

# Comprehensive Annual Financial Report

*For the Fiscal Years ended June 30, 2018 and 2017*



## City of Fresno Fire and Police Retirement System

*A Pension Trust Fund of the City of Fresno  
Fresno, California*



# City of Fresno Fire and Police Retirement System

A Pension Trust Fund of the City of Fresno (California)

## COMPREHENSIVE ANNUAL FINANCIAL REPORT

FOR FISCAL YEARS ENDED JUNE 30, 2018 AND 2017

Issued by:

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Retirement Administrator

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# City of Fresno Fire and Police Retirement System

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### ***MISSION STATEMENT***

*To protect and provide System benefits through the highest quality delivery of service for our members and the employer, prudently fulfilling our fiduciary duties of investment and conservation of Trust assets.*

### ***BOARD AND STAFF COMMITMENT***

*We promise to carry out our Mission through a competent, professional, impartial and open decision-making process. In providing benefits and services, all persons will be treated fairly, with courtesy and respect. Assets will be invested and administered to balance the need to control risk with superior performance. We expect excellence in all activities. We will also be accountable and act in accordance with the law.*

### ***GOALS***

- To create an environment in which Board Members can maximize their performance as trustees.*
- To improve business processes and our delivery of services provided to members and retirees.*
- To improve communications with members, retirees and the employer.*
- To attract, develop and retain competent and professional staff.*
- To achieve and maintain superior investment performance on a risk controlled basis measured by the Public Fund Universe.*

*The Fire and Police Retirement System was established on July 1, 1955 and is maintained and governed by Articles 3 and 4 of the Fresno Municipal Code.*

*The Fire and Police Retirement System (the System) provides retirement allowances to all full-time sworn safety members employed by the City of Fresno.*

## INTRODUCTION

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# Letter of Transmittal



*Robert T. Theller*

RETIREMENT ADMINISTRATOR

December 12, 2018

Dear Board Members:

As Retirement Administrator of the City of Fresno Fire and Police Retirement System (the System), it is with great pleasure that I submit the Comprehensive Annual Financial Report (CAFR) for the fiscal years ended June 30, 2018 and 2017.

As calendar year 2017 came to a close, investors were experiencing the second longest economic expansion in U.S. history. Many contemplated that if the current economic expansion were to last for another year and a half, it would be the longest on record. And, as such many economists stated that given the underlying U.S. economic fundamentals, it would be unlikely for there to be a severe bear market or recession in the next six to twelve months. After all, global economies were expanding after years of stagnation and the International Monetary Fund (IMF) had forecast global growth of 3.6% (2017) and 3.7% (2018), and worldwide inflation rates were low due to low commodity prices for oil, gas and materials, and an aging worldwide population along with a slowdown in population growth.

There is an old adage, that in the short term, any crazy political, natural disaster or global incident can negatively impact the stock market temporarily, but in the long term, the stock market follows the underlying fundamentals of the U.S. and worldwide economies. If the economies are trending up and expanding, the stock markets will follow. All that said, most would agree that the business cycle is clearly closer to its end than its beginning, increasing the uncertainty in the global financial markets.

During Fiscal Year 2018, the Federal Reserve raised the federal funds rate by 0.25 percent three times to the target range of 1.75 - 2.00 percent. At its meeting on September 26, 2018, the federal funds rate was raised another 0.25 percent for a current target range for the federal funds rate at 2 percent to 2.25 percent. During its November 2018 meeting, the Federal Reserve reaffirmed its plans to continue raising rates gradually, suggesting that a rate hike at its next meeting in December is likely. Federal Funds target Interest Rate in the United States averaged 5.70 percent from 1971 until 2018, reaching an all-time high of 20 percent in March of 1980 and a record low of 0.25 percent in December of 2008.

## Letter of Transmittal Continued

Despite the persistent challenges of the global economy, the System is at a fully funded status on both a market value and actuarial basis at 122.2 percent and 120.3 percent, respectively. From a long-term perspective, the System is positioned to provide a solid rate of return that is equal to or better than the respective asset classes market indices even as we enter yet another year that may be filled with uncertainties in the global economic and financial markets. The Retirement Board (the Board) carefully managed the investment portfolio through last year's uncertainties in the global financial markets and we remain confident that new investment opportunities will arise and the Board, with the required amount of due diligence and vigilance, will position the System's investments for future long-term growth.

Like almost all institutional investors and public pension plans, the System's returns for the last two years have been somewhat mixed at 8.87 percent and 14.74 percent for the fiscal years ended June 30, 2018 and 2017, respectively. Noticeably, these returns are well above the System's assumed rate of return of 7.25 percent effective June 30, 2018 and 2017, respectively.

In fiscal year 2018, the System's gross of fee returns provided by its custodian, Northern Trust, when compared to other institutional investors and weighted policy benchmarks, were very favorable. The System's gross of fees one-year return was 8.87 percent, 0.53 percent above its policy benchmark return of 8.34 percent; also outperforming its actuarial interest rate assumption of 7.25 percent by 1.62 percent. The five-year annualized gross of fees return of 8.90 percent was above its policy benchmark return of 8.29 percent by 0.61 percent. The System's ten-year annualized gross of fees return at 7.09 percent exceeded its policy benchmarks of 6.83 percent by 0.26 percent while slightly underperforming its actuarial interest rate assumption by 0.16 percent for the same period.

The System remains highly funded and well positioned to serve our members and retirees. The System's 20 and 25-year long-term gross of fees returns of 6.85 percent and 8.51 percent, respectively, as of June 30, 2018, illustrate the System's ability to achieve our long-term objectives over extended periods of time. Meanwhile, the System's actuarial and market value funding status continues to be the highest of any public safety pension defined benefit plan in California.

## The Comprehensive Annual Financial Report (CAFR)

The Comprehensive Annual Financial Report (CAFR) of the City of Fresno Fire and Police Retirement System for fiscal years ended June 30, 2018 and 2017, is submitted herewith. Information contained in this report is designed to provide a complete and accurate review of the years' operations. Responsibility for both the accuracy of the data, and the completeness and fairness of the presentation, rests with the management of the System. For a general overview of the City of Fresno Fire and Police Retirement System's finances, please refer to the Management's Discussion and Analysis in the Financial Section of this report. The CAFR consists of six sections:

The Introduction Section contains our Mission Statement, a Letter of Transmittal, a description of the System's management and organizational structure, a listing of the professional services providers, and the Government Finance Officers Association's Certificate of Achievement for Excellence in Financial Reporting.



## Letter of Transmittal Continued

The Financial Section contains the opinion of the independent auditor, Brown Armstrong Accountancy Corporation, Management’s Discussion and Analysis, the Basic Financial Statements of the System, the Required Supplementary Information and the Other Supplementary Information.

The Investment Section includes an Investment Report from the Retirement Administrator, a letter from the System’s Investment Consultant, NEPC, LLC, recapping the fiscal year investment results and activities, along with performance and asset allocation information.

The Actuarial Section includes the certification letter produced by the independent actuary, The Segal Company, along with supporting schedules and information.

The Statistical Section contains significant detailed data pertaining to the System.

The Compliance Section contains the Independent Auditor’s Report on Internal Control over Financial Reporting and on Compliance and Other Matters Based on An Audit of Financial Statements Performed in Accordance with *Government Auditing Standards*.

I trust that you and the members of the System will find this CAFR helpful in understanding the System and our commitment to financial integrity and member services.

## THE FIRE AND POLICE RETIREMENT SYSTEM AND ITS SERVICES

The Fire and Police Retirement System was established on July 1, 1955, under charter Section 910 and is governed by Articles 3 and 4 of Chapter 3 of the City of Fresno Municipal Code. Effective August 27, 1990, the City of Fresno (the City) added a Second Tier that includes all full-time sworn Fire, Police, and Airport Safety personnel hired on or after that date. The System provides retirement allowances to all full-time sworn safety members employed by the City of Fresno. In accordance with the provisions of the City of Fresno Municipal Code, the System provides lifetime retirement, disability, and death benefits to its safety members.

The Fire and Police Retirement Board is responsible for establishing policies governing the administration of the System, making benefit determinations, and managing the investment of the System’s assets. The Board operates under the authority vested in Articles 3 and 4 of Chapter 3 of the City of Fresno Municipal Code and the California Pension Protection Act of 1992. Article XVI, Section 17(b) of the Constitution of the State of California provides that the “members of the Retirement Board of a public retirement system shall discharge their duties...solely in the interest of, and for the exclusive purpose of providing benefits to, participants and their beneficiaries, minimizing employer contributions thereto, and defraying reasonable expenses of administering the System. A Retirement Board’s duty to its participants and their beneficiaries shall take precedence over any other duty.” Section 17(a) further provides that the Board has...“the sole and exclusive responsibility to administer the System in a manner that will assure prompt delivery of benefits and related services to the participants and their beneficiaries.” The Retirement Board is also responsible for the prudent investment of member and employer contributions, and defraying reasonable expenses of administration.

## Letter of Transmittal Continued

The Retirement Board has five (5) members, two (2) management employees who are appointed by the Mayor and confirmed by the City Council, one (1) employee who is elected by the sworn Fire Department members of the System, and one (1) employee who is elected by the Police and Airport Safety Officers of the System, both of which serve a four-year term. The fifth and final member of the Board shall be a qualified elector of the County of Fresno, not connected with its government, appointed by the previously designated four members. The Board oversees the Retirement Administrator and staff in the performance of their duties in accordance with the City of Fresno Municipal Code and the Board's Rules, Regulations and Policies.

## Major Initiatives

The Board, jointly with the City of Fresno Employees Retirement System Retirement Board (the Boards), with the assistance of Staff and their Investment Consultant, performed Infrastructure, Value Add Real Estate and Private Equity asset class education sessions and conducted open invitation related request for information manager searches, and a Transaction Cost Analysis provider search. The Value Add Real Estate and Private Equity Fund of 1 manager search selections, while initiated during the year, will be completed during the first half of fiscal year 2019.

At their meeting in October 2017, the Boards approved the selection of infrastructure managers JPMorgan IIF, headquartered in New York City, and Ullico UIF, headquartered in Silver Springs, Maryland, pending completion of outside investment legal counsel's review of all pertinent legal fund documents, background investigations and operational due diligence reviews. The Boards approved the infrastructure target allocation of 4% or \$120.0 million to be split evenly among the two infrastructure managers and both fund retentions occurred effective June 30, 2018.

The Boards' Value Add Real Estate manager search began in April 2018 with the review of thirty-three different strategies and culminated in the summer with the selection of three firms as finalists in the search. The Boards approved for Staff and its Investment Consultant to conduct investment and operational due diligence on-site visits. In September 2018, the Boards approved the retention of Brookfield in New York; and in October 2018, the Boards approved the retention of Artemis in Chevy Chase, Maryland and Blue Vista in Chicago, pending completion of the legal review and background investigations. At their meeting on September 12, 2018, the Boards accepted Staff's recommendation to allocate a total of \$90 million to Value Add real estate allocating \$50 million to Brookfield, and splitting the remaining allocation of \$40 million among the two remaining firms (Artemis and Blue Vista, if investment and operational due diligence visits demonstrated their capabilities).

The Boards approved the service agreement with iCompass Meeting Manager Pro and Records Manager to automate meeting and records management workflow in one system, and to facilitate open governance through comprehensive and seamless access to information.

Following a thorough education and Request for Information (RFI) selection process, the Boards selected a third-party Transaction Cost Analysis (TCA) service provider to provide transaction cost evaluation services related to the Systems' total assets, measuring trading efficiency and evaluating the reasonableness of investment managers' trading costs and commissions. Three firms responded to the RFI; the top two firms merged shortly after the RFI completion and, thus, Staff recommended and the Boards selected, Zeno AN Consulting.

## Letter of Transmittal Continued

During fiscal year 2018, the Retirement Benefits Staff increased their communication efforts with both employees and retirees of the System(s). Aggressive efforts were deployed to maximize enrollment in the Member Direct module which was initially implemented in January 2016. Participation in Member Direct increased more than 50 percent over the previous fiscal year. Mid-Career Retirement Seminars were rolled out to active employees nearing important milestones in their careers. Attendance and positive feedback from those attending the seminars far exceeded expectations.

With the assistance of its actuary and staff, the Board completed the annual actuarial valuations for June 30, 2018 and 2017; and Governmental Accounting Standards Board (GASB) Statement No. 67 which redefines pension liability and expense for financial reporting purposes only.

## Professional Services

Professional Services Consultants and Investment Portfolio Managers are retained by the Board to provide professional services essential to the effective and efficient operation of the System. See listings on pages xiii and xiv.

An opinion from the Independent Auditor and the Actuary are included in this report along with a summary investment report from the Board's Investment Consultant. The Consultants and Investment Managers retained by the Board are listed in the following section of this report.

## Certificate of Achievement

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the City of Fresno Fire and Police Retirement System for its comprehensive annual financial report for the fiscal year ended June 30, 2017. The Certificate of Achievement is a prestigious national award recognizing excellence in the preparation of public employee retirement system comprehensive annual financial reports.

In order to be awarded a Certificate of Achievement for Excellence in Financial Reporting, a government entity must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement for Excellence in Financial Reporting is valid for a period of one year only. The System has received a Certificate of Achievement for the last nineteen years. We believe that our current comprehensive annual financial report 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.

*Letter of Transmittal Continued***Actuarial Funding Status and Net Pension Liability**

The System's funding objective is to meet long-term benefit promises by retaining a well-funded plan status and obtaining superior investment returns while minimizing employer contributions. The Board's objective for employer contributions is to establish a rate as a level percent of member payroll. The greater the level of overall plan funding, the larger the ratio of assets accumulated compared to the actuarial accrued liability and the greater the level of investment potential. The advantage of a well-funded plan is that the benefits earned by participants are funded during their working careers and not by future generations of taxpayers.

The June 30, 2018 actuarial valuation is presented in this CAFR. As of June 30, 2018, the funded ratio of the Fire and Police Retirement System was 120.3 percent. The ratio of the valuation value of assets to actuarial accrued liabilities was 119.8 percent as of the June 30, 2017, valuation. The funding ratios as of June 30, 2018 and 2017, if measured using the market value of assets instead of the actuarial valuation value of assets are 122.2 percent and 121.2 percent, respectively. The funded ratios were determined by using the actuarial value of the assets in accordance with actuarial standards.

The actuarial accrued liability of the System at June 30, 2018, for funding purposes, amounted to \$1,194,731,000; the actuarial valuation value of assets amounted to \$1,436,725,409 and the market value of assets (including non-valuation reserves) amounted to \$1,602,585,594. At June 30, 2017, the actuarial valuation value of assets amounted to \$1,354,973,827; the market value of assets (including non-valuation reserves) amounted to \$1,509,542,788.

Under the Governmental Accounting Standards Board (GASB) Statement No. 67 Financial Reporting methodology, the net pension liability of the System as of June 30, 2018 indicates a surplus of \$215,103,888; while on an actuarial funding basis the valuation value of assets basis reflects a surplus of \$241,994,409 and a funding ratio of 120.3 percent. At June 30, 2017, the net pension liability of the System indicated a surplus of \$194,175,242 and a funding ratio of 119.8 percent. For financial reporting purposes, the Plan Fiduciary Net Position as a percentage of the Total Pension Liability is 115.50% and 114.76% as of June 30, 2018 and 2017, respectively.

The Board engages an independent actuarial consulting firm to conduct annual actuarial valuations of the System. The purpose of the actuarial valuation is to reassess the magnitude of the benefit commitments. This is compared to the assets expected to be available to support those commitments. Recommendations are presented to the Board for consideration. The Segal Company is the System's independent actuarial consultant.

The Actuarial Section of this report contains a more detailed discussion of funding.

**Accounting System & Reports**

The management of the System is responsible for establishing and maintaining an internal control structure designed to ensure that System assets are protected from loss, theft, or misuse. Responsibility for the accuracy, completeness, and fair presentation of the information, and all disclosures, rests with the management of the System.

## Letter of Transmittal Continued

The accounting firm of Brown Armstrong Accountancy Corporation provides financial audit services. The financial audit ensures that the System's financial statements are presented in conformity with accounting principles generally accepted in the United States of America (GAAP) and are free of material misstatement. The internal controls are designed to provide reasonable but not absolute assurance that these objectives are met. The System recognizes that even sound internal controls have their inherent limitations. Internal controls are reviewed to ensure that the System's operating policies and procedures are being adhered to and that the controls are adequate to ensure accurate and reliable financial reporting and to safeguard the System's assets. The objective is to provide a reasonable, rather than absolute, assurance that the financial statements are free of any material misstatements given the prudent need to ensure that the cost of a control should not exceed the benefits to be derived. We believe that the System's internal controls adequately safeguard assets.

This report has been prepared in accordance with Generally Accepted Accounting Principles for State and Local Governments (GAAP) as established by the Governmental Accounting Standards Board (GASB).

The System's transactions are reported on the accrual basis of accounting. Revenues are taken into account when earned, regardless of the date of collection. Expenses are recorded when the corresponding liabilities are incurred, regardless of when the payment is made.

## Investments

Article XVI, Section 17(c) of the Constitution of the State of California, provides that "the members of the Retirement Board of a public pension or retirement system shall discharge their duties... with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aim." By permitting further diversification of investments within a fund, the prudent expert standard may enable a fund to reduce overall risk and increase returns. A summary of the asset allocation can be found in the investment section of this report and in Note 2 – Summary of Significant Accounting Policies (see section Investment).

The prudent expert rule permits the Board to establish an investment policy based upon professional advice and counsel and allows for delegation of investment authority to professional investment advisors. The Investment Objectives and Policy Statement of the Board outline the responsibility for the investment of the fund and the degree of risk that is deemed appropriate for the fund. Investment advisors are to execute the policy in accordance with the Board policy and guidelines.

For the fiscal years ended June 30, 2018 and 2017, the System's investments provided a 8.87 percent and 14.74 percent gross of fees rate of return, respectively.

## *Letter of Transmittal Continued*

### Acknowledgments

The compilation of this report reflects the combined effort of the System's staff under the leadership of the Board. It is intended to provide complete and reliable information as a basis for making management decisions, as a means of determining compliance with legal provisions, and as a means of determining responsible stewardship of the funds of the System.

On behalf of the Board, I would like to express my appreciation for the dedication and efforts of my staff members, Kathleen Riley Brown, Yvonne Timberlake, Chad Jacobs, Alberto Magallanes, Karen Espiritu, Pattie Laygo, Andrea Ketch, Phillip Carbajal, Patricia Basquez, Joan Taketa, Ohn Viengsay, Stanton Perkins, Tracy Gonzales and the Board's consultants, for their assistance in the preparation of this report and for their ongoing commitment to serve the Board and the members of the System. I also would like to thank the Board members for their support in accomplishing the many tasks and goals over the past year.

Respectfully Submitted,

Robert T. Theller  
Retirement Administrator

December 12, 2018

## Retirement Board Members

As of June 30, 2018



**Chair**

**Michael Reid**

Appointed August 2011

Term Continuous

Appointed by the Mayor and Confirmed by the Fresno City Council



**Vice Chair**

**David Newton**

Elected June 2012

Term Expires July 2020

Represents police Members



**Jonathan Lusk**

Elected September 2015

Term Expires July 2018

Represents Fire Members



**Ted Semonious**

Appointed March 2016

Term Continuous

Appointed by the Mayor and Confirmed by the Fresno City Council



**Lynn Bennink**

Appointed

Term Continuous

Outside Member Appointed by the Retirement Board

## Retirement Administrative Staff



**LEFT TO RIGHT:**

CHAD JACOBS, KATHLEEN RILEY BROWN, KAREN ESPIRITU, ALBERTO MAGALLANES, TRACY GONZALES, PATTIE LAYGO, ROBERT THELLER, PHILLIP CARBAJAL, ANDREA KETCH, PATTI BASQUEZ, YVONNE TIMBERLAKE, JOAN TAKETA, ONH VIENGSAY, STANTON PERKINS,



# Administration of the System

## Administration

The Administrative Section is responsible for the administration of the City of Fresno Fire and Police Retirement System, including the risk management of the investment activities in accordance with the policies, regulations, and general guidelines of the Retirement Board. It is also responsible for interfacing with the investment managers, the investment consultant, the actuary, legal counsel, custodial bank, and any other consultants authorized by the Board. (See pages xiii and xiv for professional services and consultants and investment portfolio managers and page 76 for a schedule of brokerage commissions.)

## Member Services

This section is responsible for providing all benefit services to the members of the System. This includes benefit calculations, investigation of claims for disability retirement, preparation of data to support applications for retirement, preparation of the retiree payroll, membership counseling, and membership training.

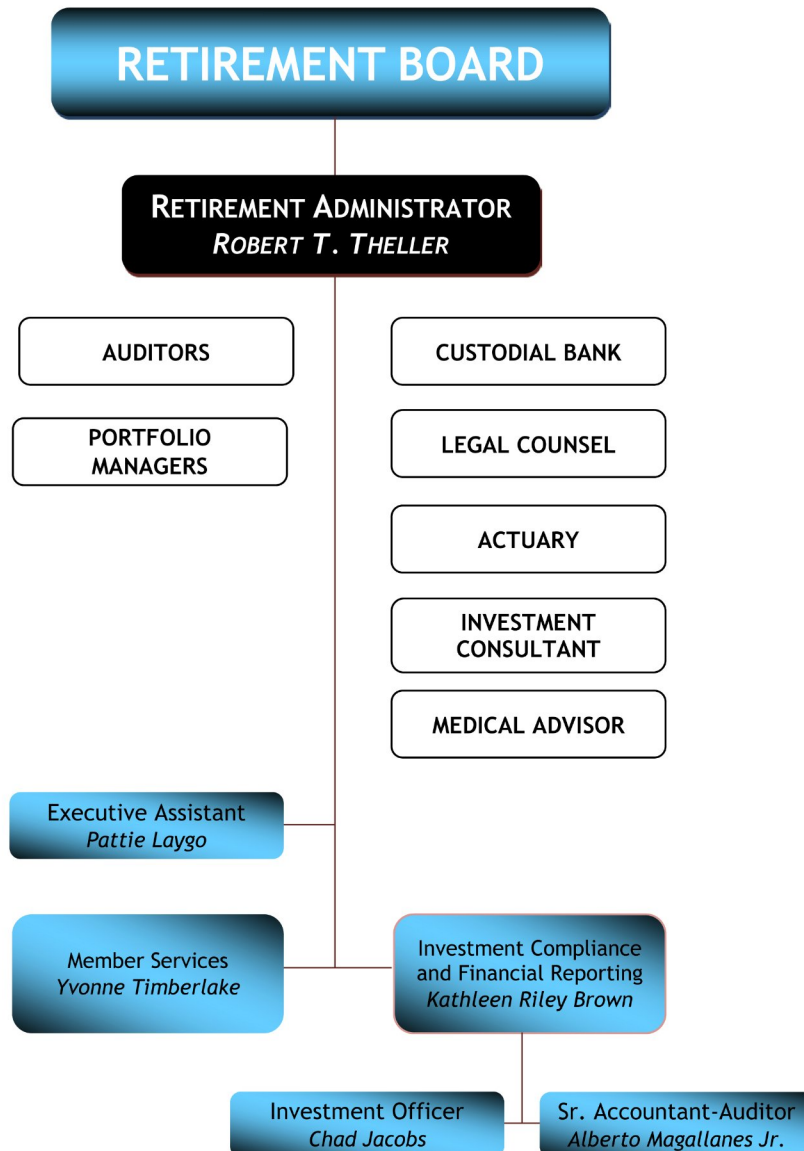
## Investment Compliance and Financial Reporting

This section is responsible for monitoring compliance with the Board's Investment Objectives and Policy Statement and for all of the financial records and reports including financial statements, control and balancing of payroll and members' contributions and reconciliation of investments.

## Executive Assistant

This position is responsible for providing administrative and clerical support services for the Board and the retirement staff.

# Organizational Structure



## Professional Services and Consultants

### Custodial Bank

NORTHERN TRUST  
Chicago, Illinois

### General Legal Advisor

SALTZMAN and JOHNSON LAW CORPORATION  
San Francisco, California

### Tax Counsel

ICE MILLER LLP  
Indianapolis, Indiana

### Investment Legal Advisor

FOLEY & LARDNER LLP  
Boston, Massachusetts

### Investment Consultant

NEPC, LLC  
Boston, Massachusetts

### Actuary

THE SEGAL COMPANY  
San Francisco, California

### Medical Advisor

BENCHMARK, AN EXAMWORKS COMPANY, INC.  
Sacramento, California

### Independent Auditor

BROWN ARMSTRONG ACCOUNTANCY CORPORATION  
Bakersfield, California

## Investment Portfolio Managers

### DOMESTIC EQUITY

#### *Large Cap*

Northern Trust Asset Management, Denver, CO

#### *Small Cap*

Eagle Asset Mgmt., Inc., St. Petersburg, FL

Kennedy Capital Mgmt. Inc., St. Louis, MO

### INTERNATIONAL & EMERGING MARKETS

#### *International*

BlackRock, San Francisco, CA

Baillie Gifford & Co., Edinburgh, Scotland

Principal Global Investors, Des Moines, IA

#### *Emerging Market*

Acadian Asset Mgmt. LLC, Boston, MA

Axiom Int'l Investors, LLC, Boston, MA

### FIXED INCOME

#### *Core Fixed Income*

Dodge & Cox, San Francisco, CA

Prudential Investment Mgmt., Inc., Newark, NJ

PIMCO, Newport Beach, CA

#### *High Yield*

Loomis Sayles, Boston, MA

### REAL ESTATE

#### *Private Real Estate Investments*

##### *Core*

JP Morgan Asset Mgmt., New York, NY

##### *Value Add*

Oaktree Capital Management, Los Angeles, CA

PCCP, LLC, Los Angeles, CA

PIMCO BRAVO III, Newport Beach, CA

#### *Real Estate Investment Trust (REIT)*

Principal Real Estate Investors, Des Moines, IA

Heitman, LLC, Chicago, IL.

### ALTERNATIVES

#### *Private Debt/Credit*

Crescent Capital, Los Angeles, CA

Monroe Capital, Chicago, IL

PIMCO COF II, Newport Beach, CA

#### *Infrastructure*

JP Morgan IIF, New York, NY

Ullico UIF, Silver Spring, MD



Government Finance Officers Association

**Certificate of  
Achievement  
for Excellence  
in Financial  
Reporting**

Presented to

**City of Fresno  
Fire and Police Retirement System  
California**

For its Comprehensive Annual  
Financial Report  
for the Fiscal Year Ended

**June 30, 2017**

*Christopher P. Morill*

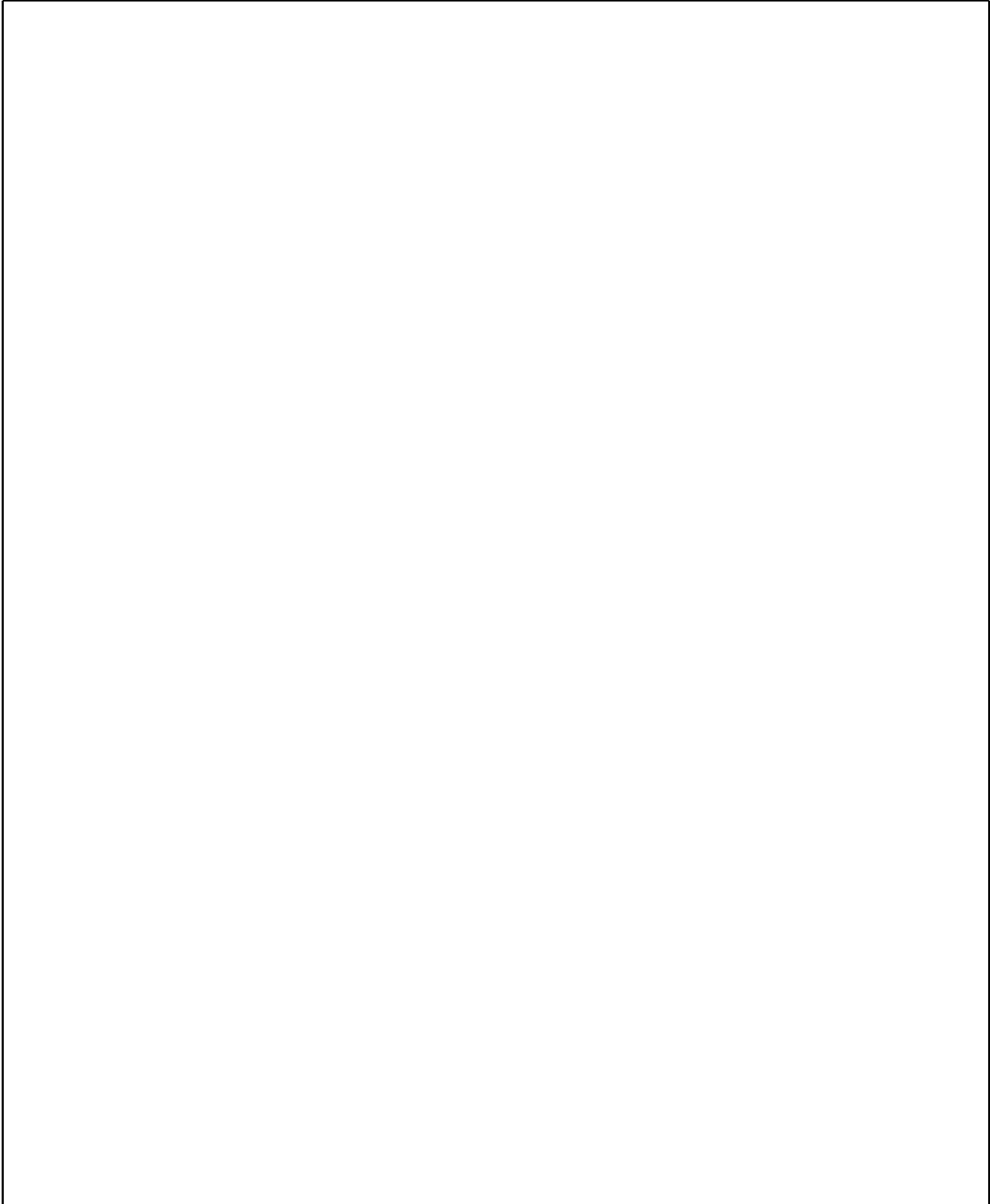
Executive Director/CEO

*To protect and provide  
system benefits through  
the highest quality  
delivery of service for our  
members and the  
employer, prudently  
fulfilling our fiduciary  
duties of investment and  
conservation of Trust  
assets.*

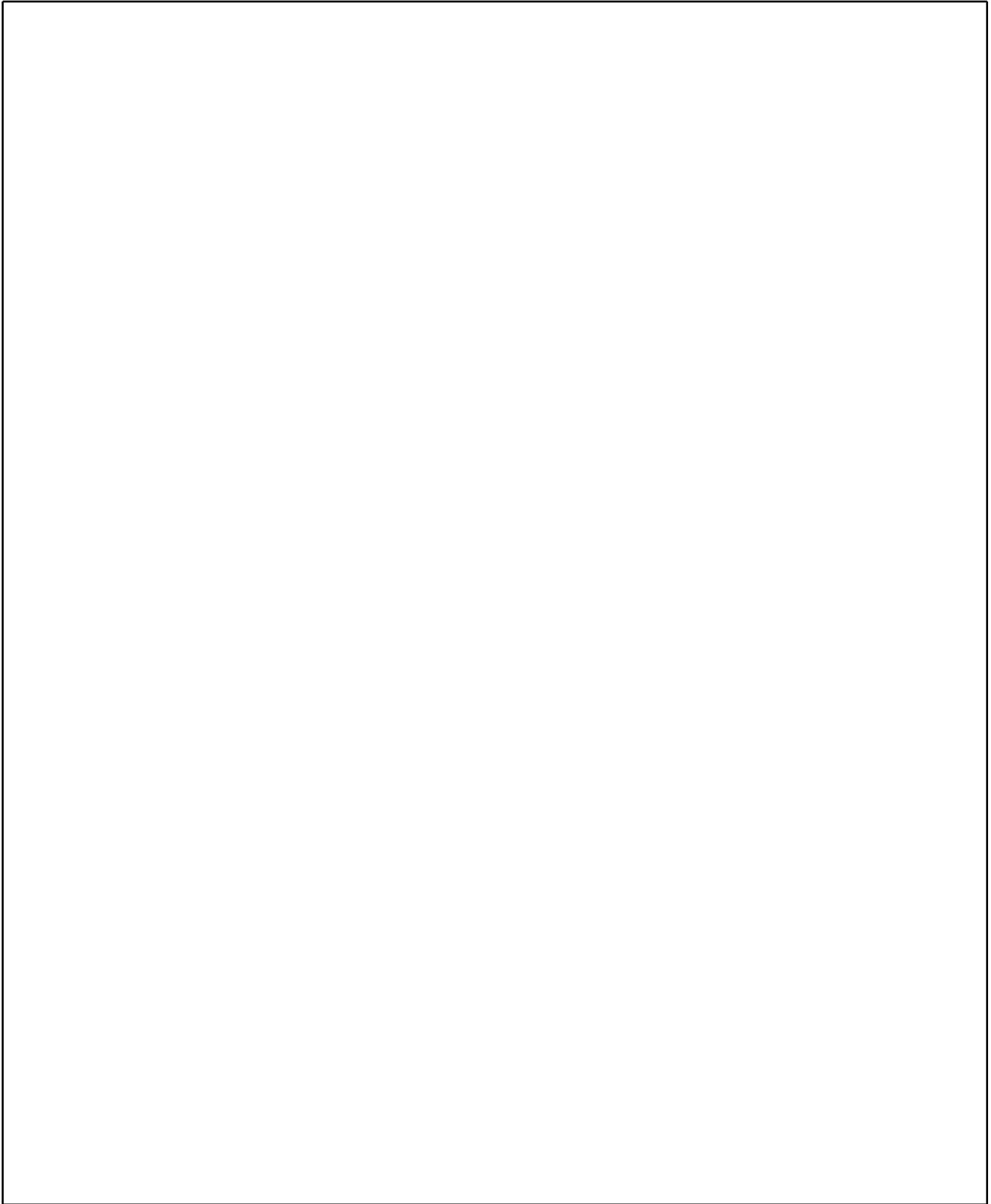
## FINANCIAL

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# Independent Auditor's Report



*Independent Auditor's Report Continued*





## Management's Discussion and Analysis

We are pleased to provide this overview and analysis of the financial activities of the City of Fresno Fire and Police Retirement System (the System) for the fiscal years ended June 30, 2018 and 2017. We encourage readers to consider the information presented here in conjunction with additional information that we have furnished in the Letter of Transmittal beginning on page i of this report.

### *Financial Highlights*

The System's net position restricted for pension benefits is for payment of pension benefits to participants and their beneficiaries and all of the net position is restricted to meet the System's ongoing obligations.

At the close of the fiscal year 2018, the assets of the System exceed its current liabilities by \$1,602,585,594; as of fiscal year 2017, the assets of the System exceed its current liabilities by \$1,509,542,788; and as of fiscal year 2016, the assets of the System exceeded its liabilities by \$1,351,288,640.

The System's net position restricted for pension benefits increased by \$93,042,806 or 6.16 percent for fiscal year 2018; for the prior fiscal year 2017 total net position increased by \$158,254,148 or 11.71 percent; and for the prior fiscal year 2016 total net position decreased by \$25,429,023 or 1.85 percent, all primarily as a result of the performance of the global investment markets.

The System's funding objective is to meet long-term benefit obligations through contributions and investment income. As of June 30, 2018, the date of the last actuarial valuation, the funded ratio for the System was 120.3 percent. In general, this indicates that for every dollar of benefits due we have approximately \$1.20 of assets available for payment as of that date.

As of June 30, 2017, the date of the previous annual actuarial valuation, the funded ratio for the System was 119.8 percent; and as of June 30, 2016, the date of the previous annual actuarial valuation, the funded ratio for the System was 119.6 percent.

### *Additions to Fiduciary Net Position*

Additions for the fiscal year 2018 decreased \$61,206,567 or 27.94 percent over the prior year from \$219,029,985 to \$157,823,418, which includes member contributions of \$8,963,672, employer contributions of \$19,696,957, a net investment income gain of \$128,685,224 and net securities lending income of \$477,565.

Fiscal year 2017 additions increased \$186,481,127 or 572.93 percent over the prior year from \$32,548,858 to \$219,029,985, which includes member contributions of \$8,169,019, employer contributions of \$18,543,308, a net investment income gain of \$191,803,916 and net securities lending income of \$513,742.

For fiscal year 2016 additions decreased \$32,966,858 or 50.32 percent over the prior year from \$65,515,716 to \$32,548,858, which includes member contributions of \$7,747,808, employer contributions of \$18,737,948, a net investment income gain of \$5,614,554 and net securities lending income of \$448,548.

*Management Discussion and Analysis Continued**Deductions from Fiduciary Net Position*

Deductions for the fiscal year 2018 increased \$4,004,775 or 6.59 percent over the prior fiscal year from \$60,775,837 to \$64,780,612.

Fiscal year 2017 deductions increased \$2,797,956 or 4.83 percent over the prior fiscal year from \$57,977,881 to \$60,775,837.

