Annual Report

FOR FISCAL YEAR ENDED
June 30, 2019

SFERS
San Francisco Employees' Retirement System

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Introductory Section

LETTER OF TRANSMITTAL

March 11, 2020

San Francisco Employees' Retirement System
1145 Market Street, 5th Floor
San Francisco, CA 94103

On behalf of the Retirement Board and Retirement System staff, we are pleased to present the San Francisco Employees' Retirement System Annual Report for Fiscal Year 2018-19.

ABOUT SFERS

The Retirement System

Initially established by approval of City voters on November 2, 1920 and the California State Legislature on January 12, 1921, the San Francisco Employees' Retirement System ("Retirement System" or "SFERS") is deeply rooted in the history and culture of the City and County of San Francisco and is committed to serving the retirement needs of its members. Originally established as a fund to assist families and orphans of firefighters and police, today the Retirement System serves more than 74,000 active, vested and retired employees of the City and County of San Francisco and their survivors.

Under the direction of the Executive Director, the System's management team administers two employee benefit programs for eligible City and County employees:

- City and County of San Francisco Employees' Retirement System pension plan, a defined benefit plan.
- San Francisco Deferred Compensation Plan, an IRC §457(b) deferred compensation plan.

Specific San Francisco City Charter sections and/or Administrative Code provisions mandate each of these benefit plans.

Our Mission

The San Francisco City and County Employees' Retirement System is dedicated to securing, protecting and prudently investing the pension trust assets, administering mandated benefit programs, and providing promised benefits to the active and retired members of the City and County of San Francisco.

The Pension Plan

The SFERS Pension Plan is a tax-qualified defined benefit plan that provides for the following benefits upon separation:
service and disability retirement, refund or vesting allowance, and pre and post-retirement death benefits to beneficiaries. Defined benefit plans are funded through employee and employer contributions and investment earnings.

SFERS has a reciprocity agreement with CalPERS, California county retirement systems covered by the 1937 Act Retirement Law, and certain other local, independent retirement systems that have a reciprocity contract with CalPERS (listed on the CalPERS website).

As of June 30, 2019, the Fund was valued at $26.1 billion returning 8.18%% for the fiscal year, significantly outperforming our peers' median return, 5.39%. SFERS annual benefit payments totaled $1.44 billion paid to over 29,900 retirees and their beneficiaries.

The San Francisco 457(b) Deferred Compensation Plan

The San Francisco Deferred Compensation Plan (SFDCP), a voluntary IRC §457(b) plan, was adopted in 1976, and allows eligible City employees to elect to voluntarily defer receipt and taxation of a portion of their regular earnings until after they retire or separate from service. The SFDCP also offers a Roth after-tax contribution option. These options offer eligible employees an opportunity to supplement pension income during retirement.

During the fiscal year, the Retirement Board selected Voya Financial to provide third party administration for the SFDCP. The Program transitioned to the new Third Party Administrator (TPA) in September 2019.

Our Members

During the fiscal year, SFERS enrolled 3,837 new members and added 1,362 new retirees.

SFERS members include eligible employees of the City and County of San Francisco, the San Francisco Unified School District, the San Francisco Community College District, and the San Francisco Trial Courts. Uniformed employees working for the City's Police and Fire Departments are covered by the SFERS Safety Plans. Eligible civilian (non- Safety) employees of the City are covered by the SFERS Miscellaneous Plan.

Sheriff, Undersheriff, and deputized personnel of the Sheriff's Department hired after January 7, 2012 are covered by the SFERS Sheriff's Plan. Probation Officers, District Attorney Investigators and Juvenile Court Counselors hired after January 7, 2012 are covered by the SFERS Miscellaneous Safety Plan.

SFERS Administration

The Executive Director leads a team of senior managers who oversee each of the functional areas in the department. The leadership team manages the day-to-day activities of the System including:

- Member services, communication and benefits administration
- Retirement Board administration, including preparation of meeting materials, minutes and public notice requirements for Board and committee meetings
- Responding to Public Records Requests in accordance with the City's Sunshine Act, State of California Public Records Act, and Federal Freedom of Information Act
- Accounting and financial reporting
- Actuarial services
- Investment activities
- Recruitment and personnel management
- Records management and systems administration

The Retirement Board

The Retirement System and its members benefit greatly from the leadership of an experienced and knowledgeable Retirement Board. Within the scope of its fiduciary duties, the Board establishes and follows policies governing the administration, management, and operation of the City's retirement plans; manages the investment of the Retirement System's assets; approves disability benefit determinations; and approves actuarial assumptions used to fund long-term benefit promises of the SFERS Pension Plan.

The Retirement Board generally meets once each month to review and to approve important elements of Retirement System business. The Retirement Board is composed of seven members: three members elected by the active and retired members of SFERS; three members appointed by the Mayor in accordance with §12.100, the San Francisco City Charter; and one member of the Board of Supervisors appointed by the President of the Board of Supervisors.

FINANCE AND FUNDING

Financial Reporting

The accounting policies followed in preparing the SFERS financial statements by the City's auditors Marcias, Gini & O'Connell, LLP, conform to standards prescribed by the Governmental Accounting Standards Board (GASB). The audited Statements of Fiduciary Net Position and Statements of Changes in Fiduciary Net Position provide a general overview of the City and County of San Francisco Employees' Retirement System's finances for the fiscal year ended June 30, 2019.

