Code §12.8.3*
5. The Board shall review and approve the hiring of each investment manager and investment consultant. *Iowa Code §97B.4.3(f)*
6. The Board shall select the actuary for the System, and shall adopt the mortality tables and actuarial assumptions and methods the actuary will use for the annual actuarial valuation. *Iowa Code §§97B.4.3(c) and 97B.8A.3*
7. The CEO will consult with the Board prior to employing a CIO. *Iowa Code §97B.4.3(a)*
8. The Board shall participate in the annual performance evaluation of the CIO. *Iowa Code §97B.8A.2(c)*
9. The CEO shall consult with the Board on the budget program for the System. *Iowa Code §97B.4.2(c)*
10. The Treasurer of State shall consult with the Board prior to selecting any bank or other third party for purposes of investment asset safekeeping, other custody, or settlement services. *Iowa Code §97B.7.2*
11. The Board shall consist of seven voting members and four nonvoting members. Four voting members of the Board shall constitute a quorum. *Iowa Code §97B.8A*
12. Staff shall provide advance notice to the public of the time, date, tentative agenda, and place of each Board meeting in compliance with Iowa Code chapter 21.
13. The Board shall set the salary of the CEO. *Iowa Code §97B.3.1*

APPENDIX B
ASSET ALLOCATION POLICY AND ACTIVE RISK BUDGET

I. Asset Allocation Policy

Asset Class	Asset Class Ranges	Policy Benchmark Weights	Policy Benchmark Index
Equities		**40%**	
Domestic Equities	20%-26%	22%	Wilshire 5000
International Equities	12%-18%	15%	MSCI ACWI ex-U.S. (Gross)
Global Smart Beta Equities	2%-4%	3%	Custom Index[1]
Fixed Income		**30.5%**	
Core-Plus Fixed Income	24%-30%	27%	Bloomberg Barclays U.S. Universal
Public Credit	1.5%-5%	3.5%	Custom Index[2]
Public Real Assets	5%-9%	**7%**	Custom Index[3]
Cash	-2%-4%	**1%**	Merrill Lynch 91-Day T-Bill
TOTAL PUBLIC MARKETS		**78.5%**	

Asset Class	Asset Class Targets	Policy Benchmark Weights	Policy Benchmark Index
Private Equity	11%	Actual[4]	Portfolio[5]
Private Credit	3%	Actual[4]	Portfolio[5]
Private Real Assets	7.5%	Actual[4]	Portfolio[5]
TOTAL PRIVATE MARKETS		**21.5%**	

[1]This benchmark index is defined as 60 percent Russell 1000 Comprehensive Factor Index + 30 percent FTSE Developed ex U.S. Comprehensive Factor Index + 10 percent FTSE Emerging Comprehensive Factor Index.
[2]This benchmark index is defined as 67 percent Citigroup HY Cash Pay Capped Index and 33 percent JP Morgan EMBI Global Index.
[3]This benchmark index is defined as 67 percent [50 percent Bloomberg Barclays U.S. TIPS Index and 50 percent Bloomberg Barclays 1-10 Year U.S. TIPS Index] + 22 percent [Wilshire REIT Index] + 11 percent [S&P MLP Index].
[4]The benchmark weight for each private market asset class is the actual percentage of each asset class relative to the total fund portfolio.
[5]The benchmark index for each private market asset class is the return of the portfolio itself.

II. Active Risk Budget

	Target[6]	Upper Limit[6]
Total Fund	**1.50%**	**3.00%**
External Managers	1.00%	2.50%
Investment Staff	1.00%	2.50%

[6]Measured as tracking error (the standard deviation of excess return) at the Total Fund level.

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November 14, 2018

This report presents the results of the June 30, 2018 annual actuarial valuation of the Iowa Public Employees' Retirement System (IPERS), a cost-sharing multiple employer plan. The primary purposes of performing the valuation are as follows:

- to determine the Actuarial Contribution Rates (ACR) and the Required Contribution Rates (RCR) for the Regular membership, Sheriffs and Deputies, and the Protection Occupation group (all public safety members other than Sheriffs and Deputies) in accordance with IPERS' Contribution Rate Funding Policy,
- to evaluate the funded status of the System and disclose various asset and liability measures as of June 30, 2018,
- to determine the experience of the System since the last valuation, and
- to analyze and report on trends in System contributions, assets, and liabilities over the past several years.

While there have been no changes to the plan provisions or actuarial methods since last year's valuation, an experience study of the System's demographic assumptions was performed in June 2018. As a result, the Investment Board adopted a new set of demographic assumptions, based on the recommendations of the System's actuary:

- Mortality assumption was changed to the family of RP-2014 Mortality Tables for all groups, with mortality improvements modeled using Scale MP-2017.
- Retirement rates for Regular members were lowered to better reflect actual experience. For the Sheriffs and Deputies, the retirement assumption was modified to reflect lower retirement rates at the younger ages. For the Protection Occupation group, the retirement rates were modified both higher and lower across the age ranges.
- Disability rates were lowered for all groups to better reflect the actual experience.
- Termination rates for Regular members were adjusted to better reflect actual experience. Separate termination assumptions were adopted for the two Special Service groups and the assumptions were changed to be service-based rather than age-based.
- The probability of a vested member electing to receive a deferred benefit was adjusted for Regular members to better reflect actual experience.
- The merit component of the salary increase assumption was adjusted to better reflect actual salary increases.

The impact of these assumption changes on the July 1, 2018 valuation results is summarized in the following tables (dollars in millions):

Regular Members	Prior Assumptions	New Assumptions	Difference
Actuarial Liability (AL)	$36,226	$36,289	$63
Actuarial Value of Assets (AVA)	29,513	29,513	0
Unfunded AL (UAL)	$ 6,712	$ 6,776	$63
Funded Ratio	81.5%	81.3%	(0.2%)
Normal Cost Rate	10.40%	10.49%	0.09%
UAL Rate	5.15%	5.21%	0.06%
Actuarial Contribution Rate	15.55%	15.70%	0.15%
Required Contribution Rate	15.73%	15.73%	0.00%

Note: Numbers may not add due to rounding

Sheriffs & Deputies	Prior Assumptions	New Assumptions	Difference
Actuarial Liability (AL)	$725	$697	($27)
Actuarial Value of Assets (AVA)	683	683	0
Unfunded AL (UAL)	$ 42	$ 15	($27)
Funded Ratio	94.2%	97.9%	3.7%
Normal Cost Rate	16.89%	16.85%	(0.04%)
UAL Rate	2.14%	0.46%	(1.68%)
Actuarial Contribution Rate	19.03%	17.31%	(1.72%)
Required Contribution Rate	19.52%	19.02%	(0.50%)

Note: Numbers may not add due to rounding

Protection Occupation	Prior Assumptions	New Assumptions	Difference
Actuarial Liability (AL)	$1,658	$1,656	($2)
Actuarial Value of Assets (AVA)	1,632	1,632	0
Unfunded AL (UAL)	$ 26	$ 24	($2)
Funded Ratio	98.4%	98.5%	0.1%
Normal Cost Rate	16.26%	15.22%	(1.04%)
UAL Rate	0.49%	0.39%	(0.10%)
Actuarial Contribution Rate	16.75%	15.61%	(1.14%)
Required Contribution Rate	17.02%	16.52%	(0.50%)

Note: Numbers may not add due to rounding

The actuarial valuation results provide a "snapshot" view of the System's financial condition on June 30, 2018. The plan provisions used in the valuation are summarized in the Financial Section and the actuarial assumptions are shown in the Actuarial Section.

The valuation results reflect net favorable experience for the past plan year as demonstrated by an unfunded actuarial liability (UAL) that was lower than expected. The UAL on June 30, 2018 for all three membership groups covered by IPERS is $6.815 billion as compared to an expected UAL of $7.114 billion. The favorable experience was the aggregate result of an experience gain of $162 million on the actuarial value of assets and an experience gain of $137 million on System liabilities.

Historically, the contribution rate for Regular members was set by state statute. Effective with the 2011 valuation, IPERS has the authority to set the Required Contribution Rate for the Regular membership group based on the Actuarial Contribution Rate (ACR) developed in the annual actuarial valuation, subject to a change of no more than 1.0% per year. Based on the current Contribution Rate Funding Policy, the Required Contribution Rate remains unchanged at 15.73% of pay for Regular members, while it dropped by 0.50% of pay for both the Sheriffs and Deputies and the Protection Occupation groups. The Required Contribution Rate is above the ACR for all three groups, as shown in the following table:

Contribution Rate for FY 2020	Regular Membership	Sheriffs and Deputies	Protection Occupation
1. Normal Cost Rate	10.49%	16.85%	15.22%
2. Amortization of UAL	5.21%	0.46%	0.39%
3. Actuarial Contribution Rate	15.70%	17.31%	15.61%
4. Required Contribution Rate	15.73%	19.02%	16.52%
5. Shortfall/(Margin) (3) - (4)	(0.03%)	(1.71%)	(0.91%)
6. Employee Contribution Rate	6.29%	9.51%	6.61%
7. Employer Contribution Rate (4) - (6)	9.44%	9.51%	9.91%
8. Unfunded Actuarial Liability ($M)	$6,776	$15	$24
9. Funded Ratio	81.3%	97.9%	98.5%

Actuarial Value of Net Assets

For financial statement purposes, the System's assets are reported at current fair values. For actuarial purposes, the assets are valued using a technique which dampens the volatility in the fair value. Specifically, the assets are valued at their expected value at the valuation date (based on the assumed rate of investment return) plus 25% of the difference between the fair value and the expected value on the valuation date. The actuarial value of assets must fall within a corridor of 80% to 120% of market value. Based on this methodology, there was an actuarial gain on assets of $162 million. Between June 30, 2017 and June 30, 2018, the actuarial value of assets increased by $1.356 billion. This represented an approximate rate of return of 7.54%, higher than the actuarial assumed rate of return of 7.00%.

Liabilities

The actuarial liability is that portion of the present value of future benefits that will not be paid by future normal costs. The difference between this liability and the actuarial value of assets at the same date is called the unfunded actuarial liability. The dollar amount of unfunded actuarial liability is reduced if the contributions to the System exceed the normal cost for the year plus interest on the prior year's UAL.

The unfunded actuarial liability by group is shown as of June 30, 2018 in the following table:

($Millions)	Regular Membership	Sheriffs & Deputies	Protection Occupation	Total*
Actuarial Liability	$36,289	$697	$1,656	$38,643
Actuarial Value of Assets	29,513	683	1,632	31,828
Unfunded Actuarial Liability*	6,776	15	24	6,815
Funded Ratio	81.3%	97.9%	98.5%	82.4%

*May not add due to rounding.

Changes in the UAL occur for various reasons. The net decrease in the UAL from June 30, 2017 to June 30, 2018 was $153 million, largely due to the impact of favorable experience. The components of this net change are shown in the following table (in millions):

Unfunded Actuarial Liability, June 30, 2017 ($M)	$	6,968
• Expected increase from amortization method		185
• Expected decrease from contributions above actuarial rate		(57)
• Investment experience		(162)
• Liability experience*		(137)
• Changes in demographic assumptions		35
• Other		(17)
Unfunded Actuarial Liability <u>before</u> FED transfer, June 30, 2018	$	6,815
• FED Transfer for favorable experience		0
Unfunded Actuarial Liability <u>after</u> FED transfer, June 30, 2018	$	6,815

* Liability experience is 0.35% of the actuarial liability.

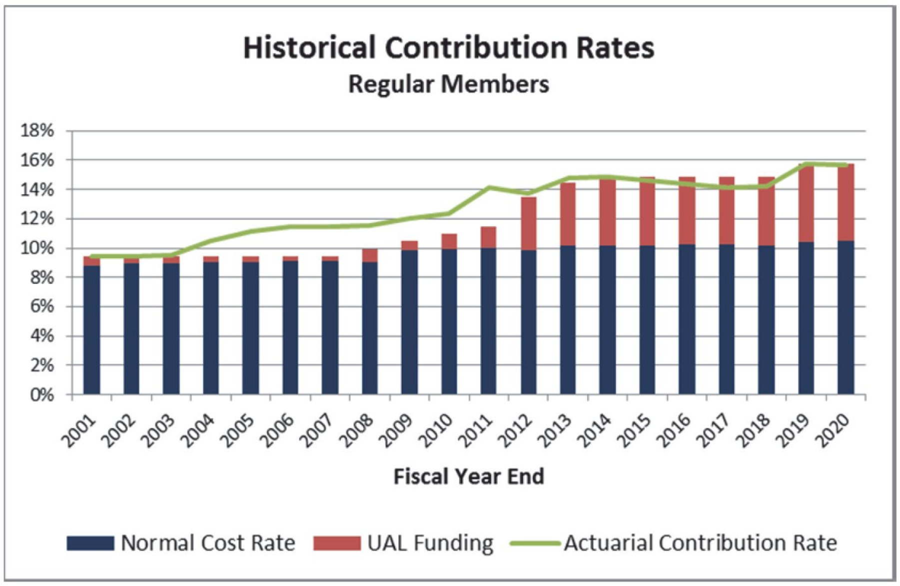
As can be observed above, various factors impacted the UAL. Actuarial gains (losses), which result from actual experience that is more (less) favorable than anticipated based on the actuarial assumptions, are reflected in the UAL and are measured as the difference between the expected unfunded actuarial liability and the actual unfunded actuarial liability, taking into account any changes due to actuarial assumptions and methods or benefit provision changes. Overall, the System experienced a net actuarial gain of $299 million. The total actuarial gain may be explained by considering the separate experience of assets and liabilities. As noted earlier, there was a $162 million actuarial gain as measured on the actuarial value of assets. There was a net actuarial gain of $137 million from demographic experience that was more favorable than anticipated by the actuarial assumptions. While there are various components of demographic experience, both gains and losses, the most significant experience came as a result of favorable salary experience due to smaller salary increases than were expected.