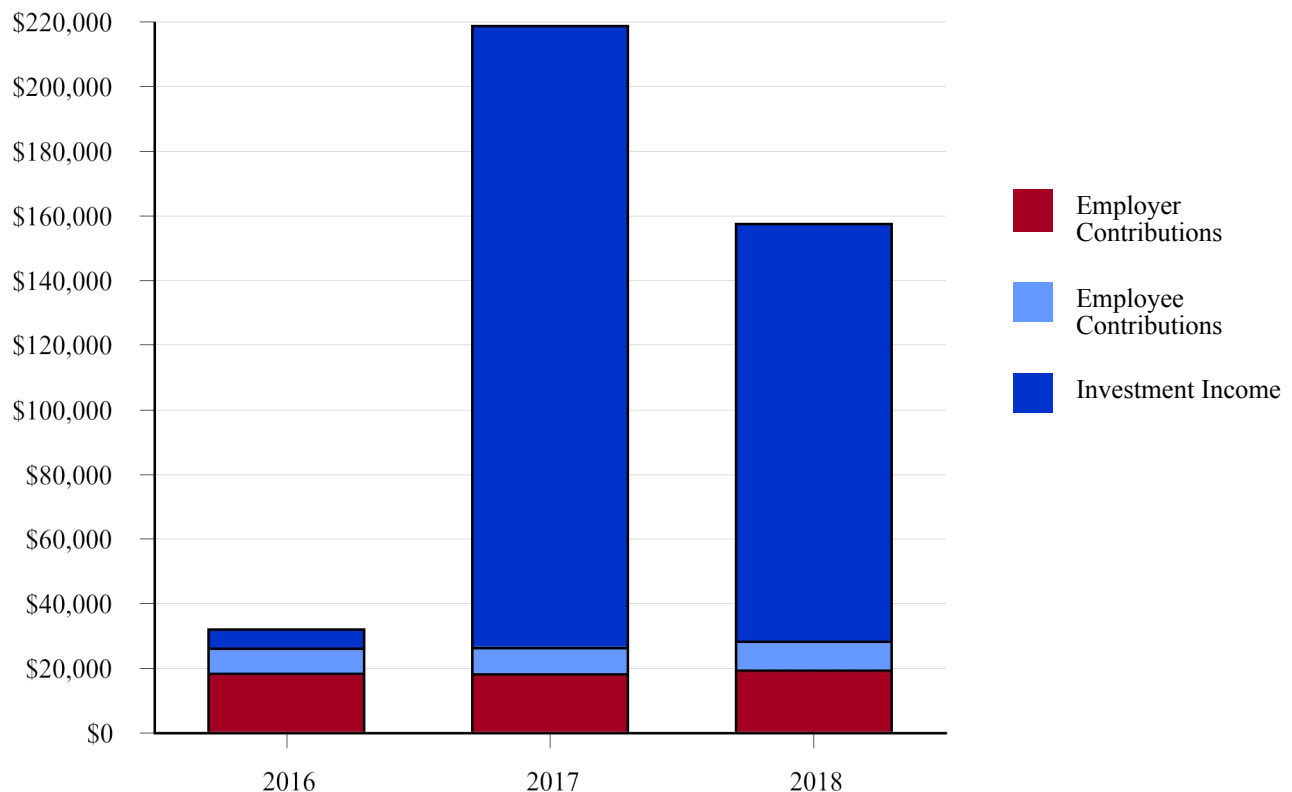
Fiscal year 2016 deductions increased \$2,258,129 or 4.05 percent over the prior fiscal year from \$55,719,752 to \$57,977,881.

The current year increase in deductions is due primarily to an increase in the number of retirees and a modest increase in the Post Retirement Supplemental Benefit (PRSB) payments for calendar year 2018.

**Schedule and Graph of Additions By Source**

For Fiscal Years Ended June 30, 2018, 2017 and 2016 (In Thousands)

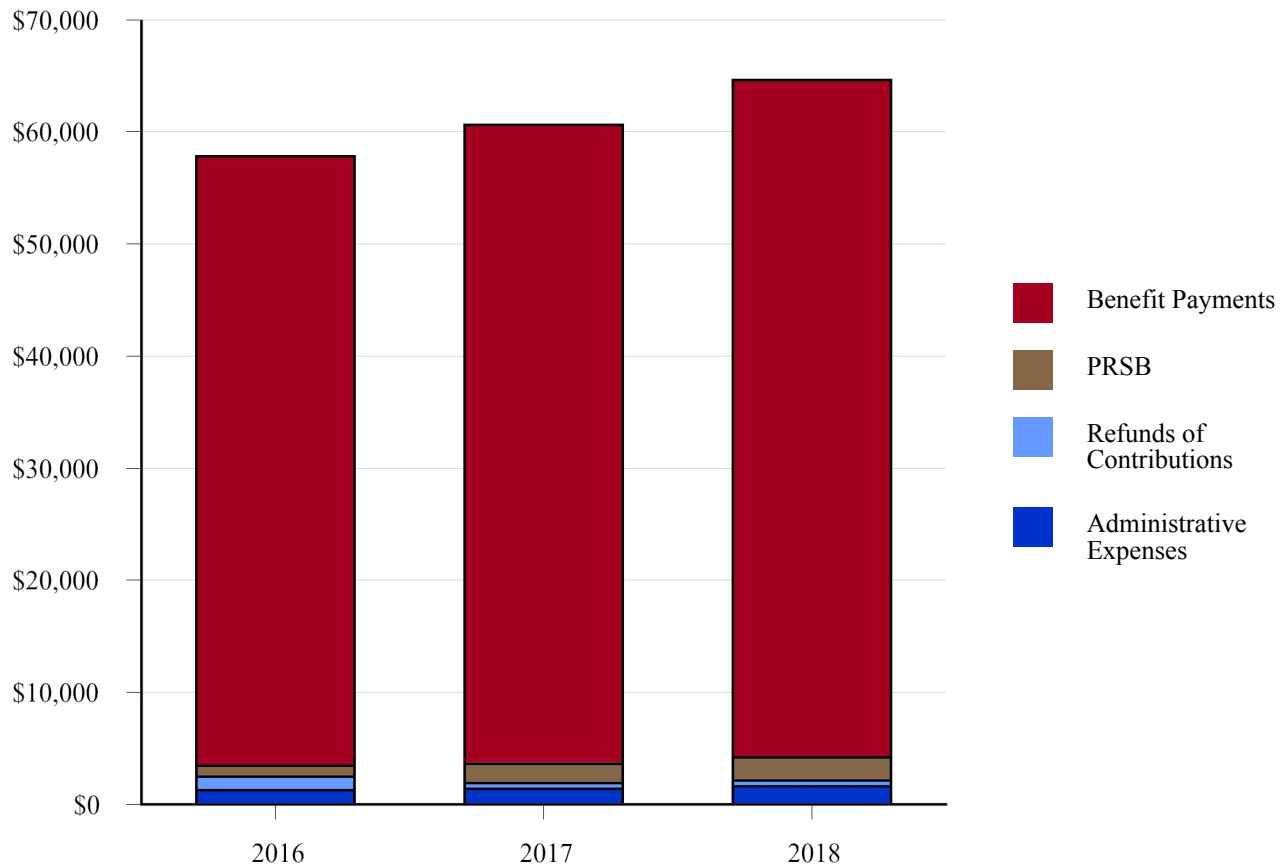
	2016	2017	2018
Employer Contributions	\$ 18,738	\$ 18,543	\$ 19,697
Employee Contributions	7,748	8,169	8,964
Investment Income	6,063	192,318	129,162
<b>TOTAL</b>	<b>\$ 32,549</b>	<b>\$ 219,030</b>	<b>\$ 157,823</b>



*Management Discussion and Analysis Continued***Schedule and Graph of Deductions By Type**

For Fiscal Years Ended June 30, 2018, 2017 and 2016 (In Thousands)

	<b>2016</b>	<b>2017</b>	<b>2018</b>
Benefit Payments	\$ 54,428	\$ 57,029	\$ 60,492
PRSB	980	1,719	2,019
Refunds of Contributions	1,173	525	560
Administrative Expenses	1,397	1,503	1,710
<b>TOTAL</b>	<b>\$ 57,978</b>	<b>\$ 60,776</b>	<b>\$ 64,781</b>



## Management Discussion and Analysis Continued

### Overview of the Financial Statements

The following discussion and analysis are intended to serve as an introduction to the System's financial statements, which are comprised of these components:

**Statement of Fiduciary Net Position** – The Statement of Fiduciary Net Position presents the major categories of assets and liabilities and their related value as of the System's fiscal years ended June 30, 2018 and 2017. "Net Position Restricted for Pension Benefits" represents funds available to pay benefits and it is a point in time or a snapshot of account balances as of the fiscal year-end. It indicates the assets available for future payments to retirees and any current liabilities. Increases and decreases in Net Position Restricted for Pension Benefits, when analyzed over time, may serve as an indicator of whether the System's financial position is improving or deteriorating. Other factors, such as market conditions, should also be considered in measuring the System's overall health.

**Statement of Changes in Fiduciary Net Position** – This Statement of Changes in Fiduciary Net Position provides information about the financial activities during the reporting period that increased and decreased the Net Position Restricted for Pension Benefits.

The two statements above include all assets and liabilities, using the full accrual basis of accounting, which is similar to the accounting method used by most private sector companies. All of the current year's additions and deductions are taken into account regardless of when the cash is received or paid. All investment gains and losses are shown at trade date, not settlement date. In addition, both realized and unrealized gains and losses are shown on investments.

Both statements are in compliance with Governmental Accounting Standards Board (GASB) Pronouncements.

These pronouncements require certain disclosures and require State and Local governments to report using the full accrual basis of accounting. The System complies with all material requirements of these pronouncements.

**Notes to the Basic Financial Statements** - The Notes to the Basic Financial Statements are an integral part of the basic financial statements and provide additional information that is essential to acquire a full understanding of the information and data provided in the two statements discussed above. The notes include further discussion and details regarding the System's key policies, programs, investments and activities that occurred during the year.

**Required Supplementary Information** – The Required Supplementary Information presents historical trend information concerning the changes in net pension liability, employer contributions and investment returns, and includes notes that explain factors that significantly affect trends in the amounts reported, such as changes of benefit terms, changes in the size or composition of the population covered by the benefit terms, or the use of different assumptions over time. The information is based on actuarial valuations prepared for the pension plan. The actuarial valuation report includes additional actuarial information that contributes to the understanding of the changes in the net pension liability of the defined benefit pension plan over the past ten years as presented in the schedule. The actuarial information is based upon assumptions made regarding future events at the time the valuations are performed and is derived for both financial reporting and funding purposes.

**Other Supplementary Information** – The Other Supplementary Information presented immediately following the required supplementary information includes schedules pertaining to the System's administrative expenses, investment management fees and other

## *Management Discussion and Analysis Continued*

investment related expenses, and payments to consultants and other professional services providers.

The System's funding ratio at June 30, 2018, was 120.3 percent, which means the System's fund has approximately \$1.20 available for each \$1.00 of liability. The Statement of Fiduciary Net Position and the Statement of Changes in Fiduciary Net Position report information about the System's financial activities during the reporting periods that increased and decreased the Net Position Restricted for Pension Benefits.

### *Financial Analysis Net Position*

As previously noted, net position restricted for pension benefits may serve over time as a useful indication of the System's financial position. The System's assets exceeded its liabilities at the close of the fiscal year 2018 by \$1,602,585,594. All of the net position restricted for pension benefits is available to meet the System's ongoing obligations to plan participants and their beneficiaries.

In fiscal year 2018, the System's restricted fiduciary net position, representing assets available to pay current and future member pension benefits, increased by 6.16 percent due to strong performance of the investment markets; while in 2017 the System's restricted fiduciary net position increased by 11.71 percent due to strong performance of the global investment markets; and also, due largely to volatility and fluctuations lowering performance in the investment markets in 2016, the System's restricted fiduciary net position decreased by 1.85 percent (See Table 1).

In order to determine whether the \$1.603 billion in net position will be sufficient to meet future obligations, the System's independent actuary performed an actuarial valuation as of June 30, 2018. The result of this valuation determines what future contributions by Plan members and the City of Fresno are needed to pay all expected future benefits. The valuation takes into account the Board's

funding policy which includes a provision to smooth the impact of market volatility by spreading each year's gains or losses over five years.

There has been extreme volatility in the various economies of the world and throughout the global financial markets over the past twenty to twenty-five years, therefore, it is of utmost importance to examine the System's investment returns with a long-term view rather than a short-term focus which tends to distort the perception of how well the investments have actually performed. As an example, you cannot isolate the high returns during the Tech Bubble in the 1990's without including the Tech Bubble corrections in the early 2000's.

Historical long-term performance rates of returns demonstrate that the System has been able to meet or exceed its actuarial assumed rate of return of 7.25 percent over long periods. As of June 30, 2018, the System's 25-year annualized return is 8.51 percent and its 20-year annualized return is 6.85 percent.

Despite volatility in the stock market, management and the System's actuary concur that the System remains in a very strong financial position to meet its obligations to the plan participants and beneficiaries. The System's current financial position is a result of a very sound and carefully managed investment and risk management program.

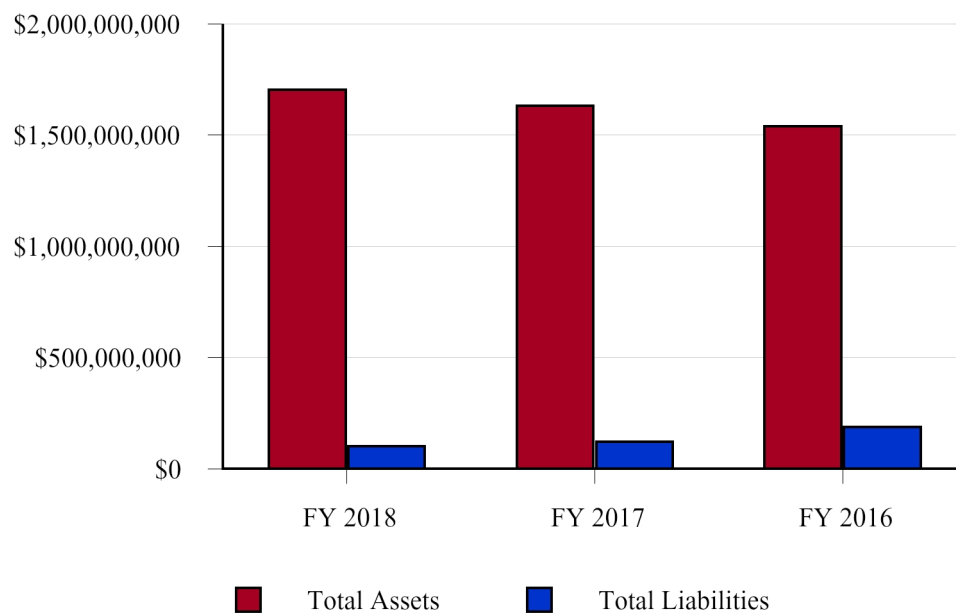
## Management Discussion and Analysis Continued

*Table 1 – Fire and Police Retirement System Fiduciary Net Position  
Restricted For Pension Benefits*

As of June 30, 2018, 2017 And 2016

	FY 2018	FY 2017	FY 2018 Increase/ (Decrease) Amount	FY 2018 Increase/ (Decrease) Percent
Current and Other Assets	\$ 108,904,110	\$ 126,535,268	\$ (17,631,158)	(13.93%)
Investments at Fair Value	1,600,674,190	1,510,940,012	89,734,178	5.94%
<b>Total Assets</b>	<b>\$ 1,709,578,300</b>	<b>\$ 1,637,475,280</b>	<b>\$ 72,103,020</b>	<b>4.40%</b>
<b>Total Liabilities</b>	<b>106,992,706</b>	<b>127,932,492</b>	<b>(20,939,786)</b>	<b>(16.37%)</b>
<b>Net Position Restricted for Pension Benefits</b>	<b>\$ 1,602,585,594</b>	<b>\$ 1,509,542,788</b>	<b>\$ 93,042,806</b>	<b>6.16%</b>

	FY 2017	FY 2016	FY 2017 Increase/ (Decrease) Amount	FY 2017 Increase/ (Decrease) Percent
Current and Other Assets	\$ 126,535,268	\$ 161,852,305	\$ (35,317,037)	(21.82%)
Investments at Fair Value	1,510,940,012	1,384,326,620	126,613,392	9.15%
<b>Total Assets</b>	<b>\$ 1,637,475,280</b>	<b>\$ 1,546,178,925</b>	<b>\$ 91,296,355</b>	<b>5.90%</b>
<b>Total Liabilities</b>	<b>127,932,492</b>	<b>194,890,285</b>	<b>(66,957,793)</b>	<b>(34.36%)</b>
<b>Net Position Restricted for Pension Benefits</b>	<b>\$ 1,509,542,788</b>	<b>\$ 1,351,288,640</b>	<b>\$ 158,254,148</b>	<b>11.71%</b>



## Management Discussion and Analysis Continued

### Capital Assets

The System's investment in capital assets decreased from \$1,101,255 to \$966,652 (net of accumulated depreciation) between fiscal years 2017 and 2018 after decreasing from \$1,235,045 to \$1,101,255 (net of accumulated depreciation) between fiscal years 2016 and 2017. This investment in capital assets includes office equipment, furniture, software, and technology infrastructure. The total change in the System's investment in capital and intangible assets as of June 30, 2018 and 2017 was \$(134,603) and \$(133,790), respectively. These changes in both fiscal years were primarily due to the costs incurred for the development of software to program and install an upgrade to our original pension administration system that was originally installed in 1997, which was implemented effective July 1, 2015.

### Reserves

Reserves are not required, nor recognized, under accounting principles generally accepted in the United States of America (GAAP). The reserves are not shown separately on the Statement of Fiduciary Net Position, but they equate to and are accounts within the net position restricted for pension benefits and are vital to the System's operations. They are established from contributions and the accumulation of investment income, after satisfying investment and administrative expenses. Investments of the System are stated at fair value instead of at cost, which includes the recognition of unrealized gains and losses in the current period.

The System's major reserve accounts, described in Note 5 – Net Position Restricted for Pension Benefits, include Active Member (Employee) Reserve, Employer Advance/Retired Reserve, DROP Reserve, PRSB Reserve and City Surplus Reserve.

Deferred Retirement Option Program (DROP) Reserve represents funds reserved for Deferred Retirement Option Program benefits accumulated by active members and retirees. DROP is an alternate method of receiving retirement benefits. It is a voluntary program as described by the conditions and requirements of the City of Fresno Municipal Code Section 3-353. A DROP account is a nominal, bookkeeping account established within the System for each DROP participant. Monthly amounts credited to DROP accounts include an amount which represents the service retirement allowance which the member would have received if the member had retired on the date the member commenced DROP participation and interest credited at the five year average interest rate as adopted by the Retirement Board (the Board) in accordance with the City of Fresno Municipal Code requirements.

Post Retirement Supplemental Benefit (PRSB) Reserve represents surplus earnings that have been allocated but not distributed to eligible participants in accordance with the City of Fresno Municipal Code Section 3-354. PRSB is a supplemental benefit distributed to eligible participants in accordance with the City of Fresno Municipal Code Section 3-354, if and only if distributable actuarial surplus is available to provide such a benefit. Actuarial surplus means the amount by which the actuarial value of the System's assets exceeds one hundred and ten percent (110%) of the System's actuarial accrued liabilities.

City Surplus Reserve represents that portion of distributable actuarial surplus that has been allocated but not used as a reduction to offset or eliminate the City of Fresno's (the City) pension contributions in accordance with the conditions and requirements of the City of Fresno Municipal Code Section 3-354 Post-Retirement Supplemental Benefits. The City Surplus Reserve Account accrues interest at the average gross rate of return earned by the System's entire investment portfolio for each of the three

## *Management Discussion and Analysis Continued*

prior fiscal years, including realized and unrealized gains and losses and as reduced by all investment related expenses.

Table 2 shows that the vast majority of reserves are generated from Employer Advance/Retired reserves. DROP reserves represent funds credited for participants who elected to participate in the Deferred Retirement Option Program. PRSB Reserve presents that portion of distributable actuarial surplus that has been allocated for PRSB but not yet distributed to eligible participants.

Additions to and deductions from PRSB occur when surpluses and allocations occur, respectively. The City Surplus reserve represents that portion of distributable actuarial surpluses and accrued interest, reduced by required City normal pension contributions. The City Surplus Reserve Account shall be drawn upon in subsequent years if needed to reduce or eliminate the City's annual pension contribution requirement.

The City Surplus Reserve Account shows positive balances for fiscal years 2018, 2017 and 2016 due to estimated surplus allocations available to the City for offsetting the City's contributions for fiscal years 2018, 2019 and 2020. The City's normal contribution rate for fiscal years 2018 and 2017 also included adjustments for economic and non-economic actuarial assumption changes including the assumed rate of return which is 7.25 percent effective July 1, 2016.

Additions to and deductions from PRSB occur when surpluses and allocations occur, respectively. The City Surplus reserve represents that portion of distributable actuarial surpluses and accrued interest, reduced by required City normal pension contributions. The City Surplus Reserve Account shall be drawn upon in subsequent years if needed to reduce or eliminate the City's annual pension contribution requirement.

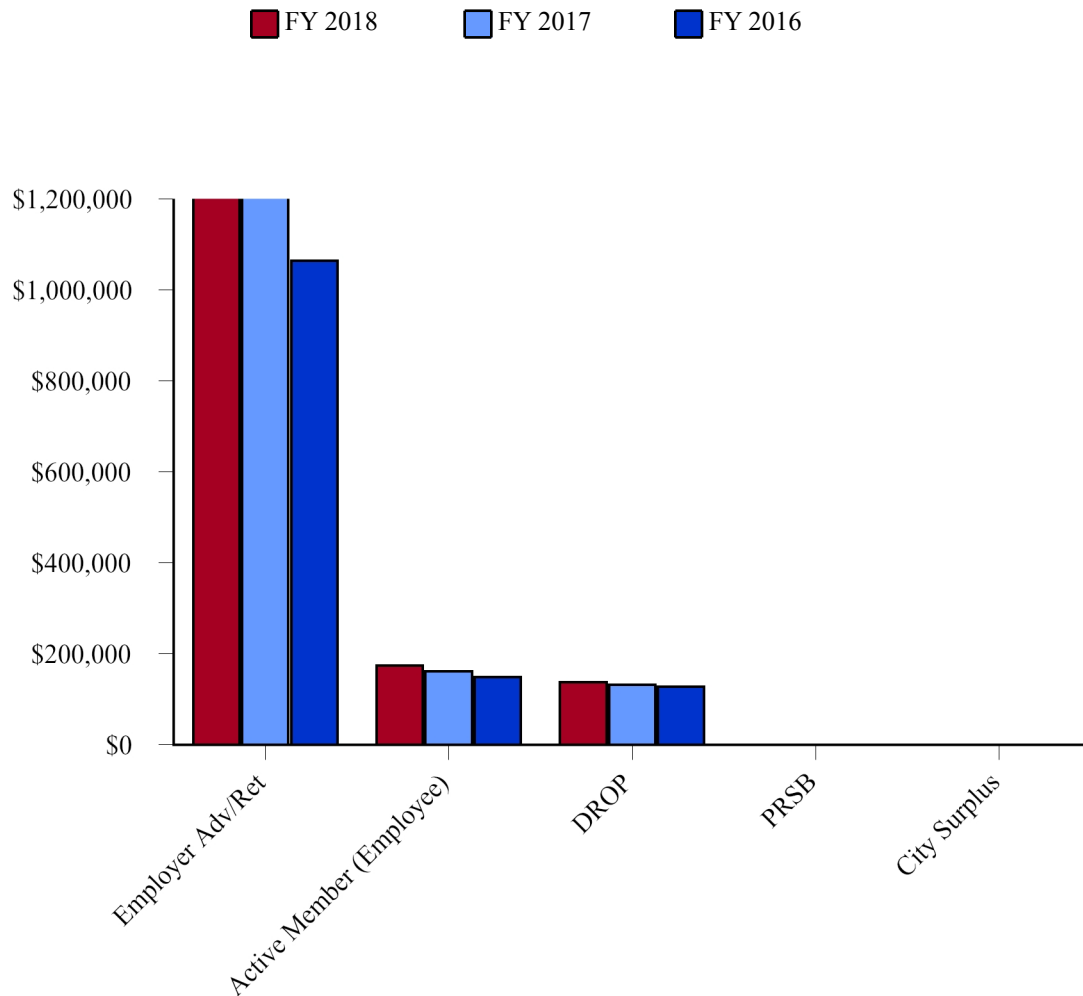


## Management Discussion and Analysis Continued

Table 2 – Fire and Police Retirement System’s Reserves

As of June 30, 2018, 2017 And 2016 (In Thousands)

	FY 2018	FY 2017	FY 2016
Employer Advance/Retired Reserves	\$ 1,282,881	\$ 1,206,941	\$ 1,066,461
Active Member (Employee) Reserves	177,163	164,672	152,424
DROP Reserves	139,944	135,164	130,485
PRSB Reserves	2,011	1,854	1,539
City Surplus Reserves	587	912	380
Net Position Restricted for Pension Benefits	\$ 1,602,586	\$ 1,509,543	\$ 1,351,289



## Management Discussion and Analysis Continued

### System's Activities

Attributable in part to the continued growth and volatility in global economic and financial markets, the System's net position increased \$93,042,806 for the fiscal year 2018 resulting in a 6.16 percent increase in the fiduciary net position restricted for pension benefits for the fiscal year ended June 30, 2018. Primarily attributable to the growth in the global financial markets in fiscal year 2017, the System's fiduciary net position increased \$158,254,148 for the fiscal year resulting in a 11.71 percent increase in the fiduciary net position restricted for pension benefits for the fiscal year ended June 30, 2017; the System's fiduciary net position decreased \$25,429,023 resulting in a 1.85 percent decrease in the fiduciary net position restricted for pension benefits for the fiscal year ended June 30, 2016.

Key elements of the additions and deductions to Fiduciary Net Position for fiscal years 2018, 2017 and 2016 are described in the sections below.

### Additions to the System's Fiduciary Net Position

The reserves needed to finance retirement benefits are normally accumulated through the collection of employer and employee contributions and through earnings on investment income net of investment expense. Total additions for the fiscal year ended June 30, 2018 totaled \$157,823,418.

For the fiscal year ended June 30, 2018, overall additions had decreased by \$61,206,567 or 27.94 percent primarily due to lower than anticipated performance in the global investment markets; for fiscal year 2017, overall additions had increased by \$186,481,127 or 572.93 percent primarily due to the performance of the investment markets; for fiscal year 2016, overall additions had decreased by \$32,966,858 or 50.32 percent from the prior fiscal year. The investment

section of this report reviews the details of the results of investment activity for the fiscal year ended June 30, 2018.

### Deductions from the System's Fiduciary Net Position

The System was created to provide lifetime retirement annuities, survivor benefits and permanent disability benefits to qualified members and their beneficiaries. The cost of such programs includes recurring benefit payments, as designated by the System, refunds of contributions to terminated employees, and the cost of administering the System.

Deductions from the fiduciary net position for the fiscal year ended June 30, 2018, totaled \$64,780,612 which was an increase of \$4,004,775 or 6.59 percent over the prior fiscal year 2017. Deductions from the fiduciary net position for the fiscal year ended June 30, 2017, totaled \$60,775,837 which was an increase of \$2,797,956 or 4.83 percent over the prior fiscal year 2016. The fiscal year ending June 30, 2016 had deductions from the fiduciary net position totaling \$57,977,881, which was an increase of \$2,258,129 or 4.05 percent over the prior fiscal year 2015. The current year increase in benefits paid resulted primarily from a modest increase in PRSB payments for calendar year 2018 and the normal increase in the number of new retirees receiving benefits.

The System's increases in total expenses have closely paralleled inflation and the growth in the membership and services provided. The System has consistently met its Administrative Expense Budget. There are no material variances between planned expenditures and actual expenditures.

## Management Discussion and Analysis Continued

## Changes in Fiduciary Net Position (Condensed)

For Fiscal Years Ended June 30, 2018 and 2017 and 2016

	FY 2018	FY 2017	FY 2018 Increase/ (Decrease) Amount	FY 2018 Increase/ (Decrease) Percent
<b>Additions</b>				
Employer Contributions	\$ 19,696,957	\$ 18,543,308	\$ 1,153,649	6.22%
Employee Contributions	8,963,672	8,169,019	794,653	9.73%
Net Investment Income *	129,162,789	192,317,658	(63,154,869)	(32.84%)
<b>Total Additions</b>	<b>\$ 157,823,418</b>	<b>\$ 219,029,985</b>	<b>\$ (61,206,567)</b>	<b>(27.94%)</b>
<b>Deductions</b>				
Retiree Benefit Payroll	\$ 60,491,661	\$ 57,028,861	\$ 3,462,800	6.07%
Post Retirement Supplemental Benefit (PRSB)	2,019,167	1,719,441	299,726	17.43%
Refunds of Contributions	560,170	524,636	35,534	6.77%
Administrative Expenses	1,709,614	1,502,899	206,715	13.75%
<b>Total Deductions</b>	<b>\$ 64,780,612</b>	<b>\$ 60,775,837</b>	<b>\$ 4,004,775</b>	<b>6.59%</b>
Changes in Net Position	93,042,806	158,254,148	(65,211,342)	(41.21%)
Net Position Restricted for Pension Benefits				
Beginning of the Year	1,509,542,788	1,351,288,640	158,254,148	11.71%
<b>End of the Year</b>	<b>\$ 1,602,585,594</b>	<b>\$ 1,509,542,788</b>	<b>\$ 93,042,806</b>	<b>6.16%</b>

\* Net of investment expense of \$11,544,650 and \$9,085,443 for June 30, 2018 and 2017, respectively.

	FY 2017	FY 2016	FY 2017 Increase/ (Decrease) Amount	FY 2017 Increase/ (Decrease) Percent
<b>Additions</b>				
Employer Contributions	\$ 18,543,308	\$ 18,737,948	\$ (194,640)	(1.04%)
Employee Contributions	8,169,019	7,747,808	421,211	5.44%
Net Investment Income *	192,317,658	6,063,102	186,254,556	3,071.94%
<b>Total Additions</b>	<b>\$ 219,029,985</b>	<b>\$ 32,548,858</b>	<b>\$ 186,481,127</b>	<b>572.93%</b>
<b>Deductions</b>				
Retiree Benefit Payroll	\$ 57,028,861	\$ 54,428,128	\$ 2,600,733	4.78%
Post Retirement Supplemental Benefit (PRSB)	1,719,441	980,037	739,404	75.45%
Refunds of Contributions	524,636	1,172,648	(648,012)	(55.26%)
Administrative Expenses	1,502,899	1,397,068	105,831	7.58%
<b>Total Deductions</b>	<b>\$ 60,775,837</b>	<b>\$ 57,977,881</b>	<b>\$ 2,797,956</b>	<b>4.83%</b>
Changes in Net Position	158,254,148	(25,429,023)	183,683,171	(722.34%)
Net Position Restricted for Pension Benefits				
Beginning of the Year	1,351,288,640	1,376,717,663	(25,429,023)	(1.85%)
<b>End of the Year</b>	<b>\$ 1,509,542,788</b>	<b>\$ 1,351,288,640</b>	<b>\$ 158,254,148</b>	<b>11.71%</b>

\* Net of investment expense of \$9,085,443 and \$6,865,528 for June 30, 2017 and 2016, respectively.

## *Management Discussion and Analysis Continued*

### *System's Fiduciary Responsibilities*

The System's Board and management staff are fiduciaries of the pension trust fund. Under the California Constitution, the assets must be used exclusively for the benefit of plan participants and their beneficiaries.

### *Requests for Information*

This financial report is designed to provide the Retirement Board, our membership, taxpayers, investment managers, and creditors with a general overview of the City of Fresno Fire and Police Retirement System's finances, and to show accountability for the funds it receives. Questions concerning any of the information provided in this report, or requests for additional financial information should be addressed to:

**City of Fresno Fire and Police Retirement System**

**2828 Fresno Street Suite 201**

**Fresno, California 93721-1327**

Respectfully submitted,

Robert T. Theller  
Retirement Administrator

December 12, 2018

# Basic Financial Statements

## Statement of Fiduciary Net Position

As of June 30, 2018 and 2017

	2018	2017
<b>ASSETS</b>		
Cash (Note 7)	\$ 2,206,598	\$ 2,629,631
Collateral Held for Securities Lent (Note 9)	98,293,865	115,054,300
Receivables		
Receivables for Investments Sold	1,510,664	1,949,433
Interest and Dividends	4,004,206	4,385,532
Other Receivables	1,884,317	1,414,907
<b>Total Receivables</b>	<b>7,399,187</b>	<b>7,749,872</b>
Prepaid Expenses	37,808	210
<b>Total Current Assets</b>	<b>107,937,458</b>	<b>125,434,013</b>
Investments at Fair Value (Note 6 and Note 7)		
Domestic Equity	598,042,858	580,054,443
International Developed Market Equities	287,973,864	263,901,288
Government Bonds	177,379,820	180,061,033
Corporate Bonds	150,585,487	152,900,815
Direct Lending	63,716,750	52,376,144
Real Estate	234,106,238	201,196,024
International Emerging Market Equities	55,558,303	51,229,521
Short-Term Investments	33,310,870	29,220,744
<b>Total Investments</b>	<b>1,600,674,190</b>	<b>1,510,940,012</b>
Capital Assets Net of Accumulated Depreciation (Note 12)	966,652	1,101,255
<b>Total Assets</b>	<b>1,709,578,300</b>	<b>1,637,475,280</b>
<b>LIABILITIES</b>		
Collateral Held for Securities Lent (Note 9)	98,293,865	115,054,300
Payable for Investments Purchased	5,590,678	9,365,854
Other Liabilities	1,419,408	2,159,243
Payable for Foreign Currency Purchased	1,688,755	1,353,095
<b>Total Liabilities</b>	<b>106,992,706</b>	<b>127,932,492</b>
<b>Net Position Restricted for Pension Benefits (Note 5)</b>	<b>\$ 1,602,585,594</b>	<b>\$ 1,509,542,788</b>

The notes to the financial statements on pages 18 - 54 are an integral part of this statement.

## Basic Financial Statement Continued

**Statement of Changes in Fiduciary Net Position**  
**For Fiscal Years Ended June 30, 2018 and 2017**

	2018	2017
<b>ADDITIONS</b>		
Contributions (Note 3)		
Employer	\$ 19,696,957	\$ 18,543,308
System Members	8,963,672	8,169,019
<b>Total Contributions</b>	<b>28,660,629</b>	<b>26,712,327</b>
Investment Income		
Net Appreciation/(Depreciation) in Value of Investments	111,163,089	174,790,945
Interest	14,600,658	14,370,912
Dividends	12,886,994	11,059,543
Other Investment Related	55,900	53,280
Total Investment Income	138,706,641	200,274,680
Less: Investment Expense	(10,021,417)	(8,470,764)
<b>Total Net Investment Income</b>	<b>128,685,224</b>	<b>191,803,916</b>
Securities Lending Income		
Securities Lending Earnings (Note 9)	2,000,798	1,128,421
Less: Securities Lending Expense	(1,523,233)	(614,679)
<b>Total Net Securities Lending Income</b>	<b>477,565</b>	<b>513,742</b>
<b>Total Additions</b>	<b>157,823,418</b>	<b>219,029,985</b>
<b>DEDUCTIONS</b>		
Benefit Payments	60,491,661	57,028,861
Post Retirement Supplemental Benefits (Note 11)	2,019,167	1,719,441
Refunds of Contributions	560,170	524,636
Administrative Expense	1,709,614	1,502,899
<b>Total Deductions</b>	<b>64,780,612</b>	<b>60,775,837</b>
<b>Changes in Net Position</b>	<b>93,042,806</b>	<b>158,254,148</b>
<b>NET POSITION RESTRICTED FOR PENSION BENEFITS</b>		
<b>BEGINNING OF YEAR</b>	<b>1,509,542,788</b>	<b>1,351,288,640</b>
<b>END OF THE YEAR</b>	<b>\$ 1,602,585,594</b>	<b>\$ 1,509,542,788</b>

The notes to the financial statements on pages 18 - 54 are an integral part of this statement.

# Notes to the Basic Financial Statements

## 1 | Significant Provisions of the Retirement System

The City of Fresno Fire and Police Retirement System (the System) was established on July 1, 1955, under provisions of the City of Fresno Ordinance Number 4611, and charter Section 910, and is maintained and governed by Article 3 and 4 of Chapter 3 of the Municipal Code of the City of Fresno but not under the control of the City Council. The System is a single-employer, contributory, defined benefit pension plan. The System is a public employee retirement system that provides lifetime retirement, disability, and death benefits to the safety members employed by the City of Fresno, includes all full time sworn fire, police and airport safety personnel.

The System is administered by the Fire and Police Retirement Board (Board) which operates under the authority vested in Article 3 and 4 of Chapter 3 of the City of Fresno Municipal Code and the California Pension Protection Act of 1992 which provides that “the members of the Retirement Board of a public retirement system shall discharge their duties...solely in the interest of, and for the exclusive purpose of providing benefits to participants and their beneficiaries, minimizing employer contribution thereto, and defraying reasonable expenses of administering the System.

The Fire and Police Retirement Board does not operate under the control of the City Council. The Board has the sole and exclusive responsibility to administer the System in a manner that will assure prompt delivery of benefits and related services to the members and their beneficiaries.

Fiduciary oversight of the Fire and Police Retirement System is vested with the Board, which consists of five (5) members: two (2) management employees who are appointed by the Mayor and confirmed by the City Council, one (1) employee who is elected by the sworn Fire Department members of the System, and one (1) employee who is elected by the Police and Airport Safety Officers of the System; both elected members serve a four-year term. The fifth and final member of the Board is a qualified elector of the County of Fresno, not connected with its government, elected by the previously designated four members and serves at the pleasure of the Board.

The Board, in conjunction with the Employees Retirement Board, appoints, directs and oversees a Retirement Administrator. The Retirement Administrator is responsible for the overall management and administration of the Employees and Fire and Police Retirement Systems in accordance with the direction, policy and goals set by the Boards and for providing highly responsible and complex administrative support to the Boards. The Retirement Administrator serves at the pleasure of the Boards.

Working closely with the Boards, the Retirement Administrator and his staff develop investment and benefits policies, coordinate member services and programs, and develop long-term strategies that fulfill the Systems’ mission and goals.

The Board oversees the Retirement Administrator and staff in the performance of their duties in accordance with the City of Fresno Municipal Code and the Board’s Rules, Regulations and Policies.

## Notes to the Basic Financial Statement Continued

### Membership and Benefit Eligibility

The Fire and Police Retirement System is one System with two tiers. Effective August 27, 1990, the City of Fresno (the City) added the Fire and Police Second Tier for all full time sworn fire, police and airport safety personnel hired on or after that date (and closed the Fire and Police First Tier to new entrants). Both tiers are governed by the City of Fresno Municipal Code. The provisions of Tier 1 are set forth in Article 3 of Chapter 3, while the Tier 2 provisions are stated in Article 4.

All permanent sworn Fire and Police personnel of the City of Fresno are eligible to participate in the plan. Temporary Public Safety employees are not eligible to participate in the plan. Employees become eligible for membership on their first day of full-time regular employment, and members become fully vested after earning 5 years of service credit.

Total participants of the System were comprised of the following at June 30, 2018 and 2017:

	<u>2018</u>	<u>2017</u>
Active Members		
Vested	808	863
Non-Vested	330	221
Total Active Members	<u>1,138</u>	<u>1,084</u>
Retirees and Beneficiaries of Deceased		
Retirees, Currently Receiving Benefits	1,062	1,042
Inactive Vested Members	94	90
Total Retirees and Inactive Members	<u>1,156</u>	<u>1,132</u>
<b>Grand Total</b>	<b><u>2,294</u></b>	<b><u>2,216</u></b>

### Benefit Provisions

The System provides lifetime retirement, disability, and death benefits to all eligible permanent sworn Fire, Police and Airport personnel employed by the City of Fresno. The retirement (pension) benefits the member will receive are based upon a combination of age at retirement, years of credited service, final average monthly salary, tier and the option selected by the participant. Death and disability benefits are additionally based upon whether the disability was service connected and whether the death occurred before or after retirement.