Financial highlights and analysis can be found in the SFERS Discussion and Analysis preceding the financial statements. This transmittal letter, when taken into consideration with the Financial Section of this report, provides an enhanced picture of the activities of the organization.

Readers who have questions regarding the financial information provided in this report are encouraged to visit the SFERS website at www.mysfers.org to view the full set of audited Financial Statements and Required Supplemental Information as prepared by the City's independent auditors, Macias Gini & O'Connell, LLP.

Actuarial Services and Funding

The Retirement Board contracts with a consulting actuarial firm to produce and report to the Retirement Board and Retirement System staff, actuarial information related to the benefit structure and funding status of the Retirement System. The Retirement Board's current consulting actuarial firm is Cheiron, Inc. The Retirement Board also employs an Actuarial Services Coordinator to coordinate the work of the consulting actuary, participate in the presentation of actuarial reports to the Retirement Board, and provide other in-house actuarial services.

The consulting actuarial firm conducts annual actuarial valuations of the Retirement System's assets and liabilities in order to assess its funded status and to determine the appropriate level of employer contributions to the Fund. Each year, the Retirement Board looks to the consulting actuary and staff Actuarial Services Coordinator to recommend appropriate actuarial assumptions to provide the required funding for the promised benefits. The recommendations are based on results from economic experience analyses conducted each year, as well as demographic experience analyses conducted approximately every five years. The actuarial assumptions are included in the Actuarial Section of this report.

Sponsoring employers of the Retirement System are required to contribute 100% of the actuarially determined contribution approved by the Retirement Board. A 10-year chart of employer contributions may be found in the Required Supplementary Information found in the Financial Section.

The consulting actuarial firm also calculates the total pension liability and net pension liability as required by GASB Statement No. 67. At the June 30, 2019 fiscal year-end measurement date, the fiduciary net position as a percentage of total pension liability is 85.3% based on total pension liability of $30.6 billion and fiduciary net position of $26.1 billion. The net pension liability at June 30, 2019 is $4.5 billion. Details may be found in Note 9 of the Notes to the Basic Financial Statements and also in the Required Supplementary Information.

INVESTMENTS

The Retirement System's investment objective is to maximize long-term rates of return on investments within prudent guidelines.

The professional Investment Staff, supported by a group of professional consulting firms hired by the Retirement Board, analyzes, develops and recommends asset allocation mixes, manages investment portfolios, and monitors the activities and performance of external investment managers. For Fiscal Year 2019, the investment portfolio returned 8.18%.

Last fiscal year, the Retirement Board approved a revised asset allocation policy, driven by a 10% allocation to implement a new Private Credit Program. Under the authorization of the Retirement Board, and in line with the 2019 Annual Investment Plan, the investment team committed a total of $6.3 billion in new investments: $1.8 billion in Private Equity, $1.2 billion in the Real Assets portfolio, $1.1 billion in Absolute Return, $1.3 billion in Public Equity, and $925 million in private credit.

ACKNOWLEDGEMENTS

We would like to express our personal appreciation to the Retirement Board members who, without compensation, have provided the leadership, direction and support that have made all of our achievements possible. SFERS members and the citizens of the City and County have been well-served by their leadership.

Finally, we would like to thank the SFERS staff for their hard work to support our mission.

Respectfully submitted,

Jay P. Huish
Executive Director

Brian Stansbury
President

THE RETIREMENT SYSTEM ORGANIZATION FOR FISCAL YEAR 2019

The SFERS Retirement Board

BRIAN STANSBURY
President

City and County of
San Francisco
Elected Member
Term Expires:
02/20/2025

LEONA M. BRIDGES

Former Managing
Director
Barclays Global
Investors
Appointed Member
Term Expires:
02/20/2023

CROCE ALEXANDER ("AL") CASCIATO

Retiree
Elected Member
Term Expires:
02/20/2022

CARMEN CHU

Assessor
City and County of
San Francisco
Appointed Member
Term Expires:
02/20/2023

WENDY PASKIN-JORDAN
Vice President

Chief Executive Officer
Paskin Capital Advisers,
LLC
Appointed Member
Term Expired:
03/14/2019

JOSEPH D. DRISCOLL, CFA

Captain, San Francisco
Fire Department
Elected Member
Term Expires:
02/20/2021

SCOTT HELDFOND

Director
Aon Risk Services
Appointed Member
(appointed 04/8/2019)
Term Expires:
02/20/2024