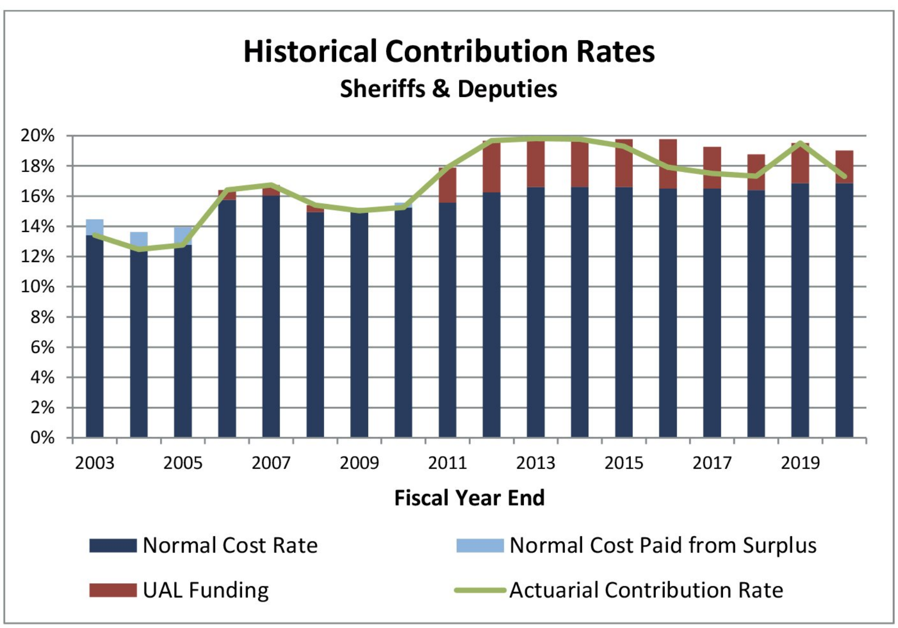
<u>Contribution Rate</u>

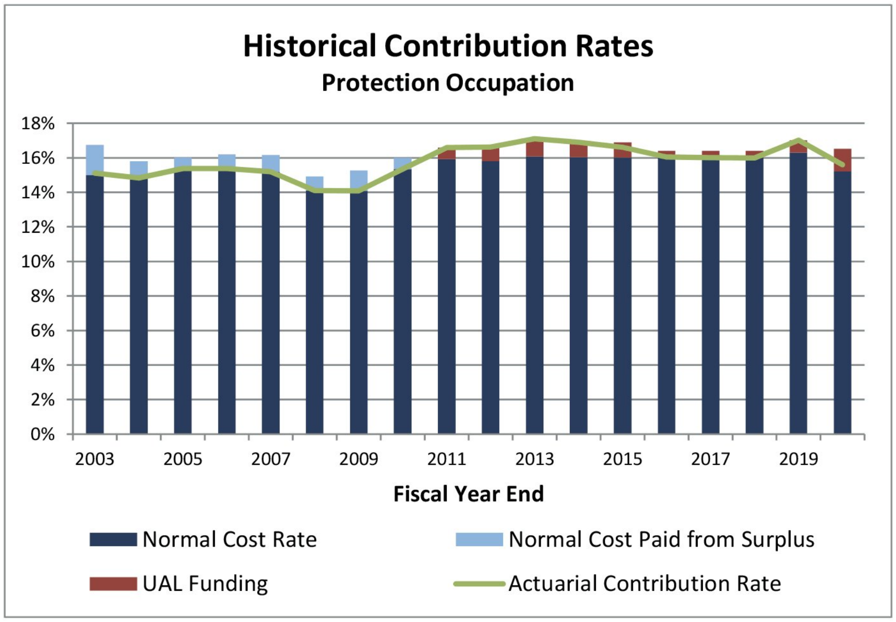
As with most public sector retirement systems, one important funding policy objective is to fund the plan in a manner that keeps contribution rates approximately level from generation to generation. A funding method that is specifically designed to maintain annual costs that are level as a percent of covered payroll is the Entry Age Normal (EAN) cost method. It is for this reason that the EAN cost method was selected by the Investment Board to be used in the actuarial valuation. Under the EAN cost method, the actuarial contribution rate consists of two components:

- a "normal cost" for the portion of projected liabilities allocated by the actuarial cost method to service of members during the year following the valuation date, and
- an "unfunded actuarial liability contribution for the excess of the portion of projected liabilities allocated to service to date over the actuarial value of assets on hand.

In 2006 and 2010, legislation was passed that increased the statutory contribution rate for Regular members. Beginning with the 2011 valuation (which applied to FY2013), the Investment Board was given the authority to set the Required Contribution Rate for Regular members subject to certain statutory limitations. The Sheriffs and Deputies group and the Protection Occupation group have historically contributed at the Actuarial Contribution Rate, which was subject to change each year. A historical summary of the actual contribution rate, split between the normal cost rate and the remaining amount available to fund the UAL, and the Actuarial Contribution Rate is shown in the following graphs:







There were several factors that impacted the contribution rates in the 2018 valuation. The contribution rates are summarized in the following table:

Contribution Rate for FY 2020	Regular Membership	Sheriffs & Deputies	Protection Occupation
1. Actuarial Contribution Rate	15.70%	17.31%	15.61%
2. Required Contribution Rate	15.73%	19.02%	16.52%
3. Employee Contribution Rate	6.29%	9.51%	6.61%
4. Employer Contribution Rate (2) – (3)	9.44%	9.51%	9.91%
5. Shortfall/(Margin) (1) – (2)	(0.03%)	(1.71%)	(0.91%)

Based on the results of this valuation and the Contribution Rate Funding Policy adopted by the Investment Board, the Required Contribution Rate for the fiscal year ending June 30, 2020 for the Regular members is 15.73%, which is greater than the Actuarial Contribution Rate by 0.03% of pay. The Required Contribution Rate for the Sheriffs and Deputies group and the Protection Occupation group will both decrease by 0.50% of pay. We would note that, based on the results of this valuation, the Required Contribution Rate is higher than the Actuarial Contribution Rate for all three groups.

The Actuarial Contribution Rate is determined based on the snapshot of the System taken on the valuation date, June 30, 2018, and applies only for the fiscal year beginning July 1, 2019. The Actuarial Contribution Rate in future years will change each year as the deferred actuarial investment experience is recognized and as other experience (both investment and demographic) impacts the System. The Required Contribution Rate will be set in each future year based on the Actuarial Contribution Rate for that year and the Contribution Rate Funding Policy.

Summary

While there have been no changes to the plan provisions or actuarial methods since last year's valuation, an experience study of the System's demographic assumptions was performed in June 2018. Based on the actuary's recommendations, the Investment Board adopted a new set of demographic assumptions. As a result of the changes to the demographic assumptions, the unfunded actuarial liability increased by $35 million and the Required Contribution Rate decreased by 0.50% of pay for both the Sheriffs and Deputies and the Protection Occupation groups. For Regular members, the Required Contribution Rate calculated in the current valuation was unaffected by the experience study.

The investment return on the market value of assets for FY2018 was 7.97%, as reported by IPERS. Due to the application of the asset smoothing method and the deferred asset gains from prior years, the investment return on the actuarial value of assets was 7.54%, which is above the assumed investment return of 7.00%. Therefore, there was an experience gain on the actuarial value of assets. In addition, there was also an experience gain on the System's liabilities. The System's combined experience for FY2018 was an aggregate experience gain of $299 million, resulting in a lower unfunded actuarial liability than was expected.

Based on the Contribution Rate Funding Policy adopted by the Investment Board, the Required Contribution Rate determined in this year's valuation for Regular members remains unchanged from last year at 15.73% of pay (applicable for the fiscal year ending June 30, 2020). The Required Contribution Rate for the Sheriffs and Deputies group in this valuation decreased by 0.50% of pay from last year's rate to 19.02% of pay. The Required Contribution Rate for the Protection Occupation group also decreased by 0.50% of pay to 16.52% of pay. As a result, the Required Contribution Rate remains higher than the Actuarial Contribution Rate for FY2020 for all three groups.

The Actuarial Contribution Rate is determined based on the snapshot of the System taken on the valuation date, June 30, 2018, and applies only for the fiscal year beginning July 1, 2019. The Actuarial Contribution Rate in future years will change each year as the deferred actuarial investment experience is recognized and as other experience (both investment and demographic) impacts the System. While the Required Contribution Rate can vary each year, the annual change to the rate is limited to 1.0% for Regular members. Therefore, depending on actual experience in future years, the Required Contribution Rate may vary from the Actuarial Contribution Rate.

The long-term financial health of this retirement system is heavily dependent on two key items: (1) future investment returns and (2) systematic contributions to the System at the full actuarially determined rate. Given the System's current funded status, the Actuarial Contribution Rate, and the Required Contribution Rate, the System's funded ratio is expected to improve over the long term, assuming all actuarial assumptions are met. Further, if all assumptions are met, the funding policy will lead to fully funding the System.

In performing the valuation, we have relied upon membership and financial data reported to us by the System. We did not verify the accuracy of the information, but did review it for reasonableness in relation to the data submitted for previous years. We provided the Principal Valuation Results, the Actuarial Balance Sheet, the Schedule of Funding Progress, and the Solvency Test in the Actuarial section. We also provided some information in the Financial Section, including the calculation of the Total Pension Liability, the Schedule of Changes in the Employers' Net Pension Liability, and the sensitivity analysis on the Net Pension Liability. In addition, we provided the contribution rates used to calculate the actuarially required contributions reflected in the Schedule of Employers' Contributions found in the Required Supplementary Information.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this information is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Guides to Professional Conduct, amplifying Opinions, and supporting Recommendations of the American Academy of Actuaries.

We further certify that all costs, liabilities, rates of interest and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations of future experience); and which, in combination, offer our best estimate of anticipated experience affecting the System. Nevertheless, the emerging costs will vary from those presented in this report to the extent actual experience differs from that projected by the actuarial assumptions. The Investment Board has the final decision regarding the appropriateness of the assumptions and adopted them as of the dates shown for each assumption.

Actuarial computations presented in the 2018 actuarial valuation report are for purposes of determining the recommended funding amounts for the System. The calculations have been made on a basis consistent with our understanding of the System's funding requirements and goals. Determinations for purposes other than meeting these requirements may be significantly different from the results shown in the June 30, 2018 actuarial funding valuation report.

We also prepared actuarial computations as of June 30, 2018 for purposes of fulfilling financial accounting requirements for the System under Governmental Accounting Standard No. 67 (GASB 67) based on the results of the June 30, 2018 actuarial valuation. The actuarial assumptions used in the funding valuation were also used for the GASB 67 reporting. The assumptions include an assumed long-term rate of return of 7.00%, net of investment expenses, which is used to determine the actuarial liability in the funding valuation as well as the discount rate used to determine the Total Pension Liability for GASB 67 reporting. In addition, as noted earlier, the Entry Age Normal actuarial cost method, which is required to be used under GASB 67, is also used in the funding valuation.

An experience study is performed for IPERS every four years, as required by statute. In June 2018, the results of the experience analysis of the System's demographic assumptions were presented to the Investment Board. Based on this information, the Investment Board adopted certain changes to the set of actuarial assumptions which were first reflected in the June 30, 2018 actuarial valuation. The actuarial assumptions and methods in the 2018 valuation meet the parameters set by Actuarial Standards of Practice, as issued by the Actuarial Standards Board, and generally accepted accounting principles (GAAP) applicable in the United States of America as promulgated by the Governmental Accounting Standards Board.