Members' contributions, including interest, are 100 percent vested at all times. Employer contributions do not become vested until completion of 10 years of credited service under the First Tier and five years of credited service under the Second Tier when they become 100 percent vested, but are not payable until the member attains the age of 50 under both tiers. Contributions are made by the members and the employer at rates recommended by the System's actuary and adopted by the Retirement Board.

### Member Retirement Benefits

Members of Tier 1, hired prior to August 27, 1990, are eligible to retire once they attain the age of 65 regardless of service or at age 50 and have acquired 10 or more years of retirement service credit. Tier 1 benefit is calculated pursuant to the provisions of Section 3-333 of the City of Fresno Municipal Code. The monthly allowance for a member with at least 20 years of service who retires from active status is equal to 55 percent of final compensation plus 2 percent of final compensation for each year of service in excess of 20 years completed after age 50. For Tier 1, final average compensation consists of the final highest consecutive 36 months of compensation earnable calculated using the rate of pay actually earned by the member in effect at the time of retirement. Some members can elect to have their final compensation based on a rank average.



## Notes to the Basic Financial Statement Continued

Members of Tier 2, hired on or after August 27, 1990, are eligible to retire once they attain the age of 65 regardless of service or at age 50 and have acquired 5 or more years of retirement service credit. Tier 2 benefit is calculated pursuant to the provisions of Section 3-411 of the City of Fresno Municipal Code. The monthly allowance for a member who is age 55 or older is equal to 2.70 percent of final compensation times years of accrued retirement service credit. The maximum monthly retirement allowance is 75 percent of final compensation. For Tier 2, final average compensation consists of the highest consecutive 36 months of compensation earnable during any 36 months of service before the date of retirement.

The member may elect an unmodified retirement allowance, or choose an optional retirement allowance. The unmodified retirement allowance provides the highest monthly benefit and a 66 2/3 percent continuance to an eligible surviving spouse or domestic partner. An eligible surviving spouse is one married to the member one year prior to the effective retirement date for members retiring on or before the effective date (February 10, 2000) of Ordinance No. 2000-5. For members retiring after the effective date of Ordinance 2000-5, an eligible surviving spouse or domestic partner is one married to or registered with the member on or before the date of retirement.

There are four optional retirement allowances the member may choose. Each of the optional retirement allowances requires a reduction in the unmodified retirement allowance in order to allow the member the ability to provide certain benefits to a surviving spouse, domestic partner, or named beneficiary having an insurable interest in the life of the member.

The City of Fresno contributes to the retirement plan based upon actuarially determined contribution rates adopted by the Board. Employer contribution rates are adopted annually based upon recommendations received from the Retirement

System's actuary after the completion of the annual actuarial valuation. The average employer contribution rate as of June 30, 2018 for 2017-2018 (based on the June 30, 2016 valuation) was 18.95 percent of compensation.

All members are required to make contributions to the Retirement System. The average member contribution rate as of June 30, 2018 for 2017-2018 (based on the June 30, 2016 valuation) was 8.62 percent of compensation.

### *Deferred Retirement Option Program (DROP)*

DROP is an optional voluntary program that allows a member to have his or her retirement benefits deposited in a special account within the System while the member continues to work in his or her current position. It is a voluntary method of receiving a distribution of retirement benefits; it is not an additional retirement benefit.

DROP may not be beneficial to all members. Each member must determine how the DROP option will affect the member's retirement benefits prior to making an election to enter the DROP.

The member's retirement benefits are determined as of the date of entry into the DROP option and accumulate in the member's DROP account while the member continues to work. Members entering DROP, after January 27, 2011 in accordance with ordinances that amended sections of the City of Fresno Municipal Code, continue making employee contributions.

**Eligibility:** Any member who is eligible for a service retirement, is age 50 with a minimum of 5 years of service.

**Participation Period:** The maximum participation period is ten years. Because the participation period cannot be extended, the member must retire at its conclusion; however, the member may end participation in DROP and terminate

## *Notes to the Basic Financial Statement Continued*

employment with the City and begin retirement at any time prior to the end of the ten-year period.

**DROP Account:** A DROP account is set up for each participant; the monthly amount credited to DROP accounts include an amount which represents the service retirement allowance which the member would have received if the member had retired on the date the member commenced DROP participation. Interest is also credited to the DROP account monthly at a rate which is set annually by the Retirement Board. The rate is based on the prior five-year moving average of net market returns of the System's investments in accordance with the City of Fresno Municipal Code requirements. The Board is authorized to reduce the annual interest crediting rate up to 3 percent, if necessary, to maintain DROP's cost neutrality.

A DROP account is a nominal, bookkeeping account established within the System for each DROP participant.

Upon termination of DROP participation and retirement from the City, a member receives the amounts credited to their DROP account, including interest. In addition, the member will also begin receiving his or her monthly retirement allowance in the amount being credited to their DROP account. The member may select a method of withdrawing the money from his or her DROP account from the options provided.

DROP Reserves which represent funds reserved for DROP benefits accumulated by active members and retirees were \$139,944,340 and \$135,164,444 as of June 30, 2018 and 2017, respectively.

### *Terminated Member Benefits*

If a member terminates before earning five years of credited service, the member forfeits the right to receive his or her service retirement benefit and is entitled to withdraw refundable contributions made, together with accumulated

interest. If the member enters a reciprocal retirement system within 180 days (6 months) of terminating employment with the City of Fresno and elects to leave their accumulated contributions on deposit with the System, then the member will receive a deferred retirement allowance when eligible.

### *Death and Disability Benefits*

Death benefits are based upon whether the death occurred before or after retirement. Disability benefits are based upon final average salary, years of credited service and whether the member is over or under age 50 and whether the permanent incapacity is found to be service connected (caused by the job) or ordinary (injury or illness not caused by their job) disability. There is no minimum service requirement before benefits are payable for service-connected disability. However, in order to receive ordinary disability benefits, the member must have completed at least 10 years of service.

### *Cost of Living Benefits*

Cost-of-living (COLA) increases for the First Tier retirees are determined by the increases attached to ranks of active safety employees for those having retired under the rank-average option. For those retired under the 3-year average, cost-of-living is based on the percentage of change in the weighted mean average monthly compensation attached to all ranks of members, as compared with the prior fiscal year and limited to a maximum of 5 percent per year.

Tier 1 cost-of-living adjustments (COLA) depend on the type of method chosen by the employee at retirement. If the employee chose the Career Rank method, the COLA is a recalculation of his/her retirement based on the new salaries adopted for the current year. If the method chosen by the retiree is the final 3-year method, the COLA is based on the change in the weighted mean average compensation attached to all ranks in the department with a cap of five

## Notes to the Basic Financial Statement Continued

percent (5%) per year. Any excess over the 5% is banked for use in years when the COLA calculation is less than 5%.

Cost-of-Living Adjustment (COLA) increases for the Second Tier retirees will be determined by the change in Consumer Price Index with a maximum of 3 percent per year. Provisions for the COLA increases are outlined in the City of Fresno Municipal Code and changes may be made only by code amendment.

Tier 2 COLAs are based on the change in the Consumer price index (for all Urban Wage Earners and all Clerical Workers – U.S. City Average) as provided in the City of Fresno Municipal Code. Retirement staff research the percentage change in CPI and propose that percent to the Fire and Police Retirement Board as the COLA to be adopted for the following fiscal year. This procedure must be complete by the end of April each year for implementation in January of the following calendar year. The COLA is limited to a three percent (3%) maximum change per year and any excess over 3 percent is banked for the retiree for use in a year where the percent of CPI change is less than 3 percent.

The Board adopted the annual COLA adjustment, pursuant to Section 3-411, 1.9 percent, January 1, 2018, 0.4 percent, January 1, 2017, 0.3 percent, effective January 1, 2016.

## 2 | Summary of Significant Accounting Policies

### Reporting Entity

The Retirement System, with its own governing board, is an independent governmental entity separate and distinct from the City of Fresno. The System's annual financial statements are included in the City of Fresno Annual Financial Report as a pension trust fund.

### Basis of Accounting

The System's financial statements are prepared using the accrual basis of accounting and in accordance with accounting principles generally accepted in the United States of America (GAAP), under which revenues are recognized when earned and deductions are recorded when the liability is incurred. Employer and employee contributions are recognized as revenue when due. Contributions are recorded in the period the related salaries are earned and become measurable. Investment income is recognized when it is earned. The net appreciation in fair value of investments held by the System is recorded as an increase to investment income based on the valuation of investments at fiscal year end, which includes both realized and unrealized gains and losses on investments. Retirement benefits and refunds are recognized when due and payable under the terms of the plan and per Sections 3-322 and 3-324 of the City of Fresno Municipal Code. Other expenses are recognized when the corresponding liabilities are incurred.

Securities lending transactions are accounted for in accordance with Governmental Accounting Standards Board (GASB) Statement No. 28, *Accounting and Financial Reporting for Securities Lending Transactions*, which establishes reporting standards for securities lending transactions. In accordance with Statement No. 28, cash received as collateral on securities lending transactions and investments made with that cash are reported as assets and liabilities resulting from these transactions and are both reported in the Statement of Fiduciary Net Position. In addition, the costs of securities lending transactions are reported as an expense in the Statement of Changes in Fiduciary Net Position.

## Notes to the Basic Financial Statement Continued

### Investments

The System is authorized by the City of Fresno Municipal Code and the policies of the Retirement Board to invest in any form or type of investment deemed prudent by the Board and does so through its Investment Objectives and Policy Statement which establishes and outlines the responsibilities of the various parties that are associated with managing assets of the Retirement System, consistent with applicable sections of the City of Fresno Municipal Code, Federal laws and Article XVI, Section 17(c) of the Constitution of the State of California which provides that “the member of the Retirement Board of a public pension or retirement system shall discharge their duties with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aim.”

System investments are reported at fair value. Fair value is the amount that the System can reasonably expect to receive for an investment in a current sale between a willing seller, that is, other than in a forced or liquidation sale. Fair value for investments of publicly traded securities is stated at fair value based upon closing sales prices reported on recognized securities exchanges on the last business day of the period or for listed securities having no sales reported and for unlisted securities, based upon last reported bid prices. All purchases and sales of securities are accounted for on a trade date basis and dividends declared but not received are accrued on the ex-dividend date. Short-term investments are reported at cost, which approximates fair value. Securities traded on national or international exchanges are valued at the last reported sales price at current exchange rates. Investments in both bonds and mortgage backed pass-through certificates are carried at fair value.

Cost values, as shown, are derived from Master Custodial Transaction Records. The fair value of real estate

investments is based on independent appraisals. Investments that do not have an established market are reported at estimated fair values.

The asset allocation policy set by the Board, in conjunction with the Employees Retirement Board, is outlined in the Boards’ Investment Objectives and Policy Statement. Plan assets are managed with a long-term objective of achieving and maintaining a fully funded status for the benefits provided by the System. The table below provides the Boards’ adopted asset allocation policy as of June 30, 2018 and 2017.

### Asset Allocation Policy

*As of June 30, 2018 and 2017*

Asset Class	FY 2018	FY 2017
Domestic Equity		
Large Cap	15.8%	15.8%
Small Cap	7.2%	7.2%
International Equity		
Developed Markets	19.0%	19.0%
Emerging Markets	6.0%	6.0%
Fixed Income		
Core Fixed Income	10.0%	10.0%
High Yield Bonds	5.0%	5.0%
Real Estate		
Core Real Estate	11.0%	11.0%
Value Add Real Estate/REITs	4.0%	4.0%
Alternatives		
Infrastructure	4.0%	4.0%
MLPs	5.0%	5.0%
Private Equity	5.0%	5.0%
Private Debt	8.0%	8.0%
Short-Term Investments	0.0%	0.0%
	<b>100%</b>	<b>100%</b>

## Notes to the Basic Financial Statement Continued

### Estimates

The preparation of financial statements in accordance with generally accepted accounting principles (GAAP) requires the System administrator to make estimates and assumptions that affect certain amounts and disclosures. Accordingly, actual results may differ from those estimates.

### Reclassifications

Certain amounts presented in the prior year's data has been reclassified to be consistent with the current year's presentation. Such reclassifications had no effect on previously reported net plan assets.

### Implementation of New Accounting Pronouncements

For the year ended June 30, 2018, the Board adopted and implemented all applicable new GASB pronouncements in the fiscal year ended June 30, 2018, as required by each statement. The most recent pronouncement, effective for fiscal year ended June 30, 2018, is provided below.

GASB Statement No.85, *OMNIBUS 2017*, was issued in March 2017. This statement addresses a variety of topics including issues related to blending component units, goodwill, fair value measurement and application, and postemployment benefits (pensions and other postemployment benefits [OPEB]). There was no material impact on the System's financial statements as a result of the implementation of GASB Statement No. 85.

## 3 | Contributions

### Authority to Collect

The responsibility for both City and employee contributions to the System is mandated by the City of Fresno Municipal Code Sections 3-319, 3-324, and 3-405.

Contributions are made by the members and the employer at rates recommended by the System's independent actuary and adopted by the Board.

All active members are required to make contributions to the System. Employee contribution rates vary in the First Tier according to entry age and are designed to provide funding for approximately one-third of the retirement benefits. The Tier 1 average member contribution rate as of June 30, 2018 for 2017-2018 (based on the June 30, 2016 valuation) was 5.02% of compensation. The Tier 1 average member contribution rate as of June 30, 2017 for 2016-2017 (based on the June 30, 2015 valuation) was 5.25% of compensation.

Employee contribution rates in the Second Tier are established at nine percent (9%) of pensionable base pay.

The City's contribution rates are designed to provide funding for the remaining regular retirement and cost-of-living benefits, as well as all disability and survivors' benefits.

The aggregate employer contribution rate as of June 30, 2018 for 2017-2018 (based on the June 30, 2016 valuation) was 18.92% of compensation. The aggregate employer contribution rate as of June 30, 2017 for 2016-2017 (based on the June 30, 2015 valuation) was 19.02% of compensation.

## Notes to the Basic Financial Statement Continued

One of the funding objectives of the System is to establish contribution rates which, over time, will remain level as a percentage of payroll unless the System benefit provisions are changed.

### Funding Status & Method

#### *Comprehensive Actuarial Funding Policy and Actuarial Cost Methodology for Funding Purposes*

The Board adopted a Comprehensive Actuarial Funding Policy on November 7, 2012. For the Fire & Police Retirement System, that policy included a change in actuarial cost methodology from the aggregate Entry Age Normal funding method used for funding purposes to the individual Entry Age Normal (EAN) method as this individual EAN method is used by a substantial majority of the retirement systems in California and nationwide. More importantly, the Board made this change in actuarial cost methodology due to the adoption of GASB Statements No. 67 and 68 which substantially revises the financial reporting requirements for governmental pension plans and their sponsors.

#### *Goals of the Actuarial Funding Policy:*

- To achieve long-term full funding of the cost of benefits provided by the System;
- To seek reasonable and equitable allocation of the cost of benefits over time; and
- To minimize any volatility of the City's contribution to the extent reasonably possible, consistent with other policy goals.

### Funding Requirements and Policy Components

The System's annual funding requirement is comprised of a payment of the Normal Cost and a payment on the Unfunded Actuarial Accrued Liability (UAAL) if applicable. The Normal Cost and the amount of the payment on UAAL are determined by three components of the Board's funding policy: 1) Actuarial Cost Method – the techniques used to allocate the cost/liability of retirement benefits to a given period; 2) Asset Smoothing Method – the techniques that spread the recognition of investment gains or losses over a period of time for the purposes of determining the Actuarial Value of Assets used in the actuarial valuation process; and 3) Amortization Policy – the decisions on how, in terms of duration and pattern, to fund the difference between the Actuarial Accrued Liability and the Actuarial Value of Assets in a systematic manner.

Using the Asset Smoothing Method, the investment gains or losses of each valuation period, as a result of comparing the actual market return to the expected market return, are recognized in level amounts over five (5) years in calculating the Actuarial Value of Assets.

As of June 30, 2018, the System does not have an Unfunded Actuarial Accrued Liability (UAAL). The Board's Amortization Policy sets forth the amortization procedures for funding any UAAL or amortization and allocation of any available surplus in the System.

Any new UAAL as a result of actuarial gains or losses identified in the annual valuation as of June 30 will be amortized over a period of fifteen (15) years. Any new UAAL as a result of any change in actuarial assumptions or methods will be amortized over a period of twenty-five (25) years. The amortization period for any increase in UAAL as a result of any amendments to the System will be amortized over a period of fifteen (15) years, while any increase in UAAL resulting from a temporary retirement

*Notes to the Basic Financial Statement Continued*

incentive will be funded over a period not to exceed five (5) years. UAAL shall be amortized over “closed” (separate) amortization periods so that the amortization period for each layer decreases by one year with each actuarial valuation.

UAAL is amortized as a level percentage of payroll so that the amortization amount in each year during the amortization period shall be expected to be a level percentage of covered payroll, taking into consideration the current assumption for general payroll increase.

If an overfunding status exists (i.e., the Valuation Value of Assets exceeds the Unfunded Actuarial Accrued Liability (UAAL), the System is considered to have a surplus in the System as of a point in time), such actuarial surplus and any subsequent surpluses will be amortized over an “open” amortization period of twenty-five (25) years.

This amortization period of twenty-five years shall be applicable to the provisions in the City of Fresno Municipal Code Sections relating to the amortization period used in the calculation of the Post Retirement Supplement Benefit (PRSB). Any prior Unfunded Actuarial Accrued Liability (UAAL) amortization layers will be considered fully amortized, and any subsequent UAAL will be amortized over fifteen (15) years as the first of a new series of amortization layers.

The System uses a five year smoothing of market gains and losses to derive the actuarial value of assets. As of the fiscal year ended June 30, 2018, the actuarial value of assets was \$1.437 billion with a funded percentage of 120.3 percent on a valuation value of assets.

The progress being made towards meeting the System’s funding objective through June 30, 2018 is illustrated in the Schedule of Funding Progress shown on the table below.

**Schedule of Funding Progress**  
For The Three Years Ending June 30, 2018  
(Dollars in Millions)

	(1)	(2)	(3)	(4)	(5)	(6)
Actuarial Valuation Date	Actuarial Valuation Value of Assets	Actuarial Accrued Liability (AAL)	Percentage Funded (1)/(2)	(Prefunded) / Unfunded AAL (2)–(1)	Annual Covered Payroll	(Prefunded) / Unfunded AAL Percentage of Covered Payroll (4)/(5)
2018	\$1,437	\$1,195	120.3%	(\$242)	\$111	(218.1%)
2017	\$1,355	\$1,131	119.8%	(\$224)	\$103	(217.8%)
2016	\$1,277	\$1,067	119.6%	(\$209)	\$99	(211.7%)

## Notes to the Basic Financial Statement Continued

### Funding Policy

The City currently funds, at a minimum, the amounts recommended by the actuary and approved by the Retirement Board. Such amounts are determined using the individual entry age normal funding method applied to the projected benefits in determining the Normal Cost and Actuarial Accrued Liability. If there is a positive (Surplus) or negative (Unfunded) difference between the Valuation of Assets and the Actuarial Accrued Liability (AAL), the amortization policy determines the amortization of the Unfunded Actuarial Accrued Liability (UAAL) on a level percentage of payroll needed to fund the UAAL or the amount of available surplus which would be distributable in any given year. This method produces an employer contribution rate consisting of amounts for (a) normal cost and (b) amortization of any unfunded (UAAL) or prefunded (PAAL) actuarial accrued liability.

These minimum contributions are recognized currently in the Statement of Changes in Fiduciary Net Position. Employees' contributions are funded and recognized currently through payroll deductions in amounts recommended by the actuary. Costs of administering the System are charged against System assets.

Total contributions to the System for fiscal year 2018 totaled \$28,660,629. Employees (members in both tiers) contributed \$8,963,672 and the City made (basic and cost-of-living adjustments (COLA)) contributions of \$19,696,957.

### First Tier

Contributions aggregating \$1,398,934 (\$1,190,040 net employer and \$208,894 employee) were made in fiscal year 2018, based on an actuarial valuation determined as of June 30, 2016, which became effective for the year ended June 30, 2018. For fiscal year 2018, the employer contribution rate was set at 28.38 percent; however, only a cash

contribution of \$1,190,040 was required from the City due to the difference between actual and the estimated June 30, 2016 surplus allocated to the City in the June 30, 2015 valuation for offsetting the City's contributions for the 2016/2017 plan year. Employer and employee contributions represented 18.93 percent and 3.32 percent, respectively, of the fiscal year 2018 covered payroll.

Contributions aggregating \$1,693,761 (\$1,475,660 net employer and \$218,101 employee) were made in fiscal year 2017, based on an actuarial valuation determined as of June 30, 2015, which became effective for the year ended June 30, 2017. For fiscal year 2017, the employer contribution rate was set at 29.59 percent; however, only a cash contribution of \$1,475,660 was required from the City due to the difference between actual and the estimated June 30, 2015 surplus allocated to the City in the June 30, 2014 valuation for offsetting the City's contributions for the 2015/2016 plan year. Employer and employee contributions represented 19.02 percent and 2.81 percent, respectively, of the fiscal year 2017 covered payroll.

### Second Tier

Contributions aggregating \$27,261,695 (\$18,506,917 net employer and \$8,754,778 employee) were made in fiscal year 2018, based on an actuarial valuation determined as of June 30, 2016, which became effective for the year ended June 30, 2018. For fiscal year 2018, the employer contribution rate was set at 23.15 percent; however, only a cash contribution of \$18,506,917 was required from the City due to the difference between actual and the estimated June 30, 2016 surplus allocated to the City in the June 30, 2015 valuation for offsetting the City's contributions for the 2016/2017 plan year. Employer and employee contributions represented 18.95 percent and 9.00 percent, respectively, of the fiscal year 2018 covered payroll.



*Notes to the Basic Financial Statement Continued*

Contributions aggregating \$25,018,566 (\$17,067,648 net employer and \$7,950,918 employee) were made in fiscal year 2017, based on an actuarial valuation determined as of June 30, 2015, which became effective for the year ended June 30, 2017. For fiscal year 2017, the employer contribution rate was set at 22.24 percent; however, only a cash contribution of \$17,067,648 was required from the City due to the difference between actual and the estimated June 30, 2015 surplus allocated to the City in the June 30, 2014 valuation for offsetting the City's contributions for the 2015/2016 plan year. Employer and employee contributions represented 19.05 percent and 9.00 percent, respectively, of the fiscal year 2017 covered payroll.

The City's normal contributions to the Fire and Police Retirement System for 2018 were estimated in accordance with actuarially determined requirements computed through an actuarial valuation performed as of June 30, 2016, as follows:

### Actuarial Rates as a Percentage of Pensionable Payroll

	Effective FY 18	Effective FY 17
Employer Normal (First Tier)	28.38%	29.59%
Employer Normal (Second Tier)	23.15%	22.24%

### Normal Cost

	FY 2018		
	Tier 1	Tier 2	Total
Employee Contributions	\$ 208,894	\$ 8,754,778	\$ 8,963,672
Employer Contribution Rate	28.38%	23.15%	
Employer Contributions	\$ 1,783,709	\$ 22,605,777	\$ 24,389,486
Prior Year Contribution (Surplus)/Shortfall	(593,669)	(4,098,860)	(4,692,529)
<b>Net Employer Contributions</b>	<b>\$ 1,190,040</b>	<b>\$ 18,506,917</b>	<b>\$ 19,696,957</b>
<b>Pensionable Payroll</b>	<b>\$ 6,285,092</b>	<b>\$ 97,649,142</b>	<b>\$ 103,934,234</b>
	FY 2017		
	Tier 1	Tier 2	Total
Employee Contributions	\$ 218,101	\$ 7,950,918	\$ 8,169,019
Employer Contribution Rate	29.59%	22.24%	
Employer Contributions	\$ 2,295,561	\$ 19,929,424	\$ 22,224,985
Prior Year Contribution (Surplus)/Shortfall	(819,901)	(2,861,776)	(3,681,677)
<b>Net Employer Contributions</b>	<b>\$ 1,475,660</b>	<b>\$ 17,067,648</b>	<b>\$ 18,543,308</b>
<b>Pensionable Payroll</b>	<b>\$ 7,757,895</b>	<b>\$ 89,610,723</b>	<b>\$ 97,368,618</b>

*Notes to the Basic Financial Statement Continued***4 | Net Pension Liability**

The components of the net pension liability of the System are as follows:

**Schedules of Changes in the System's Net Pension Liability (GASB 67)**

As of June 30, 2018 and 2017

(In Thousands)

	<b>As of June 30, 2018</b>	<b>As of June 30, 2017</b>
Total Pension Liability	\$1,387,482	\$1,315,368
Plan Fiduciary Net Position	(\$1,602,586)	(\$1,509,543)
<b>Net Pension Liability</b>	<b>(\$215,104)</b>	<b>(\$194,175)</b>
<b>Plan Fiduciary Net Position as a percentage of the total pension liability</b>	<b>115.50%</b>	<b>114.76%</b>

The net pension liability was measured as of June 30, 2018 and 2017 and determined based upon the total pension liability (on a GASB 67 basis) from actuarial valuations as of June 30, 2018 and 2017, respectively.

*Notes to the Basic Financial Statement Continued***Actuarial Assumptions****Key Methods and Assumptions Used in Valuation  
of Total Pension Liability**

The total pension liability as of June 30, 2018 was determined by an actuarial valuation as of June 30, 2018, using the following actuarial assumptions, applied to all periods included in the measurement:

Valuation Date	June 30, 2018 <sup>1</sup>
Actuarial Experience Study	3 Year Period Ending June 30, 2015
Actuarial Cost Method	Entry Age Normal Actuarial Cost Method Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percentage of compensation.

**Actuarial Assumptions**

Inflation	3.00%
Salary Increases	4.00% to 12.00%, varying by service, including inflation
Discount Rate	7.25%, net of pension plan investment expense, including inflation
Other assumptions	See June 30, 2018 funding valuation and (Appendix A) for the service retirement rates after they have been adjusted to treat DROP participation as service retirement.
Mortality Rates	Mortality rates used in the latest actuarial valuation are based on the Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional scale MP-2015. For healthy members the separate tables for males and females ages assume no setback for males and are set forward one year for females. For members that are disabled, the ages are set forward four years. For beneficiaries, the separate tables assume no setback for males and are set forward one year for females, weighted 20% male and 80% female.

<sup>1</sup> Actuarially determined contribution rates are calculated as of June 30, two years prior to the end of the fiscal year in which contributions are reported. As such, the actuarial valuation dated June 30, 2018 and 2017 will impact the contribution rates for the fiscal years ended June 30, 2020 and 2019.

## *Notes to the Basic Financial Statement Continued*

The valuation interest rate is 7.25 percent; total salary scale increases range between 4.00% to 12.00% (include 3.00 percent for inflation plus 0.50 percent across the board salary increase plus merit and promotion increases based on completed years of service) were based on the June 30, 2015 Experience Analysis and Economic Assumptions Reports.

Actuarial valuations of an ongoing plan involve estimates of the fair value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality, inflation and investment returns. Amounts determined regarding the funded status of the plan and the annual required contributions of the employer are subject to continual revisions as actual results are compared with past expectations and new estimates are made about the future.

GASB Statement No. 67 addresses accounting and financial reporting requirements for pension plans and redefines pension liability and expense for financial reporting purposes, and does not apply to contribution amounts for pension funding purposes.

When measuring pension liability under GASB Statement No. 67, the actuary uses the same actuarial cost method (Entry Age method) and the same type of discount rate (expected return on assets) as the System uses for funding. Note that, unrelated to the investment return assumption, the new rules use a version of the Entry Age method where the Total Pension Liability (TPL) for financial reporting purposes must be fully accrued by the time a member either enters DROP or is expected to elect the DROP. This is in contrast to the version of the Entry Age method used for funding, where the Actuarial Accrued Liability (AAL) does not have to be fully accrued until members retire from employment after participation in the DROP. Under GASB Statement No. 67, active members who are expected to enroll in the DROP in the future would report a Service Cost that is higher than the Normal Cost used for funding, while

members already in the DROP would report no Service Cost even though their Normal Cost continues to accrue.

### *Long-Term Expected Real Rate of Return*

The long-term expected rate of return on the System's investments was determined using a building-block method in which expected future real rates of return (expected returns, net of pension plan investment expense and net of inflation) are developed for each major asset class. This information is combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation and deducting expected investment expenses. The target allocation and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before deducting investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized in the following table.

The actual asset class target allocations from the Board's current adopted Asset Allocation Target Policy will be utilized in the Analysis of Actuarial Experience during the period July 1, 2012 through June 30, 2015 and for the Review of Economic Actuarial Assumptions for the June 30, 2018 Actuarial Valuation.

*Notes to the Basic Financial Statement Continued*

## Asset Class/Target Allocation/Long-term Expected Real Rate of Return Table

Asset Class	As of June 30, 2018		As of June 30, 2017	
	Target Asset Allocation	Weighted Average Long-Term Expected Real Rate of Return* (Arithmetic)	Target Asset Allocation	Weighted Average Long-Term Expected Real Rate of Return* (Arithmetic)
Large Cap U.S. Equity	22.5%	5.80%	22.5%	5.80%
Small Cap U.S. Equity	7.5%	6.47%	7.5%	6.47%
Developed International Equity	22.0%	6.98%	22.0%	6.98%
Emerging Market Equity	8.0%	8.99%	8.0%	8.99%
Domestic Fixed Income	15.0%	0.83%	15.0%	0.83%
High Yield Fixed Income	6.0%	3.44%	6.0%	3.44%
Real Estate	15.0%	4.45%	15.0%	4.45%
Private Debt/Direct Lending	4.0%	5.73%	4.0%	5.73%
<b>Total</b>	<b>100.0%</b>		<b>100.0%</b>	

\* Based on June 30, 2015 Economic Study Assumptions.

### *Mortality Rates*

Mortality rates used in the latest actuarial valuation are based on the Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional scale MP-2015. For healthy members, the separate tables have no setback for males and are set forward one year for females. For members that are disabled, the ages are set forward four years. For beneficiaries, the separate tables have no setback for males and are set forward one year for females, weighted 20% male and 80% female.

### *Discount Rate*

The discount rate used to measure the total pension liability was 7.25 percent as of June 30, 2018 and 2017. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the actuarially determined contribution rates. For this purpose, only employer contributions that are intended to fund benefits for current

plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs for future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on the System's investments was applied to all periods of projected benefit payments to determine the total pension liability as of both June 30, 2018 and June 30, 2017.

The table on the following page presents the net pension liability of the Retirement System calculated using the discount rate of 7.25 percent, as of June 30, 2018 and 2017, as well as what the System's net pension liability would be if it were calculated using a discount rate that is 1.00 percent lower or 1.00 percent higher than the current rate:

*Notes to the Basic Financial Statement Continued***Sensitivity of Net Pension Liability to Changes in the Discount Rate**

As of June 30, 2018 and 2017 (In Thousands)

	1% Decrease	Current Discount Rate	1% Increase
<b>Net Pension Liability</b>	<b>6.25%</b>	<b>7.25%</b>	<b>8.25%</b>
June 30, 2018	(\$34,508)	(\$215,104)	(\$361,693)

	1% Decrease	Current Discount Rate	1% Increase
<b>Net Pension Liability</b>	<b>6.25%</b>	<b>7.25%</b>	<b>8.25%</b>
June 30, 2017	(\$24,472)	(\$194,175)	(\$332,094)

**5 | Net Position Restricted for Pension Benefits**

Net position restricted for pension benefits is segregated into Active Members Reserve (members' accumulated contributions) and reserves established by the Board for various benefit payments.

Reserves are established by the System from member and employer contributions and the accumulation of investment income after satisfying investment and administrative expenses. Note: The reserves do not represent the present value of assets needed, as determined by actuarial valuation, to satisfy retirements and other benefits as they become due.

*The System's major reserves are as follows:*

**ACTIVE MEMBER (EMPLOYEE) RESERVES** represent the total accumulated member contributions. Additions include member contributions and investment earnings; deductions include refunds of member contributions and transfers to Employer Advance/Retired Reserves.

**EMPLOYER ADVANCE/RETIRED RESERVES**

represent the total accumulated employer contributions for future retirement payments to current active members and vested terminated members, and the total accumulated transfers from Active Member Reserves and investment earnings, less payments to retirees and transfers to the DROP Reserve. Additions include contributions from the employer, transfers from Active Member Reserve, and investment earnings; deductions include payments to retirees and transfers to the DROP Reserve.

**DEFERRED RETIREMENT OPTION PROGRAM**

**(DROP) RESERVE** represents funds reserved for Deferred Retirement Option Benefits accumulated by members and retirees.

*Notes to the Basic Financial Statement Continued*

**POST RETIREMENT SUPPLEMENTAL BENEFIT (PRSB) RESERVE** represents surplus earnings that have been allocated but not distributed to eligible participants in accordance with the City of Fresno Municipal Code Section 3-354 Post-Retirement Supplemental Benefit.

**CITY SURPLUS RESERVE** represents surplus earnings that have been allocated but not used as a reduction to offset or eliminate the City's pension contributions in accordance with the conditions and requirements of the City of Fresno Municipal Code Section 3-354 Post-Retirement Supplemental Benefit.

Interest is allocated at an actuarially determined interest rate as approved by the Board and is credited monthly to the Active Member Reserve and the Employer Advance/Retired Reserves. Active members in the Deferred Retirement Option Program accrue interest on their accumulated DROP accounts monthly at an interest rate annually adopted by the Board.

The amount of reserves for the years ended June 30, 2018 and 2017, consisted of the following:

### Reserves Table as of FY 2018 and FY 2017

(In Thousands)

	<b>2018</b>	<b>2017</b>
Employer Advance/Retired Reserves	\$ 1,282,881	\$ 1,206,941
Active Member (Employee) Reserves	177,163	164,672
DROP Reserves	139,944	135,164
PRSB Reserves	2,011	1,854
City Surplus Reserves	587	912
<b>Net Position Restricted for Pension Benefits</b>	<b>\$ 1,602,586</b>	<b>\$ 1,509,543</b>

## Notes to the Basic Financial Statement Continued

### 6 | Fair Value Measurements

In accordance with GASB Statement No. 72, *Fair Value Measurement and Application*, addresses accounting and financial reporting issues related to fair value measurements and disclosures. The System's investments are measured and reported within the fair value hierarchy established by generally accepted accounting principles. The fair value hierarchy, which has three levels, is based on the valuation inputs used to measure an asset's fair value 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). The three levels of the fair value hierarchy are as follows:

**Level 1:** Inputs are based on quoted prices for identical assets or liabilities in an active market that the System can access. An active market for the asset or liability is one in which transactions for the asset or liability occurs with sufficient frequency and volume to provide pricing information on an ongoing basis. A quoted price in an active market usually provides the most reliable evidence of fair value and is generally used without adjustment if available. This classification includes public equities with observable market prices.

**Level 2:** Inputs that are observable either directly or indirectly but are not Level 1 inputs. Level 2 inputs include quoted prices for similar instruments, broker quotes, or observable inputs that directly impact value such as interest rates, prepayment speeds, and credit risk. Pricing inputs, including broker quotes, are generally those other than exchange quoted prices in active markets, and fair values are determined through the use of models or other valuation methodologies. For investments in funds where there is an ability to redeem such investments at the Net Asset Value (NAV) per share (or its equivalent) at the measurement date

or in the near term, the fair value of the investment is generally categorized as Level 2.

**Level 3:** Inputs that are unobservable. Level 3 inputs are generally used in situations where there is little, if any, market activity for the investment. These inputs into the determination of fair value require significant management judgment or estimation. Due to the inherent uncertainty of these estimates, these values may differ significantly from the values that would have been used had a ready market for these investments existed. Investments that are included in this category generally include public entities and other fixed income securities where there is an inability to redeem such investments at the NAV per share (or its equivalent) at the measurement date or in the near term.

The tables on the following pages show the fair value leveling of the System's investments as of June 30, 2018 and 2017.



## Notes to the Basic Financial Statement Continued

Investment Type	Fair Value Measurements Using			
	June 30, 2018	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<b>Investments by Fair Value Level</b>				
<b>Debt Securities</b>				
Asset Backed Securities	\$ 4,346,792	\$ —	\$ 4,346,792	\$ —
Commercial Mortgage-Backed	3,920,827	—	3,753,004	167,823
Corporate Bonds	131,993,227	—	131,993,227	—
Corporate Convertible Bonds	6,609,649	—	6,609,649	—
Government Agencies	3,048,865	—	3,048,865	—
Government Bonds	58,916,944	—	58,916,944	—
Government Mortgage Backed Securities	66,183,700	—	66,183,700	—
Gov't-issued Commercial Mortgage-Backed	673,236	—	673,236	—
Municipal/Provincial Bonds	6,523,597	—	6,523,597	—
Non-Government Backed C.M.O.s	973,478	—	973,478	—
<b>Total Debt Securities</b>	<b>283,190,315</b>	<b>—</b>	<b>283,022,492</b>	<b>167,823</b>
<b>Equity Securities</b>				
Consumer Discretionary	73,372,218	73,372,218	—	—
Consumer Staples	24,363,581	23,595,459	768,122	—
Energy	20,373,231	20,185,326	187,905	—
Financials	102,214,799	102,214,799	—	—
Health Care	38,322,566	38,322,566	—	—
Industrials	84,388,396	84,381,710	—	6,686
Information Technology	60,079,255	59,903,522	—	175,733
Materials	28,318,243	28,318,243	—	—
Miscellaneous	—	—	—	—
Real Estate	94,910,644	94,906,932	3,712	—
Telecommunication Services	26,902,095	26,902,095	—	—
Utilities	5,183,461	5,183,461	—	—
<b>Total Equity Securities</b>	<b>558,428,489</b>	<b>557,286,331</b>	<b>959,739</b>	<b>182,419</b>
<b>Securities Lending</b>	<b>98,293,865</b>	<b>98,293,865</b>	<b>—</b>	<b>—</b>
<b>Short-Term Investments</b>	<b>33,310,871</b>	<b>14,926,418</b>	<b>18,384,453</b>	<b>—</b>
<b>Private Real Estate Holdings</b>	<b>3,035,896</b>	<b>—</b>	<b>3,035,896</b>	<b>—</b>
<b>Total Investments by Fair Value Level</b>	<b>\$ 976,259,436</b>			
<b>Investments Measured at the Net Asset Value (NAV)</b>				
Commingled Fund - Equities	\$ 467,404,033			
Commingled Fund - Real Estate	131,663,771			
Commingled Fund - Fixed Income	42,033,478			
Private Real Estate Funds	19,107,622			
Private Debt/Private Credit	62,484,914			
<b>Total Investments Measured at NAV</b>	<b>722,693,818</b>			
<b>Total Investments Measured at Fair Value and NAV</b>	<b>\$1,698,953,254</b>			
<b>Investment Derivative Instruments*</b>				
Equities - Rights/Warrants	\$ 14,801	\$ 14,245	\$ 556	\$ —
<b>Total Investment Derivative Instruments</b>	<b>\$ 14,801</b>	<b>\$ 14,245</b>	<b>\$ 556</b>	<b>\$ —</b>

\* Short-term derivative instruments included on page 49 are excluded here.