AHSHA SAFAI

Member
Board of Supervisors
Ex-Officio Member
Term Expires:
01/31/2020

SFERS LEADERSHIP TEAM

Jay P. Huish
Executive Director

Caryn Bortnick
Deputy Executive Director

William J. Coaker, Jr., CFA
Chief Investment Officer

Darlene Armanino
Commission Secretary

Janet Brazelton, FSA, EA
Actuarial Services Coordinator

Kurt Braitberg
Managing Director, Public Markets

Jim Burruel
Finance Manager

Diane Chui Justen
Deferred Compensation Manager

David Francl
Managing Director, Absolute Return

Alison Johnson
Communications Manager

Tanya Kemp
Managing Director, Private Markets

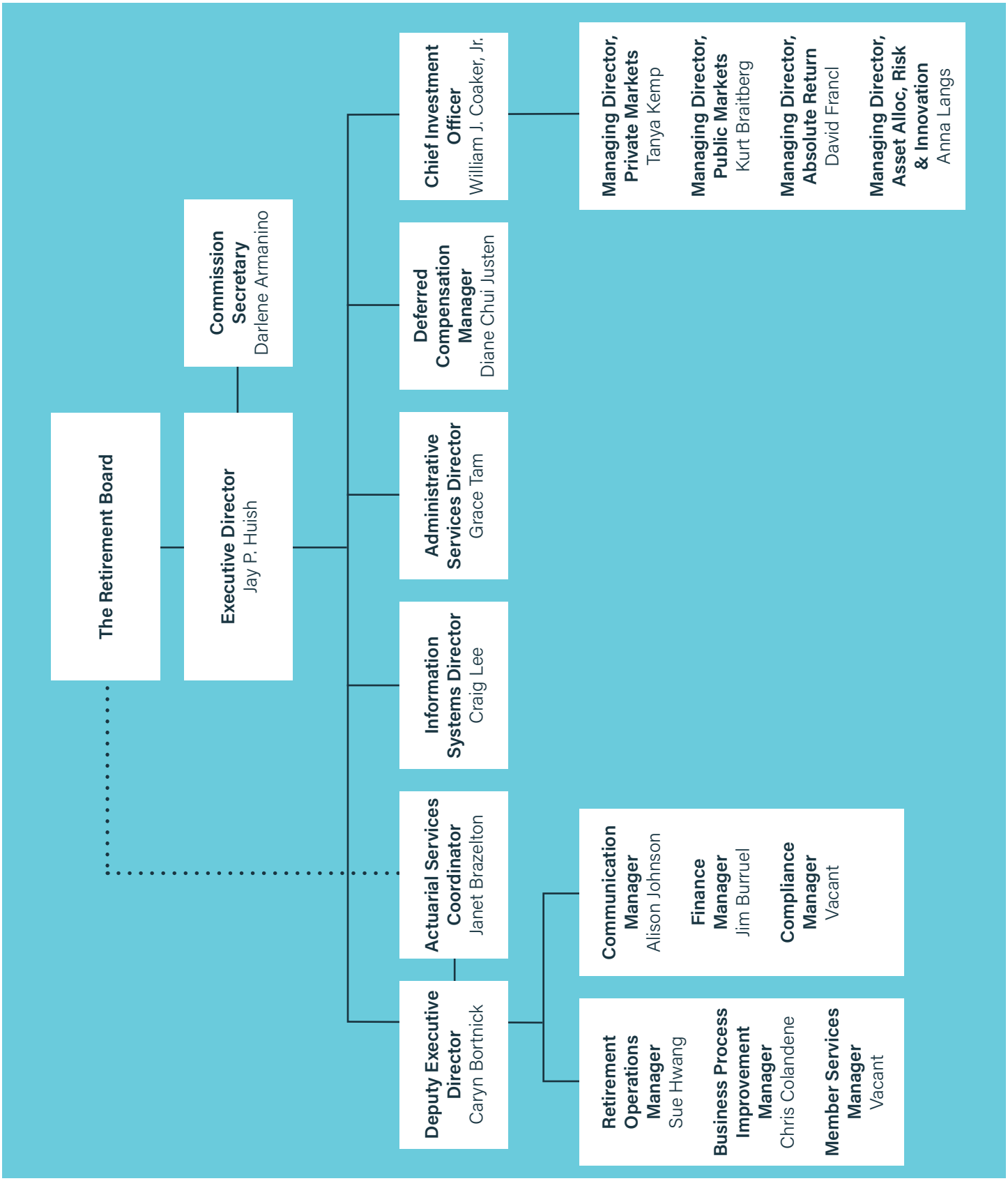
Anna Langs
Managing Director, Asset Allocation,
Risk Management and Innovative Solutions

Craig Lee
Information Systems Director

Grace Tam
Administrative Services Director

Compliance Manager
Vacant

SFERS ORGANIZATIONAL CHART - JUNE 30, 2019



PROFESSIONAL CONSULTANTS

Consulting Actuary

- Cheiron, Inc.

Investment Consultants

- NEPC, LLC
- Callan Associates, Inc.
- Cambridge Associates, LLC
- Torrey Cove Capital Partners, LLC

Governance Consultants

- Institutional Shareholder Services, Inc.
- Nossaman, LLP

Financial Section

SFERS DISCUSSION AND ANALYSIS

The management of the City and County of San Francisco Employees' Retirement System is pleased to provide this overview and analysis of the financial activities of its cost-sharing multiple-employer defined benefit pension plan (the "Plan") for the fiscal year ended June 30, 2019. We encourage readers to consider the information presented here in conjunction with the Basic Financial Statements and Required Supplementary Information which follow this discussion.