In conclusion, on the following page we present comparative statistics and actuarial information on both the June 30, 2018 and June 30, 2017 valuations. All figures shown include the Regular members¸ Sheriffs and Deputies and the Protection Occupation groups. The membership counts reflect the data as of June 30, appropriate for valuation purposes, and may differ from other reporting numbers.

I, Patrice A. Beckham, F.S.A., am a member of the American Academy of Actuaries and a Fellow of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

I, Brent A. Banister, F.S.A., am a member of the American Academy of Actuaries and a Fellow of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully Submitted,

CAVANAUGH MACDONALD CONSULTING, LLC

Patrice Beckham

Patrice A. Beckham, FSA, EA, FCA, MAAA
Principal and Consulting Actuary

Brent A. Banister, PhD, FSA, EA, FCA, MAAA
Chief Actuary

PRINCIPAL VALUATION RESULTS

	June 30, 2018	June 30, 2017	% Chg
SYSTEM MEMBERSHIP			
1. Active Membership			
- Number of Members			
(excluding Retired/Reemployed)	170,376	169,909	0.3
- Projected Payroll for Upcoming Fiscal Year	$8,176M	$8,058M	1.5
- Average Salary	$47,989	$47,425	1.2
2. Inactive Membership			
- Number Not in Pay Status	70,023	67,955	3.0
- Number of Retirees/Beneficiaries	120,755	117,508	2.8
- Average Annual Benefit	$17,036	$16,602	2.6
ASSETS AND LIABILITIES			
1. Net Assets (excluding FED reserve)			
- Market Value	$32,315M	$30,779M	5.0
- Actuarial Value	31,828M	30,472M	4.4
2. Projected Liabilities			
- Retired Members	$20,660M	$19,335M	6.9
- Inactive Members	907M	835M	8.6
- Active Members	24,792M	24,515M	1.1
- Total Liability	$46,358M	$44,685M	3.7
3. Actuarial Liability	$38,643M	$37,440M	3.2
4. Unfunded Actuarial Liability	$6,815M	$6,968M	(2.2)
5. Funded Ratio			
a. Actuarial Value Assets/Actuarial Liability	82.36%	81.39%	1.2
b. Market Value Assets/Actuarial Liability	83.62%	82.21%	1.7
SYSTEM CONTRIBUTIONS			
Required Contribution Rate, Regular Members*	15.73%	15.73%	0.0
Employer Contribution Rate	9.44%	9.44%	0.0
Employee Contribution Rate	6.29%	6.29%	0.0
Total Actuarial Contribution Rate	15.70%	15.73%	(0.2)
Shortfall/(Margin)	(0.03%)	0.00%	NA

Note: Totals may not add due to rounding

M = ($)Millions

* Contribution rates for Sheriffs and Deputies are 9.51% for employers, 9.51% for employees
Contribution rates for Protection Occupation are 9.91% for employers, 6.61% for employees

Note: For valuation purposes, the data provided by IPERS was reclassified by CMC into the membership category that would most accurately reflect the actuarial liability of the individual member on the valuation date. As a result, the counts shown in this exhibit may vary from those shown in other sections of this report.

ACTUARIAL BALANCE SHEET
as of June 30, 2018

	Regular Membership	Sheriffs & Deputies	Protection Occupation	Total
ASSETS				
Actuarial value of assets	$29,513,302,525	$682,505,577	$1,631,947,762	$31,827,755,864
Present value of future normal costs	6,999,875,655	206,426,455	508,770,220	7,715,072,330
Present value of future contributions to amortize unfunded actuarial liability	6,775,858,360	14,833,833	24,385,596	6,815,077,789
Total Net Assets	$43,289,036,540	$903,765,865	$2,165,103,578	$46,357,905,983
LIABILITIES				
Present Value of Future Benefits:				
Retired Members and Beneficiaries	$19,516,533,248	$341,195,487	$801,836,796	$20,659,565,531
Active Members	22,924,170,748	552,278,832	1,315,348,540	24,791,798,120
Inactive Members	848,332,544	10,291,546	47,918,242	906,542,332
Total Liabilities	$43,289,036,540	$903,765,865	$2,165,103,578	$46,357,905,983

SOLVENCY TEST

A short-term solvency test, which is one means of determining a system's progress under its funding program, compares the plan's present assets with: 1) the liability for active member contributions on deposit; 2) the liability for future benefits to present retirees; and (3) the liability for service already rendered by active members. In a system that has been following the level percent of payroll financing discipline, the obligation for active member contributions on deposit (Item 1) and the liabilities for future benefits to present retired lives (Item 2) will be fully covered by present assets with the exception of rare circumstances. The obligation for service already rendered by active members (Item 3) will be partially covered by the remainder of present assets. Absent any significant benefit changes, if the system has been using level cost financing, the funded portion of Item 3 usually will increase over a period of time.

Actuarial Valuation	Active Member Contributions (1)	Retirees and Beneficiaries (2)	Active Members Employer Financed Portion (3)	Actuarial Value of Assets	Portions of Liabilities Covered by Assets (1)	(2)	(3)
2018	$4,667,977,892	$20,659,565,531	$13,315,290,230	$31,827,755,864	100%	100%	49%
2017	4,508,869,822	19,334,772,904	13,596,739,303	30,472,423,914	100%	100%	49%
2016	4,344,382,843	17,657,404,813	12,617,961,491	29,033,696,587	100%	100%	56%
2015	4,150,432,107	16,843,177,973	12,376,708,651	27,915,379,103	100%	100%	56%
2014	3,974,396,951	15,974,726,784	12,055,332,353	26,460,428,085	100%	100%	54%
2013	3,789,330,469	15,000,576,427	11,708,435,424	24,711,096,187	100%	100%	51%
2012	3,675,848,243	14,151,967,558	11,618,381,685	23,530,094,461	100%	100%	49%
2011	3,562,999,712	13,252,276,665	11,441,803,737	22,575,309,199	100%	100%	50%
2010	3,569,189,416	12,321,926,878	10,577,303,356	21,537,458,560	100%	100%	53%
2009	3,501,951,261	10,623,480,763	11,893,161,799	21,123,979,941	100%	100%	59%

Note: The combined accrued liabilities in columns 1, 2, and 3 are based on the entry age normal cost method.

RETIREES AND BENEFICIARIES — CHANGES IN ROLLS

Schedule of Retirees Added to and Removed From Rolls

Fiscal Year	Added to Rolls Number*	Added to Rolls Annual Allowances	Removed From Rolls Number	Removed From Rolls Annual Allowances	Rolls at Year-End Number	Rolls at Year-End Annual Allowances	Percentage Change in Annual Allowances	Average Annual Allowances
2018	6,252	$125,728,823	3,327	$18,301,104	114,579	$1,976,483,534	5.75	$17,250
2017	6,307	127,297,430	3,325	17,353,866	111,654	1,869,055,815	6.25	16,740
2016	5,958	120,723,975	3,123	15,826,861	108,672	1,759,112,251	6.34	16,187
2015	5,926	8,930,554	3,104	18,262,385	105,837	1,654,215,137	(0.56)	15,630
2014	6,008	124,411,510	3,008	30,068,643	103,015	1,663,546,968	6.01	16,149
2013	5,759	133,822,874	3,004	27,729,949	100,015	1,569,204,101	7.25	15,690
2012	5,979	116,825,979	2,788	24,589,757	97,260	1,463,111,176	6.73	15,043
2011	7,383	183,137,035	2,767	13,377,850	94,069	1,370,874,954	14.13	14,573
2010	6,387	104,167,926	2,705	12,096,634	89,453	1,201,115,769	8.30	13,427
2009	4,908	92,013,786	2,761	12,041,683	85,771	1,109,044,477	7.77	12,930

Schedule of Beneficiaries Added to and Removed From Rolls

Fiscal Year	Added to Rolls Number*	Added to Rolls Annual Allowances	Removed From Rolls Number	Removed From Rolls Annual Allowances	Rolls at Year-End Number	Rolls at Year-End Annual Allowances	Percentage Change in Annual Allowances	Average Annual Allowances
2018	626	$8,257,415	323	$1,530,533	6,408	$74,638,891	9.91	$11,648
2017	591	7,319,937	305	1,208,986	6,105	67,912,009	9.89	11,124
2016	543	6,736,612	255	1,277,504	5,819	61,801,058	9.69	10,621
2015	580	2,130,837	267	1,321,475	5,531	56,341,950	1.46	10,187
2014	555	7,013,711	255	2,175,827	5,218	55,532,588	9.54	10,643
2013	496	6,073,050	266	2,129,400	4,918	50,694,704	8.44	10,308
2012	464	5,918,466	247	1,858,259	4,688	46,751,054	9.51	9,972
2011	456	4,497,000	224	911,691	4,471	42,690,847	9.17	9,548
2010	397	4,387,178	239	1,231,637	4,239	39,105,538	8.78	9,225
2009	429	3,930,377	214	876,249	4,081	35,949,997	9.28	8,809

*The number of retirees and beneficiaries added to rolls in these tables does not equal the number of new retirees reported elsewhere in the CAFR. This is because all retirees who died during the fiscal year have been removed from the retiree table and their beneficiaries have been added to the beneficiary table.

Note: Tables on pages 84 – 85 are provided by IPERS.

SCHEDULE OF ACTIVE MEMBER VALUATION DATA

Fiscal Years Ended June 30	Participating Employers*	Active Members	Annual Covered Payroll	Annual Average Pay	Percentage Change in Average Pay
2018	1,956	170,378	$7,983,219,527	$46,856	1.25
2017	1,956	169,910	7,863,160,443	46,278	3.11
2016	1,960	168,372	7,556,515,720	44,880	2.53
2015	1,968	167,367	7,326,348,141	43,774	2.30
2014	1,973	165,913	7,099,277,280	42,789	2.68
2013	2,147	165,095	6,880,131,134	41,674	0.83
2012	2,153	164,200	6,786,158,720	41,329	3.38
2011	2,177	164,467	6,574,872,719	39,977	0.78
2010	2,229	165,660	6,571,182,005	39,667	3.33
2009	2,241	167,717	6,438,643,124	38,390	5.09

*GASB 67 requires employers within the same financial reporting entity to be counted as a single employer, even if the employers are legally separate. This standard applies to employer counts for FY2014 and later.

SCHEDULE OF FUNDING PROGRESS

Fiscal Years Ended June 30	Actuarial Value of Assets	Actuarial Liability	Percentage Funded	Unfunded Actuarial Liability (UAL)	Annual Covered Payroll*	UAL as a Percentage of Covered Payroll
2018	$31,827,755,864	$38,642,833,653	82.36	$6,815,077,789	$7,983,219,527	85.37
2017	30,472,423,914	37,440,382,029	81.39	6,967,958,115	7,863,160,443	88.62
2016	29,033,696,587	34,619,749,147	83.86	5,586,052,560	7,556,515,720	73.92
2015	27,915,379,103	33,370,318,731	83.65	5,454,939,628	7,326,348,141	74.46
2014	26,460,428,085	32,004,456,088	82.68	5,544,028,003	7,099,277,280	78.09
2013	24,711,096,187	30,498,342,320	81.02	5,787,246,133	6,880,131,134	84.12
2012	23,530,094,461	29,446,197,486	79.91	5,916,103,025	6,786,158,720	87.18
2011	22,575,309,199	28,257,080,114	79.89	5,681,770,915	6,574,872,719	86.42
2010	21,537,458,560	26,468,419,650	81.37	4,930,961,090	6,571,182,005	75.04
2009	21,123,979,941	26,018,593,823	81.19	4,894,613,882	6,438,643,124	76.02

*Annual covered payroll is the amount of wages subject to contributions to IPERS, not to exceed the federal covered wage limit in effect at the time the wages are paid.

Note: See the 10-year Schedule of Employers' Contributions in the Required Supplementary Information on page 44 for information on actuarial contributions and required contributions paid.

ACTUARIAL ASSUMPTIONS AND METHODS

ECONOMIC ASSUMPTIONS:

Rate of Inflation (effective June 30, 2017)

2.60% per annum

Rate of Crediting Interest on Contribution Balances (effective June 30, 2017)

3.50% per annum, compounded annually

Rate of Investment Return (effective June 30, 2017)

7.00% per annum, compounded annually, net of expenses.

Wage Growth Assumption (effective June 30, 2017)

3.25% per annum based on 2.60% inflation assumption and 0.65% real wage inflation.