## Notes to the Basic Financial Statement Continued

Investment Type	Fair Value Measurements Using			
	June 30, 2017	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<b>Investments by Fair Value Level</b>				
<b>Debt Securities</b>				
Asset Backed Securities	\$ 2,108,514	\$ —	\$ 2,108,514	\$ —
Commercial Mortgage-Backed	3,215,385	—	3,215,385	—
Corporate Bonds	138,473,391	—	138,460,622	12,769
Corporate Convertible Bonds	5,613,492	—	5,613,492	—
Government Agencies	4,428,910	—	3,179,701	1,249,209
Government Bonds	56,715,377	—	56,715,377	—
Government Mortgage Backed Securities	63,036,608	—	63,036,608	—
Gov't-issued Commercial Mortgage-Backed	441,958	—	441,958	—
Municipal/Provincial Bonds	7,495,689	—	7,495,689	—
Non-Government Backed C.M.O.s	1,386,383	—	1,386,383	—
<b>Total Debt Securities</b>	<b>282,915,707</b>	<b>—</b>	<b>281,653,729</b>	<b>1,261,978</b>
<b>Equity Securities</b>				
Consumer Discretionary	61,029,278	61,029,278	—	—
Consumer Staples	26,788,426	26,624,068	164,358	—
Energy	11,608,880	11,429,089	179,791	—
Financials	88,688,293	88,688,293	—	—
Health Care	34,120,032	34,120,032	—	—
Industrials	79,059,121	79,059,121	—	—
Information Technology	79,613,036	79,613,036	—	—
Materials	23,546,895	23,546,895	—	—
Miscellaneous	77,919,674	—	77,913,105	6,569
Real Estate	88,423,682	88,423,682	—	—
Telecommunication Services	7,588,026	7,588,026	—	—
Utilities	4,591,690	4,591,690	—	—
<b>Total Equity Securities</b>	<b>582,977,033</b>	<b>504,713,210</b>	<b>78,257,254</b>	<b>6,569</b>
<b>Securities Lending</b>	<b>115,054,300</b>	<b>115,054,300</b>	<b>—</b>	<b>—</b>
<b>Short-Term Investments</b>	<b>29,220,744</b>	<b>29,220,744</b>	<b>—</b>	<b>—</b>
<b>Private Real Estate Holdings</b>	<b>3,035,895</b>	<b>—</b>	<b>3,035,895</b>	<b>—</b>
<b>Total Investments by Fair Value Level</b>	<b>\$ 1,013,203,679</b>			
<b>Investments Measured at the Net Asset Value (NAV)</b>				
Commingled Fund - Equities	\$ 390,606,351			
Commingled Fund - Real Estate	121,850,438			
Commingled Fund - Fixed Income	47,942,491			
Private Real Estate Funds	7,742,743			
Private Debt/Private Credit	44,633,404			
<b>Total Investments Measured at NAV</b>	<b>612,775,427</b>			
<b>Total Investments Measured at Fair Value and NAV</b>	<b>\$ 1,625,979,106</b>			
<b>Investment Derivative Instruments*</b>				
Equities - Rights/Warrants	\$ 15,206	\$ 14,343	\$ 863	\$ —
<b>Total Investment Derivative Instruments</b>	<b>\$ 15,206</b>	<b>\$ 14,343</b>	<b>\$ 863</b>	<b>\$ —</b>

\* Short-term derivative instruments included on page 49 are excluded here.

## *Notes to the Basic Financial Statement Continued*

Commingled equity and real estate funds are valued based on NAV reported by the investment manager, which are generally calculated based on the last reported sale price of the underlying assets held by such funds. Direct lending funds are typically structured as limited partnerships and limited liability companies. Since there is no readily available market for these investments in limited partnerships and limited liability companies, such investments are stated at fair value as estimated in an inactive market. These investments include securities of companies that may not be immediately liquid, such as private debt securities, real estate or other assets. The valuations of these investments are based upon values provided by the investment managers, based on the guidelines established with the investment managers and in consideration of other factors related to the System's interests in these investments.

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

Equity and derivative securities classified in Level 1 are valued using prices quoted in active markets for those securities.

Equity and debt securities classified in Level 2 and Level 3 are using either a bid evaluation or a matrix pricing technique. Bid evaluations may include market quotations, observable market based inputs and unobservable inputs (i.e., extrapolated data, proprietary models, and indicative quotes). Matrix pricing is used to value securities based on

the securities relationship to benchmark quoted prices. Investment derivative instruments categorized as Level 2 and 3 are valued using market approaches that consider, as applicable, benchmark interest rates or foreign exchange rates.

Real estate assets classified in Level 2 are the System's private real estate investments which are valued using independent external appraisers. The System's policy is to perform independent appraisals of the property every three years. The appraisals include a complete property and market inspection and analysis by designated Members of the Appraisal Institute (MAI). The appraisals are performed using generally accepted valuation approaches applicable to the property type. Calculations used in the System's independent appraisals are generally based on a discounted cash flow analysis.

### *Investments in Entities That Calculate Net Asset Value Per Share*

The fair value measurement of investments in commingled equity, real estate and direct lending funds are valued based on the investments' net asset value (NAV) per share (or its equivalent) reported by the investment manager, which are generally calculated based on the last reported sale price of the underlying assets held by such funds. These include funds that are structured as limited partnerships and limited liability companies.

Since there is no readily available market for investments in limited partnerships and limited liability companies, such investments are stated at fair value as estimated in an inactive market. These investments include securities of companies that may not be immediately liquid, such as private debt securities and real estate or other assets.

*Notes to the Basic Financial Statement Continued*

The valuations of these investments are based upon values provided by the investment managers, and in consideration of other factors, including guidelines established with those investment managers, related to the System's interests in these investments.

Such fair value measurements are shown in the tables below as of June 30, 2018 and 2017.

**City Of Fresno Fire and Police Retirement System  
Investments Measured at the NAV  
As of June 30, 2018**

<b>Investment Type</b>	<b>Fair Value</b>	<b>Unfunded Commitments</b>	<b>Redemption Frequency (If Currently Eligible)</b>	<b>Redemption Notice Period</b>
Commingled Fund - Equities	\$ 467,404,033	\$ —	Daily	None
Commingled Fund - Real Estate	131,663,771	—	Quarterly	45-90 Days
Commingled Fund - Fixed Income	42,033,478	—	Daily	None
Private Real Estate Funds	19,107,622	34,809,693	Not Eligible	N/A
Private Debt/Private Credit	62,484,914	83,141,121	Not Eligible	N/A
Commingled Infrastructure	—	65,174,712	Not Eligible	N/A
<b>Total investments measured at the NAV</b>	<b>\$ 722,693,818</b>	<b>\$ 183,125,526</b>		

**City Of Fresno Fire and Police Retirement System  
Investments Measured at the NAV  
As of June 30, 2017**

<b>Investment Type</b>	<b>Fair Value</b>	<b>Unfunded Commitments</b>	<b>Redemption Frequency (If Currently Eligible)</b>	<b>Redemption Notice Period</b>
Commingled Fund - Equities	\$ 390,606,351	\$ —	Daily	None
Commingled Fund - Real Estate	121,850,438	—	Quarterly	45-90 Days
Commingled Fund - Fixed Income	47,942,491	—	Daily	None
Private Real Estate Funds	7,742,743	35,211,865	Not Eligible	N/A
Private Debt/Private Credit	44,633,404	37,104,342	Not Eligible	N/A
<b>Total investments measured at the NAV</b>	<b>\$ 612,775,427</b>	<b>\$ 72,316,207</b>		

On the following page is an explanation of the investment types listed above.

## Notes to the Basic Financial Statement Continued

The investment types listed in the tables on the preceding page were measured at the NAV as follows.

(1) **Commingled equity funds** are highly liquid and can be redeemed within short-term periods of time. The System's investments of this type consist of institutional investment funds - one international ACWIexUS equity fund that is diversified across developed and emerging market countries and sectors and two domestic large cap equity index funds (S&P 500 Index and Russell 1000 Index). The fair value of these investment types has been determined using the NAV per share of the investments.

(2) **Commingled real estate fund:** The System's commingled real estate fund is a core investment strategy designed to deliver a relatively high level of current income combined with moderate appreciation potential. It is comprised of institutional quality office, retail, residential and industrial investments in major markets throughout the U.S. The redemption frequency of the real estate fund is quarterly, if liquidity is available, with a notice of redemption 45 days before the end of a quarter.

(3) **Commingled fixed income fund:** The System's commingled fixed income fund is fairly liquid and can be redeemed within short periods of time. This is an institutional quality fund that invests in high, medium, and low grade instruments such as US treasuries, investment grade corporates, securitized products, and derivatives. The fund is designed to provide current income through tactical positioning. The fair value of these investment types has been determined using the NAV per share of the investments.

(4) **Private real estate funds:** The System's two private real estate funds are designed to act as a diversifier and alpha generator to the core real estate portfolio. Investments are made in middle-market assets across various domestic and international regions and

sectors such as industrial, multifamily, office, and retail. The strategies focus on identifying investments with pricing dislocations that can be renovated, repurposed, and exited at opportunistic levels. The investment period is generally 3-5 years with a lifespan of 10-12 years.

(5) **Private Debt/Private Credit - direct lending funds:** The System's two direct lending funds are each invested through a master-feeder structure, on a leveraged basis primarily in senior secured loans of private U.S. lower-middle-market companies. Strategies employ a capital preservation focus and structured investments with strong covenant provisions to reduce associated risks, underwriting multiple cushions to provide downside protections. Investment period is generally 3-5 years with reinvestment of committed capital.

(6) **Commingled infrastructure funds:** The System's two infrastructure funds invest in core assets that generate long-term stable cash yields, have modest price appreciation, and provide inflation protection. Types of assets include energy (water, wind, and solar, etc.), transportation (toll roads and bridges, airports, and seaports, etc.), and social (hospitals, prisons, and schools, etc.). Investments are located domestically as well as in the Organization for Economic Co-operation and Development (OECD) countries internationally. Each fund has lockup periods of 4 years and, after that initial period, redemptions can be requested on a quarterly basis, if liquidity is available.

*Notes to the Basic Financial Statement Continued***7 | Deposits and Investments**

The System's investment guidelines reflect the duties imposed by an investment standard known as the "prudent expert rule." The prudent expert rule establishes a standard for all fiduciaries which includes anyone who has discretionary authority with respect to the System's investments.

Northern Trust serves as custodian of the System's investments. The System's asset classes include U.S. Equity, International Equity, Emerging Market Equity, U.S. Fixed Income, and Real Estate. Any class may be held in direct form, pooled form, or both. The System has fifteen external investment managers, managing eighteen individual portfolios. Investments at June 30, 2018 and 2017 consist of the following:

**Investments at Fair Value 2018 and 2017**

(In Thousands)

	<b>2018</b>	<b>2017</b>
Investments at Fair Value		
Domestic Equity	\$ 598,043	\$ 580,054
International Developed Market Equities	287,974	263,901
International Emerging Market Equities	55,558	51,230
Government Bonds	177,380	180,061
Corporate Bonds	150,585	152,901
Direct Lending	63,717	52,376
Real Estate	234,106	201,196
Short-Term Investments	33,311	29,221
<b>Total Investments at Fair Value</b>	<b>\$ 1,600,674</b>	<b>\$ 1,510,940</b>

*Notes to the Basic Financial Statement Continued*

The Board, through its Investment Policy Statement, provides guidelines for investments and established the following target allocations with a minimum and maximum range for each of these asset classes:

**Asset Class Minimum Target and Maximum Allocations**

<b>Asset Class</b>	<b>Minimum</b>	<b>Target</b>	<b>Maximum</b>
Domestic Equities			
Large Cap	13.0%	15.8%	27.0%
Small Cap	2.0%	7.2%	9.0%
International Equities			
Developed Markets	13.0%	19.0%	27.0%
Emerging Markets	0.0%	6.0%	10.0%
Fixed Income			
Core Fixed Income	4.0%	10.0%	19.0%
High Yield Bonds	3.0%	5.0%	12.0%
Real Estate			
Core Real Estate	5.0%	11.0%	20.0%
Value Add Real Estate/REITs	1.0%	4.0%	9.0%
Alternatives			
Infrastructure	0.0%	4.0%	10.0%
MLPs	0.0%	5.0%	10.0%
Private Equity	0.0%	5.0%	10.0%
Private Debt	0.0%	8.0%	10.0%
Short-Term Investments	0.0%	0.0%	0.0%
		<b>100%</b>	

Allowable securities must meet the reporting requirements of the Securities and Exchange Commission and must meet a “prudent expert” standard for investing. In no case may the System have five percent (5%) or more of System net position invested in any one organization.

The Retirement Board’s investment policies and guidelines permit investment in numerous specified asset classes to take advantage of the non correlated economic behavior of diverse asset classes. The result is a well-diversified portfolio.

***Custodial Credit Risk***

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, the System will not be able to recover the value of its investment

or collateral securities that are in the possession of another party. The Retirement System’s investment securities are not exposed to custodial credit risk since all securities are registered in the System’s name and held by the System’s custodial bank.

Custodial credit risk for deposits is the risk that, in the event of the failure of the depository financial institution, the System will not be able to recover its deposits or will not be able to recover collateral securities that are in the possession of an outside party. Any cash associated with the System’s investment portfolios not invested at the end of a day is temporarily swept overnight to the Northern Trust Collective Short-Term Investment Fund.

*Notes to the Basic Financial Statement Continued*

That portion of the System's cash held by the City in a Trust account as part of the City's cash investment pool totaled \$1,352,251 and \$1,958,732 at June 30, 2018 and 2017, respectively. Accordingly, the System's investments in the pool are held in the name of the City and are not specifically identifiable.

Disclosure of the legal and contractual provisions of the City's investment policy and carrying amounts by type of investments may be found in the notes to the City's separate Comprehensive Annual Financial Report for the fiscal year ended June 30, 2018.

*Credit and Interest Rate Risk*

Credit risk associated with the System's debt securities is identified by their ratings in the table below. Interest rate risk is the risk that changes in market interest rates will adversely affect the fair value of an investment. The System has no general policy on credit and interest rate risk. The System limits its investments in below investment grade bonds and monitors the interest rate risk inherent in its portfolio by measuring the duration of its portfolio. The average duration of the System's debt portfolios in years is also listed in the following table:

Type of Investment	2018			2017		
	Fair Value	Credit Quality	Duration	Fair Value	Credit Quality	Duration
Asset Backed Securities	\$ 4,346,791	AA	2.68	\$ 2,108,514	A	1.65
Commercial Mortgage-Backed	3,920,827	AA-	5.37	3,215,385	A	5.37
Corporate Bonds	131,993,227	BB+	3.31	138,473,392	BB+	5.76
Corporate Convertible Bonds	6,609,649	CC	5.11	5,613,492	B+	4.19
Non-Government backed C.M.O.s	973,478	BBB-	1.79	1,386,383	CC	0.62
Rights & Warrants	556	B-	0.00	863	NR	—
Convertible Equity	956,028	BB-	14.75	344,149	CC	3.60
Common Stock	471,262	B-	0.00	265,326	CCC+	0.02
Preferred Stock	1,313,669	BB+	0.00	1,493,311	BB	0.12
Government Agencies	3,048,865	AAA	4.41	4,428,910	AAA	4.04
Government Bonds	58,916,944	AAA	5.24	56,715,377	AAA	4.94
Gov't Issued Commercial Mortgage Backed Securities	673,236	AAA	7.89	441,958	AAA	6.20
Government Mortgage Backed Securities	66,183,700	AAA	3.69	63,036,608	AAA	2.98
Funds - Government Agencies	42,033,478	AAA	—	47,942,491	AAA	—
Municipal/Provincial Bonds	6,523,597	A	9.65	7,495,689	A-	9.23
Index Linked Government Bonds	—	—	—	—	—	—
<b>Total Credit Risk Fixed Income</b>	<b>\$ 327,965,307</b>			<b>\$ 332,961,848</b>		



## *Notes to the Basic Financial Statement Continued*

Per Section 3.5.f.i. of the System's Investment Policy Statement, no more than 15 percent of an investment manager's fixed income portfolio may be invested in below investment grade rated securities (BB or B rated bonds). Therefore, at least 85 percent of the manager's fixed income portfolio must be invested in investment grade securities. Intermediate Bond portfolios shall maintain an average credit quality of A+ or better.

High yield fixed income portfolios, in accordance with Section 3.5.f.ii. of the System's Investment Policy Statement, shall maintain an average credit quality rating equal to or higher than that of the Barclays US Corporate High Yield Index. Based on the Barclays US Corporate High Yield Index, a high yield manager's portfolio shall have a constraint of the benchmark weight plus five percent (5%) in bonds rated Caa1/CCC+ or lower with non-rated bonds being limited to five percent (5%) of the portfolio with both limits subject to maintaining the average portfolio credit quality requirement of the Barclays US Corporate High Yield index. No more than 25 percent of a high yield manager's portfolio may be invested in foreign securities; within this limit, a manager may allocate up to 20 percent in emerging market government securities including both on-US dollar denominated securities and US dollar denominated Yankee securities and up to 15 percent of the portfolio may be invested in non-US dollar denominated securities.

High yield bond portfolios may hold up to the benchmark weight plus five percent (5%) of assets in Rule 144A bond issues with or without registration rights. No more than 10 percent of the high yield manager's portfolio may be invested in convertibles or preferreds, and no more than 20 percent may be invested in securitized bank debt. No single security and/or issuer can represent more than five percent (5%) of the market value of a portfolio at the time of purchase, and no single industry can represent more than 25

percent of the market value of the account at the time of purchase.

Firms that manage fixed income portfolios will continually monitor the risk associated with their fixed income investments. They will be expected to report, as a component of their quarterly report, a risk/reward analysis of the management decisions relative to their benchmarks. Statistics that relate performance variance to effective duration decisions will be included in each quarterly report.

### *Concentration Risk*

The investment portfolio as of June 30, 2018 and 2017, contained no concentration of investments in any one entity (other than those issued or guaranteed by the U.S. Government) that represented five percent (5%) or more of the total investment portfolio or fiduciary net position.

### *Foreign Currency Risk*

Foreign Currency Risk is the risk that changes in foreign exchange rates will adversely affect the fair value of an investment or deposit. The System has no general investment policy with respect to foreign currency risk. The System's investment policy guidelines allow international developed and emerging equity managers to hedge their currency risks in foreign countries through the purchase of derivatives. Used as a defensive measure and in an effort to control the risks associated with international portfolios, international equity investment managers are permitted to invest in forward currency contracts, swaps, currency futures, and exchanged-traded index futures that represent broad equity exposure to countries represented in their respective benchmark index.

The positions shown on the following page represent the System's exposure to foreign currency risk as of June 30, 2018 and 2017.

## Notes to the Basic Financial Statement Continued

## Foreign Currency Risk Exposure

As of June 30, 2018

Base Currency	Country	Equities / Fixed Income	Foreign Currency Contracts	Rights & Warrants	Cash & Cash Equivalents	Total	
AED	United Arab Emirates Dirham	United Arab Emirates	\$ 112,510	\$ —	\$ —	\$ 112,510	
ARS	Argentine Peso	Argentina	155,549	—	—	155,549	
AUD	Australian Dollar	Australia	10,794,379	—	—	10,794,379	
BRL	Brazilian Real	Brazil	3,278,533	—	10,843	3,289,376	
CAD	Canadian Dollar	Canada	14,681,568	—	—	14,681,568	
CHF	Swiss Franc	Switzerland	18,237,067	—	(27,765)	18,209,302	
CLP	Chilean Peso	Chile	181,350	—	7,477	188,827	
CNY	Chinese Yuan Renminbi	China	208,224	—	20,765	228,989	
COP	Colombian Peso	Colombia	778,971	—	—	778,971	
CZK	Czech Koruna	Czech Republic	4,419	—	—	4,419	
DKK	Danish Krone	Denmark	8,284,010	—	—	8,284,010	
EGP	Egyptian Pound	Egypt	126,999	—	781	127,780	
EUR	Euro	Europe	72,753,854	—	13,016	501	72,767,371
GBP	British Pound Sterling	United Kingdom	45,132,474	—	—	(148,663)	44,983,811
HKD	Hong Kong Dollar	Hong Kong	25,642,341	—	—	16,762	25,659,103
IDR	Indonesian Rupiah	Indonesia	1,255,821	—	—	15,538	1,271,359
ILS	New Israeli Shekel	Israel	926,972	—	—	—	926,972
INR	Indian Rupee	India	4,254,344	—	—	(22,148)	4,232,196
JPY	Japanese Yen	Japan	45,987,926	60,782	—	(60,782)	45,987,926
KRW	South Korean Won	South Korea	13,666,412	—	—	—	13,666,412
MXN	Mexican Peso	Mexico	3,098,121	—	—	—	3,098,121
MYR	Malaysian Ringgit	Malaysia	1,624,410	—	—	3,395	1,627,805
NOK	Norwegian Krone	Norway	2,238,282	—	—	—	2,238,282
PEN	Peruvian Nuevo Sol	Peru	5,020	—	—	469	5,489
PHP	Philippine Peso	Philippines	443,848	—	—	3,412	447,260
PLN	Polish Zloty	Poland	1,140,565	—	—	—	1,140,565
QAR	Qatari Rial	Qatar	747,311	—	—	3,153	750,464
SEK	Swedish Krona	Sweden	9,707,556	—	—	—	9,707,556
SGD	Singapore Dollar	Singapore	4,751,245	—	—	—	4,751,245
THB	Thai Baht	Thailand	1,973,384	—	1,229	1,762	1,976,375
TRY	Turkish Lira	Turkey	1,403,427	—	—	686	1,404,113
TWD	New Taiwan Dollar	Taiwan	9,070,878	—	—	46,114	9,116,992
USD	United States Dollar	United States	1,037,093,516	1,275,482	556	31,175,992	1,069,545,546
ZAR	South African Rand	South Africa	11,295,029	—	—	(867,080)	10,427,949
<b>Total Equities (In USD)</b>			<b>1,351,056,315</b>	<b>1,336,264</b>	<b>14,801</b>	<b>30,181,212</b>	<b>1,382,588,592</b>
<b>Total Non-USD Equities (In USD)</b>			<b>\$ 313,962,799</b>	<b>\$ 60,782</b>	<b>\$ 14,245</b>	<b>\$ (994,780)</b>	<b>\$ 313,043,046</b>

## Notes to the Basic Financial Statement Continued

## Foreign Currency Risk Exposure

As of June 30, 2017

Base Currency	Country	Equities / Fixed Income	Foreign Currency Contracts	Rights & Warrants	Cash & Cash Equivalents	Total	
AED	United Arab Emirates Dirham	United Arab Emirates	\$ 261,357	\$ —	\$ —	\$ 261,357	
ARS	Argentine Peso	Argentina	316,221	—	—	316,221	
AUD	Australian Dollar	Australia	10,844,926	—	—	10,844,926	
BRL	Brazilian Real	Brazil	2,664,723	432,772	—	(434,124)	2,663,371
CAD	Canadian Dollar	Canada	11,970,370	—	—	3,612	11,973,982
CHF	Swiss Franc	Switzerland	18,024,950	—	—	—	18,024,950
CLP	Chilean Peso	Chile	144,284	8,596	—	(2,800)	150,080
CNY	Chinese Yuan Renminbi	China	—	—	—	—	—
COP	Colombian Peso	Colombia	—	—	—	—	—
CZK	Czech Koruna	Czech Republic	91,321	—	—	—	91,321
DKK	Danish Krone	Denmark	11,801,082	—	—	—	11,801,082
EGP	Egyptian Pound	Egypt	85,642	—	—	—	85,642
EUR	Euro	Europe	68,442,496	—	14,343	(303,987)	68,152,852
GBP	British Pound Sterling	United Kingdom	38,184,709	—	—	—	38,184,709
HKD	Hong Kong Dollar	Hong Kong	18,125,300	—	—	1,415	18,126,715
IDR	Indonesian Rupiah	Indonesia	2,009,993	—	—	2,144	2,012,137
ILS	New Israeli Shekel	Israel	340,911	—	—	—	340,911
INR	Indian Rupee	India	4,827,818	—	—	9,922	4,837,740
JPY	Japanese Yen	Japan	40,533,131	55,097	—	(55,096)	40,533,132
KRW	South Korean Won	South Korea	15,060,363	—	—	4,424	15,064,787
MXN	Mexican Peso	Mexico	2,819,153	—	—	13,252	2,832,405
MYR	Malaysian Ringgit	Malaysia	1,428,063	—	—	19,201	1,447,264
NOK	Norwegian Krone	Norway	989,414	—	—	—	989,414
PEN	Peruvian Nuevo Sol	Peru	3,415	—	—	202	3,617
PHP	Philippine Peso	Philippines	623,571	—	—	1,353	624,924
PLN	Polish Zloty	Poland	1,303,871	—	—	2,286	1,306,157
QAR	Qatari Rial	Qatar	496,874	—	—	3,486	500,360
SEK	Swedish Krona	Sweden	9,332,255	—	—	—	9,332,255
SGD	Singapore Dollar	Singapore	2,425,008	—	—	—	2,425,008
THB	Thai Baht	Thailand	1,567,027	—	—	3,446	1,570,473
TRY	Turkish Lira	Turkey	2,576,180	—	—	12,161	2,588,341
TWD	New Taiwan Dollar	Taiwan	9,447,100	—	—	317	9,447,417
USD	United States Dollar	United States	1,020,331,124	713,758	863	22,353,685	1,043,399,430
ZAR	South African Rand	South Africa	7,368,932	—	—	6,708	7,375,640
<b>Total Equities (In USD)</b>			<b>1,304,441,584</b>	<b>1,210,223</b>	<b>15,206</b>	<b>21,641,607</b>	<b>1,327,308,620</b>
<b>Total Non-USD Equities (In USD)</b>			<b>\$ 284,110,460</b>	<b>\$ 496,465</b>	<b>\$ 14,343</b>	<b>\$ (712,078)</b>	<b>\$ 283,909,190</b>

## Notes to the Basic Financial Statement Continued

Per Section 3.5.e. of the System's Investment Objectives and Policy Statement, assets in international equity portfolios shall consist of liquid, publicly traded equity and equity like securities traded on major stock exchanges as well as cash and cash equivalents as necessary. Securities will be primarily composed of foreign ordinary shares and depository receipts (American Depository Receipts (ADRs) and Global Depository Receipts (GDRs) including ADRs and GDRs that are 144A securities). Securities that are 144A securities, including ADR and GDR 144A securities, are authorized investments which in aggregate cannot exceed 10 percent of the portfolio. Primarily large capitalization securities may be held, although investments in small and mid capitalization securities are also allowed. Firms will continually monitor their country, currency, sector and security selection risks associated with their international portfolios. All of the risks will be included in the manager's quarterly reports and performance attribution based on these factors will also be included.

The System's complete Investment Objectives and Policy Statement can be found on the System's website at [www.CFRS-CA.org](http://www.CFRS-CA.org) or by contacting the Retirement Office at 2828 Fresno Street, Suite 201, Fresno, CA 93721.

### Rate of Return

For the fiscal years ended June 30, 2018 and 2017, the annual money-weighted rate of return on the assets of the System, net of investment expense, was 8.57 percent and 14.35 percent, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for timing of cash flows and the changing amounts actually invested.

## 8 | Derivatives

The Retirement Board has authorized certain investment managers to invest in or otherwise enter into transactions involving derivative financial instruments when, in the judgment of management, such transactions are consistent with the investment objectives established for a specific investment manager's assignment. The acceptable investment purposes for the use of derivatives are as follows:

- a. Mitigation of risk (or risk reduction).
- b. A useful substitute for an existing, traditional investment. In certain circumstances it may be cheaper, quicker or easier to invest in a derivative instrument or security rather than transacting in cash or in the traditional security market.
- c. To provide investment value to the portfolio while being consistent with the System's overall and specific investment policies.
- d. To obtain investment exposure which is appropriate for the manager's investment strategy and the System's investment guidelines, but could not be made through traditional investment securities.

The Retirement Board monitors and reviews each investment manager's securities and derivative position as well as the manager's performance relative to established benchmark rates of return and risk measures. In management's opinion, derivative activities must be evaluated within the context of the overall portfolio performance and cannot be evaluated in isolation.

Allowable derivative financial instruments held by the System include stable and well-structured mortgage collateralized mortgage obligations (CMOs); centrally cleared instruments including, but not limited to, futures, swaps and options; and forwards including currency

## Notes to the Basic Financial Statement Continued

forwards. Derivative investments with allocation limits include mortgage derivatives (interest only and principal only CMOs); non centrally cleared derivatives; caps and floors; and inverse floating rate notes and bonds. Allocation limits will be determined and specified in portfolio guidelines with individual investment managers based on the objectives and risk tolerances of a given strategy.

Cash securities containing derivative features include callable bonds, structural notes, and collateralized mortgage obligations (CMOs). These instruments are generally traded in over-the-counter bond markets.

Financial instruments whose value is dependent upon a contractual price or rate relative to one or more reference prices or rates, applied to a notional amount, including interest rate futures, options, swaps and caps, and foreign currency futures and forward contracts. Some of these instruments are exchange-traded and others are traded over-the-counter (OTC).

### Market Risk

Market risk is the risk of change in fair value of an instrument in response to changes in a market price or index. While all investments are subject to market risk, derivatives often have a higher degree of market risk than other types of investment instruments. Values of cash securities containing derivative features are often more susceptible to market risk than other types of fixed income securities because the amounts and/or timing of their scheduled cash flows may fluctuate under changing market conditions, according to their contractual terms. For other types of derivatives, amounts of contractual cash flows may be either positive or negative depending upon prevailing market conditions relative to the reference prices or rates, and thus the values of such instruments may be positive or negative, despite the fact that little or no cash is initially exchanged to enter into such contracts.

### Credit Risk

Credit risk of cash securities containing derivative features is based upon the credit worthiness of the issuers of such securities. The Retirement Board establishes minimum credit requirements for such securities. The other derivative instruments described above are subject to credit risk to the extent their value is a positive market fair value, and the counterparty to such contract fails to perform under the terms of the instrument.

Exchange traded derivatives are generally considered to be of lower credit risk than OTC derivatives due to the exchange margin requirements. Equity Index Swaps are derivatives and represent an agreement between two parties to swap two sets of equity values. Equity Futures are contracts used to replicate an underlying stock or stock market index. These futures can be used for hedging against an existing equity position, or for speculating on future movement of the index.

As of June 30, 2018 and 2017, the System held a total fair value of \$2,853,327 and \$8,205,459, respectively, in derivative holdings. These holdings consisted of Rights/Warrants and Foreign Currency Forwards and Futures designed to synthetically create equity returns and are held as components of the System's international equity investments, and S&P 500 E Mini Index Futures, S&P MidCap 400 E Mini Futures and a variety of ACWIexUS index related futures as components of the System's investments in BlackRock S&P 500 Equity Index, Russell 1000, and ACWIexUS Index Funds. Holdings also consist of futures – interest rate contracts, options and swaptions held as components of the System's absolute return fixed income strategy. These derivatives are used for the purpose of synthetically creating equity returns, synthetically creating floating rates and to buy or sell credit protection on the assets.

*Notes to the Basic Financial Statement Continued*

There is no net counterparty exposure for which there is a positive replacement cost to the fund. The details of these derivative holdings are as follows:

**Derivative Type:**

	FY 2018		FY 2017	FY 2018 - FY 2017 Change in Fair Value
	Notional Amount	Fair Value	Fair Value	
Foreign Currency Forward	\$(1,246,118)	\$1,336,264	\$1,210,222	\$ 126,042
Future Contracts - Domestic Equity Index	—	—	5,810,671	(5,810,671)
Future Contracts - International Equity Index	—	1,494,532	1,163,969	330,563
Futures - Interest Rate Contracts	—	—	—	—
Options/Swaption	—	—	—	—
Rights & Warrants	—	22,531	20,597	1,934
Swaps	—	—	—	—
<b>Total</b>		<b>\$2,853,327</b>	<b>\$8,205,459</b>	

**Derivative Type:**

	FY 2017		FY 2016	FY 2017 - FY 2016 Change in Fair Value
	Notional Amount	Fair Value	Fair Value	
Foreign Currency Forward	\$(1,216,541)	\$1,210,222	\$20,836,577	\$ (19,626,355)
Future Contracts - Domestic Equity Index	—	5,810,671	2,729,717	3,080,954
Future Contracts - International Equity Index	—	1,163,969	636,998	526,971
Futures - Interest Rate Contracts	—	—	(19,308,471)	19,308,471
Options/Swaption	—	—	(32,254)	32,254
Rights & Warrants	—	20,597	—	20,597
Swaps	—	—	(1,533,906)	1,533,906
<b>Total</b>		<b>\$8,205,459</b>	<b>\$3,328,661</b>	

*Notes to the Basic Financial Statement Continued***9 | Securities Lending**

The City of Fresno Municipal Code and the Board's policies permit the Retirement Boards of the City of Fresno Fire and Police Retirement System and the City of Fresno Employees Retirement System (the Systems) to use investments of both Systems to enter into securities lending transactions, i.e., loans of securities to broker-dealers and other entities for collateral with a simultaneous agreement to return the collateral for the same securities in the future. The Systems have contracted with Northern Trust, their custodian, to manage the securities lending program for the Systems and all securities held in a separately managed account are available for lending. As the securities lending agent, Northern Trust calculates collateral margins and accepts collateral in the form of cash or marketable securities and irrevocable bank letters of credit for all securities lending transactions. Transactions are collateralized at 102 percent of fair value (contract value) for domestic securities and 105 percent of fair value (contract value) for international securities. Collateral is marked to market daily. When a loan is secured by cash, a rebate is negotiated and the cash collateral is invested according to the guidelines in the collateral pool.

As designated by the Board, cash collateral is invested in Northern Trust's Core U.S.A. Collateral Section (short-term investment pool), which, as of June 30, 2018 and 2017, had a weighted average duration of 102 days and 95 days, respectively, an average maturity of 29 days and 33 days, respectively, and an average monthly yield of 2.24 percent and 1.38 percent respectively. The relationship between the maturities of the investment pool and the System's loans is affected by the maturities of the security loans made by other entities that use the Northern Trust Core U.S.A. Collateral Section and a definitive statement of that relationship cannot be formulated by the System. As of June 30, 2018, the Northern Trust CORE U.S.A. Cash Collateral Fund had zero

exposure in below investment grade long-term securities and there were no known credit risks related to the securities lending transactions.

As of June 30, 2018, the fair value of the securities on loan was \$112.9 million. The fair value of associated collateral was \$116.3 million (\$98.3 million of cash collateral and \$18.0 million of non-cash collateral). Non-cash collateral, the collateral which the System does not have the ability to sell unless the borrower defaults, is not reported in the Statement of Fiduciary Net Position. As of June 30, 2017, the fair value of the securities on loan was \$122.9 million. The fair value of associated collateral was \$125.9 million (\$115.1 million of cash collateral and \$10.8 million of non-cash collateral). Non-cash collateral, the collateral which the System does not have the ability to sell unless the borrower defaults, is not reported in the Statement of Fiduciary Net Position.

Northern Trust will ensure that, in any agreement with a borrower, it retains its absolute right to terminate the agreement without cause, upon short notice and without any penalty. The System cannot pledge or sell collateral securities received unless the borrower defaults. In the event of a borrower default, Northern Trust indemnifies the System against losses and will replace or reimburse the System for any borrowed securities not replaced. In general, the average term of all System loans is overnight or "on demand". All securities loans can be terminated on demand by either the lender or the borrower, although the average term of the System's loans was approximately 102 days and 82 days, respectively, as of June 30, 2018 and 2017.

*Notes to the Basic Financial Statement Continued*

The System's securities lending income is as follows:

**Securities Lending Income**

For Fiscal Years Ended June 30, 2018 and 2017

	2018	2017
Gross Income	\$2,000,798	\$1,128,421
Expenses:		
Bank Fees	1,523,233	614,679
Total Expenses	1,523,233	614,679
<b>Net Income from Securities Lending</b>	<b>\$477,565</b>	<b>\$513,742</b>

**Fair Value of Loaned Securities**

As of June 30, 2018 and 2017

Collateralized by	FY 2018			FY 2017		
	Cash	Securities	Total	Cash	Securities	Total
U.S. Government & Agency	\$ 27,581,044	\$ 74,007	\$ 27,655,051	\$ 34,917,529	\$ 1,439,249	\$ 36,356,778
Domestic Equities	49,483,996	6,327,301	55,811,297	59,773,484	5,585,047	65,358,531
Domestic Fixed	18,600,751	—	18,600,751	16,923,523	266,555	17,190,078
International Equities	61,238	10,764,849	10,826,087	820,413	3,157,209	3,977,622
International Fixed	—	—	—	—	—	—
<b>Total Value</b>	<b>\$ 95,727,029</b>	<b>\$17,166,157</b>	<b>\$112,893,186</b>	<b>\$112,434,949</b>	<b>\$10,448,060</b>	<b>\$122,883,009</b>

**Fair Value of Collateral Received for Loaned Securities**

As of June 30, 2018 and 2017

Collateralized by	FY 2018			FY 2017		
	Cash	Securities	Total	Cash	Securities	Total
U.S. Government & Agency	\$ 28,199,886	\$ 75,740	\$ 28,275,626	\$ 35,703,623	\$ 1,471,489	\$ 37,175,112
Domestic Equities	50,757,662	6,473,670	57,231,332	61,163,554	5,699,846	66,863,400
Domestic Fixed	19,053,150	—	19,053,150	17,322,231	272,347	17,594,578
International Equities	64,578	11,439,990	11,504,568	864,892	3,354,799	4,219,691
International Fixed	218,589	—	218,589	—	—	—
<b>Total Value</b>	<b>\$ 98,293,865</b>	<b>\$17,989,400</b>	<b>\$116,283,265</b>	<b>\$115,054,300</b>	<b>\$10,798,481</b>	<b>\$125,852,781</b>



## Notes to the Basic Financial Statement Continued

### 10 | Administrative Expenses

Section 3-325 of the City of Fresno Municipal Code provides that all administrative costs of the System shall be a charge against the assets of the System. Per the City of Fresno Municipal Code, the Administrative expenses are a component of the City's contribution calculation.