Financial Highlights of Fiscal Year 2019

- At the close of the year ended June 30, 2019, the Plan held $26.1 billion of net position restricted for pension benefits. All of the fiduciary net position is available to meet the Retirement System's ongoing obligations to plan participants and their beneficiaries.
- The Retirement System's funding objective is to meet long term benefit obligations through contributions and investment income. The Retirement System's fiduciary net position as a percentage of the total pension liability should be considered when evaluating the Retirement System's financial health. Based on the June 30, 2019, measurement date, the fiduciary net position was 85.3% of the total pension liability.
- For the year ended June 30, 2019, the Retirement System's net investment income of $2.0 billion represents 8.0% of fiduciary net position as of the beginning of the fiscal year.
- Total fiduciary net position held in trust for pension benefits increased by $1.5 billion, or 6.2%, primarily as a result of strong investment returns, which were slightly reduced by the net difference between contributions to the Plan and benefits, refunds, and administrative expenses incurred by the Plan.
- Members' contributions to the Plan totaled $381.0 million, an increase of $16.3 million or 4.5% from the prior year. This increase is primarily a result of a 4.8% increase in covered payroll. Employee contribution rates in fiscal year 2018-19 ranged from 7.5% - 13.0%, same as in fiscal year 2017-18.
- In order to maintain the fiscal soundness of the Plan, required employer contributions to the Plan totaled $645.1 million, an increase of $26.0 million or 4.2% from the prior year. This increase is mainly due to a 4.8% increase in covered payroll.
- Total deductions from the Plan were $1,475.7 million, an increase of 6.7% from the prior year due to the increase in benefits paid during the current fiscal year, as a result of a higher average retirement benefits and an increase in the cost of living (COLA) adjustments.

Overview of Financial Statements

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

1. ***Statements of Fiduciary Net Position*** are snapshots of account balances as of the close of the years – June 30, 2019 and 2018. They indicate the total assets, deferred outflows of resources, total liabilities, deferred inflows of resources, and the net position restricted for future payment of retirement benefits and operating expenses as of June 30, 2019 and 2018.
2. ***Statements of Changes in Fiduciary Net Position*** provide a view of additions to and deductions from the Plan during the fiscal years ended June 30, 2019 and 2018.
3. ***Notes to Financial Statements*** provide additional information that is essential to a full understanding of the data provided in the financial statements.

The statements of fiduciary net position and the statements of changes in fiduciary net position report information about the Retirement System's financial activities, prepared using the accrual basis of accounting. Contributions to the Plan are recognized when due pursuant to legal requirements and benefits and refunds are recognized when currently due and payable in accordance with the terms of the Plan.

Investments are reported at fair value. Securities traded on a national or international exchange are valued at the last reported sales price at current exchange rates. Securities that do not have an established market are reported at estimated fair value derived from third party pricing services. Purchases and sales of investments are recorded on a trade date basis. The fair values of the Retirement System's partnership interests, which include private equity, real assets, private credit, absolute return, and some public equity investments, are based on net asset values provided by the general partners and investment managers.

Investments in forward currency contract investments are commitments to purchase and sell stated amounts of foreign currency. Changes in fair value of open contracts are immediately recognized as gains or losses. The fair value of forward currency contracts is determined by quoted currency prices from national exchanges.

Additional information on the Retirement System's investments can be found in Notes 4, 5 and 6 to the Basic Financial Statements of this report.

The Plan's net position as of June 30, 2019, 2018, and 2017 are represented in the table below:

(Dollars in thousands)

	2019	2018	2017
Other assets	$ 245,668	$ 329,188	$ 256,857
Investments at fair value	26,021,469	24,327,090	22,319,815
Total assets	$ 26,267,137	$ 24,656,278	$ 22,576,672
Deferred outflows of resources	1,027	641	-
Total assets and deferred outflows of resources	$ 26,268,164	$ 24,656,919	$ 22,576,672
Total liabilities	$ 188,422	$ 98,934	$ 166,322
Deferred inflows of resources	1,093	19	-
Total liabilities and deferred inflows of resources	$ 189,515	$ 98,953	$ 166,322
Fiduciary net position	$ 26,078,649	$ 24,557,966	$ 22,410,350

Financial Analysis

The Plan's net position may serve over time as a useful indication of the Plan's financial position. The assets and deferred outflows of resources of the Plan exceeded its liabilities and deferred inflows of resources at June 30, 2019 and 2018. All of the Plan's fiduciary net position is restricted to meet the Retirement System's ongoing obligation to Plan participants and their beneficiaries.

As of June 30, 2019, the Plan's total fiduciary net position held in trust for pension benefits increased by $1,520.7 million or 6.2% for the year, primarily due to a continuation of the generally favorable market conditions in prior years. Payables to brokers increased by $88.2 million due to the timing of investments.