Payroll Increase Assumption (effective June 30, 2017)

3.25% per year

Cost of Living Adjustments Assumption (effective June 30, 2017)

2.60% for members who retired before July 1, 1990. No cost-of-living adjustments are assumed to be granted to future retirees

DEMOGRAPHIC ASSUMPTIONS:

Rates of Mortality

Pre-Retirement (effective June 30, 2018)

State	
Male	RP-2014 Employee Table, Generational using MP-2017, setback 4 years
Female	RP-2014 Employee Table, Generational using MP-2017, setback 4 years
School	
Male	RP-2014 Employee Table, Generational using MP-2017, setback 4 years
Female	RP-2014 Employee Table, Generational using MP-2017, setback 8 years
Other	
Male	RP-2014 Employee Table, Generational using MP-2017, setback 3 years
Female	RP-2014 Employee Table, Generational using MP-2017, setback 4 years

Sheriffs/Deputies and Protection Occupation

Male	RP-2014 Employee Table, Generational using MP-2017, setback 3 years
Female	RP-2014 Employee Table, Generational using MP-2017, setback 4 years

5% of active deaths are assumed to be service related for non-regular members.

Post-Retirement (effective June 30, 2018)

State	RP-2014 Healthy Annuitant, Generational using MP-2017
Male	8.5% increase in rates above age 75
Female	No age adjustment
School	RP-2014 Healthy Annuitant, Generational using MP-2017
Male	2 Year setback, 10% decrease in rates below age 75, 20% increase above age 75
Female	2 Year setback, 25% decrease below age 75, 10% increase above age 75
Other	RP-2014 Healthy Annuitant, Generational using MP-2017
Male	1 Year set forward, 10% decrease below age 75, 8% increase above age 75
Female	1 Year setback, 10% decrease below age 75, 5% increase above age 75
Sheriffs/Deputies and Protection Occupation	RP-2014 Healthy Annuitant, Generational using MP-2017
Male	1 Year set forward, 10% increase above age 75
Female	No age adjustment
Beneficiaries:	Same as members
Disabled Members:	RP-2014 Disabled Mortality, Generational using MP-2017
Male	3 Year age set forward
Female	5 Year age set forward

Retirement Rates (effective June 30, 2018)

Upon meeting the requirements for early retirement, the following rates apply to Regular Members:

	Assumed Retirement Rates – Early		
Age	State	School	Other
55	5.0%	6.0%	4.0%
56	5.0%	6.0%	4.0%
57	5.0%	6.0%	4.0%
58	5.0%	7.0%	4.0%
59	5.0%	8.0%	5.0%
60	5.0%	10.0%	5.0%
61	15.0%	15.0%	10.0%
62	15.0%	15.0%	15.0%
63	15.0%	15.0%	15.0%
64	15.0%	15.0%	15.0%

Upon reaching the requirements for normal retirement (unreduced benefits), the following rates apply:

	Assumed Retirement Rates – Select Unreduced		
Age	State	School	Other
55	20.0%	25.0%	20.0%
56	15.0%	25.0%	20.0%
57	15.0%	25.0%	17.0%
58	15.0%	25.0%	20.0%
59	15.0%	25.0%	20.0%
60	15.0%	25.0%	17.0%
61	20.0%	33.0%	20.0%
62	40.0%	40.0%	30.0%
63	35.0%	30.0%	25.0%
64	30.0%	30.0%	30.0%
65	30.0%	30.0%	30.0%

	Assumed Retirement Rates – Ultimate Unreduced		
Age	State	School	Other
55	15.0%	20.0%	12.0%
56	15.0%	20.0%	12.0%
57	15.0%	20.0%	12.0%
58	15.0%	20.0%	12.0%
59	15.0%	21.0%	12.0%
60	15.0%	23.0%	15.0%
61	20.0%	28.0%	20.0%
62	40.0%	35.0%	30.0%
63	30.0%	30.0%	20.0%
64	30.0%	30.0%	25.0%
65	30.0%	45.0%	40.0%
66	30.0%	35.0%	30.0%
67	20.0%	25.0%	20.0%
68	20.0%	25.0%	20.0%
69	35.0%	40.0%	40.0%
70	100.0%	100.0%	100.0%

Assumed Retirement Rates

Age	Sheriffs and Deputies	Protection Occupation
50	17.0%	
51	15.0%	
52	15.0%	
53	15.0%	
54	15.0%	
55	15.0%	25.0%
56	15.0%	10.0%
57	15.0%	10.0%
58	15.0%	10.0%
59	15.0%	10.0%
60	15.0%	10.0%
61	15.0%	15.0%
62	30.0%	30.0%
63	30.0%	25.0%
64	30.0%	25.0%
65	100.0%	100.0%

Terminated vested members are assumed to retire at age 62 (55 for Sheriffs/Deputies and Protection Occupation groups).

For Regular membership, retired reemployed members are assumed to retire at a rate of 25% per year until age 80 when all are assumed to retire.

All retirees are assumed to elect a modified cash refund annuity (Option 2).

Rates of Disablement (effective June 30, 2018)

Assumed Rates

	Males			Females		
Age	State	School	Other	State	School	Other
27	0.020%	0.020%	0.020%	0.020%	0.020%	0.020%
32	0.020%	0.020%	0.020%	0.020%	0.020%	0.020%
37	0.030%	0.034%	0.030%	0.030%	0.030%	0.030%
42	0.050%	0.056%	0.050%	0.040%	0.040%	0.040%
47	0.100%	0.098%	0.110%	0.070%	0.070%	0.070%
52	0.180%	0.142%	0.260%	0.180%	0.130%	0.160%
57	0.260%	0.230%	0.500%	0.310%	0.190%	0.280%
62	0.340%	0.318%	0.720%	0.500%	0.260%	0.400%

Assumed Rates
Sheriffs/Deputies
Protection Occupation

Age	Rate
27	0.130%
32	0.130%
37	0.130%
42	0.150%
47	0.200%
52	0.240%
57	0.320%
62	0.430%

Rates of Termination of Employment (effective June 30, 2018)

Regular Membership

	Male			Female		
Years of Service	State	School	Other	State	School	Other
1	11.00%	14.20%	19.00%	11.00%	14.20%	19.99%
5	4.75%	6.60%	7.50%	4.75%	6.60%	8.35%
10	2.25%	2.70%	4.10%	2.25%	2.70%	4.93%
15	1.60%	1.70%	2.64%	1.60%	1.70%	3.36%
20	1.10%	1.20%	2.10%	1.10%	1.20%	2.66%
25	0.80%	1.00%	1.60%	0.80%	1.00%	1.98%
30	0.80%	1.00%	1.10%	0.80%	1.00%	1.30%

Sheriffs/Deputies and Protection Occupation

Years of Service	Sheriffs/Deputies	Protection Occupation
1	4.00%	10.00%
5	1.00%	6.50%
10	1.00%	3.50%
15	1.00%	2.20%
20	1.00%	1.45%
25	1.00%	1.00%
30	1.00%	1.00%

Probability of Electing a Deferred Vested Benefit (effective June 30, 2018)

	Regular Membership					
	Male			Female		
Years of Service	State	School	Other	State	School	Other
5	62.0%	74.0%	62.0%	56.0%	80.0%	70.0%
10	71.0%	79.0%	71.0%	62.0%	80.0%	73.0%
15	76.0%	84.0%	76.0%	72.0%	85.0%	80.0%
20	81.0%	89.0%	81.0%	82.0%	90.0%	85.0%
25	86.0%	94.0%	86.0%	92.0%	95.0%	90.0%
30	90.0%	95.0%	90.0%	100.0%	100.0%	90.0%

	Sheriffs/Deputies and Protection Occupation
Years of Service	Rate
5	53.0%
10	65.0%
15	85.0%
20	95.0%
25	100.0%
30	100.0%

Rates of Salary Increase* (effective June 30, 2018)

	Annual Increase			
Years of Service	State	School	Other	Sheriffs/Deputies and Protection Occupation
1	14.25%	16.25%	14.25%	16.25%
5	7.75%	5.75%	5.35%	5.75%
10	5.50%	4.55%	4.55%	4.55%
15	4.45%	3.75%	4.05%	4.05%
20	3.85%	3.40%	3.75%	3.75%
25	3.60%	3.25%	3.65%	3.75%
30	3.35%	3.25%	3.65%	3.25%
35+	3.25%	3.25%	3.25%	3.25%

* Includes 3.25% wage growth

ACTUARIAL COST METHOD (adopted 1996)

The actuarial cost method is a procedure for allocating the actuarial present value of pension plan benefits and expenses to time periods. The method used for the valuation is known as the entry age normal actuarial cost method. Under this method, a total contribution rate is determined which consists of two parts: (i) the normal cost rate and (ii) the unfunded actuarial liability (UAL) rate. The entry age normal cost method has the following characteristics:

(i) The annual normal costs for each individual active member are sufficient to accumulate the value of the member's pension at time of retirement.

(ii) Each annual normal cost is a constant percentage of the member's year by year projected compensation rates.

The entry age normal actuarial cost method allocates the actuarial present value of each member's projected benefits on a level basis over the member's compensation rates between the entry age of the member and the assumed exit ages.

ACTUARIAL AMORTIZATION METHOD (adopted 2013)

The portion of the actuarial present value of benefits allocated to the valuation year is called the normal cost. The portion of the actuarial present value of benefits not provided for by the actuarial present value of future normal costs is called the actuarial liability. Deducting the actuarial value of assets from the actuarial liability determines the unfunded actuarial liability (UAL). The one-year lag between the valuation date and the date the contribution rate is effective is reflected in calculating the corresponding amortization payment. The UAL is amortized according to the Actuarial Amortization Method adopted by the Investment Board and summarized below:

1. Amortization payments will be calculated as a level percentage of payroll.
2. For the actuarial valuation prepared as of June 30, 2013, the amortization period of the UAL shall be 30-year open for all membership groups.
3. For the actuarial valuation prepared as of June 30, 2014:
   a. The UAL for each membership group shall be amortized over a 30-year closed period.
   b. This will be designated as the initial UAL base for subsequent valuations and it will be amortized over the remaining years of the 30-year closed period set on June 30, 2014.
4. For each valuation subsequent to June 30, 2014, annual net experience gains/losses for each membership group will be amortized over a new, closed 20-year period.
5. Subsequent plan amendments or changes in actuarial assumptions or methods that create a change in the UAL will be amortized over a demographically appropriate period selected by the Investment Board at the time that the change is incurred.
6. The dollar amount of the UAL payment for purposes of computing the UAL component of the actuarial and required contribution rate will be the sum of the amortization payments for each amortization schedule divided by the total projected payroll. Unless the plan has been 110 percent funded for the current and prior two years, a negative amortization payment shall be ignored.
7. If the valuation shows that the group has a surplus, the prior amortization bases will be eliminated and one base equal to the amount of the surplus shall be established. The amortization period of a surplus shall be a 30-year open period for all groups.

ACTUARIAL VALUE OF ASSETS SMOOTHING METHOD (adopted 2007)

The market value of assets, representing a fair value of System assets, may not necessarily be the best measure of the System's ongoing ability to meet its obligations.

To arrive at a suitable value for the actuarial valuation, a technique for determining the actuarial value of assets is used which dampens volatility in the market value while still indirectly recognizing market value. The specific technique follows:

Step 1: Determine the expected value of plan assets at the current valuation date using the actuarial assumption for investment return applied to the prior actuarial value and the actual receipts and disbursements of the fund for the previous 12 months.

Step 2: Subtract the expected value determined in Step 1 from the total market value of the Fund at the current valuation date.

Step 3: Multiply the difference between market and expected values determined in Step 2 by 25%.

Step 4: Add the expected value of Step 1 and the product of Step 3 to determine the actuarial value of assets.

Step 5: Verify the preliminary actuarial value of assets in Step 4 is not more than 120% of the market value of assets nor less than 80% of the market value. If it is, adjust the actuarial value of assets so it falls within the 80% - 120% corridor.

CONTRIBUTION RATE FUNDING POLICY

Background:

IPERS is charged with setting a "Required Contribution Rate" for each membership category within IPERS that will discharge its liabilities. Iowa Code §97B.11(3)(d) provides the basic framework for implementing this charge by stating:

> The Required Contribution Rate that is set by the system for a membership category shall be the contribution rate the system actuarially determines, based upon the most recent actuarial valuation of the system and using the actuarial methods, assumptions, and funding policy approved by the Investment Board, is the rate required by the system to discharge its liabilities as a percentage of the covered wages of members in that membership category. However, the Required Contribution Rate set by the system for members in regular service for a fiscal year shall not vary by more than one percentage point from the Required Contribution Rate for the prior fiscal year.

Goal:
To establish policy and procedures in setting contribution rates that combined with investment income will fund the benefits specified in Chapter 97B of the Iowa Code.

To move towards fully funding the benefits (100 percent or greater funded ratio) in as expeditious manner as is reasonable within the guidelines acknowledged herein.

Procedure:
The Investment Board shall retain a consulting actuary to conduct an annual actuarial valuation of assets and liabilities. The consulting actuary shall use the entry age normal cost method and all other actuarial assumptions and methods approved by the Investment Board.