### 11 | Post Retirement Supplemental Benefit (PRSB)

The Post Retirement Supplemental Benefit (PRSB) Program was created as a contingent program to provide supplemental distributions to eligible retirees which they could use to pay for various post-retirement expenses. The Retirement Board will annually review the actuarial valuation report and declare an actuarial surplus if available in accordance with the procedures in the City of Fresno Municipal Code Section 3-354.

If an actuarial surplus is declared, the surplus is allocated into two components, one component composed of two-thirds of the declared surplus shall be used to reduce or eliminate the City's pension contributions. Any unused portion shall be reserved in the City Surplus Reserve and drawn upon in subsequent years if needed. The remaining one-third component shall be distributed among eligible post-retirement supplemental benefit recipients in accordance with procedures in the City of Fresno Municipal Code Section 3-354(f)(4). Any unused portion shall be reserved in the PRSB Reserve and drawn upon in subsequent years if needed.

For the fiscal year ended June 30, 2018, the System distributed PRSB benefits in the total amount of \$2,217,605 to eligible recipients (including \$2,019,167 to retirees and \$198,438 to DROP participants). As of June 30, 2018, the City Surplus Reserve balance was \$586,480 and the PRSB Reserve balance was \$2,010,554.

For the fiscal years ended June 30, 2018 and 2017, there was a surplus (or prefunded actuarial accrued liability) as the System has a valuation value of assets which is in excess of the actuarial accrued liability. The System's valuation value of assets was 120.3 percent and 119.8 percent, respectively, which was above the required 110 percent for declaration of a surplus, thus a 10.3 percent and 9.8 percent, actuarial surplus was available to reduce the City's contributions and to fund new PRSB benefits for the years ended June 30, 2018 and 2017. The June 30, 2018 PRSB portion of the surplus is \$2,260,076, of which 80 percent will be allocated in the 2019 calendar year to retirees at \$184.57 per month commencing January 1, 2019. For June 30, 2017 the PRSB portion of the surplus was \$2,269,769, of which 80 percent was allocated in the 2018 calendar year to retirees at \$181.48 per month commencing January 1, 2018.

### 12 | Capital Assets

Capital assets are carried at historical cost, net of accumulated depreciation. Capital assets are any items of equipment or furnishings purchased with a value of or an initial cost of \$500 or greater and \$5,000 for land, buildings and infrastructure and an estimated useful life in excess of two years.

Accumulated depreciation shall be summarized and reflected on the System's annual financial statements. Capital assets shall be depreciated over their estimated useful lives using the straight-line depreciation method. Intangible assets with limited useful lives (e.g., by legal or contractual provisions) should be depreciated over their estimated useful lives. Depreciation of computer software begins when the program is placed into service.

The System's major two-year project to program and install an upgrade to our original pension administration system that was installed in 1997 (the LRS Pension Gold Retirement

## Notes to the Basic Financial Statement Continued

Solutions' Version 3 project) includes software costs of \$930,716 and \$1,063,675 which are capitalized as of June 30, 2018 and 2017, respectively, and will be amortized over a ten-year useful life period commencing July 1, 2015.

As of June 30, 2018, other capital assets consisting of office furniture and equipment for the System's Retirement Offices located at 2828 Fresno Street, Fresno, California, in the amount of \$35,936 are capitalized and depreciated over remaining estimated useful lives of 2-15 years.

As of June 30, 2017, capital assets consisting of office furniture and equipment for the System's Retirement Offices in the amount of \$37,580 were capitalized and depreciated over remaining estimated useful lives of 2-15 years.

### 13 | Leases

Under the lease agreement with CFRS Realty Holding Corporation, the holding corporation formed jointly by the Retirement Boards to take ownership of the building, effective September 19, 2005, the City of Fresno Employees and City of Fresno Fire and Police Retirement Boards and their staff occupy approximately 7,900 square feet of the second floor of the renovated building at 2828 Fresno Street, Fresno, California. The term of the lease is ten years with an option for two additional five year extensions. The first five (5) year extension was exercised effective September 1, 2015.

Under the terms of the lease agreement, the Systems share equally a base rent of \$13,367, originally \$1.35 per square foot per month, triple net which as of June 30, 2018, is \$1.68 per square foot per month, triple net.

The Retirement System is involved in various business transactions with the City of Fresno, the primary plan sponsor. These include reimbursement to the City for the salary and benefits of the System's Retirement Staff members paid through the City, reimbursement to the City Personnel Department for personnel consulting services, and reimbursement to the City Information Services Department for computer and telephone support.

The Retirement Systems lease office space from the CFRS Realty Holding Corporation, a title holding company controlled jointly by the City of Fresno Employees and City of Fresno Fire and Police Retirement Systems. See note 13 for a description of this arrangement.

### 14 | Related Party Transactions

*Notes to the Basic Financial Statement Continued***15 | Commitments and Contingencies**

The Board, in accordance with its Asset Allocation Plan, has committed capital for investment in Private Debt/Private Credit, Private Real Estate and Infrastructure Funds. The following table details the outstanding capital commitments in these investments as of June 30, 2018 and 2017.

Investment Type	Unfunded Commitments	
	FY 2018	FY 2017
Private Real Estate Funds		
Oaktree Capital Mgt.	\$ 5,686,494	\$ 7,642,705
PIMCO BRAVO III	19,552,414	23,429,628
PCCP, LLC	9,570,785	4,139,532
Total	<u>\$ 34,809,693</u>	<u>\$ 35,211,865</u>
Private Debt/Private Credit		
Monroe Capital	\$ 36,660,776	\$ 6,797,068
Crescent Capital	28,883,173	9,480,938
PIMCO COF II	17,597,172	20,826,336
Total	<u>\$ 83,141,121</u>	<u>\$ 37,104,342</u>
Infrastructure		
JPM IIF	\$ 32,587,356	\$ —
Ullico UIF	32,587,356	—
Total	<u>\$ 65,174,712</u>	<u>\$ —</u>
Total Unfunded Commitments	<u>\$183,125,526</u>	<u>\$ 72,316,207</u>

**16 | Date of Management Review**

The date to which events occurring after June 30, 2018, have been evaluated for possible adjustments to the financial statements or disclosures is December 12, 2018, which is the date the financial statements were available to be issued.

Management did not identify any subsequent financial events that require disclosure.

## Required Supplementary Information

## Schedule of Changes in the Net Pension Liability

(Dollars in Thousands)

For Fiscal Years Ended June 30, 2013-2018

Change in Net Pension Liability	GASB 67 Basis*					
	Financial Reporting					
	2018	2017	2016	2015	2014	2013
<b>Total Pension Liability</b>						
Service cost	\$30,298	\$28,838	\$26,569	\$26,518	\$28,058	\$25,663
Interest	95,274	90,184	88,363	86,772	86,092	87,850
Change of benefit terms	—	—	—	—	—	—
Differences between expected and actual experience	6,723	10,896	(42,953)	(36,529)	(49,879)	(30,574)
Changes of assumptions	2,891	—	49,427	—	—	17,284
Benefit Payments (including refunds, excluding PRSB)	(63,071)	(59,272)	(56,581)	(54,612)	(52,720)	(52,982)
<b>Net Change in Total Pension Liability</b>	<b>\$72,115</b>	<b>\$70,646</b>	<b>\$64,825</b>	<b>\$22,149</b>	<b>\$11,551</b>	<b>\$47,241</b>
<b>Total Pension Liability - Beginning</b>	<b>\$1,315,367</b>	<b>\$1,244,721</b>	<b>\$1,179,896</b>	<b>\$1,157,747</b>	<b>\$1,146,196</b>	<b>\$1,098,955</b>
<b>Total Pension Liability - Ending (a)*</b>	<b>\$1,387,482</b>	<b>\$1,315,367</b>	<b>\$1,244,721</b>	<b>\$1,179,896</b>	<b>\$1,157,747</b>	<b>\$1,146,196</b>
<b>Plan Fiduciary Net Position</b>						
Employee Contributions	\$8,964	\$8,169	\$7,748	\$7,385	\$7,294	\$7,399
Employer Contributions	19,697	18,543	18,738	18,967	18,575	18,725
Net Investment Income	129,163	192,315	6,063	39,164	201,838	140,701
Actual Benefit Payments (including Refunds, PRSB)	(63,071)	(59,273)	(56,581)	(54,612)	(52,720)	(52,982)
Administrative & Professional Expense	(1,710)	(1,500)	(1,397)	(1,108)	(1,119)	(1,182)
<b>Net Change in Plan Fiduciary Net Position</b>	<b>\$93,043</b>	<b>\$158,254</b>	<b>\$(25,429)</b>	<b>\$9,796</b>	<b>\$173,868</b>	<b>\$112,661</b>
<b>Plan Fiduciary Net Position - Beginning</b>	<b>\$1,509,543</b>	<b>\$1,351,289</b>	<b>\$1,376,718</b>	<b>\$1,366,922</b>	<b>\$1,193,054</b>	<b>\$1,080,393</b>
<b>Plan Fiduciary Net Position - Ending (b)</b>	<b>\$1,602,586</b>	<b>\$1,509,543</b>	<b>\$1,351,289</b>	<b>\$1,376,718</b>	<b>\$1,366,922</b>	<b>\$1,193,054</b>
System Net Pension Liability (Surplus) - Ending (a) - (b)	\$(215,104)	\$(194,176)	\$(106,568)	\$(196,822)	\$(209,175)	\$(46,858)
Plan fiduciary net position as a percentage of						
total pension liability	115.50%	114.76%	108.56%	116.68%	118.07%	104.09%
Covered Payroll	103,934	97,369	94,266	91,075	91,721	94,368
<b>Net Pension Liability as a percentage of covered payroll</b>	<b>(206.96)%</b>	<b>(199.42)%</b>	<b>(113.05)%</b>	<b>(216.11)%</b>	<b>(228.06)%</b>	<b>(49.65)%</b>

\* Data above, as of June 30, 2013 through June 30, 2018, are provided in accordance with provisions of GASB 67 for determining Total Pension Liability, which for financial reporting purposes uses a version of the Entry Age method whereby the Actuarial Accrued Liability is fully accrued when a member either enters DROP or is expected to elect DROP. Data as of June 30, 2009 through June 30, 2012 are not available in a comparable format.

## Note to Schedule:

Changes of Assumptions: The calculations above for June 30, 2018, 2017, 2016, 2015, 2014, and 2013 reflect various assumption changes, including the modification of the Board's assumed rate of return to 7.25 percent for use in preparing the June 30, 2018 annual actuarial valuation and other assumption changes based on the triennial experience study for the period from July 1, 2012 through June 30, 2015, and 7.50 percent for use in preparing the June 30, 2013 annual actuarial valuation and other assumption changes based on the triennial experience study for the period from July 1, 2009 through June 30, 2012 which included changes in assumptions for retirement from active employment, pre-retirement mortality, healthy life post-retirement mortality, disabled life post-retirement mortality, vested termination, disability DROP election, percentage of members married, spouse age difference and salary increases.

## Required Supplementary Information Continued

*Schedule of Changes in the Net Pension Liability Continued*

(Dollars in Thousands)

For Fiscal Years Ended June 30, 2009-2012

<b>Change in Net Pension Liability</b>	<b>2012</b>	<b>2011</b>	<b>2010</b>	<b>2009</b>
<b>Total Pension Liability</b>				
Service Cost	\$27,873	\$28,892	\$28,241	\$27,644
Interest	72,000	72,000	71,000	67,000
Salary Increase (Greater) Less than Expected	(6,407)	(9,294)	(5,776)	—
COLA Increase Greater (Less) than Expected	(10,000)	(25,594)	(29,463)	—
Other Experience	3,000	(961)	(8,000)	(6,810)
Economic Assumption Changes	—	—	36,174	—
Change in Valuation Programs and Methods	—	(17,000)	—	—
Benefit Payments (including refunds, excluding PRSB)	(51,541)	(49,388)	(47,245)	(43,515)
<b>Net Change in Total Pension Liability</b>	<b>\$34,925</b>	<b>\$(1,345)</b>	<b>\$44,931</b>	<b>\$44,319</b>
Total Pension Liability - Beginning	\$917,941	\$919,286	\$874,355	\$830,036
Total Pension Liability - Ending (a)**	\$952,866	\$917,941	\$919,286	\$874,355
<b>Plan Fiduciary Net Position</b>				
Employee Contributions	\$7,540	\$7,304	\$7,355	\$7,172
Employer Contributions	22,875	19,397	12,094	8,938
Net Investment Income (Loss)	(6,201)	215,994	118,018	(223,122)
Benefit Payments (including Refunds, PRSB)	(51,914)	(51,050)	(50,555)	(47,363)
Administrative & Professional Expense	(1,118)	(1,080)	(993)	(952)
<b>Net Change in Plan Fiduciary Net Position</b>	<b>\$(28,818)</b>	<b>\$190,565</b>	<b>\$85,919</b>	<b>\$(255,327)</b>
Plan Fiduciary Net Position - Beginning	\$1,109,211	\$918,646	\$832,727	\$1,088,054
Plan Fiduciary Net Position - Ending (b)	\$1,080,393	\$1,109,211	\$918,646	\$832,727
System Net Pension Liability (Surplus) - Ending (a) - (b)	\$(127,527)	\$(191,270)	\$640	\$41,628
Plan fiduciary net position as a percentage of total pension liability	113.38%	120.84%	99.93%	95.24%
Covered Employee Payroll	100,596	99,000	102,686	102,355
<b>Net Pension Liability as a percentage of covered employee payroll</b>	<b>(126.77%)</b>	<b>(193.20%)</b>	<b>0.62%</b>	<b>40.67%</b>

\*\*Data above, as of June 30, 2009 through June 30, 2012, are provided in accordance with provisions of GASB 25 and the System's funding policy for determining Total Pension Liability, which for funding purposes uses a version of the Entry Age method whereby the Actuarial Accrued Liability is fully accrued when a member retires from employment after participation in DROP.

## Required Supplementary Information Continued

### Schedule of Employer Contributions Last Ten Fiscal Years

(Dollars in Thousands)

Fiscal Year Ending June 30	Actuarially Determined Contribution (ADC)	Contributions in Relation to the ADC	Contribution Deficiency (Excess)	Covered Payroll	Contributions as a Percentage of Covered Payroll
2018	\$19,697	\$19,697	\$—	\$103,934	18.95%
2017	18,543	18,543	—	97,369	19.04%
2016	18,738	18,738	—	94,266	19.88%
2015	18,967	18,967	—	91,075	20.83%
2014	18,575	18,575	—	91,721	20.25%
2013	18,725	18,725	—	94,368	19.84%
2012	22,875	22,875	—	96,195	23.78%
2011	19,397	19,397	—	96,758	20.05%
2010	12,094	12,094	—	99,166	12.20%
2009	8,938	8,938	—	99,327	9.00%

### Schedule of Investment Returns Last Ten Fiscal Years

Fiscal Year Ending June 30	Annual Money-Weighted Rate of Return Gross of Investment Expenses	Annual Money-Weighted Rate of Return Net of Investment Expense
2018	8.93%	8.57%
2017	14.73%	14.35%
2016	0.82%	0.53%
2015	3.32%	2.93%
2014	17.61%	17.16%
2013	13.65%	13.20%
2012	(0.20%)	(0.57%)
2011	24.42%	23.88%
2010	15.13%	14.55%
2009	(20.14%)	(20.50%)

The Schedule of Investment Returns above shows the annual money-weighted rate of return on the assets of the System, both gross and net of investment expense for ten fiscal years (2009 – 2018). The money-weighted rate of return expresses investment performance adjusted for timing of cash flows and the changing amounts actually invested. These returns differ slightly from the time-weighted rate of returns calculated and reported by the System's custodian, Northern Trust (shown in the Transmittal Letter on page i and within the Investment Section beginning on page 63) and as independently reported by the System's investment consulting firm, NEPC, LLC (shown in the Investment Section on pages 71-72). The System's custodian and investment consulting firm must use time-weighted returns as opposed to money-weighted returns in order to meet Global Investment Performance Standards for the purposes of effectively evaluating and reporting the performance of the System's investment managers.

The time-weighted return method is a measure of the compound rate of return of a portfolio over a stated period of time. It requires a set of sub-period returns to be calculated whenever there is an external cash flow, such as a deposit or withdrawal from the portfolio. In essence, it calculates the geometric total and mean return as opposed to the arithmetic total and mean return. This method does not include or have any distortions created when money is deposited or withdrawn from a portfolio. This is in contrast to money-weighted returns.

## Notes to the Required Supplementary Information

For Fiscal Years Ended June 30, 2018 and 2017

### *Actuarial Assumptions*

The Segal Company, the System's actuary, performed the most recent annual actuarial valuation as of June 30, 2018, which computes the contribution requirements (employee and employer contributions rates for fiscal year 2020), and determines the funding status of the plan.

Valuation Date:	Actuarially determined contribution rates are calculated as of June 30, two years prior to the end of the fiscal year in which contributions are reported.
Actuarial Cost Method:	Entry Age Actuarial Cost Method
Amortization Method:	Level percent of payroll for total Unfunded or Prefunded Actuarial Accrued Liability (UAAL or PAAL)
Remaining Amortization Period:	Effective with the June 30, 2013 valuation, any new UAAL established on each subsequent valuation as a result of actuarial gains or losses or plan amendments are amortized over separate 15-year declining periods (with the exception of temporary retirement incentives which are amortized over its own declining period of up to 5 years). Any new UAAL established as a result of changes in actuarial assumptions or methods at each valuation is amortized over separate 25-year declining periods. Any actuarial surplus (when the funded ratio is over 110%) will be amortized over a non-declining 25-year period.
Asset Valuation Method:	Market value of assets less unrecognized returns from each of the last five years. Unrecognized returns are equal to the difference between the actual market return and the expected return on a market value basis and are recognized over a five-year period. The Actuarial Value of Assets is reduced by the value of the non-valuation reserves.

## Notes to the Required Supplementary Information

### *Actuarial Assumptions (Continued):*

Investment Rate of Return:	7.25%
Inflation Rate:	3.00%
Real Across-the-Board Salary Increase:	0.50%
Projected Salary Increases:	Ranges from 4.00 percent to 12.00 percent based on years of service. Includes inflation at 3.00% plus real across-the-board salary increase of 0.50% plus merit and promotion increases.
Cost of Living Adjustments:	3.50% of Tier 1 retirement income and 3.00% of Tier 2 retirement income.
Other Assumptions:	See June 30, 2018 funding valuation report and Appendix A for the service retirement rates after they have been adjusted to treat DROP participation as service retirement.
Post-Retirement Mortality Rates:	Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional scale MP-2015, with no setback for healthy males and set forward one year for healthy females. For Disabled members, set forward four years. For Beneficiaries, no setback for males and set forward one year for females, weighted 20% male and 80% female.



## Other Supplementary Information

## Schedule of Administrative Expenses

For Fiscal Years Ended June 30, 2018 And 2017

	2018	2017
Personnel Services		
Staff Salaries	\$ 572,773	\$ 526,131
Fringe Benefits	148,485	144,918
<b>Total Personnel Services</b>	<b>\$ 721,258</b>	<b>\$ 671,049</b>
Professional Services		
Actuarial	\$ 81,449	\$ 61,000
Legal Counsel	86,658	76,088
Information Systems Services	154,210	132,970
Specialized Services	148,767	153,379
<b>Total Professional Services</b>	<b>\$ 471,084</b>	<b>\$ 423,437</b>
Communication		
Telephone	6,503	3,876
Postage	767	1,179
<b>Total Communication</b>	<b>\$ 7,270</b>	<b>\$ 5,055</b>
Rentals		
Office Rent	\$ 104,782	\$ 64,241
Common Area Maintenance (CAM) Charges	43,155	34,404
<b>Total Rentals</b>	<b>\$ 147,937</b>	<b>\$ 98,645</b>
Other		
Education and Conference	\$ 89,390	\$ 46,856
Membership & Dues	6,428	3,510
Subscriptions & Publications	222	27
Office Supplies	5,843	7,211
Computer Equipment	6,129	2,169
Equipment Lease	9,223	11,775
Insurance	40,486	37,189
Miscellaneous	5,195	8,387
Reimbursement to City for Inter-Dept Services	60,124	48,635
Depreciation	139,025	138,954
<b>Total Other</b>	<b>\$ 362,065</b>	<b>\$ 304,713</b>
<b>Total Administrative Expenses</b>	<b>\$ 1,709,614</b>	<b>\$ 1,502,899</b>

## Other Supplementary Information Continued

## Schedule of Investment Management Expenses

For Fiscal Years Ended June 30, 2018 and 2017

	2018	2017
Investment Manager Fees		
Equity		
Domestic	\$ 954,989	\$ 1,027,254
International	1,944,466	1,558,695
Fixed Income		
Domestic	4,203,523	3,092,438
Real Estate	1,510,867	1,424,420
<b>Total Investment Manager Fees</b>	<b>8,613,845</b>	<b>7,102,807</b>
Other Investment Expenses		
Foreign Income Taxes & Related Services, Charges	999,861	1,012,673
Custodial Services	175,634	146,928
Investment Consultant	143,991	132,242
Investment Legal Counsel	41,569	24,877
Analytical Database Service	46,517	51,237
<b>Total Other Investment Expenses</b>	<b>1,407,572</b>	<b>1,367,957</b>
<b>Total Fees &amp; Other Investment Expenses</b>	<b>10,021,417</b>	<b>8,470,764</b>
Securities Lending Expenses		
Agent Fees	1,523,233	614,679
<b>Total Securities Lending Expenses</b>	<b>1,523,233</b>	<b>614,679</b>
<b>Total Investment Expenses</b>	<b>\$ 11,544,650</b>	<b>\$ 9,085,443</b>

## Schedule of Payments To Consultants

For Fiscal Years Ended June 30, 2018 and 2017

	2018	2017
Actuarial Services	\$ 81,449	\$ 61,000
Audit Services	22,972	19,391
City Information Services	154,210	132,970
Legal Services	86,658	76,088
Medical Consultant	81,756	113,198
Miscellaneous	44,039	20,790
<b>Total Payments to Consultants</b>	<b>\$ 471,084</b>	<b>\$ 423,437</b>

*We promise to carry out our Mission through a competent, professional, impartial and open decision-making process. In providing benefits and services, all persons will be treated fairly, with courtesy and respect.*

## INVESTMENT

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# Investment Report from the Retirement Administrator

For the Years June 30, 2018 and 2017

## *Analysis of Issues Affecting Our Portfolio in FY 2018*

In spite of the overwhelming challenges of the global economy, the continued prudent leadership of the City of Fresno Fire and Police Retirement System (the System) Retirement Board (the Board) is undoubtedly the most important factor in the long-term success of our System. Our Board understands that the Retirement System's portfolio requires a sound and stable strategy for meeting investment goals over the long-term and that in times of unprecedented financial market volatility a well-diversified portfolio with strong controls to manage risk and ensure compliance are likely to produce superior performance relative to its indices over the long term.

The System is well funded at a fully funded status on both a market fair value basis and an actuarial valuation value of assets basis. From a long-term perspective, the System is positioned to provide a solid rate of return that is equal to or better than the respective asset classes market indices even as we enter yet another year of uncertainty in the global financial markets.

The great recession's hangover is evidenced by the fact that, even though the stock market has climbed and the housing market has largely recovered from the crisis, ordinary people have not made up all the ground they lost after the financial crisis. Home ownership is lower than any time in recent history; the unemployment rate, while very low, excludes some people who lost jobs to the recession and may never make it back to work. The crisis reordered the giants of finance and slowed major economies allowing others like China to surge ahead. Now Chinese banks are among the

largest in the world. And, global debt has hit a new record, raising fears of a new peril.

Throughout these uncertain and volatile times, it is the Board's responsibility to manage in and through the global financial market environment as it is unfolding. The Board, in its wisdom, feel certain that the path forward will be marked by uncertainty and market volatility. While the outcome of the recent US election represents a seismic shift, and as markets are discovering how this shift will change the landscape, we anticipate sharp market moves along the way in both up and down directions.

All investments involve risks, including possible loss of principal. Stock prices fluctuate, sometimes rapidly and dramatically, due to factors affecting individual companies, particular industries or sectors, or general market conditions. Bond prices generally move in the opposite direction of interest rates. Thus, as prices of bonds in an investment portfolio adjust to a rise in interest rates, the value of the portfolio may decline. Special risks are associated with foreign investing, including currency fluctuations, economic instability and political developments. Investments in emerging markets involve heightened risks related to the same factors, in addition to those associated with these markets' smaller size, lesser liquidity and lack of established legal, political, business and social frameworks to support securities markets.

Sudden swings in investor sentiment, from irrational exuberance to widespread pessimism, account for moments of epic value destruction. Some express the opinion that risk is greater now than in the past. However, we should be

## Investment Report from the Retirement Administrator Continued

careful of that statement as businesses faced extremely high levels of uncertainty in periods such as the early 1970s (with the Arab oil embargo and transition to floating exchange rates) and the financial crisis that began in August 2007. Today's risks are different, but they are hardly greater. The balance of risks, however, looks biased toward things that could go wrong; that's why many judge the potential risk of slower growth to be greater than the risk of faster growth. This creates an environment in which well-timed and careful investment can still be profitable, and in which the probability remains high that job growth and the economy will stay relatively healthy.

### *Investment Performance*

Highlighted Investment Performance of the System's Investment Portfolio gross of fees provided by its custodian for Fiscal Year 2018:

	Return
Total Fund	8.87%
Domestic Equity	15.68%
International Equity	8.96%
Fixed Income	1.86%
Real Estate	7.35%
Alternatives	9.50%
Fiscal Year End Fund Value:	\$1,602,585,594

The principal goals of the System's Board in managing the System's Investment Portfolios are the following:

- 1) To fund the System's benefit payments;
- 2) To assume a prudent risk posture to minimize the cost of meeting the obligations of the System;
- 3) To achieve rates of return above inflation;
- 4) To comply with legal statutes and regulations; and
- 5) To maintain a fully funded pension status.

These are the fundamental goals as stated in the Board's Investment Objectives and Policy Statement. The Board has strong controls in place to manage the overall investment objectives of the System's assets and hold the fiduciary responsibility for the System.

The System's Total Fund Returns versus NEPC, LLC's InvestorForce (IF) Public Fund Universe (Gross of Fee) Returns for the one-year period ended June 30, 2018, 8.87 percent ranked the System in the 2nd quartile (38th percentile) of our Investment Consultant's universe of all public funds (\$1 Billion + in assets). For the three years ended June 30, 2018, the System's Total Fund Returns of 8.02 percent ranked the System in the 2nd quartile (41st percentile), exceeding its policy weighted benchmark by 0.60 percent and also exceeding the Median IF Public Pension Funds (\$1 Billion+ in assets) return of 8.65 percent by 0.22 percent. Over the past ten years, the System's investment returns have remained sound and outperformed its policy benchmark returns in eight of the ten years and the median fund returns in eight of the ten years as shown in the chart on the following page.

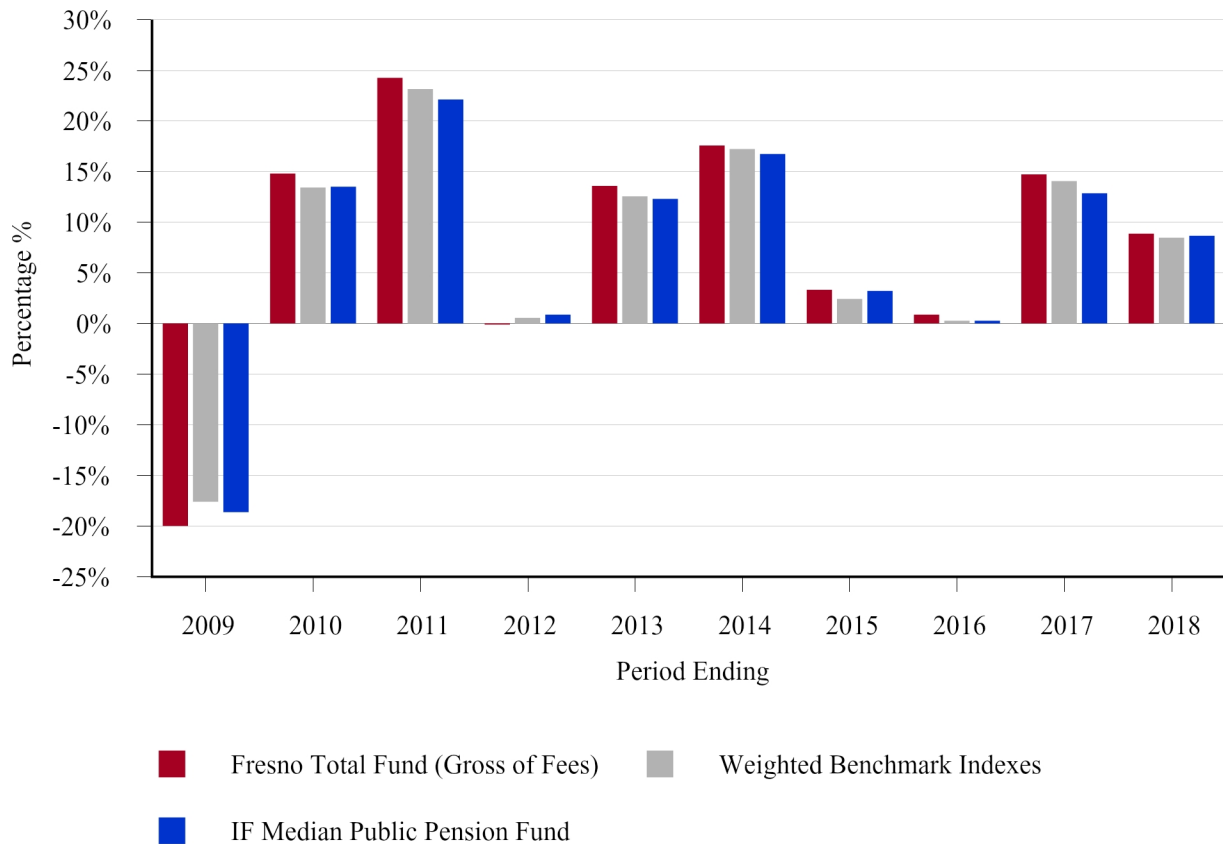
Due to the extreme volatility in the various economies of the world and the global financial markets over the past twenty to twenty-five years, it is of utmost importance to examine the System's investment returns with a long-term view rather than a short-term focus which tends to distort the perception of how well the investments have actually performed. As an example, you cannot isolate the high

## Investment Report from the Retirement Administrator Continued

returns during the Tech Bubble in the 1990’s without including the Tech Bubble corrections in the early 2000’s. The intermediate term (five, ten, and fifteen-year) performance rates demonstrate the extreme volatility of the markets, while the historical long-term performance rates of returns demonstrate that despite the short and

intermediate term volatility the System has been able to meet or exceed its actuarial assumed rate of return of 7.25 percent over long periods. As of June 30, 2018, the System’s 25-year annualized return is 8.51 percent and its 20-year annualized return is 6.85 percent, ranking the System in the top quartile (17<sup>th</sup> and 18<sup>th</sup> percentile, respectively).

City of Fresno Retirement Systems  
Fiscal Year Total Fund and Median Fund Annual Returns



## Investment Report from the Retirement Administrator Continued

### *Summary of Portfolio Results*

The fiscal year ended June 30, 2018, marked yet another extraordinarily volatile year which ended with a decline from its peak fiscal year performance for the System. The System experienced a total investment gain of 8.87 percent for the fiscal year ended June 30, 2018, outperforming the System's actuarial interest rate assumption of 7.25 percent by 1.62 percent and outperforming the System's policy benchmark (a weighted average of the fund's asset classes and their respective benchmarks) return of 8.34 percent by 0.53 percent. The System's ten-year annualized returns averaged 7.09 percent, outperforming its policy benchmarks return of 6.83 percent for the period by 0.26 percent. Over the longer term, our investment results remain sound with annualized returns of 6.85 percent and 8.51 percent, respectively, over the past twenty and twenty-five years. After paying all benefits and expenses of the System, the year-end value of the System reached \$1.603 billion.

### *General Information*

The System's investment assets are managed by external investment management firms. Professional investment consultants, along with staff, closely monitor the activity of these managers and assist the Board with the implementation of investment policies and long-term strategies. The System's goal is to fund benefit payments, while assuming a risk posture that is consistent with the Board's risk tolerance, protecting against loss of purchasing power by achieving rates of return above inflation, and to maintain a fully funded pension status.

### *Summary of General Investment Guidelines, Policies and Procedures*

The Board, having sole and exclusive authority and sole and exclusive fiduciary responsibility for the investment and administration of the System and its assets, has adopted an Investment Objectives and Policy Statement which reflects

the Board's policies for management of the System's investments. The Board reserves the right to amend, supplement or rescind this statement at any time. This Investment Objectives and Policy Statement establishes the investment program goals and policies, asset allocation policies, performance objectives, investment management policies and risk controls. It also defines the principal duties of the Board, staff, investment managers, master custodian and consultants.

The System's primary investment objective is to take prudent risk, as necessary, to minimize the cost of meeting the obligations of the System. The purpose of the Investment Objectives and Policy Statement is to express in operational terms: Return expectations, prudence with respect to risk and compliance with statutes and regulations.

An integral part of the overall investment policy is the strategic asset allocation policy. This allocation mix is designed to provide an optimal mix of asset categories with return expectations that reflect expected risk. This emphasizes a maximum prudent diversification of the portfolio that protects the System from declines that a particular asset class may experience in a given period. Both traditional assets (cash, bonds, domestic stocks, fixed income and mortgages) and nontraditional assets (real estate, alternatives such as infrastructure and private debt/credit, private equity, international stock and emerging equity market stock) are included in the mix.

Total portfolio return, over the long-term, is directed toward achieving and maintaining a fully funded status for the System. Prudent risk taking is warranted within the context of overall portfolio diversification to meet this objective. All activities will be conducted so as to serve the best interests of the System's members and beneficiaries.

## Investment Report from the Retirement Administrator Continued

### *Summary of Proxy Voting Guidelines and Procedures*

In recognition of its duty to manage retirement plan assets in the best interest of the plan participants, the Board has established proxy voting guidelines and procedures which are intended to assist in the faithful discharge of the Board's duty to vote proxies on behalf of plan participants. These guidelines consist of preferences with respect to specific, recurring proxy-voting issues followed by a general statement of voting policies. The System will at all times strive to cast proxy votes so as to advance the overall good of the System.

The Board incorporates International equity proxy voting guidelines for share-blocking markets into its Proxy Voting policy. Share-blocking markets are markets of countries outside the U.S. and Canada, which restrict trade activity by shareholders who vote proxies. For portfolio managers managing assets in these international developed and emerging market countries, the requirement to vote proxies may prevent the full exercise of their fiduciary duty to manage the portfolio in the best interest of the System. Therefore, under these circumstances, the portfolio manager is granted the authority to choose whether or not to vote proxies in share-blocking markets based upon the manager's determination of what is in the best interest of the System.

### *Specific Investment Results by Asset Classification*

As of June 30, 2018, the System's portfolio was slightly over-weight in total equities, with 59.9 percent in total equities versus the target of 48.0 percent. Domestic equities were slightly over-weight with 28.0 percent versus the target of 23.0 percent, and international equity with 23.7 percent developed and 8.2 percent emerging markets was slightly over-weight total international equity with 31.9 percent versus the target of 25.0 percent. Fixed income with 18.6 percent was 3.6 percent over-weight its target of 15.0 percent and real estate at 14.5 percent was 0.5 percent under-weight its target of 15.0 percent. Alternative investments represented 6.5 percent of the System's portfolio, which is 15.5 percent under-weight of its target of 22.0 percent.



## Investment Report from the Retirement Administrator Continued

The investments were further diversified into the following asset classes and target percentages:

<b>Asset Classification</b>	<b>Actual</b>	<b>Target</b>
Domestic Equities:		
Large-Cap	19.5%	15.8%
Small-Cap	8.5%	7.2%
International Equities:		
Developed Markets	23.7%	19.0%
Emerging Markets	8.2%	6.0%
Fixed Income:		
Domestic Fixed Income	12.8%	10.0%
High Yield Fixed Income	5.8%	5.0%
Real Estate		
Core Real Estate	8.3%	11.0%
Value Add Real Estate/REITs	6.2%	4.0%
Alternatives		
Infrastructure	—	4.0%
MLPs	—	5.0%
Private Equity	—	5.0%
Private Debt	7.0%	8.0%
Short-Term Investments	0.0%	0.0%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>

This asset class diversification along with portfolio investment style diversification is all part of the Retirement Board's Investment Risk Management Program. The investment returns presented herein are based on a time-weighted rate of return methodology based upon market values.

Respectfully submitted,

Robert T. Theller  
Retirement Administrator

December 12, 2018

# Investment Consultant's Report



**DON STRACKE**  
SENIOR CONSULTANT

November 15, 2018

City of Fresno Retirement Systems  
2828 Fresno Street Suite 201  
Fresno, California 93721

Dear Board Members,

The overall objective of the City of Fresno Retirement Systems (CFRS) is to ensure continued access to retirement, disability and survivor benefits for current and future CFRS participants. To ensure a solid foundation for the future of the Retirement Systems, CFRS' Boards carefully plan and implement an investment program designed to produce superior long-term investment returns, while prudently managing the risk in the portfolio. Investment policy and asset allocation are reviewed and revised by the CFRS Retirement Boards, at least annually, to reflect the Systems' actuarial assumptions, accrued liabilities, and economic and investment outlook. The following is a report on the performance of the Fund for the fiscal year ending June 30, 2018 with background on the underlying market environment.