The Retirement Board believes that the Plan remains in a strong financial position to meet its obligations to the Plan members and beneficiaries. For fiscal year 2018-19, the U.S. economic expansion entered its tenth year, setting a record for duration, although total cumulative GDP growth trails other recoveries. The Federal Reserve Bank initially maintained its path of methodically normalizing monetary policy, raising interest rates twice, however, the Fed shifted its stance on monetary policy in early 2019 signaling potential interest rate cuts in the near future. US market volatility returned in late 2018 in response to concerns over the Fed's pace of interest rate increases, slowing global economic growth, and the U.S. – China trade tensions. Many of these concerns eased in the first half of 2019 and volatility dissipated through the end of the fiscal year. U.S. stocks, as a result, posted their tenth consecutive year of positive returns and outperformed international equities. Global capital markets continued to be largely driven by accommodative Central Bank policy from both the European Central Bank and Bank of Japan. Despite this, volatility increased in global markets in the year ended June 30, 2019 as concerns of slowing economic growth, historically low and broadly negative real interest rates and fears over U.S. trade policy caused uncertainty to impact investor sentiment. Despite these risks, U.S. equities posted a robust 10.4% return as measured by the S&P 500 Index. International developed-markets equities (1.1% for the year) performed positively but lagged domestic equities by 9.3%. Underperformance in international developed-markets was driven by uncertainty stemming from slowing economic growth and U.S. trade policy. Emerging markets equities underperformed U.S. and outperformed developed-international equities as markets reacted to U.S. Dollar strength and negative sentiment associated with the trade tensions between the U.S. and China. Driven by declining interest rates, U.S. high quality fixed income investments generated a positive return for the year, returning 7.9% as measured by the Bloomberg Barclays U.S. Aggregate Bond Index.

As fiduciaries to the Plan members and beneficiaries, the Retirement Board, Retirement System staff, and our investment consultants continuously monitor the Plan's investment strategies, which comply with a "prudent expert" standard, to secure and maintain the sustainability of the Plan.

Highlights of Changes in Fiduciary Net Position – Years ended June 30, 2019, 2018, and 2017

(Dollars in thousands)

	2019	2018	2017
Additions:			
Member contributions	$ 380,980	$ 364,696	$ 316,844
Employer contributions	645,056	619,067	551,809
Interest	95,100	132,988	159,065
Dividends	203,047	244,721	209,951
Net appreciation in fair value of investments	1,720,605	2,221,453	2,356,332
Securities lending income	-	393	9,004
Investment expenses	(48,440)	(49,881)	(47,395)
Securities lending borrower rebates and expenses	-	-	(3,489)
Total additions	$ 2,996,348	$ 3,533,437	$ 3,552,121
Deductions:			
Benefits	$ 1,438,935	$ 1,350,009	$ 1,264,633
Refunds of contributions	17,747	14,578	13,507
Administrative expenses	18,204	17,762	16,586
Other administrative expenses - OPEB	779	476	1,548
Total deductions	$ 1,475,665	$ 1,382,825	$ 1,296,274
Net increase in fiduciary net position	$ 1,520,683	$ 2,150,612	$ 2,255,847
Fiduciary net position – restricted for pension benefits:			
Beginning of year (as previously reported)	$ 24,557,966	$ 22,410,350	$ 20,154,503
Cumulative effect of change in accounting principle due to adoption of GASB 75 [1]	-	(2,996)	-
Beginning of year (as restated)	24,557,966	22,407,354	20,154,503
End of the year	$ 26,078,649	$ 24,557,966	$ 22,410,350

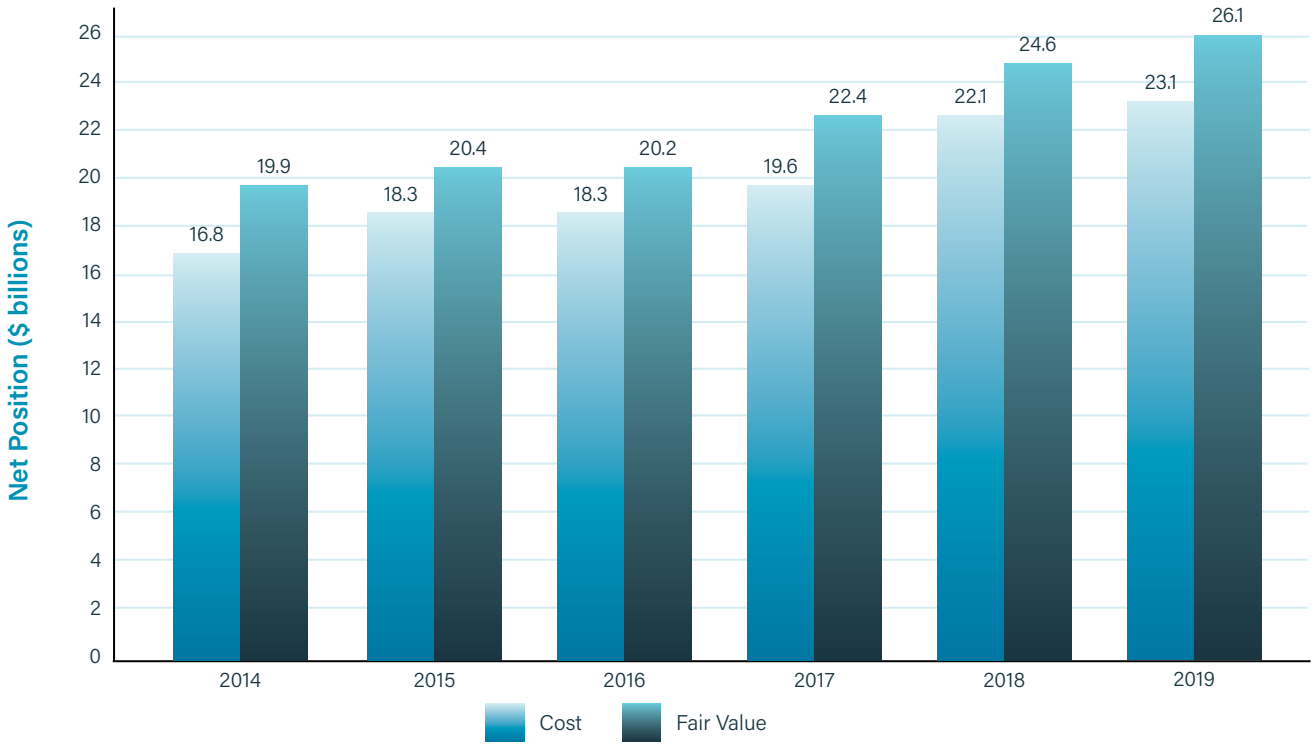
1 Refer to Note 2 in the Notes to Financial Statements for discussion of the cumulative effect of change in accounting principle to beginning net position due to the adoption of GASB Statement No. 75.