In the annual valuation process, the consulting actuary shall calculate an Actuarial Contribution Rate and a Required Contribution Rate pursuant to this policy. Each shall be calculated as a level percent of pay.

There is a one-year lag between the completion of an annual actuarial valuation report and the fiscal year to which the contribution rates calculated therein are applied. Therefore, the Actuarial Contribution Rate and the Required Contribution Rate declared in the annual valuation process are applicable to the fiscal year immediately following the completion of the valuation report (for example the rates declared in the report presented to the Investment Board in December 2013 are applicable to the rates for the fiscal year beginning July 1, 2014).

Actuarial Contribution Rate (ACR):
1. ACR is the combined employer and employee contribution rate that is the minimum rate necessary to fund the benefits using the actuarial assumptions and methods approved by the Investment Board.

2. A separate ACR shall be determined for each membership group within IPERS according to this policy.

3. The ACR shall consist of:

    a. Normal cost and an amortization payment (not less than zero) of any unfunded actuarial liability.
    b. Normal cost may only be offset by a negative amortization payment after a membership group has attained a funded ratio of 110 percent or greater for 3 consecutive years.

Required Contribution Rate:

1. The Required Contribution Rate is the combined employer and employee rate payable pursuant to this policy and Iowa Code §97B.11(3)(d).

2. The Required Contribution Rate shall be determined by comparing the ACR determined in the annual valuation process to the Required Contribution Rate of the previous year.

    a. If the ACR is less than the previous Required Contribution Rate by fewer than 50 basis points, then the Required Contribution Rate shall remain unchanged from the previous year.

    b. If the ACR is less than the previous Required Contribution Rate by 50 basis points or more, then the Required Contribution Rate shall be lowered by 50 basis points provided the funded ratio of the membership group is 95 percent or higher.

    c. If the ACR is greater than the Required Contribution Rate of the previous year, then the Required Contribution Rate shall be:

        i. Increased to be equal to ACR for Sheriffs and Deputies.
        ii. Increased to be equal to ACR for Protection Occupation Members.
        iii. Increased to be equal to ACR for Regular Members, or one percentage point greater than the prior year's Required Contribution Rate, whichever is smaller.

Policy Guidelines:
In adopting actuarial assumptions and methods to be used in setting contribution rates, the Investment Board shall strive to provide a balance among the following:

1. Stability in contribution rates (such as use of smoothing and amortization schedules that do not produce dramatic swings in the required contributions from year to year).

2. Disciplined funding approach (such as requiring full payment of normal cost and an amortization payment towards the unfunded actuarial liability and deferring decreases in contribution rates until strong funded ratios are attained).

3. Interperiod equity (such as shortening the amortization schedule when reasonable and amortization of retroactive benefit enhancements over a reasonable time period such as the average working lifetime for active members and the average life expectancy of retired members).

4. Support an affordable, sustainable plan (in consultation with the Benefits Advisory Committee review affordability of required contribution rates and/or the benefit provisions).

5. At a minimum, this policy will be reviewed in conjunction with the quadrennial experience study.

IOWA CODE SECTION 97D.5 CERTIFICATION

This Addendum is being prepared solely for the purpose of providing the information required under Iowa Code §97D.5. Calculations are based on the following prescribed methods:

Actuarial cost method: Entry Age Normal
Amortization method: Level percent of payroll
Amortization period: 30 years, open period

All other assumptions, methodologies, and System provisions used are consistent with those used in the June 30, 2018 valuation for the Iowa Public Employees' Retirement System.

The results shown in this Addendum may not be consistent with those in the June 30, 2018 valuation. The June 30, 2018 valuation results were determined in accordance with generally accepted actuarial principles and practices that are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Guides to Professional Conduct, amplifying opinion and supporting recommendations of the American Academy of Actuaries. The results shown in this Addendum are not necessarily based on the methodologies adopted by the System.

We are available to answer any questions on the material contained in this report, or to provide explanations or further details as may be appropriate.

The undersigned credentialed actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.

Patrice Beckham

Patrice A. Beckham, FSA, EA, FCA, MAAA

November 16, 2018
Date

Brent A. Banister

Brent A. Banister, PhD, FSA, EA, FCA, MAAA

November 16, 2018
Date

SUMMARY OF RESULTS UNDER PRESCRIBED METHODOLOGY PER IOWA CODE SECTION 97D.5

This addendum report has been prepared to present the results of a valuation of the Iowa Public Employees' Retirement System as of June 30, 2018, based on the prescribed methodology under Iowa Code §97D.5.

The unfunded actuarial accrued liability has been amortized as a level percent of payroll over 30 years. The payroll growth assumption used was 3.25%.

A summary of results from the current and the prior valuation follows.

	Regular Membership Actuarial Valuation as of	
	June 30, 2018	**June 30, 2017**
Summary of Costs		
Normal cost	10.49%	10.40%
UAL amortization	4.67%	4.86%
Total	15.16%	15.26%
Less Employee Contribution Rate	(6.29%)	(6.29%)
Employer Required Contribution Rate	8.87%	8.97%
Funded Status		
Actuarial liability	$36,289,160,885	$35,176,950,577
Actuarial value of assets	29,513,302,525	28,292,788,895
Unfunded actuarial liability	$6,775,858,360	$6,884,161,682
Funded Ratio	81.3%	80.4%
Asset Values		
Market value of assets (MVA)	$29,962,905,119	$28,575,257,607
Actuarial Value of Assets (AVA)	29,513,302,525	28,292,788,895
MVA/AVA	102%	101%

	Sheriffs and Deputies Actuarial Valuation as of	
	June 30, 2018	June 30, 2017
Summary of Costs		
Normal cost	16.85%	16.85%
UAL amortization	0.56%	2.34%
Total	17.41%	19.19%
Less Employee Contribution Rate	(9.51%)	(9.76%)
Employer Required Contribution Rate	7.90%	9.43%
Funded Status		
Actuarial liability	$697,339,410	$691,205,752
Actuarial value of assets	682,505,577	642,509,070
Unfunded actuarial liability	$14,833,833	$48,696,682
Funded Ratio	97.9%	93.0%
Asset Values		
Market value of assets (MVA)	$693,572,370	$649,668,861
Actuarial Value of Assets (AVA)	682,505,577	642,509,070
MVA/AVA	102%	101%

Protection Occupation Group*
Actuarial Valuation as of

	June 30, 2018	June 30, 2017
Summary of Costs		
Normal cost	15.22%	16.31%
UAL amortization	0.28%	0.55%
Total	15.50%	16.86%
Less Employee Contribution Rate	(6.61%)	(6.81%)
Employer Required Contribution Rate	8.89%	10.05%
Funded Status		
Actuarial liability	$1,656,333,358	$1,572,225,700
Actuarial value of assets	1,631,947,762	1,537,125,949
Unfunded actuarial liability	$24,385,596	$35,099,751
Funded Ratio	98.5%	97.8%
Asset Values		
Market value of assets (MVA)	$1,658,111,106	$1,554,189,858
Actuarial Value of Assets (AVA)	1,631,947,762	1,537,125,949
MVA/AVA	102%	101%

* Includes all public safety members other than Sheriffs and Deputies.

STATISTICAL

STATISTICAL

Statistical Overview

Objectives

The objective of the Statistical section is to provide the detail and historical context needed for a thorough assessment and understanding of IPERS' financial condition. Data in this section are presented in multiple-year format to show previous and emerging trends.

Contents

The Statistical section provides financial, demographic, operating, and investment trend information. The financial trend information presented on pages 104 – 105 is intended to help explain how the System's financial position has changed over time.

The demographic and operating information presented on pages 106 – 115 provides data on IPERS' membership, including:

- Members by group and type.
- Active membership data.
- Retiree information such as years of service, employer type, and benefit amount.
- Benefits paid by option, employer type, benefit type, and location.
- Principal participating employers.

The investment information presented on page 116 shows the growth of net investment portfolio assets and investment returns since 1989.

Tables related to types of refunds are not included in the Statistical section because IPERS pays only one type of refund — termination refunds.

Data Sources

Data for the Statistical section are derived from financial statements, an actuary member file, and an actuary retirement file, all prepared by IPERS. The data in the actuary files are also used by IPERS' actuaries to prepare the annual actuarial valuation. The investment data in the Statistical section are provided by Wilshire Associates.

Methods

IPERS uses several data extraction and statistical tools to produce the information for the Statistical section. In some cases, data are imported into Microsoft Excel for further analysis and calculations.

Assumptions

Active members are defined as those with wages reported for the last quarter of the fiscal year. Retired members and beneficiaries are those who were paid benefits in the last month of the fiscal year.

Membership and Trust Fund Summary

Changes in Fiduciary Net Position

(Dollar Values Expressed in Thousands)
Fiscal Years Ended June 30

	2018	2017	2016	2015	2014
Additions					
Employee contributions	$481,406	$473,355	$459,854	$441,213	$429,196
Employer contributions	716,753	704,766	684,665	656,908	638,996
QBA Fund contributions	—	—	—	3	5
Service purchases	4,629	4,271	32,148	17,476	14,324
Net investment income/(loss)	2,458,969	3,279,743	624,854	1,080,045	3,904,374
Miscellaneous noninvestment income	—	—	—	—	—
Total additions	**3,661,757**	**4,462,135**	**1,801,521**	**2,195,645**	**4,986,895**
Deductions					
Trust Fund benefits*	2,052,428	1,943,103	1,840,735	1,744,598	1,764,059
QBA Fund benefits	—	—	—	3	5
Refunds	58,924	50,451	49,248	47,167	48,121
Trust Fund administrative expenses	14,754	15,899	14,939	12,592	14,866
QBA Fund administrative expenses	—	—	—	—	—
Total deductions	**2,126,106**	**2,009,453**	**1,904,922**	**1,804,360**	**1,827,051**
Change in net position	**$1,535,651**	**$2,452,682**	**($103,401)**	**$391,285**	**$3,159,844**

Continued on page 105

*A Schedule of Benefit Payments by Type of Benefit is found on page 110.

Note: The purpose of the Qualified Benefits Arrangement (QBA) is to permit IPERS retirees to receive the amount of their calculated monthly benefit that exceeds the IRS limits under IRC section 415(b). IPERS began collecting QBA contributions and paying QBA benefits in FY2006. No members have qualified for the QBA since FY2015.

Changes in Fiduciary Net Position

(Dollar Values Expressed in Thousands)
Fiscal Years Ended June 30
Continued from page 104

	2013	2012	2011	2010	2009
Additions					
Employee contributions	$404,654	$366,377	$306,472	$293,472	$270,934
Employer contributions	601,945	557,930	467,633	448,765	414,966
QBA Fund contributions	7	9	8	5	23
Service purchases	12,011	17,611	14,847	12,614	9,301
Net investment income/(loss)	2,338,201	823,983	3,922,569	2,477,824	(3,863,761)
Miscellaneous noninvestment income	—	500	—	—	—
Total additions	**3,356,818**	**1,766,410**	**4,711,529**	**3,232,680**	**(3,168,537)**
Deductions					
Trust Fund benefits*	1,667,462	1,549,167	1,456,998	1,278,550	1,183,098
QBA Fund benefits	7	9	7	6	21
Refunds	42,597	43,328	41,215	41,470	34,337
Trust Fund administrative expenses	11,587	12,498	9,256	8,613	10,560
QBA Fund administrative expenses	—	—	1	1	1
Total deductions	**1,721,653**	**1,605,002**	**1,507,477**	**1,328,640**	**1,228,017**
Change in net position	**$1,635,165**	**$161,408**	**$3,204,052**	**$1,904,040**	**($4,396,554)**

*A Schedule of Benefit Payments by Type of Benefit is found on page 110.

Note: The purpose of the Qualified Benefits Arrangement (QBA) is to permit IPERS retirees to receive the amount of their calculated monthly benefit that exceeds the IRS limits under IRC section 415(b). IPERS began collecting QBA contributions and paying QBA benefits in FY2006. No members have qualified for the QBA since FY2015.

Changes to Membership and Net Position

Fiscal Years Ended June 30

Fiscal Year	Retired Members	Active Members	Total Additions	Total Deductions	Total Investments	Total Net Position
2018	120,987	170,378	$3,661,757,083	$2,126,106,199	$32,916,559,493	$32,314,588,595
2017	117,759	169,910	4,462,135,823	2,009,453,153	30,707,033,241	30,779,116,326
2016	114,491	168,372	1,801,520,563	1,904,921,736	29,276,427,008	28,326,433,656
2015	111,368	167,367	2,195,645,133	1,804,360,197	28,806,868,252	28,429,834,829
2014	108,233	165,913	4,986,894,852	1,827,050,988	28,186,974,092	28,038,549,893
2013	104,933	165,095	3,356,818,792	1,721,653,271	25,136,870,851	24,878,706,029
2012	101,948	164,200	1,766,410,045	1,605,002,472	23,508,268,276	23,243,540,508
2011	98,540	164,467	4,711,529,286	1,507,476,979	24,064,559,555	23,082,132,935
2010	93,692	165,660	3,232,679,640	1,328,639,663	20,432,970,506	19,878,080,628
2009	89,852	167,717	(3,168,536,719)	1,228,017,619	18,715,729,776	17,974,040,651

Note: Total investments in this table include the securities lending collateral pool.