## **Fiscal Year 2018 Market Review**

The U.S. economic expansion entered its ninth year, approaching a record for duration, powered by fiscal stimulus from the Tax Cuts and Jobs Act of 2017, corporate earnings growth and investment of repatriated cash. Although the Federal Reserve Bank maintained its path of methodically normalizing monetary policy through increasing interest rates, US market volatility remained relatively placid with equities appearing to price in near-term expectation of further economic growth. U.S. stocks, as a result, posted their ninth consecutive year of positive returns and outperformed international equities. Global capital markets continued to be largely driven by accommodative Central Bank policy with the European Central Bank and Bank of Japan suggesting that stimulative monetary policy may persist into 2019 and perhaps beyond. Volatility increased in global markets in the year ending June 30, 2018 as concerns over anti-establishment political change, historically low and broadly negative real interest rates and fears over U.S. trade policy caused uncertainty to impact investor sentiment. These risks were largely shrugged off by markets, resulting in U.S. equities posting a robust 14.4% return as measured by the S&P 500 Index. International developed-markets equities (6.8% for the year) performed well but lagged domestic equities by 7.6%. Underperformance in international developed-markets was driven by political and economic growth uncertainty in Europe. Emerging markets equities underperformed U.S. and outperformed developed-international equities as markets reacted to U.S. Dollar strength and trade policy uncertainty. Driven by increasing interest rates, U.S. high quality fixed income investments generated a negative return for the second consecutive year, returning -0.4% as measured by the Bloomberg Barclays U.S. Aggregate Bond Index.

The Systems returned 8.9%, gross of fees, for the fiscal year ending June 30, 2018. By comparison, the median public fund in the comparative universe returned 8.7% for the period<sup>1</sup>. The Systems' allocation to public equities is significantly higher than many of its peers, and the US-equity exposure and Non-US Equity exposure were positive contributors to performance. US Equity was the primary contributor to absolute performance, returning 15.7% gross of fees.

<sup>1</sup> As of June 30, 2018, the InvestorForce Public Funds Greater than \$1 Billion Universe was comprised of 63 total funds with approximately \$723 billion in assets.

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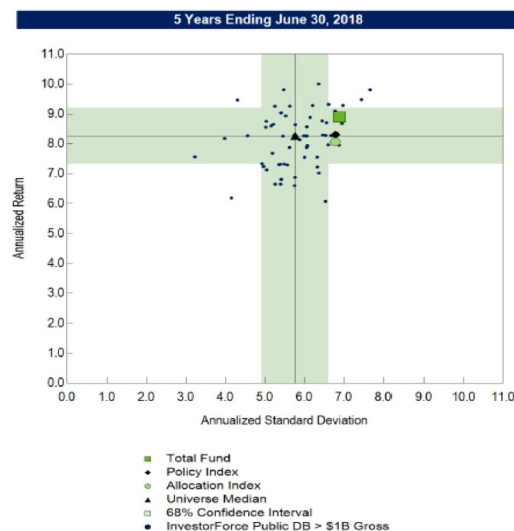
## Investment Consultant's Report Continued



For the five-year period ending June 30, 2018, the Systems returned 8.9% gross of fees per annum. As you can see in the chart below, this was an above average return but with a higher level of volatility than the average public fund.

Data as of 6/30/2018	1 Yr(%)	3 Yrs(%)	5 Yrs(%)	10 Yrs(%)	15 Yrs(%)
Systems' Total Return (Gross of Fees)	8.9	8.0	8.9	7.1	8.1
Systems' Total Return (Net of Fees)	8.5	7.6	8.5	6.7	7.6
Weighted Benchmark	8.5	7.5	8.3	6.9	7.8

**Investor Force Public Funds Greater than \$1 Billion Universe  
Risk-Return Comparison (Gross of Fees)**



NEPC provides the Systems with quarterly economic and investment market updates, performance reviews, investment manager monitoring and selection advice, and related investment services for traditional and non-traditional asset classes. In preparing our performance analysis for the Systems, we rely on the accuracy of financial data provided by the Systems' custodian bank and investment managers. CFRS's custodian, The Northern Trust Company, independently prepared the underlying performance data used in this report. The Systems' goals are measured against stated policy objectives, appropriate benchmarks and comparative universes over multiple time periods. This review process allows the Boards to evaluate whether established goals are being achieved on an absolute, relative and risk-adjusted basis.

*Don Stracke*

Sincerely,  
Don Stracke

## Investment Results

	Market Value (\$)	% of Portfolio	Gross of Fees Ending June 30, 2018			
			1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
<b>Total Fund (Employees and Fire &amp; Police Systems)</b>	<b>2,942,312,411</b>	<b>100.00</b>	<b>8.86</b>	<b>8.01</b>	<b>8.89</b>	<b>7.08</b>
<i>Weighted Index</i>			8.47	7.46	8.30	6.86
<i>Allocation Index</i>			8.10	7.12	8.06	7.10
<i>InvestorForce Public DB &gt; \$1B Gross Median</i>			8.65	7.18	8.26	6.63
<b>Total Equity Composite</b>	<b>1,759,978,198</b>	<b>59.82</b>	<b>11.97</b>	<b>9.41</b>	<b>10.55</b>	<b>7.26</b>
<i>MSCI ACWI</i>			10.73	8.19	9.41	5.80
<i>InvestorForce Public DB Gbl Eq Gross Median</i>			9.86	8.59	10.63	3.25
<b>Domestic Equity Composite</b>	<b>822,642,296</b>	<b>27.96</b>	<b>15.68</b>	<b>11.90</b>	<b>13.47</b>	<b>10.63</b>
<i>Domestic Equity Index</i>			15.74	11.94	13.37	10.41
<i>InvestorForce Public DB US Eq Gross Median</i>			14.65	11.37	13.08	10.26
<b>Large Cap Equity Composite</b>	<b>573,010,398</b>	<b>19.47</b>	<b>14.59</b>	<b>11.55</b>	<b>13.42</b>	<b>10.20</b>
<i>Large Cap Equity Index</i>			14.52	11.98	13.45	10.18
<i>eV US Large Cap Equity Gross Median</i>			13.44	10.76	12.80	10.21
<b>Small Cap Equity Composite</b>	<b>249,631,898</b>	<b>8.48</b>	<b>18.06</b>	<b>12.59</b>	<b>13.50</b>	<b>11.86</b>
<i>Russell 2000</i>			17.57	10.96	12.46	10.60
<i>eV US Small Cap Equity Gross Median</i>			16.60	11.33	13.11	11.73
<b>International Equity Composite</b>	<b>937,335,903</b>	<b>31.86</b>	<b>8.94</b>	<b>7.01</b>	<b>7.77</b>	<b>3.60</b>
<i>International Equity Index</i>			6.70	5.26	6.37	2.99
<i>InvestorForce Public DB ex-US Eq Gross Median</i>			7.52	5.99	6.94	3.49
<b>International Developed Equity Composite</b>	<b>833,578,752</b>	<b>28.33</b>	<b>8.97</b>	<b>6.90</b>	<b>8.01</b>	<b>3.62</b>
<i>Developed Equity Index</i>			7.30	5.40	6.65	3.12
<i>InvestorForce Public DB Dev Mkt ex-US Eq Gross Median</i>			6.78	4.30	6.06	3.76
<b>ACWI ex US Equity Composite</b>	<b>611,732,869</b>	<b>20.79</b>	<b>9.16</b>	<b>7.37</b>	<b>8.05</b>	<b>0</b>
<i>MSCI ACWI ex USA Gross</i>			7.79	5.56	6.48	3.01
<i>eV ACWI ex-US All Cap Equity Gross Median</i>			8.72	6.50	8.20	4.86
<b>EAFE Equity Composite</b>	<b>221,845,883</b>	<b>7.54</b>	<b>8.49</b>	<b>5.66</b>	<b>7.70</b>	<b>3.42</b>
<i>MSCI EAFE Gross</i>			7.37	5.41	6.93	3.33
<i>eV All EAFE Equity Gross Median</i>			8.30	6.41	7.96	4.65
<b>International Emerging Markets Equity Composite</b>	<b>103,757,147</b>	<b>3.53</b>	<b>8.84</b>	<b>7.99</b>	<b>6.46</b>	<b>2.99</b>
<i>MSCI Emerging Markets Gross</i>			8.59	5.98	5.39	2.60
<i>InvestorForce Public DB Emg Mkt Eq Gross Median</i>			5.58	4.99	4.69	1.55
<b>Total Fixed Income Composite</b>	<b>624,643,271</b>	<b>21.23</b>	<b>1.86</b>	<b>3.71</b>	<b>4.09</b>	<b>5.37</b>
<i>Fixed Income Index</i>			1.12	3.27	3.58	5.01
<i>BBgBarc US Aggregate TR</i>			-0.40	1.72	2.27	3.72
<i>InvestorForce Public DB Total Fix Inc Gross Median</i>			0.72	2.53	2.63	4.54
<b>Core Fixed Composite</b>	<b>468,210,594</b>	<b>15.91</b>	<b>0.75</b>	<b>2.84</b>	<b>3.26</b>	<b>4.47</b>
<i>BBgBarc US Aggregate TR</i>			-0.40	1.72	2.27	3.72
<i>InvestorForce Public DB US Fix Inc Gross Median</i>			0.07	2.17	2.71	4.08
<b>High Yield Composite</b>	<b>156,432,676</b>	<b>5.32</b>	<b>2.55</b>	<b>5.53</b>	<b>5.85</b>	<b>8.31</b>
<i>BBgBarc US High Yield TR</i>			2.62	5.53	5.51	8.19
<i>InvestorForce Public DB US Fix Inc Gross Median</i>			0.07	2.17	2.71	4.08
<b>Private Credit</b>	<b>128,517,116</b>	<b>4.37</b>	<b>9.50</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<i>Private Credit Index</i>			7.19	0.00	0.00	0.00
<b>Real Estate Composite</b>	<b>427,379,804</b>	<b>14.53</b>	<b>7.35</b>	<b>9.42</b>	<b>10.82</b>	<b>7.18</b>
<i>Real Estate Index</i>			5.08	8.47	9.95	7.17
<i>InvestorForce Public DB Real Estate Pub+Priv Gross Median</i>			8.12	9.18	10.62	5.76
<b>Private Real Estate Composite</b>	<b>275,550,492</b>	<b>9.37</b>	<b>8.56</b>	<b>9.29</b>	<b>11.04</b>	<b>5.96</b>
<i>NCREIF ODCE</i>			8.44	9.36	11.03	5.29
<b>Public Real Estate Composite</b>	<b>151,829,311</b>	<b>5.16</b>	<b>5.50</b>	<b>9.54</b>	<b>10.44</b>	<b>9.41</b>
<i>Wilshire RESI</i>			4.00	8.27	8.80	7.91
<i>eV US REIT Gross Median</i>			4.52	8.55	9.02	9.10
<b>Cash &amp; Equivalents Composite</b>	<b>1,794,023</b>	<b>0.06</b>	<b>1.41</b>	<b>0.82</b>	<b>0.54</b>	<b>0.46</b>
<i>91 Day T-Bills</i>			1.40	0.70	0.43	0.30

Calculations are prepared by NEPC, LLC using a time-weighted rate of return based on market values.

## Investment Results

	Market Value (\$)	% of Portfolio	Net of Fees Ending June 30, 2018			
			1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
<b>Total Fund (Employees and Fire &amp; Police Systems)</b>	<b>2,942,312,411</b>	<b>100.00</b>	<b>8.52</b>	<b>7.64</b>	<b>8.50</b>	<b>6.66</b>
<i>Weighted Index</i>			8.47	7.46	8.30	6.86
<i>Allocation Index</i>			8.10	7.12	8.06	7.10
<i>InvestorForce Public DB &gt; \$1B Net Median</i>			8.00	6.68	7.50	6.06
<b>Total Equity Composite</b>	<b>1,759,978,198</b>	<b>59.82</b>	<b>11.65</b>	<b>9.07</b>	<b>10.20</b>	<b>6.83</b>
<i>MSCI ACWI</i>			10.73	8.19	9.41	5.80
<i>InvestorForce Public DB Glbl Eq Net Median</i>			9.05	7.73	10.26	2.98
<b>Domestic Equity Composite</b>	<b>822,642,296</b>	<b>27.96</b>	<b>15.43</b>	<b>11.64</b>	<b>13.17</b>	<b>10.28</b>
<i>Domestic Equity Index</i>			15.74	11.94	13.37	10.41
<i>InvestorForce Public DB US Eq Net Median</i>			14.33	11.20	12.84	9.95
<b>Large Cap Equity Composite</b>	<b>573,010,398</b>	<b>19.47</b>	<b>14.58</b>	<b>11.49</b>	<b>13.33</b>	<b>10.03</b>
<i>Large Cap Equity Index</i>			14.52	11.98	13.45	10.18
<i>eV US Large Cap Equity Net Median</i>			12.61	9.88	12.09	9.60
<b>Small Cap Equity Composite</b>	<b>249,631,898</b>	<b>8.48</b>	<b>17.18</b>	<b>11.74</b>	<b>12.64</b>	<b>11.00</b>
<i>Russell 2000</i>			17.57	10.96	12.46	10.60
<i>eV US Small Cap Equity Net Median</i>			15.96	10.62	12.26	10.79
<b>International Equity Composite</b>	<b>937,335,903</b>	<b>31.86</b>	<b>8.55</b>	<b>6.61</b>	<b>7.35</b>	<b>3.10</b>
<i>International Equity Index</i>			6.70	5.26	6.37	2.99
<i>InvestorForce Public DB ex-US Eq Net Median</i>			7.15	5.49	6.44	3.31
<b>International Developed Equity Composite</b>	<b>833,578,752</b>	<b>28.33</b>	<b>8.64</b>	<b>6.55</b>	<b>7.65</b>	<b>3.19</b>
<i>Developed Equity Index</i>			7.30	5.40	6.65	3.12
<i>InvestorForce Public DB Dev Mkt ex-US Eq Net Median</i>			6.53	4.00	5.57	3.50
<b>ACWI ex US Equity Composite</b>	<b>611,732,869</b>	<b>20.79</b>	<b>8.89</b>	<b>7.09</b>	<b>7.77</b>	<b>0</b>
<i>MSCI ACWI ex USA Gross</i>			7.79	5.56	6.48	3.01
<i>eV ACWI ex-US All Cap Equity Net Median</i>			9.25	5.81	7.87	4.09
<b>EAFE Equity Composite</b>	<b>221,845,883</b>	<b>7.54</b>	<b>7.96</b>	<b>5.15</b>	<b>7.17</b>	<b>2.88</b>
<i>MSCI EAFE Gross</i>			7.37	5.41	6.93	3.33
<i>eV All EAFE Equity Net Median</i>			7.93	5.85	7.23	4.10
<b>International Emerging Markets Equity Composite</b>	<b>103,757,147</b>	<b>3.53</b>	<b>7.91</b>	<b>7.07</b>	<b>5.57</b>	<b>2.05</b>
<i>MSCI Emerging Markets Gross</i>			8.59	5.98	5.39	2.60
<i>InvestorForce Public DB Emg Mkt Eq Net Median</i>			5.04	4.38	4.25	1.55
<b>Total Fixed Income Composite</b>	<b>624,643,271</b>	<b>21.23</b>	<b>1.66</b>	<b>3.48</b>	<b>3.84</b>	<b>5.12</b>
<i>Fixed Income Index</i>			1.12	3.27	3.58	5.01
<i>BBgBarc US Aggregate TR</i>			-0.40	1.72	2.27	3.72
<i>InvestorForce Public DB Total Fix Inc Net Median</i>			0.39	2.34	2.44	4.38
<b>Core Fixed Composite</b>	<b>468,210,594</b>	<b>15.91</b>	<b>0.64</b>	<b>2.68</b>	<b>3.09</b>	<b>4.31</b>
<i>BBgBarc US Aggregate TR</i>			-0.40	1.72	2.27	3.72
<i>InvestorForce Public DB Total Fix Inc Net Median</i>			0.39	2.34	2.44	4.38
<b>High Yield Composite</b>	<b>156,432,676</b>	<b>5.32</b>	<b>2.03</b>	<b>5.01</b>	<b>5.31</b>	<b>7.77</b>
<i>BBgBarc US High Yield TR</i>			2.62	5.53	5.51	8.19
<i>InvestorForce Public DB US Fix Inc Net Median</i>			-0.16	2.00	2.52	3.91
<b>Private Credit</b>	<b>128,517,116</b>	<b>4.37</b>	<b>9.51</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<i>Private Credit Index</i>			7.19	0.00	0.00	0.00
<b>Real Estate Composite</b>	<b>427,379,804</b>	<b>14.53</b>	<b>6.60</b>	<b>8.64</b>	<b>9.99</b>	<b>6.32</b>
<i>Real Estate Index</i>			5.08	8.47	9.95	7.17
<i>InvestorForce Public DB Real Estate Pub+Priv Net Median</i>			7.87	8.84	10.35	4.97
<b>Private Real Estate Composite</b>	<b>275,550,492</b>	<b>9.37</b>	<b>7.69</b>	<b>8.37</b>	<b>10.04</b>	<b>4.93</b>
<i>NCREIF ODCE</i>			8.44	9.36	11.03	5.29
<b>Public Real Estate Composite</b>	<b>151,829,311</b>	<b>5.16</b>	<b>4.96</b>	<b>8.97</b>	<b>9.85</b>	<b>8.81</b>
<i>Wilshire RESI</i>			4.00	8.27	8.80	7.91
<i>eV US REIT Net Median</i>			3.88	7.60	8.61	8.53
<b>Cash &amp; Equivalents Composite</b>	<b>1,794,023</b>	<b>0.06</b>	<b>1.41</b>	<b>0.82</b>	<b>0.54</b>	<b>0.46</b>
<i>91 Day T-Bills</i>			1.40	0.70	0.43	0.30

Calculations are prepared by NEPC, LLC using a time-weighted rate of return based on market values.

## Target and Actual Asset Allocation

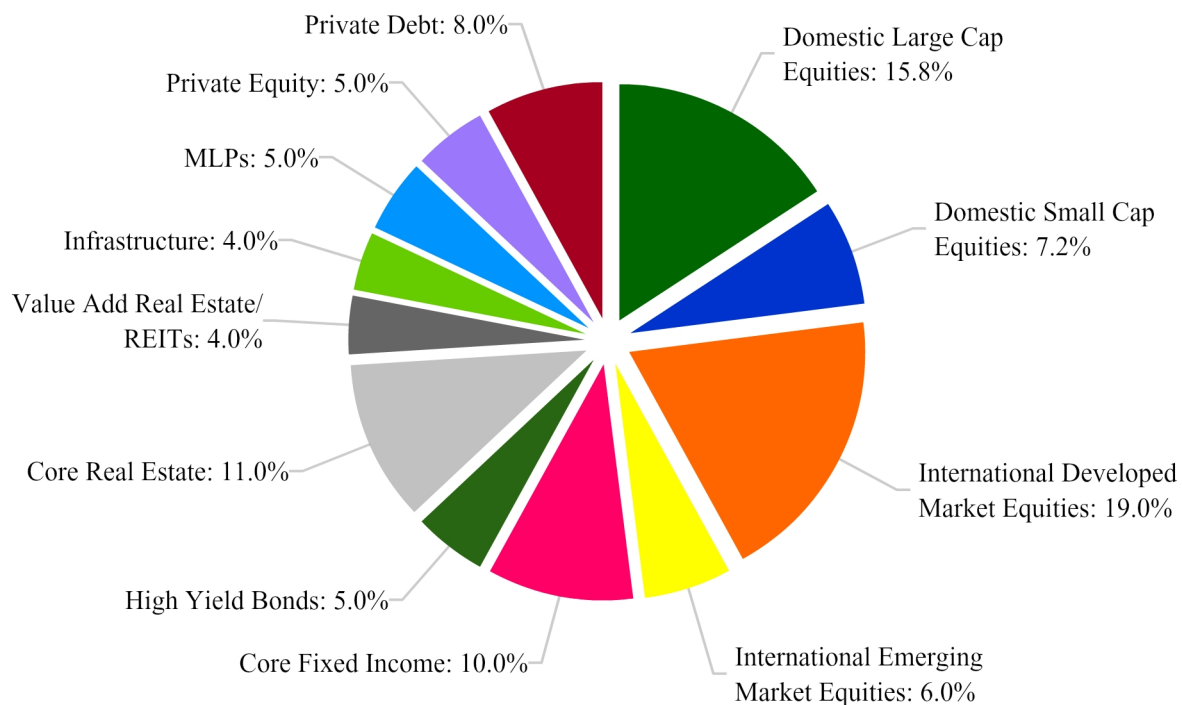
As of June 30, 2018

Asset Class	Current Target	Allocation Range	Actual
Domestic Large Cap Equities	15.8%	13.0% - 27.0%	19.5%
Domestic Small Cap Equities	7.2%	2.0% - 9.0%	8.5%
International Developed Market Equities	19.0%	13.0% - 27.0%	23.7%
International Emerging Market Equities	6.0%	0.0% - 10.0%	8.2%
Core Fixed Income	10.0%	4.0% - 19.0%	12.8%
High Yield Bonds*	5.0%	3.0% - 12.0%	5.8%
Core Real Estate	11.0%	5.0% - 20.0%	8.3%
Value Add Real Estate/REITs	4.0%	1.0% - 9.0%	6.2%
Infrastructure	4.0%	0.0% - 10.0%	—%
MLPs	5.0%	0.0% - 10.0%	—%
Private Equity	5.0%	0.0% - 10.0%	—%
Private Debt	8.0%	0.0% - 10.0%	7.0%
Short-Term Investments	0.0%	0%	0%

\* 1% High Yield Bonds Managed Within Domestic Fixed Income

### Target Asset Allocation\*

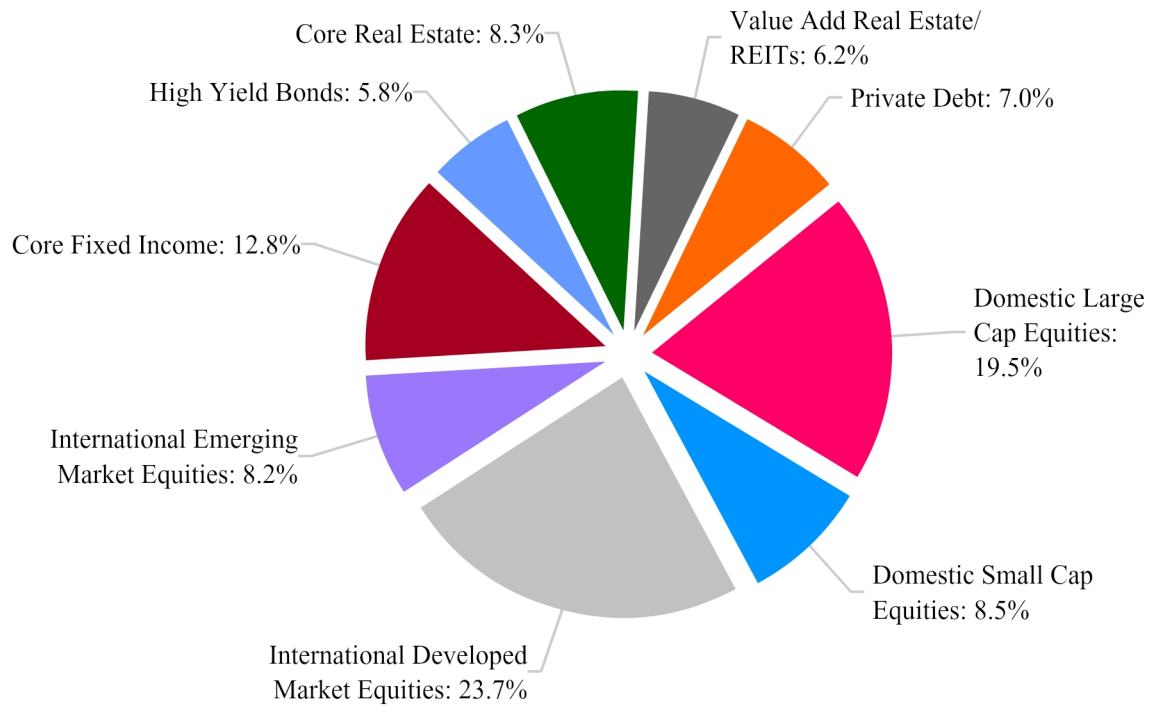
As of June 30, 2018



\* Short-Term Investments is 0%.

### Actual Asset Allocation\*

As of June 30, 2018



\* Short-Term Investments is 0%.

## Largest Stock Holdings (by Market Value)

As of June 30, 2018

	Shares	Stock Holding	Market Value
1)	197,613	SAMSUNG ELECTRONICS CO KRW5000	\$ 8,271,561
2)	26,510	NASPERS LIMITED N ZAR0.02	6,740,575
3)	84,826	NESTLE SA CHF0.10(REGD)	6,569,442
4)	38,543	SIMON PROPERTY GROUP INC COM	6,559,695
5)	13,635	EQUINIX INC COM PAR \$0.001	5,861,672
6)	754,412	TAIWAN SEMICONDUCTOR MANUFACTURING TWD10	5,357,111
7)	29,313	AVALONBAY CMNTYS REIT	5,038,530
8)	41,629	SAP SE	4,809,401
9)	79,086	RIO TINTO PLC ORD GBP0.10(REGD)	4,386,394
10)	32,631	DEUTSCHE BOERSE AG	4,348,948
<b>Total Largest Stock Holdings</b>			<b>\$ 57,943,329</b>

## Largest Bond Holdings (by Market Value)

As of June 30, 2018

	Share/Par Value	Bond Holding	Coupon Rate	Maturity Date	Market Value
1)	6,789,033	UNITED STATES TREAS NTS 2.125% DUE	2.000%	31 Dec 2021	\$ 6,638,404
2)	4,344,981	UNITED STATES TREAS NTS DTD 1.625% DUE	2.625%	15 May 2021	4,345,320
3)	3,617,197	UNITED STATES TREAS NTS 1.875% DUE	2.875%	15 May 2028	3,624,402
4)	3,013,879	FNMA SINGLE FAMILY MORTGAGE 3.5% 30	4.500%	1 May 2048	3,141,878
5)	2,940,685	UNITED STATES TREAS NTS DTD 00407 .625%	4.500%	1 May 2047	3,062,667
6)	2,715,613	UNITED STATES TREAS INFL INDEXED BONDS	1.875%	31 Jan 2022	2,641,784
7)	2,666,732	UNITED STATES TREAS NTS DTD 05/31/2014	2.125%	30 Sep 2021	2,623,398
8)	2,329,996	VERIZON COMMUNICATIONS 6.55% BDS DUE	1.625%	30 Jun 2020	2,288,585
9)	2,190,855	UNITED STATES TREAS NTS 1.0% DUE	4.000%	1 Apr 2047	2,238,200
10)	2,286,546	CALIFORNIA ST 7.5% DUE 04-01-2034 BEO	1.125%	30 Sep 2021	2,178,559
<b>Total Largest Bond Holdings</b>					<b>\$ 32,783,197</b>

A complete list of portfolio holdings is available upon request.



## Brokerage Commission Recapture

The System participates in a commission recapture program offered by Northern Trust Securities Inc. (NTSI). Investment Managers are instructed to seek best execution and to seek to minimize omission and market impact costs when trading securities. Consistent with the pursuit of best execution, equity managers participating in the Brokerage Commission Recapture Program are to give consideration to executing a portion of the trades for their account through brokerage firms identified by NTSI as eligible Broker Dealer firms. The System receives a rebate in the amount of 80 percent for domestic and 70 percent for international of the total commissions directed through the NTSI Network. For fiscal years ended June 30, 2018 and 2017, the net income from Brokerage Commission Recapture was \$3,960 and \$23,852, respectively. During these periods, the overall participating rate by the System's equity managers was 2.21 percent and 8.89 percent, respectively. The percentage of equity trading being executed through the program is generally at a low cost and has resulted over the years in a meaningful cost recapture. Program economics are tough in the lower commission environment and participation by the System's investment managers is voluntary.

## Schedule of Commissions

For The Fiscal Year Ended June 30, 2018

<b>Brokerage Firm</b>	<b>Total Commissions</b>	<b>Number of Shares</b>	<b>Commission Cost/Share</b>
JEFFERIES LLC	\$ 14,589	796,685	\$ 0.0183
CITIGROUP GLOBAL MARKETS INC.	12,393	5,261,012	0.0024
MERRILL LYNCH INTERNATIONAL LIMITED	9,852	1,224,241	0.0080
CITATION GROUP (THE)	9,235	230,881	0.0400
J.P. MORGAN SECURITIES LLC	9,098	263,872	0.0345
WEEDEN AND CO	8,022	525,527	0.0153
CREDIT SUISSE SECURITIES (USA) LLC	6,763	760,029	0.0089
GOLDMAN, SACHS AND CO.	6,661	629,504	0.0106
STIFEL, NICOLAUS & COMPANY, INCORPORATED	6,377	184,542	0.0346
INVESTMENT TECHNOLOGY GROUP LTD.	6,355	717,231	0.0089
	<b>\$ 89,345</b>	<b>10,593,524</b>	<b>\$ 0.0084</b>
All Other Brokerage Firms	224,636	856,841,692	0.0003
<b>TOTAL</b>	<b>\$ 313,981</b>	<b>867,435,216</b>	<b>\$ 0.0004</b>

## Investment Summary

For The Fiscal Year Ended June 30, 2018

	<b>Investment Value</b>	<b>Percent of Fund</b>	<b>Investment Management Fees</b>
Equity			
Domestic	\$ 598,042,858	37.3%	\$ 954,989
International Developed Market	287,973,864	18.0%	1,443,019
International Emerging Market	55,558,303	3.5%	501,447
Fixed Income			
Domestic	391,682,057	24.5%	4,203,523
Real Estate	234,106,238	14.6%	1,510,867
Short-term Investments	33,310,870	2.1%	—
<b>Total</b>	<b>\$ 1,600,674,190</b>	<b>100.0%</b>	<b>\$ 8,613,845</b>

*Assets will be invested  
and administered to  
balance the need to  
control risk with  
superior performance.*

*We expect excellence  
in all activities. We  
will also be  
accountable and act in  
accordance with the  
law.*

## ACTUARIAL

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# Actuarial Certification Letter



100 Montgomery Street Suite 500 San Francisco, CA 94104-4308  
T 415.263.8200 www.segalco.com

VIA E-MAIL

December 4, 2018

Board of Retirement  
City of Fresno Fire and Police Retirement System  
2828 Fresno Street, Suite 201  
Fresno, CA 93721-1327

**Re: City of Fresno Fire and Police Retirement System  
June 30, 2018 Actuarial Valuation**

Dear Members of the Board:

Segal Consulting (Segal) prepared the June 30, 2018 annual actuarial valuation of the City of Fresno Fire and Police Retirement System. We certify that the valuation was performed in accordance with generally accepted actuarial principles and practices and the System's funding policy that was last reviewed with the Board in 2012. We have also reflected the lengthening of the period used to amortize actuarial surplus approved by the Board in 2018. It is our understanding that the assumptions and methods used for funding purposes meet the parameters set by Actuarial Standards of Practice (ASOPs).

As part of the June 30, 2018 actuarial valuation, Segal conducted an examination of all participant data for reasonableness. Summaries of the employee data used in performing the actuarial valuations over the past several years are provided in our valuation report. We did not audit the System's financial statements. For actuarial valuation purposes, Plan assets are valued at Actuarial Value. Under this method, the assets used to determine employer contribution rates take into account market value by recognizing the differences between the total actual investment return at market value and the expected investment return over a five-year period.

One of the general goals of an actuarial valuation is to establish contribution rates which, over time, will remain level as a percentage of payroll unless Plan benefit provisions are changed. Actuarial funding is based on the Entry Age Cost Method. Under this method, the employer contribution rate provides for current cost (normal cost) plus a level percentage of payroll to amortize any prefunded actuarial accrued liability or unfunded actuarial accrued liability (UAAL). The UAAL is amortized over different periods depending on the source.

Benefits, Compensation and HR Consulting. Member of The Segal Group. Offices throughout the United States and Canada

## Actuarial Certification Letter Continued

Board of Retirement  
 City of Fresno Fire and Police Retirement System  
 December 4, 2018  
 Page 2

Effective with the June 30, 2013 valuation, any new UAAL established as a result of actuarial gains or losses or plan amendments are amortized over separate 15-year declining periods (with the exception of temporary retirement incentives which are amortized over a separate declining period of up to 5 years). Any new UAAL established as a result of changes in actuarial assumptions or methods at each valuation is amortized over separate 25-year declining periods. Any actuarial surplus (when the funded ratio is over 110%) will be amortized over a non-declining 30-year period.<sup>1</sup> The progress being made towards meeting the funding objective through June 30, 2018 is illustrated in the Schedule of Funding Progress.

Notes number 1, 3 and 4 to the Basic Financial Statements and the Required Supplemental Information (RSI) included in the Financial Section were prepared by the System based on the results of the Governmental Accounting Standards Statement No. 67 (GAS 67) actuarial valuation as of June 30, 2018 prepared by Segal. For the Financial Section of the Comprehensive Annual Financial Report (CAFR), Segal provided the Schedule of Funding Progress, Schedule of Changes in Net Pension Liability and Schedule of Employer Contributions as shown in the RSI. A listing of the other supporting schedules Segal prepared for inclusion in the Actuarial and Statistical Sections of the System's CAFR is provided below. These schedules were prepared based on the results of the actuarial valuation as of June 30, 2018 for funding purposes.

1. Summary of Actuarial Assumptions and Methods;
2. Schedule of Funded Liabilities by Type; and
3. Actuarial Analysis of Financial Experience.

The valuation assumptions included in the Actuarial Section were adopted by the Retirement Board based on the June 30, 2015 Experience Analysis and the June 30, 2016 Economic Assumptions Report. It is our opinion that the assumptions used in the June 30, 2018 valuation produce results, which, in the aggregate, reflect the future experience of the Plan. Actuarial valuations are performed on an annual basis. An experience analysis is performed every three years. The next experience analysis is due to be performed as of June 30, 2018 and those assumptions will be used in the June 30, 2019 valuation. The Retirement System utilizes the actuarial surplus to provide contribution rate offsets and a PRSB benefit. The impact of the application of the actuarial surplus on the future financial condition of the Plan has not been explicitly measured in the valuation.

In the June 30, 2018 valuation, the ratio of the valuation assets to actuarial accrued liabilities increased slightly from 119.8% to 120.3%. The employer's rate has increased from 18.72%<sup>2</sup> of payroll to 19.59%<sup>3</sup> of payroll, while the employee's rate has remained at 8.97% of payroll.

<sup>1</sup> In the June 30, 2017 valuation, a non-declining 25-year period was used to amortize actuarial surplus.

<sup>2</sup> This rate has been decreased by 4.27% of payroll as a result of surplus allocation.

<sup>3</sup> This rate has been decreased by 3.94% of payroll as a result of surplus allocation.

## Actuarial Certification Letter Continued

Board of Retirement  
City of Fresno Fire and Police Retirement System  
December 4, 2018  
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As a result of using the actuarial value of assets in the actuarial valuation, there were \$23.3 million in unrecognized deferred investment gains as of June 30, 2018, which represented 1.5% of the market value of assets. This is an improvement from last year's amount of \$16.6 million in unrecognized deferred investment gains. If \$23.3 million in deferred investment gains were recognized immediately in the actuarial value of assets, the funded percentage would increase from 120.3% to 122.2% and the employer's rate would decrease from 19.59% of payroll to 18.85% of payroll.

The undersigned are Members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Sincerely,



Paul Angelo, FSA, MAAA, FCA, EA  
Senior Vice President and Actuary



Andy Yeung, ASA, MAAA, FCA, EA  
Vice President and Actuary

MYM/jl  
Enclosures

5562428v1/09328.001

## Summary of Actuarial Assumptions and Funding Method

These actuarial assumptions and methods based on June 30, 2018 data were adopted by the City of Fresno Fire and Police System (the System) Retirement Board on December 12, 2018, and were effective for July 1, 2019.

### Assumptions

Valuation Interest Rate	7.25%
Inflation:	3.00%

### Post-Retirement Mortality

#### (a) Service Retirement

Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional scale MP-2015, with no setback for males and set forward one year for females.

Beneficiary: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional scale MP-2015, with no setback for males and set forward one year for females, weighted 20% male and 80% female.

#### (b) Disability Retirement

Member: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional scale MP-2015, set forward four years.

### Pre-Retirement Mortality

Based upon the Analysis of Actuarial Experience during the period July 1, 2012 through June 30, 2015.

### Withdrawal Rates

Based upon the Analysis of Actuarial Experience during the period July 1, 2012 through June 30, 2015.

### Disability Rates

Based upon the Analysis of Actuarial Experience during the period July 1, 2012 through June 30, 2015.

### Service Retirement Rates

Based upon the Analysis of Actuarial Experience during the period July 1, 2012 through June 30, 2015.

### Percentage Married at Retirement

85% of all active members are assumed to be married at retirement. Their spouses will be eligible for the 2/3 automatic survivor benefits.

### Assets

Five-year smoothed recognition of realized and unrealized capital gains and losses greater or lesser than the actuarial assumed rate of return.

### Funding Method

The System's liability is being funded on the Entry Age Normal Cost method with the Unfunded Actuarial Accrued Liability (UAAL) amortized as a level percentage of payroll. There is no UAAL as of June 30, 2018.

The System's funding policy for determining Total Pension Liability (for funding purposes) uses a version of the Entry Age method whereby the Actuarial Accrued Liability is fully accrued when a member retires from employment after participating in DROP (Deferred Retirement Option Program). While for financial reporting purposes only, in accordance with GASB 67 provisions, for determining Total Pension Liability, the Actuarial Accrued Liability is fully accrued when a member either enters DROP or is expected to elect DROP. (See page 30 of the Financial Section and pages 58 and 59 of the Required Supplementary Information on the different actuarial assumptions used for financial reporting versus funding progress.)

## Summary of Actuarial Assumptions and Funding Method Continued

### *Cost-of-Living (COLA) Assumption*

The annual cost-of-living adjustment (COLA) is 3.00% for Tier 2 members and 3.50% for Tier 1 members and retirees who have retired with the final average formula, or with the career average formula.

### *DROP Assumptions*

	Tier 1	Tier 2
1st year eligible	100%	40%
Following year	0%	10%
Next following year	0%	5%
Thereafter	0%	0%

Members are assumed to remain in the Deferred Retirement Option Program (DROP) for 7 years.

### *Ultimate Salary Scale*

5.85% for the first five years of service. Graded increases thereafter ranging from 1.70% at age 25 to 0.40% at ages 50 and over. Of the total salary increases assumed, 3.00% is for inflation, plus 0.50% real across-the-board salary increase.

## Probabilities of Separation Prior to Retirement

Rate (%)		
Mortality		
Tier 1 and Tier 2		
Age	Male	Female
25	0.03	0.01
30	0.03	0.02
35	0.04	0.02
40	0.04	0.03
45	0.07	0.05
50	0.11	0.08
55	0.20	0.13
60	0.35	0.19
65	0.60	0.26

All pre-retirement deaths are assumed to be non-service connected.