Fiscal Year 2019

- Members' contributions to the Plan totaled $381.0 million, an increase of $16.3 million or 4.5% from the prior year. This increase is primarily a result of a 4.8% increase in covered payroll. Employee contribution rates in fiscal year 2018-19 ranged from 7.5% - 13.0%, same as in fiscal year 2017-18.
- In order to maintain the fiscal soundness of the Plan, $645.1 million in required employer contributions were made during the year ended June 30, 2019. The increase of $26.0 million in required employer contributions reflects the increase in covered payroll. The employer contribution rates ranged from 18.81% to 23.31% in fiscal year 2018-19 and 18.96% to 23.46% in fiscal year 2017-18.
- Net investment income was $1,970.3 million for fiscal year 2018-19, with net appreciation in fair value of investments of $1,720.6 million. This compares to net investment income of $2,549.7 million for fiscal year 2017-18, with net appreciation in fair value of investments of $2,221.5 million. Net investment income was $579.4 million lower than the prior year; however, net appreciation in fair value of investments reflects positive investment returns in the majority of asset classes that the Retirement System invests in for both fiscal years. Interest income decreased by $37.9 million, mainly due to the domestic fixed income markets.
- Benefit payments to Plan participants increased by $88.9 million or 6.6%. This increase was due to both a 2.9% increase in the number of payees and the Supplemental COLA and Basic COLA effective July 1, 2018.
- Accrued DROP retirement benefits decreased by $268 thousand reflecting the wind down of the program as a result of the program being closed to new participants on June 30, 2011.

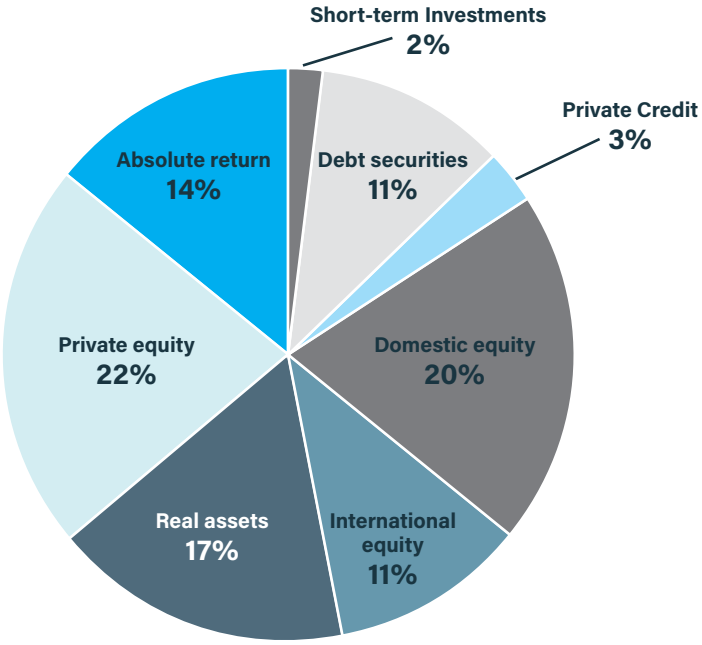
Fiduciary net position as of June 30, 2014 through 2019 expressed at cost and fair value of investments are represented in the chart below:

Fiduciary Net Position as of June 30 ($billions)



The investment allocation at fair value based on investment category (excluding foreign currency contracts) as of June 30, 2019 is represented in the chart below:

Investment Allocation as of June 30, 2019 - Fair Value



Currently Known Facts and Events Affecting Next Year

The Retirement System's funding objective is to meet long-term benefit obligations through contributions and investment income. The Retirement Board believes that the Retirement System remains in a strong financial position to meet its obligations to Plan participants and beneficiaries.

Requests for information

This financial report is designed to provide a general overview of the Retirement System's finances for the year ended June 30, 2019. Questions regarding any of the information provided in this report or requests for additional financial information should be addressed to:

Jay Huish, Executive Director
San Francisco City and County Employees' Retirement System
1145 Market Street – 5th floor
San Francisco, CA 94103

BASIC FINANCIAL STATEMENTS

Statements of Fiduciary Net Position, June 30, 2019 and 2018

(Dollars in thousands)