Membership by Group

Fiscal Years Ended June 30

Fiscal Year		Regular Members	Sheriffs and Deputies	Protection Occupation Members	Total
2018	Active members	161,707	1,638	7,033	170,378
	Inactive members	67,992	152	1,903	70,047
	Retired members	117,010	988	2,989	120,987
	Total	**346,709**	**2,778**	**11,925**	**361,412**
2017	Active members	161,316	1,594	7,000	169,910
	Inactive members	65,989	135	1,838	67,962
	Retired members	114,076	959	2,724	117,759
	Total	**341,381**	**2,688**	**11,562**	**355,631**
2016	Active members	159,782	1,598	6,992	168,372
	Inactive members	65,002	126	1,719	66,847
	Retired members	111,103	889	2,499	114,491
	Total	**335,887**	**2,613**	**11,210**	**349,710**
2015	Active members	158,808	1,552	7,007	167,367
	Inactive members	65,625	125	1,624	67,374
	Retired members	108,220	849	2,299	111,368
	Total	**332,653**	**2,526**	**10,930**	**346,109**
2014	Active members	157,349	1,538	7,026	165,913
	Inactive members	70,557	122	1,588	72,267
	Retired members	105,298	795	2,140	108,233
	Total	**333,204**	**2,455**	**10,754**	**346,413**
2013	Active members	156,679	1,527	6,889	165,095
	Inactive members	71,071	121	1,432	72,624
	Retired members	102,235	754	1,944	104,933
	Total	**329,985**	**2,402**	**10,265**	**342,652**
2012	Active members	155,800	1,530	6,870	164,200
	Inactive members	67,566	123	1,261	68,950
	Retired members	99,519	674	1,755	101,948
	Total	**322,885**	**2,327**	**9,886**	**335,098**
2011	Active members	156,011	1,524	6,932	164,467
	Inactive members	64,712	126	1,130	65,968
	Retired members	96,252	657	1,631	98,540
	Total	**316,975**	**2,307**	**9,693**	**328,975**
2010	Active members	157,118	1,546	6,996	165,660
	Inactive members	64,415	114	992	65,521
	Retired members	91,657	616	1,419	93,692
	Total	**313,190**	**2,276**	**9,407**	**324,873**
2009	Active members	159,113	1,492	7,112	167,717
	Inactive members	65,855	113	874	66,842
	Retired members	88,074	585	1,193	89,852
	Total	**313,042**	**2,190**	**9,179**	**324,411**

Active Membership Summary

Active Membership Statistics

Fiscal Years Ended June 30

Fiscal Year	Active Members	Percentage Change	Annual Average Pay	Average Age (Years)	Average Service Credit (Years)
2018	170,378	0.3	$46,856	45.2	11.2
2017	169,910	0.9	46,278	45.4	11.3
2016	168,372	0.6	44,880	45.5	11.4
2015	167,367	0.9	43,774	45.6	11.5
2014	165,913	0.5	42,789	45.6	11.5
2013	165,095	0.5	41,674	45.7	11.6
2012	164,200	(0.2)	41,329	45.8	11.6
2011	164,467	(0.7)	39,977	45.0	11.6
2010	165,660	(1.2)	39,667	46.0	11.5
2009	167,717	(0.1)	38,390	41.4	11.7

Analysis of Change in Active Membership

Fiscal Years Ended June 30

Fiscal Year	Beginning Members	Additions	Retired	Died	Other Terminations	Ending Members
2018	169,910	19,569	5,004	206	13,891	170,378
2017	168,372	19,714	5,067	222	12,887	169,910
2016	167,367	19,130	4,784	210	13,131	168,372
2015	165,913	19,236	4,840	219	12,723	167,367
2014	165,095	18,616	4,787	205	12,806	165,913
2013	164,200	17,862	4,719	219	12,029	165,095
2012	164,467	16,878	4,928	193	12,024	164,200
2011	165,660	17,236	6,368	237	11,824	164,467
2010	167,717	14,663	5,277	244	11,199	165,660
2009	167,850	16,565	4,013	246	12,439	167,717

Retiree and Benefit Payment Statistics

New Retirees by Employer Type

Fiscal Years Ended June 30

Fiscal Year		City	County	Education	State	Utility	Health	28E Agency	Township & Cemetery	Other	Total
2018	Number of retirees	943	1,015	2,942	1,195	64	—	—	—	157	6,316
	Average monthly benefit	$1,622	$1,657	$1,716	$2,651	$2,004	—	—	—	$1,090	$1,857
	Average years of service	20.23	20.35	21.84	25.06	20.34	—	—	—	16.11	21.81
2017	Number of retirees	872	987	3,288	1,023	74	—	—	—	116	6,360
	Average monthly benefit	$1,650	$1,685	$1,696	$2,786	$2,391	—	—	—	$1,240	$1,863
	Average years of service	21.08	20.87	21.79	24.98	23.80	—	—	—	15.67	21.98
2016	Number of retirees	872	986	3,049	908	66	—	—	—	130	6,011
	Average monthly benefit	$1,636	$1,642	$1,677	$2,380	$1,888	—	—	—	$789	$1,755
	Average years of service	21.24	21.42	21.62	23.02	20.36	—	—	—	13.95	21.56
2015	Number of retirees	657	637	3,102	899	52	528	—	—	95	5,970
	Average monthly benefit	$1,750	$1,737	$1,580	$2,422	$1,833	$1,369	—	—	$893	$1,715
	Average years of service	21.90	22.21	21.48	23.72	19.71	18.28	—	—	14.17	21.53
2014	Number of retirees	810	608	3,064	986	62	426	—	—	120	6,076
	Average monthly benefit	$1,550	$1,566	$1,642	$2,170	$1,739	$1,232	—	—	$760	$1,663
	Average years of service	20.61	21.30	21.70	22.24	19.78	17.46	—	—	12.73	21.11
2013	Number of retirees	665	673	3,011	809	50	473	—	—	133	5,814
	Average monthly benefit	$1,655	$1,593	$1,685	$2,327	$1,833	$1,271	—	—	$849	$1,709
	Average years of service	21.78	21.66	22.11	23.46	21.66	17.47	—	—	14.10	21.64
2012	Number of retirees	671	617	3,487	618	53	463	—	—	112	6,021
	Average monthly benefit	$1,547	$1,549	$1,728	$2,253	$1,754	$1,378	—	—	$1,024	$1,703
	Average years of service	21.63	21.47	22.45	21.22	21.78	18.28	—	—	15.57	21.68
2011	Number of retirees	776	859	3,822	1,728	55	—	82	—	38	7,360
	Average monthly benefit	$1,387	$1,397	$1,799	$2,285	$1,741	—	$655	—	$544	$1,803
	Average years of service	20.51	20.80	23.95	25.85	23.00	—	13.11	—	11.93	23.48
2010	Number of retirees	786	811	3,186	1,476	31	—	58	3	34	6,385
	Average monthly benefit	$1,274	$1,317	$1,739	$2,119	$1,471	—	$620	$1,098	$606	$1,698
	Average years of service	20.25	20.40	23.92	25.14	19.70	—	12.12	20.50	11.62	23.11
2009	Number of retirees	620	800	2,571	765	44	—	49	—	28	4,877
	Average monthly benefit	$1,226	$1,241	$1,610	$2,067	$1,586	—	$881	—	$467	$1,558
	Average years of service	20.62	19.69	23.34	24.40	21.46	—	14.51	—	11.75	22.39

Note: With the implementation of I-Que, revised employer classifications are being used for FY2012 and forward. Health was previously reported separately to assist in tracking licensed health care professionals due to a unique bona fide retirement provision that is no longer in effect.

Average Benefit Payments for Retirees

Fiscal Years Ended June 30

Fiscal Year		Years of Service							
		0 – 5	6 – 10	11 – 15	16 – 20	21 – 25	26 – 30	>30	Total
2018	Number of retirees	6,016	15,393	15,875	16,020	16,070	15,028	36,585	120,987
	Average monthly benefit	$142	$286	$524	$872	$1,324	$1,908	$2,589	$1,423
	Average high average salary	$1,329	$1,817	$2,171	$2,624	$3,107	$3,677	$4,427	$3,138
	Average years of service	4.46	8.46	13.33	18.45	23.31	28.21	34.70	22.58
2017	Number of retirees	5,899	15,022	15,503	15,592	15,683	14,600	35,460	117,759
	Average monthly benefit	$142	$276	$514	$846	$1,290	$1,866	$2,537	$1,389
	Average high average salary	$1,310	$1,753	$2,108	$2,535	$3,025	$3,593	$4,350	$3,061
	Average years of service	4.46	8.45	13.33	18.45	23.31	28.21	34.65	22.53
2016	Number of retirees	5,808	14,724	15,192	15,293	15,244	13,958	34,272	114,491
	Average monthly benefit	$142	$270	$499	$822	$1,253	$1,814	$2,483	$1,349
	Average high average salary	$1,318	$1,698	$2,035	$2,462	$2,950	$3,509	$4,273	$2,984
	Average years of service	4.46	8.44	13.33	18.45	23.30	28.21	34.61	22.45
2015	Number of retirees	5,674	14,365	14,804	14,863	14,867	13,529	33,266	111,368
	Average monthly benefit	$138	$261	$483	$798	$1,221	$1,765	$2,431	$1,315
	Average high average salary	$1,305	$1,637	$1,961	$2,383	$2,873	$3,431	$4,200	$2,911
	Average years of service	4.47	8.45	13.33	18.45	23.30	28.22	34.56	22.41
2014	Number of retirees	5,527	13,966	14,425	14,513	14,448	13,160	32,194	108,233
	Average monthly benefit	$144	$270	$507	$824	$1,265	$1,850	$2,552	$1,373
	Average high average salary	$1,294	$1,581	$1,899	$2,321	$2,820	$3,393	$4,178	$2,866
	Average years of service	4.47	8.45	13.33	18.45	23.30	28.22	34.52	22.38
2013	Number of retirees	5,332	13,532	13,945	14,153	14,080	12,802	31,089	104,933
	Average monthly benefit	$140	$261	$485	$800	$1,228	$1,799	$2,490	$1,335
	Average high average salary	$1,263	$1,506	$1,821	$2,257	$2,796	$3,411	$4,173	$2,832
	Average years of service	4.47	8.46	13.32	18.45	23.30	28.22	34.47	22.36
2012	Number of retirees	5,180	13,181	13,605	13,864	13,711	12,419	29,986	101,946
	Average monthly benefit	$136	$251	$467	$775	$1,184	$1,739	$2,418	$1,289
	Average high average salary	$1,213	$1,436	$1,742	$2,181	$2,706	$3,320	$4,094	$2,749
	Average years of service	4.47	8.46	13.33	18.45	23.29	28.22	34.43	22.31
2011	Number of retirees	4,924	12,762	13,210	13,512	13,287	12,014	28,828	98,537
	Average monthly benefit	$123	$235	$441	$731	$1,124	$1,667	$2,337	$1,234
	Average high average salary	$1,372	$1,296	$1,462	$1,763	$2,162	$2,679	$3,388	$2,284
	Average years of service	4.49	8.46	13.33	18.45	23.28	28.24	34.39	22.28
2010	Number of retirees	4,732	12,428	12,777	13,073	12,593	11,372	26,712	93,687
	Average monthly benefit	$110	$210	$390	$643	$982	$1,478	$2,094	$1,085
	Average high average salary	$1,280	$1,212	$1,349	$1,631	$1,978	$2,502	$3,198	$2,118
	Average years of service	4.49	8.47	13.34	18.44	23.29	28.25	34.36	22.10
2009	Number of retirees	4,549	12,061	12,547	12,685	12,191	10,893	24,921	89,847
	Average monthly benefit	$108	$209	$392	$644	$973	$1,471	$2,071	$1,064
	Average high average salary	$1,203	$1,130	$1,252	$1,521	$1,834	$2,318	$2,943	$1,948
	Average years of service	4.50	8.47	13.34	18.43	23.27	28.24	34.33	21.93

Note: The data reported for average high average salary takes into account the statutory rules that govern how the wage component of the benefit formula is determined. These rules have changed over time. Until June 30, 2012, the highest 3-year average salary was used, and a spiking control was incorporated. The wage component of the formula for Regular members was frozen as of June 30, 2012, until those members' highest 5-year average surpasses their 3-year average as of that date. A spiking control is incorporated into the highest 5-year average salary calculation as well.