Rate (%)				
Disability				
Age	Tier 1		Tier 2	
	Duty	Non-Duty	Duty	Non-Duty
20	0.02	0.00	0.14	0.00
25	0.14	0.01	0.29	0.01
30	0.26	0.01	0.50	0.01
35	0.39	0.03	0.72	0.03
40	0.60	0.12	0.98	0.12
45	0.88	0.25	1.22	0.25
50	2.80	0.20	1.48	0.20
55	8.20	0.00	1.78	0.00
60	0.00	0.00	0.00	0.00

Rate (%)		
Total Termination (Less Than 5 years of service)		
Service	Tier 1	Tier 2

0 – 1	4.47	12.00
1 – 2	4.47	8.00
2 - 3	4.47	2.00
3 – 4	4.47	1.50
4 – 5	4.47	1.00

100% of members are assumed to elect a withdrawal of contributions. No termination is assumed after a member is assumed to retire.

Rate (%)				
Total Termination (5 or more years of service)				
Age	Tier 1		Tier 2	
	5-10 Years	10+ Years		
20	2.87	3.57		3.10
25	2.87	3.57		2.85
30	1.88	2.63		2.36
35	0.87	1.44		1.74
40	0.44	0.92		1.32
45	0.19	0.63		0.96
50	0.00	0.00		0.00

100% of Tier 1 members with 5 – 10 years of service, 0% of Tier 1 members with 10+ years of service and 50% of Tier 2 members with 5+ years of service are assumed to elect a withdrawal of contributions. The remaining members are assumed to elect a deferred vested benefit. No termination is assumed after a member is assumed to retire.



## Schedule of Active Member Valuation Data

Valuation Date	Active/DROP	Number	Annual Payroll	Annual Average Pay	% Increase (Decrease) in Average Pay
June 30, 2018	Active Members	1,043	\$ 100,270,371	\$ 96,137	3.6%
	DROP Participants	90	10,701,563	118,906	5.4%
	<b>Totals</b>	<b>1,133</b>	<b>\$ 110,971,934</b>	<b>\$ 215,043</b>	
June 30, 2017	Active Members	990	\$ 91,850,923	\$ 92,779	1.1%
	DROP Participants	96	10,828,198	112,794	1.1%
	<b>Totals</b>	<b>1,086</b>	<b>\$ 102,679,121</b>	<b>\$ 205,573</b>	
June 30, 2016	Active Members	947	\$ 86,884,960	\$ 91,748	(2.5)%
	DROP Participants	107	11,932,935	111,523	1.3%
	<b>Totals</b>	<b>1,054</b>	<b>\$ 98,817,895</b>	<b>\$ 203,271</b>	
June 30, 2015	Active Members	880	\$ 82,820,376	\$ 94,114	(0.8)%
	DROP Participants	113	12,441,847	110,105	2.3%
	<b>Totals</b>	<b>993</b>	<b>\$ 95,262,223</b>	<b>\$ 204,219</b>	
June 30, 2014	Active Members	872	\$ 82,701,177	\$ 94,841	(2.2)%
	DROP Participants	126	13,557,816	107,602	(3.1)%
	<b>Totals</b>	<b>998</b>	<b>\$ 96,258,993</b>	<b>\$ 202,443</b>	
June 30, 2013	Active Members	899	\$ 87,164,227	\$ 96,957	4.1%
	DROP Participants	122	13,540,941	110,991	3.9%
	<b>Totals</b>	<b>1,021</b>	<b>\$ 100,705,168</b>	<b>\$ 207,948</b>	
June 30, 2012	Active Members	939	\$ 87,461,980	\$ 93,144	1.6%
	DROP Participants	123	13,133,740	106,778	8.1%
	<b>Totals</b>	<b>1,062</b>	<b>\$ 100,595,720</b>	<b>\$ 199,922</b>	
June 30, 2011	Active Members	953	\$ 87,339,861	\$ 91,647	1.3%
	DROP Participants	118	11,659,869	98,812	9.0%
	<b>Totals</b>	<b>1,071</b>	<b>\$ 98,999,730</b>	<b>\$ 190,459</b>	
June 30, 2010	Active Members	992	\$ 89,718,011	\$ 90,442	3.0%
	DROP Participants	143	12,968,418	90,688	2.3%
	<b>Totals</b>	<b>1,135</b>	<b>\$ 102,686,429</b>	<b>\$ 181,130</b>	
June 30, 2009	Active Members	997	\$ 87,546,941	\$ 87,810	5.1%
	DROP Participants	167	14,807,704	88,669	5.0%
	<b>Totals</b>	<b>1,164</b>	<b>\$ 102,354,645</b>	<b>\$ 176,479</b>	

## Schedule of Retirees and Beneficiaries Added to or Removed from Rolls

Year Ended June 30	Added to Rolls		Removed from Rolls		Rolls at End of Year		Average Annual Allowance	% Increase / (Decrease) in Retiree Allowance
	Number	Annual Allowance	Number	Annual Allowance	Number	Annual Allowance		
2018	51	\$1,231,992	(31)	(\$708,568)	1,066	\$62,510,828	\$58,641	4.41
2017	55	\$1,432,672	(20)	(\$456,710)	1,046	\$58,748,302	\$56,165	2.48
2016	32	\$728,058	(26)	(\$730,485)	1,011	\$55,408,166	\$54,805	2.55
2015	48	\$1,429,630	(21)	(\$514,195)	1,005	\$53,711,161	\$53,444	(0.58)
2014	41	\$1,068,770	(31)	(\$703,986)	978	\$52,573,897	\$53,757	0.05
2013	48	\$1,438,868	(40)	(\$856,967)	968	\$52,011,489	\$53,731	0.39
2012	31	\$481,428	(19)	(\$413,006)	960	\$51,378,999	\$53,520	0.36
2011	71	\$1,895,852	(25)	(\$691,254)	948	\$50,556,250	\$53,329	(3.09)
2010	69	\$2,889,037	(32)	(\$838,327)	902	\$49,638,574	\$55,032	1.23
2009	37	\$1,133,750	(26)	(\$663,449)	865	\$47,024,672	\$54,364	8.09

## Solvency Test (In thousands)

Valuation Date As of June 30	Aggregate Accrued Liabilities for			Portion of Accrued Liabilities Covered by Reported Asset			
	Active Member Contributions	Retirees and Beneficiaries (Includes Deferred Vested)	Active Members (Employer Financed Portion)	Actuarial Valuation Value of Assets	Active Member Contributions	Retirees and Beneficiaries (Includes Deferred Vested)	Active Members (Employer Financed Portion)
2018	\$165,233	\$801,931	\$227,567	\$1,436,725	100%	100%	100%
2017	154,607	770,352	206,389	1,354,974	100%	100%	100%
2016	143,208	728,510	195,698	1,276,604	100%	100%	100%
2015	131,828	713,712	174,376	1,220,269	100%	100%	100%
2014	124,550	717,618	163,860	1,142,649	100%	100%	100%
2013	115,277	711,124	171,435	1,061,399	100%	100%	100%
2012	107,138	697,622	148,106	1,003,929	100%	100%	100%
2011	96,649	678,264	143,028	1,022,996	100%	100%	100%
2010	88,824	683,318	147,144	1,018,605	100%	100%	100%
2009	79,896	654,398	140,061	1,045,774	100%	100%	100%

## Actuarial Analysis of Financial Experience

(Dollars in Millions)

	Plan Years									
	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Prior Valuation Actuarial Accrued Liability	\$1,131	\$1,067	\$1,020	\$1,006	\$998	\$953	\$918	\$919	\$874	\$830
Salary Increase Greater/ (Less) than Expected	5	(9)	(28)	(10)	(20)	(1)	(6)	(9)	(6)	—
Asset Return (Greater)/ Less than Expected	—	—	—	—	—	—	—	—	—	—
COLA Increase Greater/(Less) than Expected	(6)	11	(24)	(27)	(23)	(23)	(10)	(26)	(29)	—
Other Experience	9	11	8	1	—	(1)	2	(2)	(8)	(7)
Economic Assumption Changes	3	—	50	—	—	20	—	—	36	—
Non-economic Assumption Changes	—	—	—	—	—	—	—	—	—	—
Normal Cost	33	32	30	30	30	28	28	29	28	28
Interest	81	76	76	75	74	75	73	73	71	67
Payments	(61)	(57)	(55)	(54)	(53)	(53)	(52)	(49)	(47)	(44)
Change in Valuation Programs and Methods	—	—	(10)	(1)	—	—	—	(17)	—	—
<b>Ending Actuarial Accrued Liability</b>	<b>\$1,195</b>	<b>\$1,131</b>	<b>\$1,067</b>	<b>\$1,020</b>	<b>\$1,006</b>	<b>\$998</b>	<b>\$953</b>	<b>\$918</b>	<b>\$919</b>	<b>\$874</b>

## Schedule of Funding Progress

(Dollars in Millions)

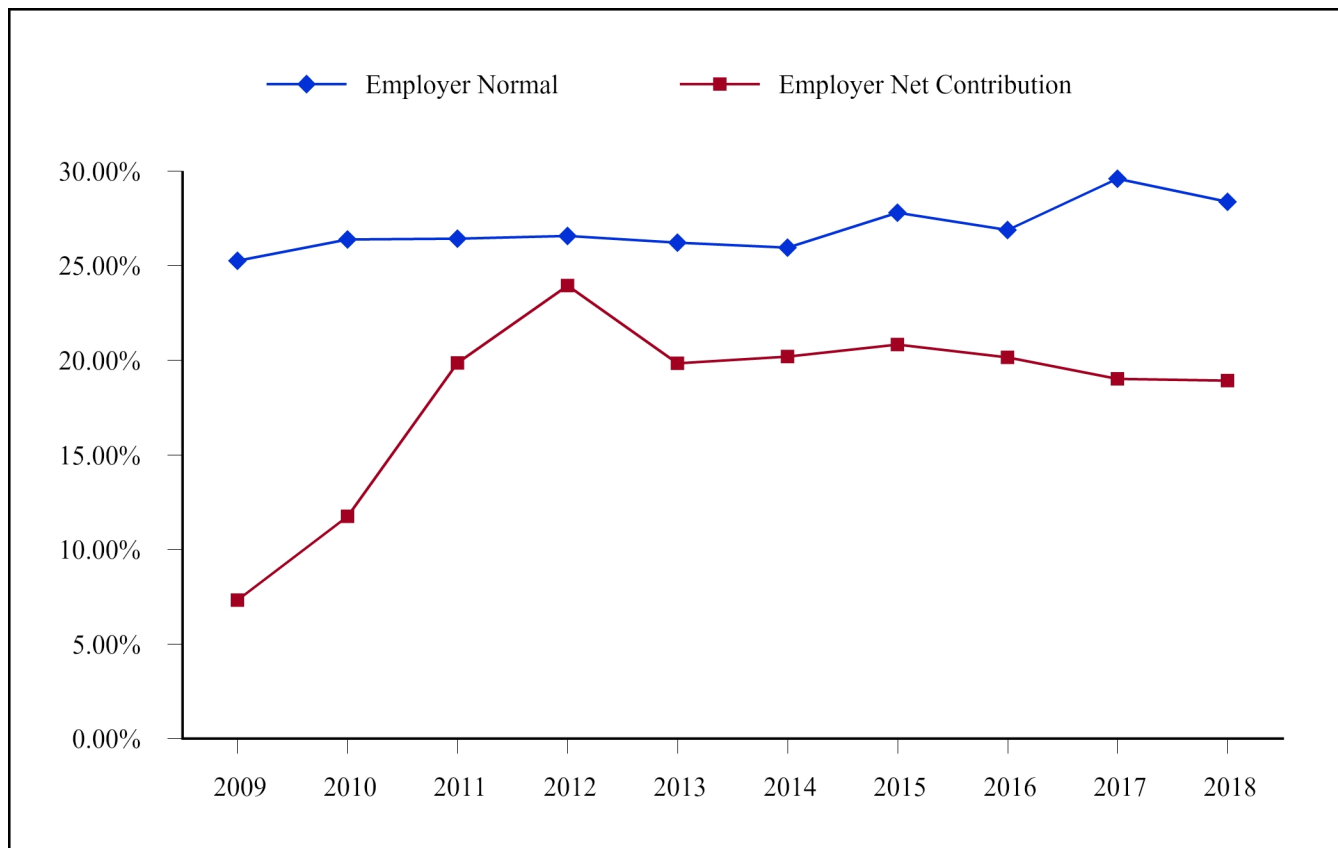
Actuarial Valuation As of June 30	(1) Actuarial Valuation Value of Assets	(2) Actuarial Accrued Liability (AAL)	(3) Percentage Funded (1) / (2)	(4) (Prefunded) / Unfunded AAL (3)	(5) Annual Covered Payroll	(6) (Prefunded) / Unfunded AAL Percentage of Covered Payroll (4) / (5)
2018	\$1,437	\$1,195	120.3%	(\$242)	\$111	(218.10%)
2017	\$1,355	\$1,131	119.8%	(\$224)	\$103	(217.80%)
2016	\$1,277	\$1,067	119.6%	(\$209)	\$99	(211.70%)
2015	\$1,220	\$1,020	119.6%	(\$200)	\$95	(210.30%)
2014	\$1,143	\$1,006	113.6%	(\$137)	\$96	(141.90%)
2013	\$1,061	\$998	106.4%	(\$64)	\$101	(63.10%)
2012	\$1,004	\$953	105.4%	(\$51)	\$101	(50.80%)
2011	\$1,023	\$918	111.4%	(\$105)	\$99	(106.10%)
2010	\$1,019	\$919	110.8%	(\$99)	\$103	(96.70%)
2009	\$1,046	\$874	119.6%	(\$171)	\$102	(167.50%)

## Major Benefit Provisions of the Retirement System

	<u>Fire &amp; Police First Tier</u>	<u>Fire &amp; Police Second Tier</u>														
Coverage	All Fire and Police employees hired on or after October 27, 1927, and before August 27, 1990.	All Fire and Police employees hired on or after August 27, 1990.														
Final Average Salary (FAS)	<p>A. Three-year final average salary; or</p> <p>B. Salary attached to rank average-service weighted compensation for each rank held.</p>	A. Highest three consecutive year average.														
Service Retirement	<p>Requirement: Age 50 and 10 years of Service, or age 60.</p> <p>Benefit: (1) and (2)</p> <p>1. <math>2\frac{3}{4}\%</math> of FAS times years of service before age 50, not to exceed 20 years.</p> <p>2. <math>2\%</math> of FAS times years of service after age 50, not to exceed 10 years</p> <p>Maximum Benefit: 75% of FAS</p>	<p>Requirement: Age 50 and 5 years of service.</p> <p>Benefit:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Retirement Age</th> <th style="text-align: left;">Benefit Formula</th> </tr> </thead> <tbody> <tr> <td>50</td> <td><math>2.00\% \times \text{FAS} \times \text{service}</math></td> </tr> <tr> <td>51</td> <td><math>2.14\% \times \text{FAS} \times \text{service}</math></td> </tr> <tr> <td>52</td> <td><math>2.28\% \times \text{FAS} \times \text{service}</math></td> </tr> <tr> <td>53</td> <td><math>2.42\% \times \text{FAS} \times \text{service}</math></td> </tr> <tr> <td>54</td> <td><math>2.56\% \times \text{FAS} \times \text{service}</math></td> </tr> <tr> <td>55 and over</td> <td><math>2.70\% \times \text{FAS} \times \text{service}</math></td> </tr> </tbody> </table> <p>Maximum Benefit: 75% of FAS</p>	Retirement Age	Benefit Formula	50	$2.00\% \times \text{FAS} \times \text{service}$	51	$2.14\% \times \text{FAS} \times \text{service}$	52	$2.28\% \times \text{FAS} \times \text{service}$	53	$2.42\% \times \text{FAS} \times \text{service}$	54	$2.56\% \times \text{FAS} \times \text{service}$	55 and over	$2.70\% \times \text{FAS} \times \text{service}$
Retirement Age	Benefit Formula															
50	$2.00\% \times \text{FAS} \times \text{service}$															
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54	$2.56\% \times \text{FAS} \times \text{service}$															
55 and over	$2.70\% \times \text{FAS} \times \text{service}$															
Deferred Retirement Option Program (DROP)	An employee who is age 50 with 10 years of service may join the DROP program which is in essence an alternative form of retirement distribution. Retirement amount is calculated and monthly deposits are made to the employee's DROP account while the employee continues to work for a maximum of 10 years.	An employee who is age 50 with 5 years of service may join the DROP program which is in essence an alternative form of retirement distribution. Retirement amount is calculated and monthly deposits are made to the employee's DROP account while the employee continues to work for a maximum of 10 years.														
Disability Retirement	<p>a. Requirements:</p> <ol style="list-style-type: none"> <li>1. Service-Connected: None</li> <li>2. Non-Service Connected: 10 years of service.</li> </ol> <p>b. Benefit:</p> <ol style="list-style-type: none"> <li>1. Service-Connected: 55% of FAS or service retirement, if higher.</li> <li>2. Non-Service Connected: <math>1.65\% \times \text{FAS} \times \text{years of service}</math>, if exceeds 36.67% of FAS; or 36.67% of FAS; or service retirement, if higher.</li> </ol> <p>Benefit reduced to the extent that income earned while on disability and the amount of the disability retirement benefits exceeds the current salary attached to the last rank held.</p>	<p>a. Requirements:</p> <ol style="list-style-type: none"> <li>1. Service-Connected: None</li> <li>2. Non-Service Connected: 10 years of service.</li> </ol> <p>b. Benefit:</p> <ol style="list-style-type: none"> <li>1. Service-Connected: 50% of FAS or service retirement, if higher.</li> <li>2. Non-Service Connected: <math>1\frac{1}{2}\% \times \text{FAS} \times \text{years of service}</math>, if exceeds 1/3 of FAS; or 1/3 of FAS; or service retirement, if higher.</li> </ol> <p>Benefit reduced to the extent that income earned while on disability and the amount of the disability retirement benefits exceeds the current salary attached to the last rank held.</p>														

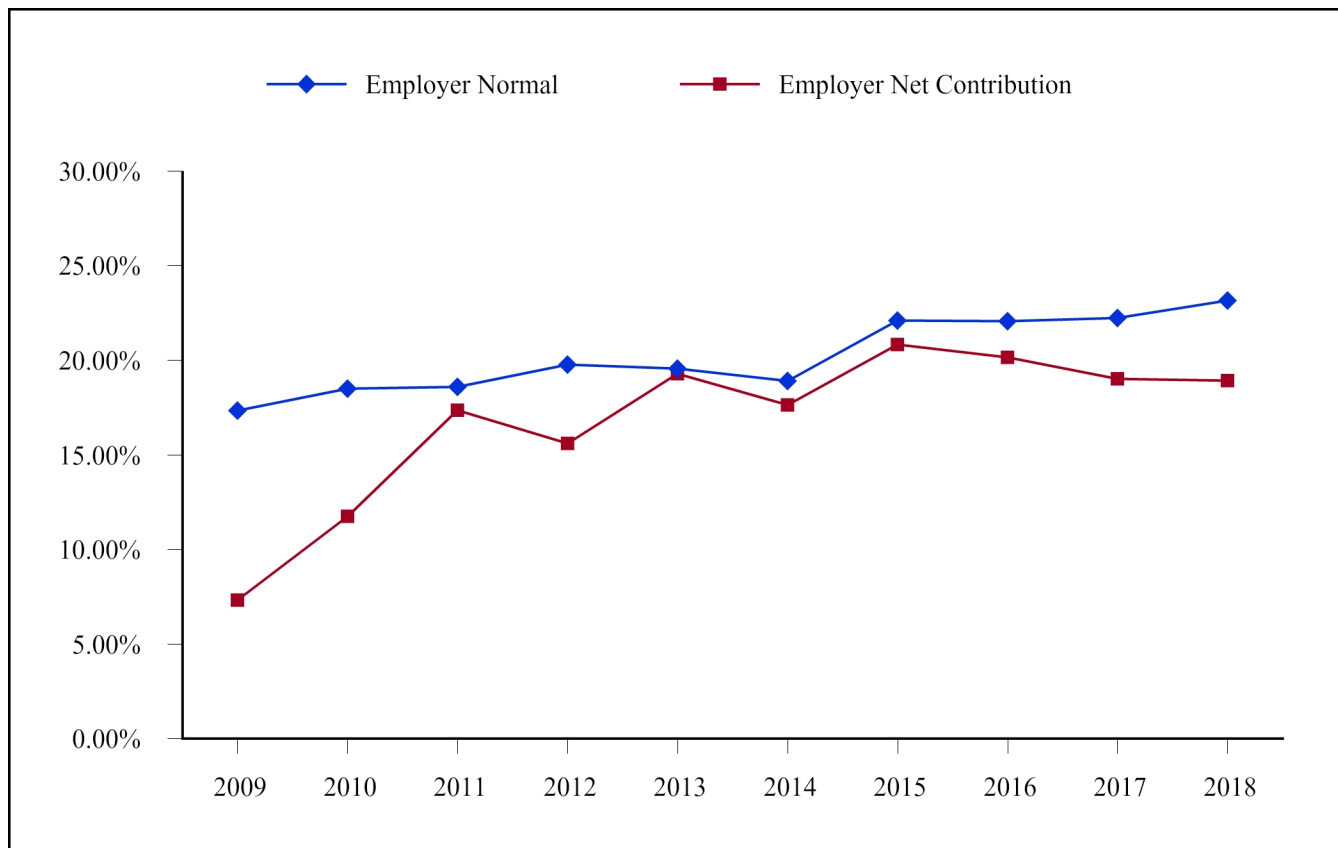
	Fire & Police First Tier	Fire and Police Second Tier
Death Before Retirement	<p>a. Before eligible to retire for disability (less than 5 years).</p> <ol style="list-style-type: none"> <li>1. One month's salary for each year of service, not-to-exceed 6 months.</li> <li>2. Return of contributions with interest. <ol style="list-style-type: none"> <li>a. While eligible to retire (after 10 years): 2/3 of Service or Non-Service-connected Disability Retirement Benefit.</li> </ol> </li> </ol> <p>b. Service-Connected Death: 55% of FAS</p>	<p>a. Before eligible to retire (less than 5 years).</p> <ol style="list-style-type: none"> <li>1. One month's salary for each year of service, not-to-exceed 6 months.</li> <li>2. Return of contributions with interest. <ol style="list-style-type: none"> <li>a. While eligible to retire (after 5 years): 2/3 of Service or Non-Service-connected Disability Retirement Benefit</li> <li>b. Service-Connected Death: 50% of FAS</li> </ol> </li> </ol>
Death After Retirement	Two-thirds of the member's allowance continued to eligible spouse for life.	Two-thirds of the member's allowance continued to eligible spouse for life.
Withdrawal Benefits	<ol style="list-style-type: none"> <li>a. If less than 10 years of service, return of contributions.</li> <li>b. If greater than 10 years of service, right to have vested deferred retirement benefit at normal retirement date.</li> </ol>	<ol style="list-style-type: none"> <li>a. If less than 5 years of service, return of contributions.</li> <li>b. If greater than 5 years of service, right to have vested deferred retirement benefit.</li> </ol>
Post Retirement Supplemental Benefit (PRSB)	On May 27, 1998, the City Council adopted the Post Retirement Supplemental Benefit ("PRSB") Program which is intended to provide assistance to retirees to pay for various post retirement expenses. Annually, after an actuarial study has been performed, the Retirement Board will review the availability of surplus earnings in the System and determine whether a benefit can be paid to eligible PRSB recipients. If a surplus is declared by the Retirement Board, PRSB benefit payments will be calculated for eligible recipients and payments for the following calendar year will begin in January.	On May 27, 1998, the City Council adopted the Post Retirement Supplemental Benefit ("PRSB") Program which is intended to provide assistance to retirees to pay for various post retirement expenses. Annually, after an actuarial study has been performed, the Retirement Board will review the availability of surplus earnings in the System and determine whether a benefit can be paid to eligible PRSB recipients. If a surplus is declared by the Retirement Board, PRSB benefit payments will be calculated for eligible recipients and payments for the following calendar year will begin in January.
Cost of Living Benefits	<ol style="list-style-type: none"> <li>a. Based on the weighted mean average compensation attached to all ranks in the department, limited to a 5% maximum change per year, if based on three-year FAS.</li> <li>b. Based on salary increase for each rank held, if benefit was calculated on salary attached to average rank.</li> </ol>	<ol style="list-style-type: none"> <li>a. Based on the Consumer Price Index for all Urban Wage Earners and all Clerical Workers (U.S. City Average) limited to 3% change per year.</li> </ol>
Member Contribution Rates	Varies based on entry age.	9% of Compensation.

### History of Employer Net Contribution Rates (Tier 1)



<b>Fiscal Year Ending June 30</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Employer Normal	25.25 %	26.38 %	26.43 %	26.57 %	26.22 %	25.95 %	27.80 %	26.88 %	29.59 %	28.38 %
Prefunded Liability/Prepaid Contributions	17.93 %	14.64 %	6.58 %	2.63 %	6.38 %	5.76 %	6.97 %	6.74 %	10.57 %	9.46 %
<b>Employer Net Contribution</b>	<b>7.32%</b>	<b>11.74%</b>	<b>19.85%</b>	<b>23.94%</b>	<b>19.84%</b>	<b>20.19%</b>	<b>20.83%</b>	<b>20.14%</b>	<b>19.02%</b>	<b>18.92%</b>

### History of Employer Net Contribution Rates (Tier II)



<b>Fiscal Year Ending June 30</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Employer Normal	17.34 %	18.49 %	18.60 %	19.77 %	19.56 %	18.91 %	22.09 %	22.07 %	22.24 %	23.15 %
Prefunded Liability/Prepaid Contributions	10.02 %	6.75 %	1.25 %	4.17 %	0.28 %	1.28 %	1.26 %	1.93 %	3.22 %	4.23 %
<b>Employer Net Contribution</b>	<b>7.32%</b>	<b>11.74%</b>	<b>17.35%</b>	<b>15.60%</b>	<b>19.28%</b>	<b>17.63%</b>	<b>20.83%</b>	<b>20.14%</b>	<b>19.02%</b>	<b>18.92%</b>



*To create an environment  
in which Board Members  
can maximize their  
performance as trustees.*

*To improve business  
processes and our delivery  
of services provided to  
members and retirees.*

*To improve  
communications with  
members, retirees and the  
employer.*

STATISTICAL

- 94 Schedule of Changes in Fiduciary Net Position
- 95 Schedule and Graph of Additions by Source
- 96 Schedule and Graph of Deductions by Type
- 97 Membership Information

## Statistical Section Review

This section provides additional historical perspective, context, and detail in order to provide a more comprehensive understanding of this year's financial statements, note disclosures, and supplementary information which covers the benefits provided by the City of Fresno Fire and Police Retirement System.

It also provides multi-year trend of financial and operation information to facilitate comprehensive understanding of how the organization's financial position and performance has changed over time.

More specifically, the financial and operating information provides contextual data for the System's net position, benefits, refunds, contribution rates and different types of retirement benefits.

The financial and operating trend information is located on the following pages.

## Schedule of Changes in Fiduciary Net Position

Last Ten Fiscal Years 2009 - 2018

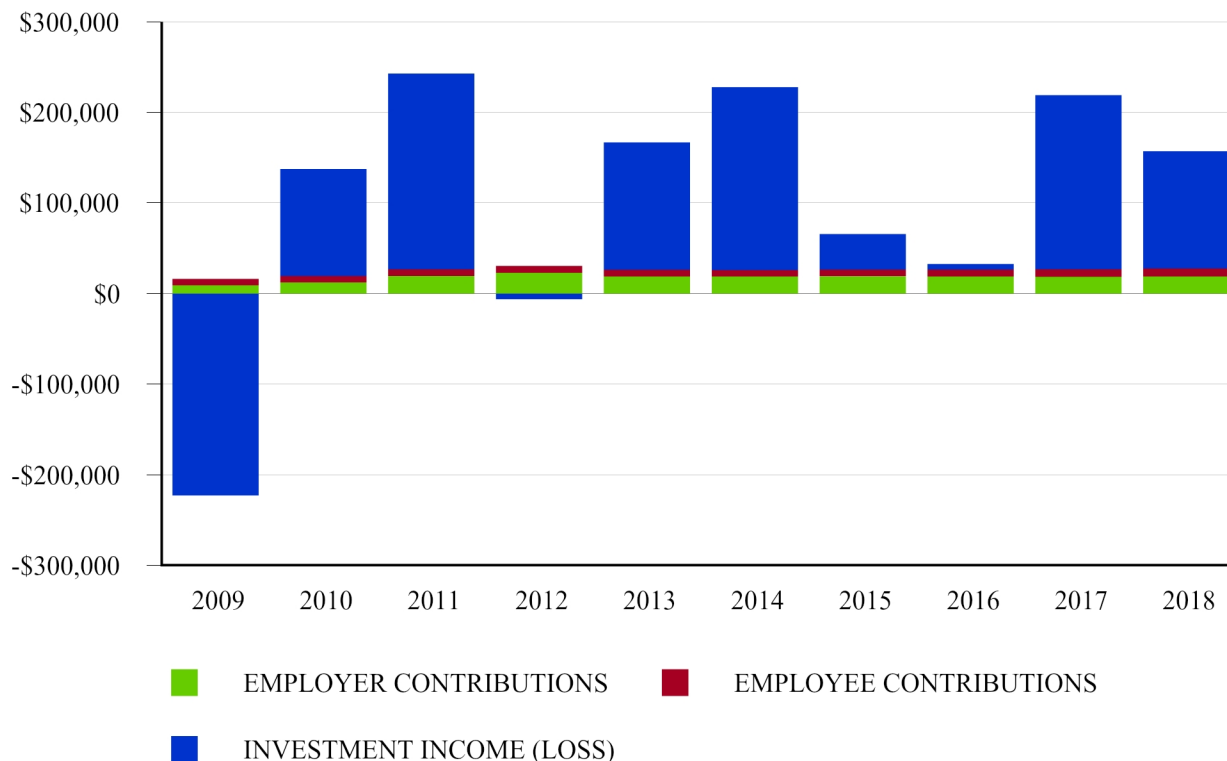
(Dollars in Millions)

	2018	2017	2016	2015	2014
<b>Additions</b>					
Employer Contributions	\$ 19.6	\$ 18.5	\$ 18.7	\$ 19.0	\$ 18.6
Member Contributions	8.9	8.1	7.7	7.4	7.3
Investment Income (Loss)	129.1	192.3	6.1	39.1	201.80
<b>Total Additions</b>	<b>\$ 157.6</b>	<b>\$ 218.9</b>	<b>\$ 32.5</b>	<b>\$ 65.5</b>	<b>\$ 227.7</b>
<b>Deductions</b>					
Benefit Payments	\$ 60.4	\$ 57.0	\$ 54.4	\$ 53.5	\$ 52.5
Post Retirement Supplemental Benefits	2.0	1.7	1.0	0.2	0.1
Refunds	0.5	0.5	1.2	0.9	0.1
Administrative	1.7	1.5	1.4	1.1	1.1
<b>Total Deductions</b>	<b>64.6</b>	<b>60.7</b>	<b>58.0</b>	<b>55.7</b>	<b>53.8</b>
<b>Change in Fiduciary Net Position</b>	<b>\$ 93.0</b>	<b>\$ 158.2</b>	<b>\$ (25.5)</b>	<b>\$ 9.8</b>	<b>\$ 173.9</b>

	2013	2012	2011	2010	2009
<b>Additions</b>					
Employer Contributions	\$ 18.7	\$ 22.9	\$ 19.4	\$ 12.1	\$ 8.9
Member Contributions	7.4	7.5	7.3	7.4	7.2
Investment Income (Loss)	140.7	(6.2)	215.9	117.9	(223.1)
<b>Total Additions</b>	<b>\$ 166.8</b>	<b>\$ 24.2</b>	<b>\$ 242.6</b>	<b>\$ 137.4</b>	<b>\$ (207.0)</b>
<b>Deductions</b>					
Benefit Payments	\$ 51.8	\$ 51.0	\$ 48.9	\$ 46.3	\$ 43.2
Post Retirement Supplemental Benefits	0.2	0.4	1.7	3.3	3.8
Refunds	1.0	0.5	0.5	0.9	0.3
Administrative	1.2	1.1	1.0	1.0	1.0
<b>Total Deductions</b>	<b>54.2</b>	<b>53.0</b>	<b>52.1</b>	<b>51.5</b>	<b>48.3</b>
<b>Change in Fiduciary Net Position</b>	<b>\$ 112.6</b>	<b>\$ (28.8)</b>	<b>\$ 190.5</b>	<b>\$ 85.9</b>	<b>\$ (255.3)</b>

## Schedule and Graph of Additions by Source (In Thousands)

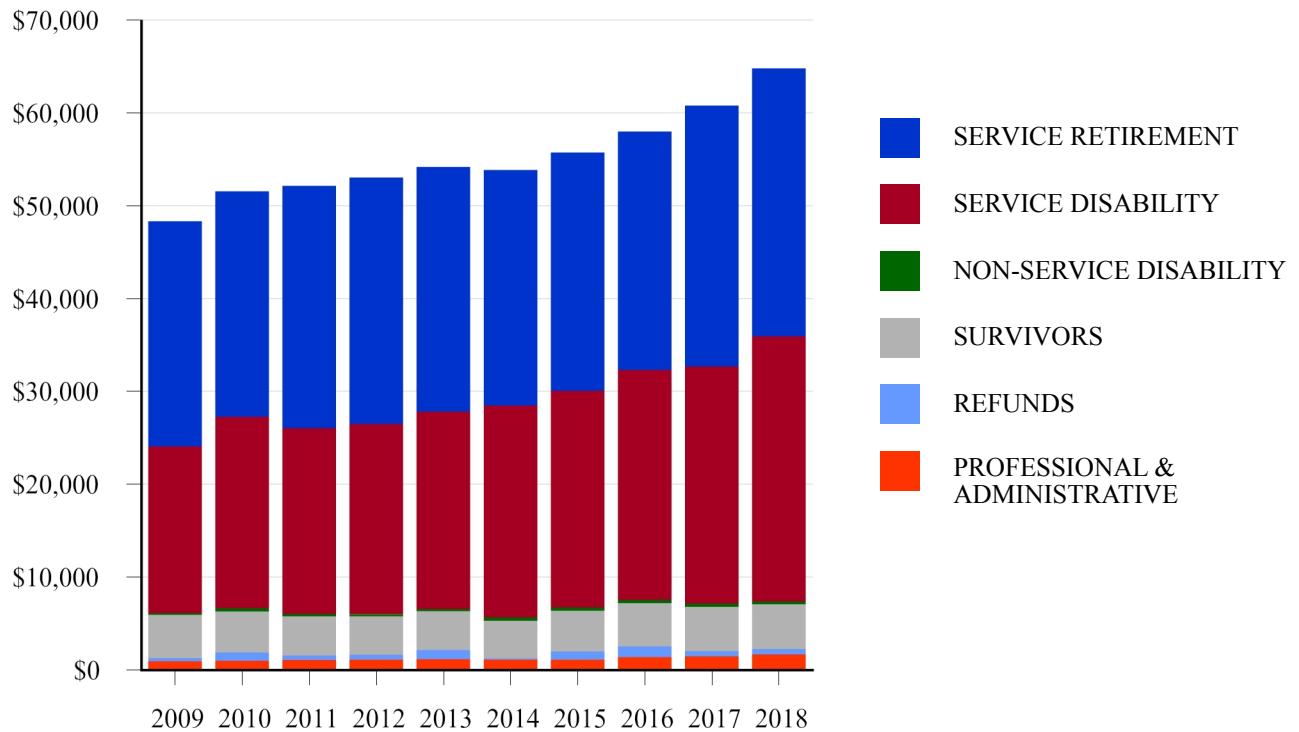
Last Ten Fiscal Years 2009 - 2018



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
EMPLOYER CONTRIBUTIONS	8,938	\$ 12,094	\$ 19,397	\$ 22,875	\$ 18,725	\$ 18,575	\$ 18,967	\$ 18,738	\$ 18,543	\$ 19,697
EMPLOYEE CONTRIBUTIONS	7,172	7,355	7,304	7,540	7,398	7,294	7,385	7,748	8,169	8,964
INVESTMENT INCOME (LOSS)	(223,122)	118,018	215,994	(6,201)	140,701	201,838	39,164	6,063	192,318	129,162
<b>TOTAL</b>	<b>(207,012)</b>	<b>\$ 137,467</b>	<b>\$ 242,695</b>	<b>\$ 24,214</b>	<b>\$ 166,824</b>	<b>\$ 227,707</b>	<b>\$ 65,516</b>	<b>\$ 32,549</b>	<b>\$ 219,030</b>	<b>\$ 157,823</b>

## Schedule and Graph of Deductions by Type (In Thousands)

Last Ten Fiscal Years 2009 - 2018



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
SERVICE RETIREMENTS	\$ 24,215	\$ 24,271	\$ 26,088	\$ 26,531	\$ 26,332	\$ 25,338	\$ 25,657	\$ 25,662	\$ 28,079	\$ 28,855
SERVICE DISABILITY	17,982	20,607	20,012	20,464	21,250	22,848	23,336	24,753	25,539	28,533
NON-SERVICE DISABILITY	177	349	244	242	242	339	348	340	350	280
SURVIVORS	4,651	4,411	4,212	4,142	4,188	4,049	4,370	4,653	4,780	4,843
REFUNDS	338	918	494	535	970	146	901	1,173	525	560
PROFESSIONAL & ADMINISTRATIVE	952	993	1,080	1,118	1,182	1,119	1,108	1,397	1,503	1,710
<b>TOTAL</b>	<b>\$ 48,315</b>	<b>\$ 51,549</b>	<b>\$ 52,130</b>	<b>\$ 53,032</b>	<b>\$ 54,164</b>	<b>\$ 53,839</b>	<b>\$ 55,720</b>	<b>\$ 57,978</b>	<b>\$ 60,776</b>	<b>\$ 64,781</b>

## Schedule of Average Benefit Payments

Retirement Effective Dates	Years of Credited Service						Fiscal Year Average/ New Retirants
	5-10	10-15	15-20	20-25	25-30	30+	
<b>Period 7/1/17 to 6/30/18*</b>							
Average Monthly Pension Benefits	\$ 2,603	\$ 3,469	\$ 4,020	\$ 5,024	\$ 4,923	\$ 4,637	\$ 4,113
Average Monthly DROP Payment	—	—	1,174	3,520	2,858	3,108	2,665
Average Final Average Salary	7,949	8,113	7,730	8,508	9,046	7,019	8,061
Number of New Retired Members	7	6	6	9	7	1	36
<b>Period 7/1/16 to 6/30/17*</b>							
Average Monthly Pension Benefits	\$ 1,633	\$ 3,211	\$ 4,100	\$ 5,027	\$ 5,481	\$ 5,909	\$ 4,227
Average Monthly DROP Payment	—	—	2,305	2,560	4,372	4,266	3,376
Average Final Average Salary	6,049	7,648	8,067	8,565	9,524	10,141	8,332
Number of New Retired Members	3	4	5	11	10	1	34
<b>Period 7/1/15 to 6/30/16*</b>							
Average Monthly Pension Benefits	\$ 612	\$ 2,914	\$ 3,448	\$ 4,268	\$ 4,922	\$ 3,862	\$ 3,338
Average Monthly DROP Payment	—	3,128	1,154	3,245	5,207	2,907	3,128
Average Final Average Salary	4,761	7,579	8,011	7,845	8,928	6,689	7,302
Number of New Retired Members	1	5	5	5	3	3	22
<b>Period 7/1/14 to 6/30/15</b>							
Average Monthly Pension Benefits	\$ 3,735	\$ 3,565	\$ 3,846	\$ 6,323	\$ 8,405	\$ 7,434	\$ 5,551
Number of New Retired Members	1	4	6	10	10	3	34
<b>Period 7/1/13 to 6/30/14</b>							
Average Monthly Pension Benefits	\$ 2,665	\$ 2,540	\$ 4,759	\$ 7,181	\$ 8,611	\$ —	\$ 5,151
Number of New Retired Members	4	2	6	7	6	0	25
<b>Period 7/1/12 to 6/30/13</b>							
Average Monthly Pension Benefits	\$ 2,450	\$ 3,973	\$ 4,169	\$ 7,226	\$ —	\$ 7,842	\$ 5,132
Number of New Retired Members	3	8	6	6	0	3	26
<b>Period 7/1/11 to 6/30/12</b>							
Average Monthly Pension Benefits	\$ 3,458	\$ 3,265	\$ 4,866	\$ 4,484	\$ 5,527	\$ —	\$ 4,320
Number of New Retired Members	5	2	4	3	4	0	18
<b>Period 7/1/10 to 6/30/11</b>							
Average Monthly Pension Benefits	\$ 2,609	\$ 3,040	\$ 4,383	\$ 5,493	\$ 5,330	\$ 5,519	\$ 4,396
Number of New Retired Members	8	4	11	19	10	7	59
<b>Period 7/1/09 to 6/30/10</b>							
Average Monthly Pension Benefits	\$ 1,984	\$ 2,864	\$ 5,394	\$ 7,460	\$ 7,539	\$ 9,485	\$ 5,788
Number of New Retired Members	2	7	4	19	15	6	53
<b>Period 7/1/08 to 6/30/09</b>							
Average Monthly Pension Benefits	\$ 2,727	\$ —	\$ 5,859	\$ 7,673	\$ 7,875	\$ 5,423	\$ 5,911
Number of New Retired Members	4	0	3	9	3	2	21

Data Source: PensionGold Administration System V3

\*The Schedule of Average Benefit Payments above now includes information about the average final salary in accordance with GASB Statement No. 44 for the period July 1, 2015 to June 30, 2018. Fortunately, with the implementation of our new PensionGold Administration System, we are able to present a reasonably accurate calculation of the average final salary because we show the separate payment amount for members who participated in the Deferred Retirement Option Program (DROP). We are currently unable to provide prior year data for Fiscal Years 2009-2015, but plan to do so as soon as realistically achievable. DROP, which is not a separate plan, is an alternate method of receiving retirement benefits. Amounts credited to the Member's DROP account include an amount which represents the service retirement allowance which the member would have received if the member had retired on the date the member commenced DROP participation and interest credited to the DROP account at the adopted rate. Members that elect to participate in DROP have their retirement benefit calculated based upon their years of service and final average salary *as determined at the time they enter DROP* (potentially a full 10 years earlier than their actual retirement date) rather than at the time the member actually retires. When the member retires, they receive their monthly retirement benefit and included is a DROP payment. Since we are now able to provide the final average salary which created the monthly pension benefit payment, the appearance of disproportional benefits when viewed in relationship with the average final average salary is now eliminated.