	2019	2018
Assets:		
Deposits	$ 62,375	$ 105,525
Contributions receivable – members	14,532	13,557
Investment income receivable:		
Interest	17,435	20,828
Dividends	5,497	10,342
Receivable from brokers, general partners, others	145,829	178,936
Investments at fair value:		
Short-term investments	479,876	521, 870
City investment pool	31,264	24,275
Debt securities:		
U. S. Government and agency securities	1,461,178	1,593,955
Other debt securities	1,321,937	1,712,045
Equity securities:		
Domestic	5,585,777	5,233,524
International	2,869,805	4,240,318
Real assets	4,334,229	3,578,379
Private credit	758,662	454,199
Private equity	5,604,023	4,344,306
Absolute return	3,574,622	2,625,376
Foreign currency contracts, net	96	(1,157)
Total investments	$ 26,021,469	$ 24,327,090
Total assets	$ 26,267,137	$ 24,656,278
Deferred outflows of resources:		
Employer's contributions - other postemployment benefits	1,027	641
Total assets and deferred outflows of resources	$ 26,268,164	$ 24,656,919
Liabilities		
Payable to brokers	148,518	60,297
Deferred retirement option program	45	313
Other	39,859	38,324
Total liabilities	$ 188,422	$ 98,934
Deferred inflows of resources:		
Net investment earnings - other postemployment benefits	1,093	19
Total liabilities and deferred inflows of resources	$ 189,515	$ 98,953
Fiduciary net position – restricted for pension benefits	$ 26,078,649	$ 24,557,966

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

Statements of Changes in Fiduciary Net Position, Years Ended June 30, 2019 and 2018

(Dollars in thousands)

	2019	2018
Additions:		
Member contributions		
Miscellaneous	$ 315,059	$ 302,865
Police	38,418	35,791
Firefighter	27,503	26,040
Total member contributions	$ 380,980	$ 364,696
Employer contributions:		
Miscellaneous	$ 548,319	$ 525,315
Police	55,533	54,150
Firefighter	41,204	39,602
Total employer contributions	$ 645,056	$ 619,067
Investment income (expenses):		
Interest	$ 95,100	$ 132,988
Dividends	203,047	244,721
Net appreciation in fair value of investments	1,720,605	2,221,453
Securities lending income	-	393
Investment expenses	(48,440)	(49,881)
Net investment income	$ 1,970,312	$ 2,549,674
Total additions	$ 2,996,348	$ 3,533,437
Deductions:		
Benefits	$ 1,438,935	$ 1,350,009
Refunds of contributions	17,747	14,578
Administrative expenses	18,204	17,762
Other administrative expenses - other postemployment benefits	779	476
Total deductions	$ 1,475,665	$ 1,382,825
Net increase in net position	$ 1,520,683	$ 2,150,612
Fiduciary net position – restricted for pension benefits:		
Beginning of year	24,557,966	22,407,354
End of year	$ 26,078,649	$ 24,557,966

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

NOTES TO THE BASIC FINANCIAL STATEMENTS

The Notes below provide a summary of the complete Notes found in SFERS' 2019 audited financial statements dated December 30, 2019.

(1) Plan Description

(a) General

The San Francisco City and County Employees' Retirement System (the Retirement System) administers a cost-sharing multiple employer defined benefit pension plan (the Plan) established to provide pension benefits for substantially all employees of the City and County of San Francisco (the City and County), certain classified and certificated employees of the Community College and Unified School Districts, and San Francisco Trial Court employees other than judges. The Retirement System provides service retirement, disability, and death benefits based on specified percentages of defined final average monthly salary and annual cost of living adjustments after retirement. While the Plan is not subject to the provisions of the Employee Retirement Income Security Act of 1974 (ERISA), it is a tax-qualified plan under Internal Revenue Code provisions. The City and County Charter (the Charter) and the Administrative Code are the authorities that establish and amend the benefit provisions and employer and member obligations to the Plan.

The Retirement System is considered to be a part of the City and County's financial reporting entity and is included in the City and County's basic financial statements as a pension trust fund. The financial statements of the Retirement System are intended to present only the fiduciary net position and changes in fiduciary net position of the Retirement System. They do not purport to, and do not, present fairly the financial position of the City and County as of June 30, 2019 and 2018, and the changes in its financial position for the years then ended in accordance with accounting principles generally accepted in the United States of America. The City and County's Comprehensive Annual Financial Report can be obtained from City Hall, Room 316, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA 94102.

The Retirement System is administered by the Executive Director, an employee of the City and County, in accordance with the provisions of the Charter and Administrative Code, and the policies and regulations of the Retirement Board. The Retirement Board is composed of seven members: three members elected by the active and retired members of the Retirement System; three members appointed by the Mayor in accordance with Section 12.100 of the Charter; and one member of the Board of Supervisors appointed by the President of the Board of Supervisors.

The Retirement System pays benefits according to the category of employment and the type of benefit coverage provided by the City and County. The four main categories of Plan membership are:

- Miscellaneous Non-Safety Members – staff, operational, supervisory, and all other eligible employees who are not in special membership categories.
- Sheriff's Department and Miscellaneous Safety Members – sheriffs assuming office on and after January 7, 2012, and undersheriffs, deputized personnel of the sheriff's department, and miscellaneous safety employees hired on and after January 7, 2012.
- Firefighter Members – firefighters and other employees whose principal duties are in fire prevention and suppression work or who occupy positions designated by law as firefighter member positions.
- Police Members – police officers and other employees whose principal duties are in active law enforcement or who occupy positions designated by law as police member positions.