Where data were available, the average monthly wages used to calculate members' retirement benefits were calculated by dividing the high average salary by the applicable number of months (36 for the highest 3-year average salary, or 60 for the highest 5-year average salary). This table does not include retirees under the Iowa Old-Age and Survivors' Insurance System.

Schedule of Benefit Payments by Type of Benefit

Fiscal Years Ended June 30

Fiscal Year	Number of Retirees	Normal Retirement Benefit	Early Retirement Benefit	Death Benefit (Normal, Early, or Disability Retirement)	Preretirement Death Benefit	Disability Benefit	Special Service In-Service Disability Benefit	Special Service Ordinary Disability Benefit	Total
2018	120,987	$1,530,480,793	$351,227,851	$64,331,097	$6,089,032	$44,946,581	$1,551,385	$469,750	$1,999,096,489
2017	117,759	1,440,073,713	341,016,819	59,235,879	5,628,874	44,145,318	1,321,552	428,570	1,891,850,725
2016	114,491	1,358,625,886	330,328,320	54,759,110	5,157,531	42,716,696	1,305,876	402,828	1,793,296,247
2015	111,368	1,280,932,627	318,701,798	50,655,108	4,815,714	41,345,123	1,206,633	415,647	1,698,072,650
2014	108,233	1,291,948,738	328,584,720	50,993,939	4,569,515	43,468,128	1,080,553	409,438	1,721,055,031
2013	104,933	1,215,721,455	312,460,044	46,566,814	4,155,084	41,507,779	902,784	372,139	1,621,686,099
2012	101,948	1,134,393,596	290,216,887	43,180,523	3,595,564	39,968,472	801,062	362,184	1,512,518,288
2011	98,540	1,088,085,798	253,413,138	39,533,700	3,096,481	28,381,456	771,831	376,798	1,413,659,202
2010	93,692	951,375,232	220,803,713	36,386,690	2,653,287	27,960,711	624,888	330,890	1,240,135,411
2009	89,852	882,890,118	197,219,959	33,554,573	2,323,743	28,042,167	584,892	304,352	1,144,919,804

Note: This table does not include lump-sum payments.

Schedule of Retired Members by Type of Benefit

As of June 30, 2018

Amount of Monthly Benefit	Number of Retirees	Normal Retirement Benefit	Early Retirement Benefit	Death Benefit (Normal, Early, or Disability Retirement)	Preretirement Death Benefit	Disability Benefit	Special Service In-Service Disability Benefit	Special Service Ordinary Disability Benefit
$ <250	20,500	8,722	10,000	899	116	761	2	—
250 – 499	16,584	6,619	7,968	1,071	107	818	—	1
500 – 749	11,775	5,026	5,191	895	74	588	—	1
750 – 999	8,840	4,115	3,470	737	48	470	—	—
1,000 – 1,249	8,169	4,360	2,746	642	39	381	1	—
1,250 – 1,499	6,701	3,814	2,132	418	43	289	1	4
1,500 – 1,749	6,209	4,005	1,591	346	28	228	4	7
1,750 – 1,999	6,200	4,521	1,223	238	33	171	12	2
2,000 – 2,249	6,249	4,946	976	183	18	115	6	5
2,250 – 2,499	5,829	4,876	707	140	11	86	7	2
2,500 – 2,749	5,209	4,540	500	95	10	62	1	1
2,750 – 2,999	4,474	3,993	374	39	7	53	7	1
3,000 – 3,249	3,732	3,451	196	49	4	29	3	—
3,250 – 3,499	2,824	2,636	128	33	3	19	5	—
3,500 – 3,749	2,112	1,973	96	26	2	11	4	—
3,750 – 3,999	1,531	1,436	62	19	4	10	—	—
4,000+	4,049	3,806	160	31	5	44	3	—
Total	**120,987**	**72,839**	**37,520**	**5,861**	**552**	**4,135**	**56**	**24**

Note: The above tables do not include types of refunds because IPERS pays only one type of refund (termination refunds).

Retired Members by Benefit Option

As of June 30, 2018

Amount of Monthly Benefit	Number of Retirees	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Misc.
$ <250	20,500	5,784	5,126	3,956	1,981	2,174	1,472	7
250 – 499	16,584	4,748	4,143	2,274	2,126	1,647	1,639	7
500 – 749	11,775	3,226	2,863	1,357	1,721	1,119	1,489	—
750 – 999	8,840	2,156	2,088	980	1,477	786	1,353	—
1,000 – 1,249	8,169	1,888	1,842	803	1,533	680	1,423	—
1,250 – 1,499	6,701	1,491	1,481	599	1,199	576	1,355	—
1,500 – 1,749	6,209	1,380	1,226	551	1,111	561	1,380	—
1,750 – 1,999	6,200	1,148	1,293	585	1,047	600	1,527	—
2,000 – 2,249	6,249	1,191	1,215	609	869	606	1,759	—
2,250 – 2,499	5,829	984	1,163	592	780	522	1,788	—
2,500 – 2,749	5,209	868	1,043	575	562	456	1,705	—
2,750 – 2,999	4,474	744	945	481	366	420	1,518	—
3,000 – 3,249	3,732	574	780	400	343	299	1,336	—
3,250 – 3,499	2,824	436	604	259	290	221	1,014	—
3,500 – 3,749	2,112	286	474	237	199	148	768	—
3,750 – 3,999	1,531	225	331	153	137	117	568	—
4,000+	4,049	515	785	434	500	358	1,457	—
Total	**120,987**	**27,644**	**27,402**	**14,845**	**16,241**	**11,290**	**23,551**	**14**

See definitions of benefit options on page 38.

Note: Miscellaneous column consists of survivor death benefits based upon law provisions no longer available.

Benefit Payment Summary

Fiscal Years Ended June 30

Fiscal Year	To Iowa	To Other States	To Foreign Countries
2018	$1,810,076,771	$241,972,129	$378,845
2017	1,716,489,981	226,225,319	387,908
2016	1,625,956,965	214,384,328	393,315
2015	1,541,982,482	202,258,326	360,202
2014	1,556,861,335	206,805,339	397,590
2013	1,476,219,393	190,938,237	311,229
2012	1,376,422,791	172,458,343	295,502
2011	1,295,324,198	161,447,515	233,918
2010	1,129,876,718	148,444,926	234,200
2009	1,044,257,972	138,540,110	320,734

Benefit Payments by Iowa County

Fiscal Year 2018

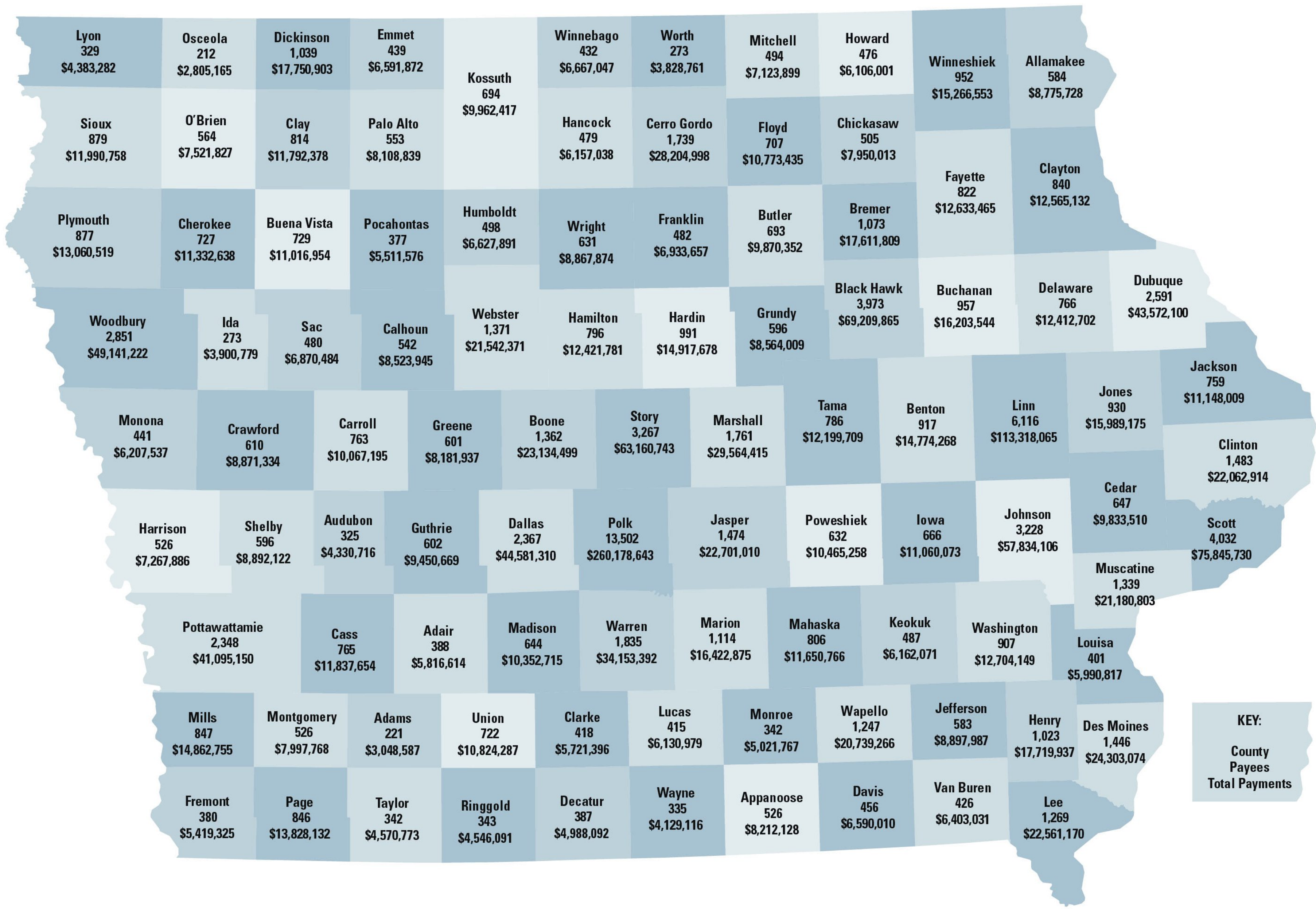
County	Amount	Annual Average	Payees
Adair	$5,816,614	$14,991	388
Adams	3,048,587	13,795	221
Allamakee	8,775,728	15,027	584
Appanoose	8,212,128	15,612	526
Audubon	4,330,716	13,325	325
Benton	14,774,268	16,112	917
Black Hawk	69,209,865	17,420	3,973
Boone	23,134,499	16,986	1,362
Bremer	17,611,809	16,414	1,073
Buchanan	16,203,544	16,932	957
Buena Vista	11,016,954	15,112	729
Butler	9,870,352	14,243	693
Calhoun	8,523,945	15,727	542
Carroll	10,067,195	13,194	763
Cass	11,837,654	15,474	765
Cedar	9,833,510	15,199	647
Cerro Gordo	28,204,998	16,219	1,739
Cherokee	11,332,638	15,588	727
Chickasaw	7,950,013	15,743	505
Clarke	5,721,396	13,688	418
Clay	11,792,378	14,487	814
Clayton	12,565,132	14,958	840
Clinton	22,062,914	14,877	1,483
Crawford	8,871,334	14,543	610
Dallas	44,581,310	18,835	2,367
Davis	6,590,010	14,452	456
Decatur	4,988,092	12,889	387
Delaware	12,412,702	16,205	766
Des Moines	24,303,074	16,807	1,446
Dickinson	17,750,903	17,085	1,039
Dubuque	43,572,100	16,817	2,591
Emmet	6,591,872	15,016	439
Fayette	12,633,465	15,369	822
Floyd	10,773,435	15,238	707
Franklin	6,933,657	14,385	482
Fremont	5,419,325	14,261	380
Greene	8,181,937	13,614	601
Grundy	8,564,009	14,369	596
Guthrie	9,450,669	15,699	602
Hamilton	12,421,781	15,605	796
Hancock	6,157,038	12,854	479
Hardin	14,917,678	15,053	991
Harrison	7,267,886	13,817	526
Henry	17,719,937	17,322	1,023
Howard	6,106,001	12,828	476
Humboldt	6,627,891	13,309	498
Ida	3,900,779	14,289	273
Iowa	11,060,073	16,607	666
Jackson	11,148,009	14,688	759
Jasper	22,701,010	15,401	1,474
Jefferson	8,897,987	15,262	583