## Retirees by Type of Benefit

As of June 30, 2018

Amount of Monthly Benefit	Number of Retirees	Type of Retirement*		
		1	2	3
\$1 - \$1,000	66	60	2	4
\$1,001 - \$2,000	75	56	5	14
\$2,001 - \$3,000	112	36	10	66
\$3,001 - \$4,000	219	31	129	59
\$4,001 - \$5,000	221	75	123	23
\$5,001 - \$6,000	84	49	33	2
\$6,001 - \$7,000	71	32	39	0
\$7,001 - \$8,000	68	37	30	1
\$8,001 - \$9,000	45	26	19	0
> \$9,000	101	61	40	0
<b>Total</b>	<b>1,062</b>	<b>463</b>	<b>430</b>	<b>169</b>

**\*Type of Retirement**

1 - Service Retiree

2 - Disability Retiree

3 - Beneficiary/Continuant/Survivor

Amount of Monthly Benefit	Number of Retirees	Option Selected**			
		Unmodified	Option 1	Option 2	Option 3
\$1 - \$1,000	66	56	7	3	0
\$1,001 - \$2,000	75	56	13	3	3
\$2,001 - \$3,000	112	67	29	14	2
\$3,001 - \$4,000	219	144	34	28	13
\$4,001 - \$5,000	221	151	40	21	9
\$5,001 - \$6,000	84	56	9	17	2
\$6,001 - \$7,000	71	46	10	13	2
\$7,001 - \$8,000	68	25	11	28	4
\$8,001 - \$9,000	45	30	7	7	1
> \$9,000	101	58	10	31	2
<b>Total</b>	<b>1,062</b>	<b>689</b>	<b>170</b>	<b>165</b>	<b>38</b>

**\*\*Option Selected**

Unmodified - Beneficiary receives 50% of the member's allowance

Option 1 - Beneficiary receives lump sum of member's unused contributions

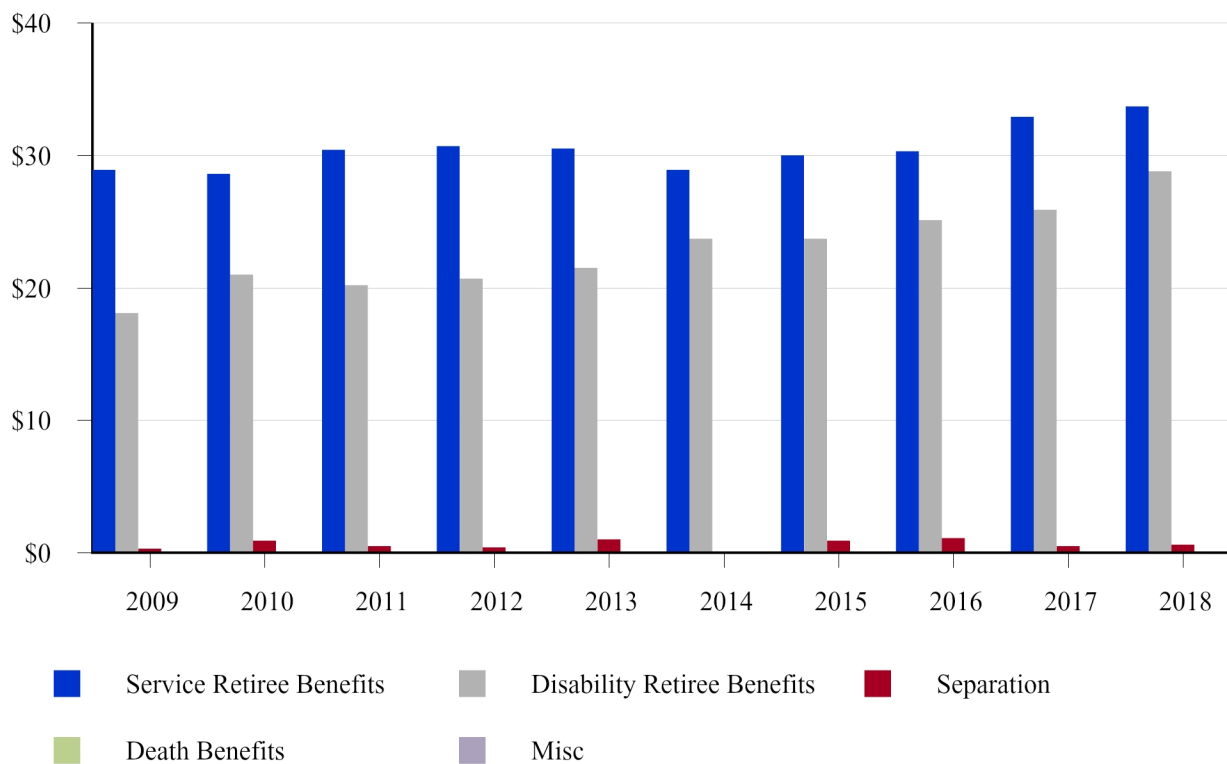
Option 2 - Beneficiary receives 100% of member's reduced monthly benefit

Option 3 - Beneficiary receives 75% of member's reduced monthly benefit

## Schedule and Graph of Pension Benefit Payments Deductions by Type

Last Ten Fiscal Years 2009 - 2018

(Dollars in Millions)

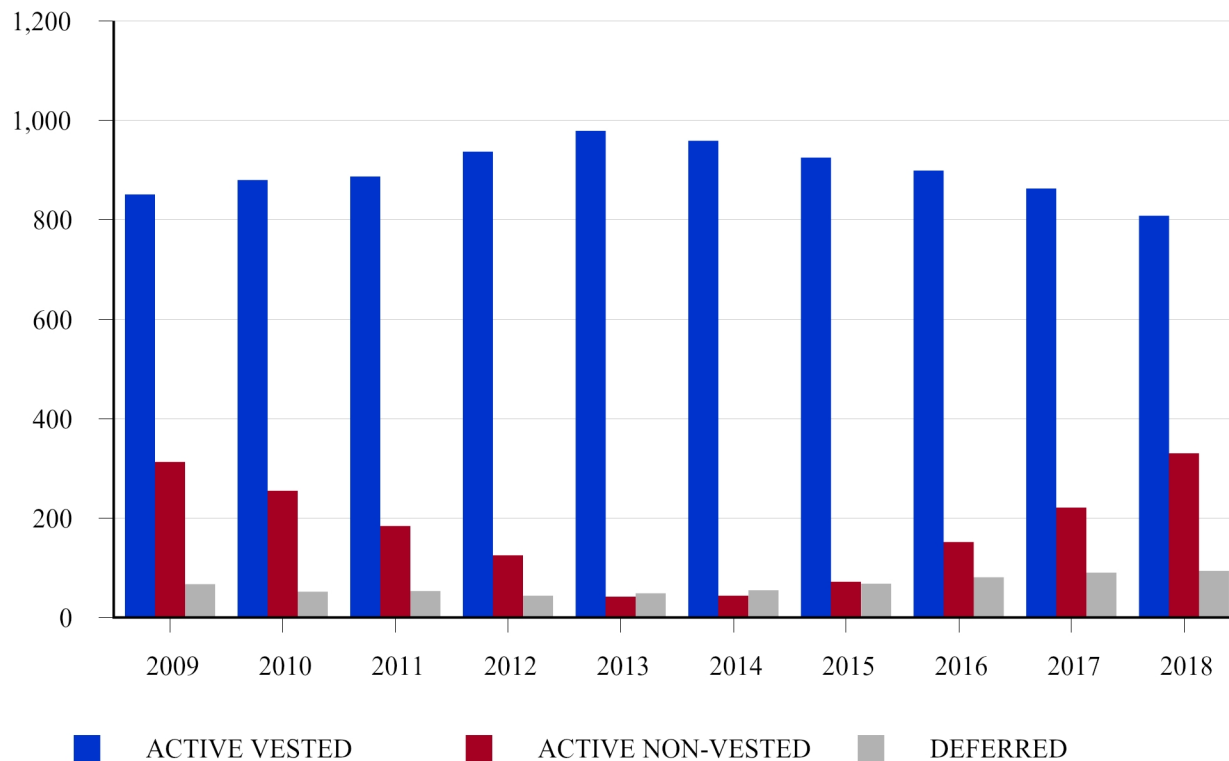


	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Service Retiree Benefits	\$28.9	\$28.6	\$30.4	\$30.7	\$30.5	\$28.9	\$30.0	\$30.3	\$32.9	\$33.7
Disability Retiree Benefits	18.1	21.0	20.2	20.7	21.5	23.7	23.7	25.1	25.9	28.8
Separation	0.3	0.9	0.5	0.4	1.0	0.1	0.9	1.1	0.5	0.6
Death Benefits	0.0	0.0	—	—	—	—	—	0.1	—	0.0
Misc	0.1	0.0	0.0	0.1	—	0.0	—	—	—	—
<b>Total Benefit Deductions</b>	<b>\$47.4</b>	<b>\$50.5</b>	<b>\$51.1</b>	<b>\$51.9</b>	<b>\$53.0</b>	<b>\$52.7</b>	<b>\$54.6</b>	<b>\$56.6</b>	<b>\$59.3</b>	<b>\$63.1</b>



## Schedule and Graph of Active Vested, Active Non-Vested and Deferred Membership History

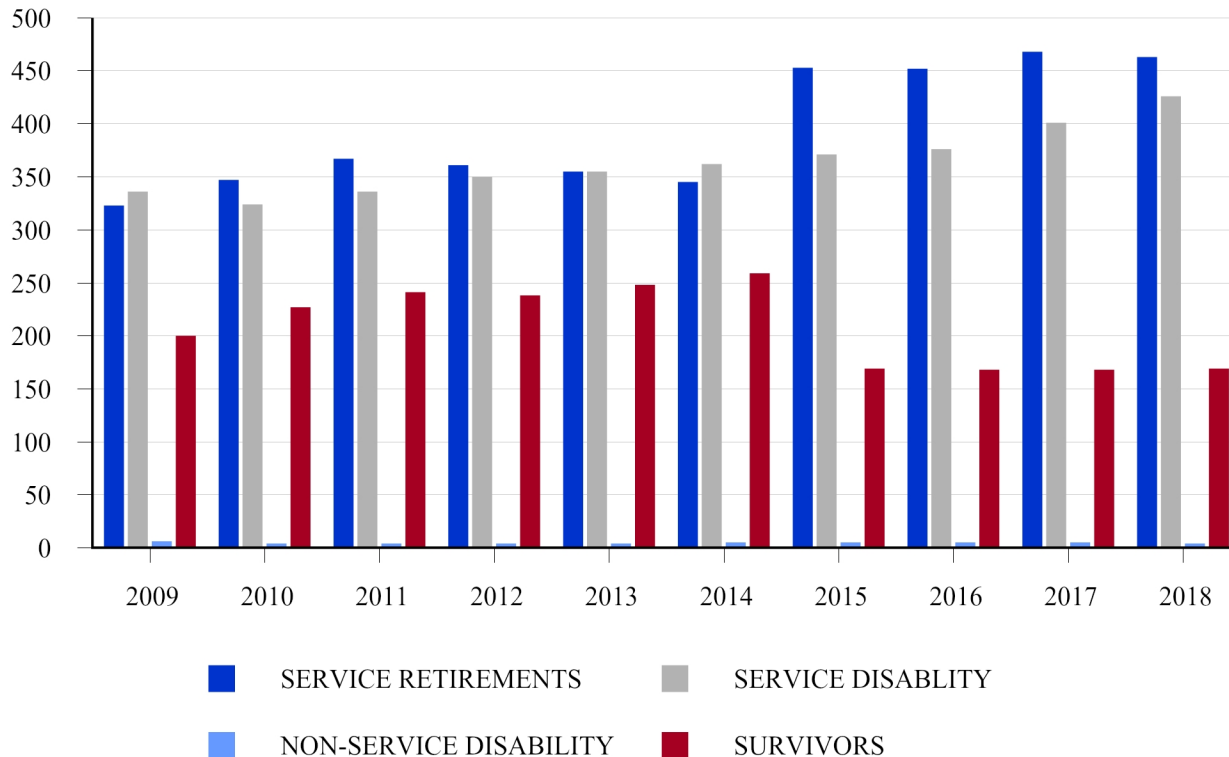
Last Ten Fiscal Years 2009 - 2018



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
ACTIVE VESTED	851	880	887	937	979	959	925	899	863	808
ACTIVE NON-VESTED	313	255	184	125	42	44	72	152	221	330
DEFERRED	67	52	53	44	49	55	68	81	90	94
<b>TOTAL</b>	<b>1,231</b>	<b>1,187</b>	<b>1,124</b>	<b>1,106</b>	<b>1,070</b>	<b>1,058</b>	<b>1,065</b>	<b>1,132</b>	<b>1,174</b>	<b>1,232</b>

## Schedule and Graph of Retirees Pension Benefit Payments by Type of Benefit

Last Ten Fiscal Years 2009 - 2018



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
SERVICE RETIREMENTS	323	347	367	361	355	345	453	452	468	463
SERVICE DISABILITY	336	324	336	350	355	362	371	376	401	426
NON-SERVICE DISABILITY	6	4	4	4	4	5	5	5	5	4
SURVIVORS	200	227	241	238	248	259	169	168	168	169
<b>TOTAL</b>	<b>865</b>	<b>902</b>	<b>948</b>	<b>953</b>	<b>962</b>	<b>971</b>	<b>998</b>	<b>1,001</b>	<b>1,042</b>	<b>1,062</b>

## Summary of Active Participants

YEAR	NUMBER OF MEMBERS	PENSIONABLE PAYROLL	ANNUAL AVERAGE SALARY	NET CHANGE IN AVERAGE SALARY
2018	1,138	\$103,934,234	\$91,331	1.68%
2017	1,084	\$97,368,618	\$89,823	1.48%
2016	1,051	\$93,030,822	\$88,516	(3.10)%
2015	997	\$91,075,093	\$91,349	(0.39)%
2014	1,003	\$91,980,224	\$91,705	(0.78)%
2013	1,021	\$94,368,329	\$92,427	2.04%
2012	1,062	\$96,194,537	\$90,579	0.26%
2011	1,071	\$96,757,692	\$90,343	3.40%
2010	1,135	\$99,166,002	\$87,371	2.39%
2009	1,164	\$99,327,134	\$85,333	1.80%

## Summary of Retirees

YEAR	NUMBER OF RETIREES	ANNUAL BENEFITS TO PARTICIPANTS	ANNUAL AVERAGE ALLOWANCE (INDIVIDUAL)	NET CHANGE IN BENEFITS TO PARTICIPANTS
2018	1,062	\$62,510,828	\$58,861	4.40%
2017	1,042	\$58,748,302	\$56,380	1.86%
2016	1,001	\$55,408,166	\$55,353	2.85%
2015	998	\$53,711,161	\$53,819	(0.60)%
2014	971	\$52,573,897	\$54,144	0.14%
2013	962	\$52,011,489	\$54,066	0.28%
2012	953	\$51,378,999	\$53,913	1.10%
2011	948	\$50,556,250	\$53,329	(3.09)%
2010	902	\$49,638,574	\$55,032	1.23%
2009	865	\$47,024,672	\$54,364	8.09%

## Member and City Contribution Rates

Last Ten Fiscal Years 2009 - 2018

TIER I							
As of June 30		Member Rates			City Contribution Rates		
		Basic at Entry Age			Total City	Less Prefunded Actuarial Accrued Liability (PAAL)	Net City Contribution
Fiscal Year	Valuation Date	20	30	40	Rate	(PAAL)	Rate
2018	2016	4.34%	7.84%	7.30%	28.38%	(9.46%)	18.92%
2017	2015	4.52%	7.75%	6.94%	29.59%	(10.57%)	19.02%
2016	2014	4.52%	7.75%	6.94%	26.88%	(6.74%)	20.14%
2015	2013	4.52%	7.75%	6.94%	27.80%	(6.97%)	20.83%
2014	2012	4.05%	7.10%	6.40%	25.95%	(5.76%)	20.19%
2013	2011	4.05%	7.10%	6.40%	26.22%	(6.38%)	19.84%
2012	2010	4.05%	7.10%	6.40%	26.57%	(2.63%)	23.94%
2011	2009	3.76%	6.65%	5.94%	26.43%	(6.58%)	19.85%
2010	2008	3.76%	6.65%	5.94%	26.38%	(14.64%)	11.74%
2009	2007	3.76%	6.65%	5.94%	25.25%	(17.93%)	7.32%

TIER II							
As of June 30		Member Rates			City Contribution Rates		
		Basic at Entry Age			Total City	Less Prefunded Actuarial Accrued Liability (PAAL)	Net City Contribution
Fiscal Year	Valuation Date	20	30	40	Rate	(PAAL)	Rate
2018	2016	0.00%	0.00%	0.00%	23.15%	(4.23%)	18.92%
2017	2015	0.00%	0.00%	0.00%	22.24%	(3.22%)	19.02%
2016	2014	9.00%	9.00%	9.00%	22.07%	(1.93%)	20.14%
2015	2013	9.00%	9.00%	9.00%	22.09%	(1.26%)	20.83%
2014	2012	9.00%	9.00%	9.00%	18.91%	(1.28%)	17.63%
2013	2011	9.00%	9.00%	9.00%	19.56%	(0.28%)	19.28%
2012	2010	9.00%	9.00%	9.00%	19.77%	(4.17%)	15.60%
2011	2009	9.00%	9.00%	9.00%	18.60%	(1.25%)	17.35%
2010	2008	9.00%	9.00%	9.00%	18.49%	(6.75%)	11.74%
2009	2007	9.00%	9.00%	9.00%	17.34%	(10.02%)	7.32%

Data Source: Annual Actuarial Valuation Reports

## Economic Assumptions and Funding Method

Last Ten Fiscal Years 2009 - 2018

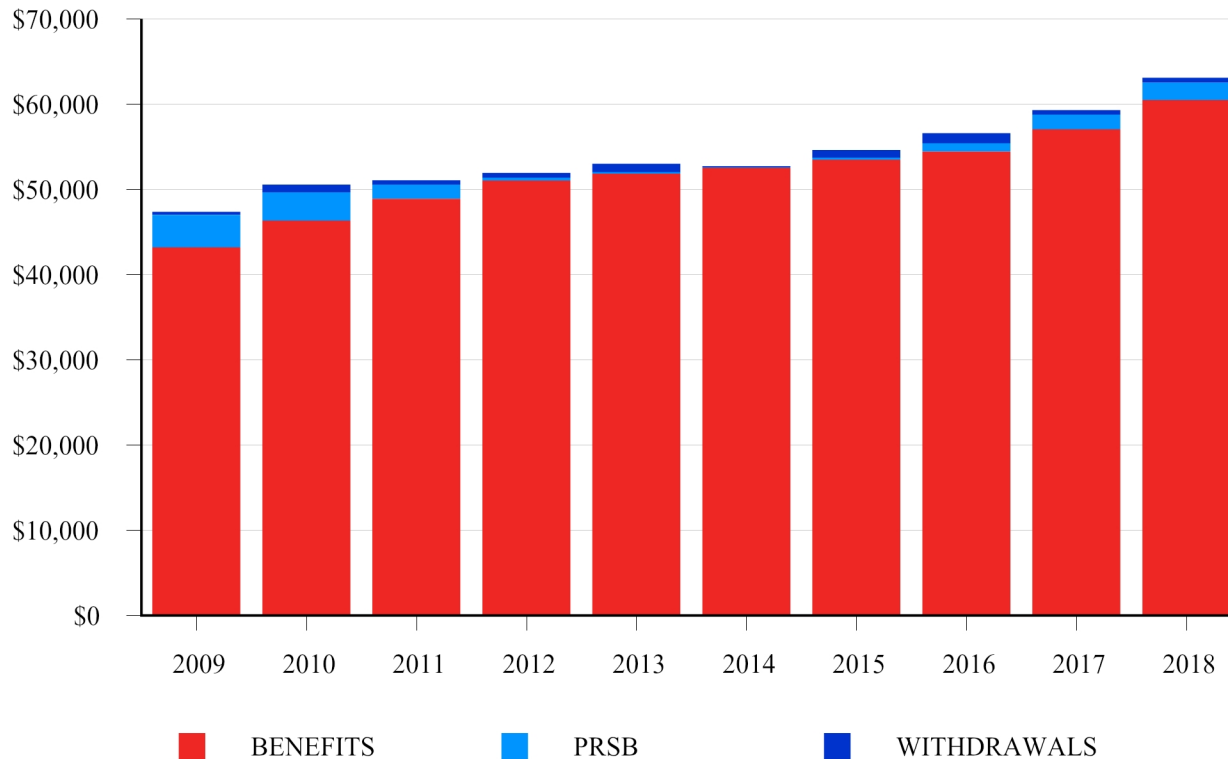
<b>Valuation Date</b>	<b>Interest</b>	<b>Salary Scale</b>	<b>Cost-of-Living (COLA)</b>	<b>Inflation Component</b>	<b>Funding Method</b>
2018	7.25%	5.5% Avg	3.00 - 3.50%	3.00%	Entry Age Normal
2017	7.25%	5.5% Avg	3.00 - 3.50%	3.00%	Entry Age Normal
2016	7.25%	5.5% Avg	3.00 - 3.75%	3.00%	Entry Age Normal
2015	7.50%	5.5% Avg	3.00 - 3.75%	3.25%	Entry Age Normal
2014	7.50%	5.5% Avg	3.00 - 3.75%	3.25%	Entry Age Normal
2013	7.50%	5.5% Avg	3.00 - 3.75%	3.25%	Entry Age Normal
2012	8.00%	5.5% Avg	3.00 - 4.00%	3.50%	Entry Age Normal
2011	8.00%	5.5% Avg	3.00 - 4.00%	3.50%	Entry Age Normal
2010	8.00%	5.5% Avg	3.00 - 4.00%	3.50%	Entry Age Normal
2009	8.25%	5.5% Avg	3.00 - 4.00%	3.75%	Entry Age Normal

Source: The Segal Company June 30, 2018, Actuarial Valuation Report

## Benefits and Withdrawals Paid

Last Ten Fiscal Years 2009 - 2018

(In Thousands)

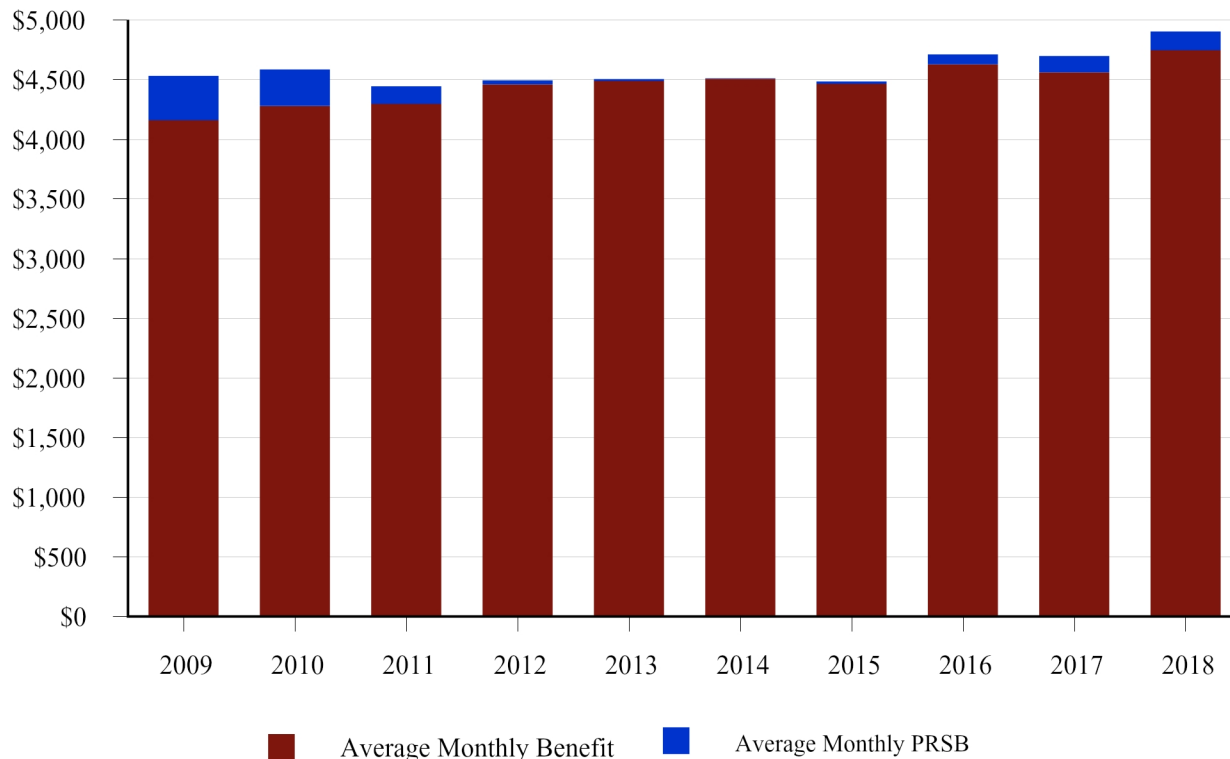


	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
BENEFITS	\$43,177	\$46,327	\$48,894	\$51,006	\$51,827	\$52,513	\$53,471	\$54,428	\$57,029	\$60,492
PRSB	3,848	3,311	1,662	373	185	61	241	980	1,719	2,019
WITHDRAWALS	338	918	494	535	970	146	901	1,173	525	560

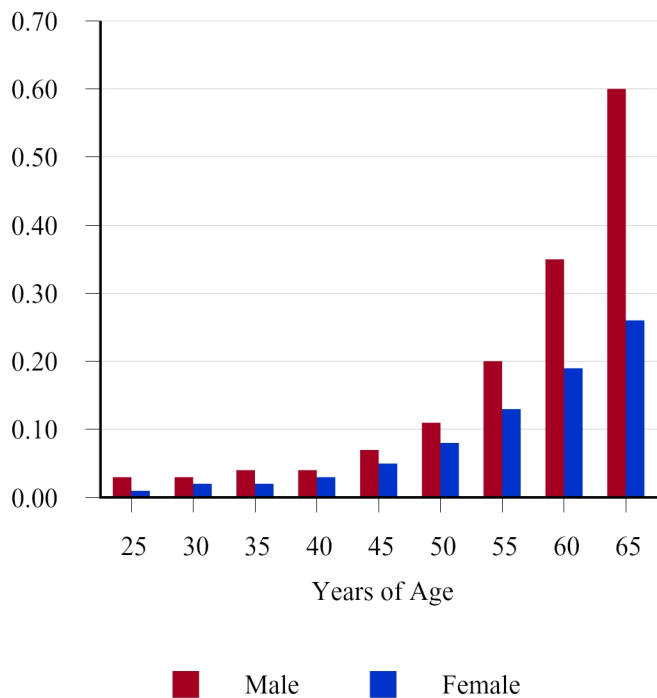
## Average Monthly Benefits to Retirees

Last Ten Fiscal Years 2009 - 2018

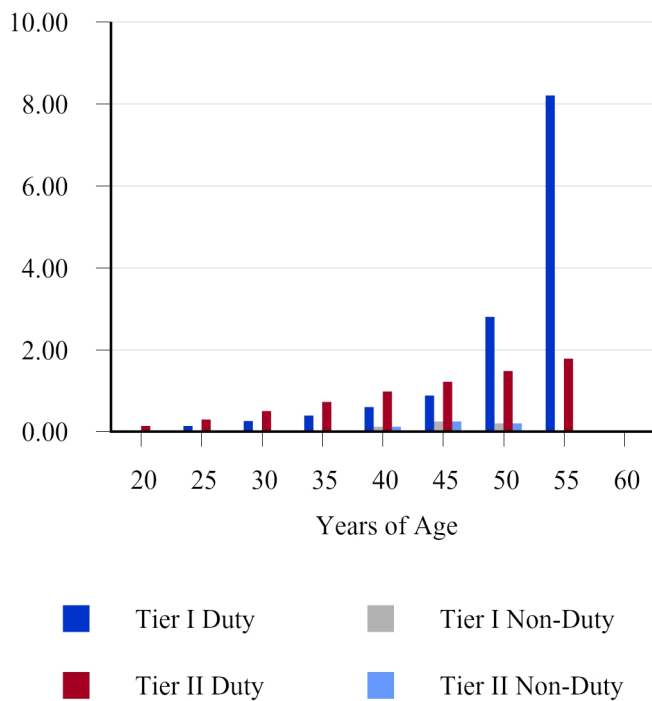
(In Thousands)



<b>Average Monthly</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Benefit	\$4,160	\$4,280	\$4,298	\$4,460	\$4,490	\$4,507	\$4,465	\$4,629	\$4,560	\$4,746
PRSB	371	306	146	33	16	5	20	82	137	158
<b>Average Monthly Benefit Total</b>	<b>\$4,531</b>	<b>\$4,586</b>	<b>\$4,444</b>	<b>\$4,493</b>	<b>\$4,506</b>	<b>\$4,512</b>	<b>\$4,485</b>	<b>\$4,711</b>	<b>\$4,697</b>	<b>\$4,904</b>



EXPECTATION OF LIFE Age and Service Retirees RP-2014 Healthy Annuitant Morality Table Male (x =0), Female (x+1)		
Age	Tier I & II	
	Male	Female
25	0.03	0.01
30	0.03	0.02
35	0.04	0.02
40	0.04	0.03
45	0.07	0.05
50	0.11	0.08
55	0.20	0.13
60	0.35	0.19
65	0.60	0.26



EXPECTATION OF LIFE Disabled Retirees RP-2014 Healthy Annuitant Morality Table (x+4)				
Age	Tier I Duty	Tier I Non-Duty	Tier II Duty	Tier II Non-Duty
20	0.02	0.00	0.14	0.00
25	0.14	0.01	0.29	0.01
30	0.26	0.01	0.50	0.01
35	0.39	0.03	0.72	0.03
40	0.60	0.12	0.98	0.12
45	0.88	0.25	1.22	0.25
50	2.80	0.20	1.48	0.20
55	8.20	0.00	1.78	0.00
60	0.00	0.00	0.00	0.00



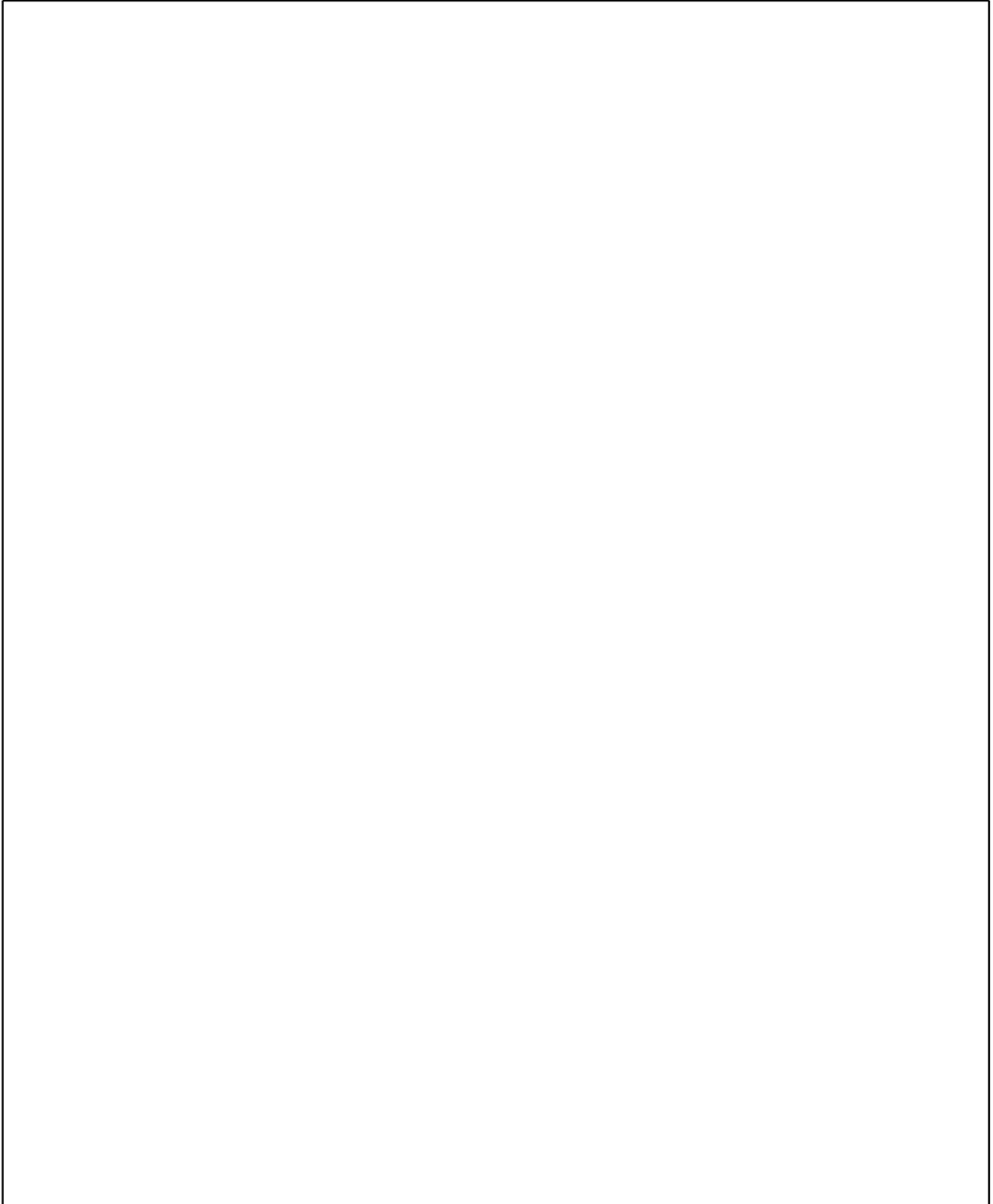
*To attract, develop and  
retain competent and  
professional staff.*

*To achieve and  
maintain superior  
investment  
performance on a risk  
controlled basis  
measured by the  
Public Fund Universe.*

## COMPLIANCE

- 109 Independent Auditor's Report on Internal Control Over  
Financial Reporting and On Compliance and Other Matters  
Based on an Audit of Financial Statements Provided in  
Accordance with *Government Auditing Standards*

## Independent Auditor's Internal Control Letter



## Independent Auditor's Internal Control Letter Continued