County	Amount	Annual Average	Payees
Johnson	$57,834,106	$17,916	3,228
Jones	15,989,175	17,193	930
Keokuk	6,162,071	12,653	487
Kossuth	9,962,417	14,355	694
Lee	22,561,170	17,779	1,269
Linn	113,318,065	18,528	6,116
Louisa	5,990,817	14,940	401
Lucas	6,130,979	14,773	415
Lyon	4,383,282	13,323	329
Madison	10,352,715	16,076	644
Mahaska	11,650,766	14,455	806
Marion	16,422,875	14,742	1,114
Marshall	29,564,415	16,788	1,761
Mills	14,862,755	17,548	847
Mitchell	7,123,899	14,421	494
Monona	6,207,537	14,076	441
Monroe	5,021,767	14,684	342
Montgomery	7,997,768	15,205	526
Muscatine	21,180,803	15,818	1,339
O'Brien	7,521,827	13,337	564
Osceola	2,805,165	13,232	212
Page	13,828,132	16,345	846
Palo Alto	8,108,839	14,663	553
Plymouth	13,060,519	14,892	877
Pocahontas	5,511,576	14,620	377
Polk	260,178,643	19,270	13,502
Pottawattamie	41,095,150	17,502	2,348
Poweshiek	10,465,258	16,559	632
Ringgold	4,546,091	13,254	343
Sac	6,870,484	14,314	480
Scott	75,845,730	18,811	4,032
Shelby	8,892,122	14,920	596
Sioux	11,990,758	13,641	879
Story	63,160,743	19,333	3,267
Tama	12,199,709	15,521	786
Taylor	4,570,773	13,365	342
Union	10,824,287	14,992	722
Van Buren	6,403,031	15,031	426
Wapello	20,739,266	16,631	1,247
Warren	34,153,392	18,612	1,835
Washington	12,704,149	14,007	907
Wayne	4,129,116	12,326	335
Webster	21,542,371	15,713	1,371
Winnebago	6,667,047	15,433	432
Winneshiek	15,266,553	16,036	952
Woodbury	49,141,222	17,236	2,851
Worth	3,828,761	14,025	273
Wright	8,867,874	14,054	631
Total Iowa Benefit Payments:		**$1,810,076,771**	

Note: Payments determined by zip code.

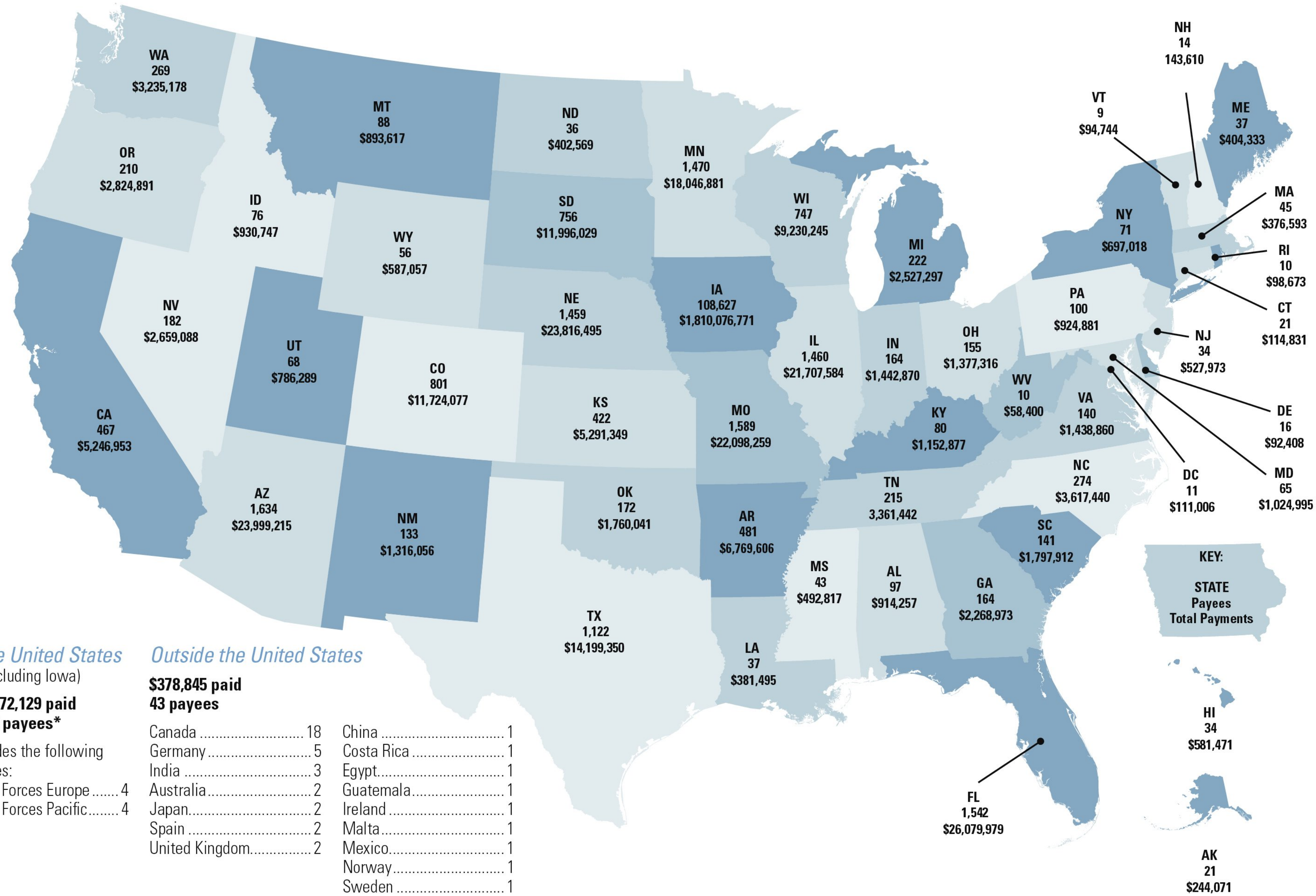
Benefit Payments by Iowa County

Fiscal Year 2018



Benefit Payments by State

Fiscal Year 2018



In the United States
(not including Iowa)

$241,972,129 paid
17,478 payees*

*Includes the following payees:

Armed Forces Europe	4
Armed Forces Pacific	4

Outside the United States

$378,845 paid
43 payees

Canada	18
Germany	5
India	3
Australia	2
Japan	2
Spain	2
United Kingdom	2
China	1
Costa Rica	1
Egypt	1
Guatemala	1
Ireland	1
Malta	1
Mexico	1
Norway	1
Sweden	1

Summary of Principal Employers

Principal Participating Employers

Fiscal Years Ended June 30

Participating Employer	2018 Covered Employees	2018 Rank	2018 Percentage of Total Covered Employees
State of Iowa Centralized Payroll	24,489	1	14.38
Des Moines Community School District (CSD)	5,045	2	2.96
Cedar Rapids CSD	2,897	3	1.70
Davenport CSD	2,608	4	1.53
Iowa City CSD	2,221	5	1.30
Dubuque CSD	1,990	6	1.17
Sioux City CSD	1,946	7	1.14
Waterloo CSD	1,722	8	1.01
Ankeny CSD	1,644	9	0.97
West Des Moines CSD	1,485	10	0.87
All other employers*	124,331		72.97
Total (1,956 employers)	**170,378**		**100.00**

Participating Employer	2009 Covered Employees	2009 Rank	2009 Percentage of Total Covered Employees
State of Iowa Centralized Payroll	19,450	1	11.60
Des Moines Community School District (CSD)	4,624	2	2.76
Cedar Rapids CSD	3,052	3	1.82
Iowa Department of Transportation	2,924	4	1.74
Davenport CSD	2,402	5	1.43
Dubuque CSD	1,909	6	1.14
Sioux City CSD	1,852	7	1.10
Iowa City CSD	1,812	8	1.08
Waterloo CSD	1,504	9	0.90
West Des Moines CSD	1,479	10	0.88
All other employers	126,709		75.55
Total (2,241 employers)	**167,717**		**100.00**

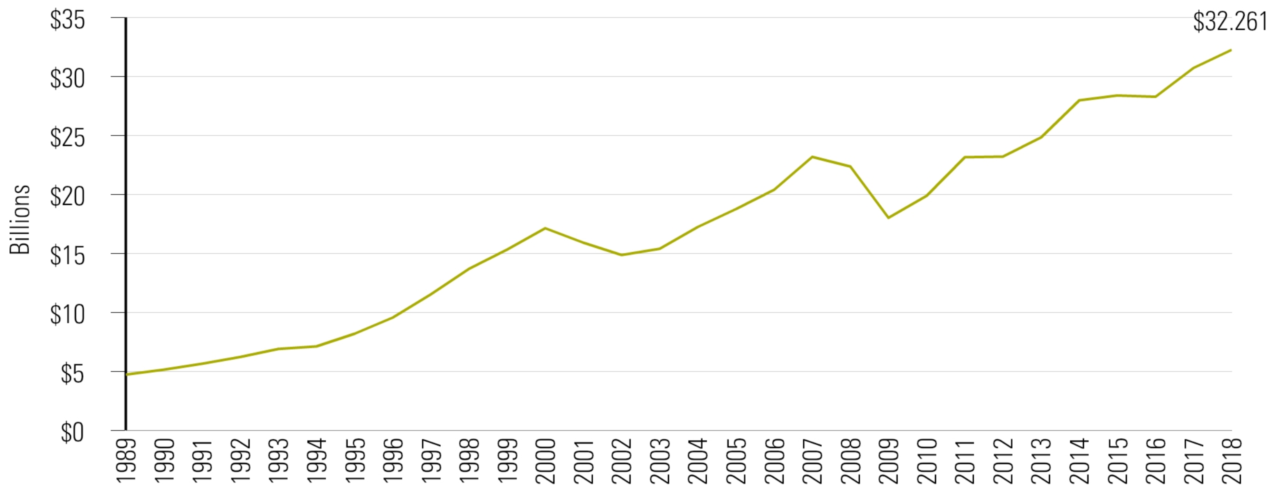
***All other employers for FY2018**

Type	Number	Employees
City	958	23,446
Education	350	68,155
County	349	27,050
Other	157	3,813
Utilities	132	1,867
Total	**1,946**	**124,331**

Investment Statistics

Growth of Net Investment Portfolio Assets

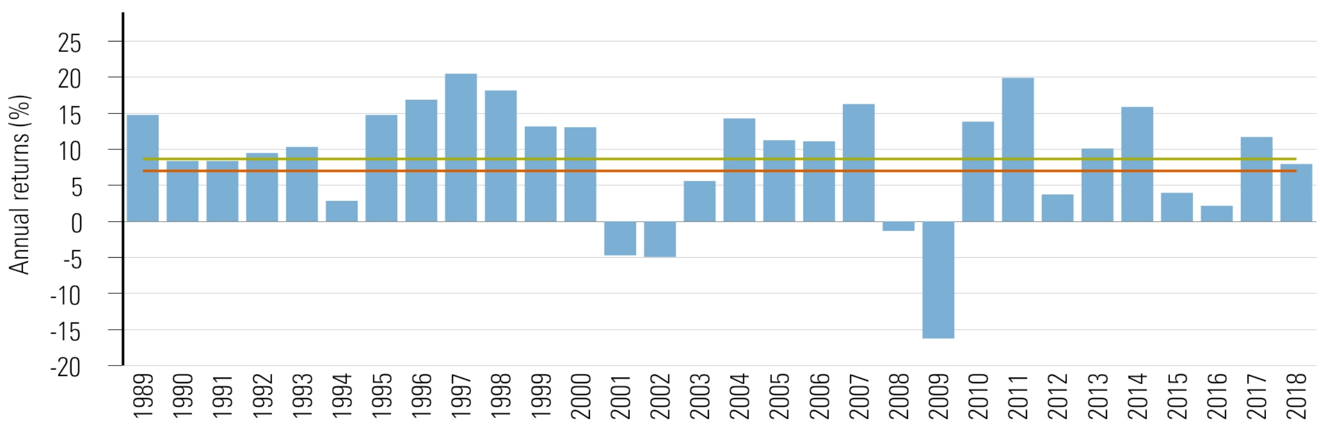
Fiscal Years Ended June 30



Investment Returns

Fiscal Years Ended June 30

Current actuarial assumed investment return = 7.00%* 30-year annualized return = 8.72%



***Actuarial assumed investment return**

1977 – 1993:	6.50%	1996 – 2016:	7.50%
1994 – 1995:	6.75%	2017 – 2018:	7.00%

Annualized returns for periods ended June 30, 2018

1-year return:	7.97%	10-year return:	6.84%
3-year return:	7.20%	20-year return:	6.96%
5-year return:	8.22%	30-year return:	8.72%

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