(b) Service Retirement

Membership Group	Service Retirement Benefit
Miscellaneous Old Plan A8.509 - Miscellaneous employees who became members before November 2, 1976	2.3% @ age 62; maximum benefit 75% of average monthly compensation (12 mo. avg.)
Miscellaneous New Plan Tier I A8.587 - Miscellaneous employees who became members on or after November 2, 1976	2.3% @ age 62; maximum benefit 75% of average monthly compensation (12 mo. avg.)
Miscellaneous New Plan Tier II Plan A8.600 - Miscellaneous employees who became members on or after July 1, 2010 and before January 7, 2012	2.3% @ age 62; maximum benefit 75% of average monthly compensation (24 mo. avg.)
Miscellaneous New Plan Tier III Plan A8.603 - Miscellaneous employees who became members on or after January 7, 2012	2.3% @ age 65; maximum benefit 75% of average monthly compensation (36 mo. avg.)
Police Old Plan A8.595 - Police officers who became members before November 2, 1976 and elected Proposition H benefits effective January 1, 2003	3.0% @ age 55; maximum benefit 90% of average monthly compensation (12 mo. avg.)
Police New Plan Tier I A8.597 - Police officers who became members on or after November 2, 1976 and were eligible for Proposition H benefits effective January 1, 2003	3.0% @ age 55; maximum benefit 90% of average monthly compensation (12 mo. avg.)
Police New Plan Tier II A8.602 - Police officers who became members on or after July 1, 2010 and before January 7, 2012	3.0% @ age 55; maximum benefit 90% of average monthly compensation (24 mo. avg.)
Police New Plan Tier III A8.605 - Police officers who became members on or after January 7, 2012	3.0% @ age 58; maximum benefit 90% of average monthly compensation (36 mo. avg.)
Firefighter Old Plan A8.588 - Firefighters who were members on January 1, 2003, who did not elect Proposition H	2.7% @ age 55; maximum benefit 75% of average monthly compensation (12 mo. avg.)
Firefighter Old Plan A8.596 - Firefighters who became members before November 2, 1976 and elected Proposition H benefits effective January 1, 2003	3.0% @ age 55; maximum benefit 90% of average monthly compensation (12 mo. avg.)
Firefighter New Plan Tier I A8.598 - Firefighters who became members on or after November 2, 1976 and were eligible for 2002 Proposition H benefits effective January 1, 2003	3.0% @ age 55; maximum benefit 90% of average monthly compensation (12 mo. avg.)
Firefighter New Plan Tier II A8.601 - Firefighters who became members on or after July 1, 2010 and before January 7, 2012	3.0% @ age 55; maximum benefit 90% of average monthly compensation (24 mo. avg.)
Firefighter New Plan Tier III A8.604 - Firefighters who became members on or after January 7, 2012	3.0% @ age 58; maximum benefit 90% of average monthly compensation (36 mo. avg.)
Sheriffs Plan A8.608 - Sheriffs, undersheriffs and all deputized personnel of the Sheriff's Department hired on or after January 7, 2012	3.0% @ age 58; maximum benefit 90% of average monthly compensation (36 mo. avg.)
Miscellaneous Safety Plan A8.610 - Probation Officers, District Attorney Investigators and Juvenile Court Counselors who hired on or after January 7, 2012	2.7% @ age 58; maximum benefit 90% of average monthly compensation (36 mo. avg.)

(c) Disability Retirement

All members are eligible to apply for a disability retirement benefit, regardless of age, when they have 10 or more years of credited service and they sustain an injury or illness that prevents them from performing their duties. Safety members are eligible to apply for an industrial disability retirement benefit from their first day on the job if their disability is caused by an illness or injury that they receive while performing their duties.

(d) Separation and Death Benefits

Upon separation from employment, members may either withdraw their accumulated contributions from the Plan or, if they have 5 or more years of credited service, elect to leave their accumulated contribution in the Plan. Safety members who so elect will receive a deferred benefit that is first payable at or after age 50. Miscellaneous members who so elect will receive a vesting benefit that is first payable at or after age 50 for members hired prior to January 7, 2012 or at or after age 53 for those hired on or after January 7, 2012.

Generally, upon the death of an active member who is eligible for a service retirement, qualified surviving spouses or qualified domestic partners receive death benefits based upon a percentage of the service retirement benefit. Prior to eligibility for service retirement, a lump sum death payment equal to 6 months' earnable salary plus the member's accumulated contributions is payable to the members' named beneficiary or estate. For Safety members whose death is due to injury or illness caused by performance of duty, salary continuance is provided until the date member would have been eligible for service retirement.

Death benefits after retirement are contingent upon the form of annuity payment selected by the member.

(e) Cost of Living Adjustments (COLA)

Basic COLA: All retired members receive a benefit adjustment each July 1. The majority of adjustments are determined by changes in CPI with increases capped at 2%. Old Plan Police and Firefighter members receive benefit adjustments based upon 50% of either the actual dollar or the percentage change in the salary of the rank or position on which the member's retirement benefit is based. Although decreases are possible in a given year, a negative adjustment cannot reduce a member's monthly benefit below the initial pension amount.

Supplemental COLA: The Plan provides for a Supplemental COLA in years when there are sufficient "excess" investment earnings in the Plan. The Supplemental COLA is capped at 3.5% less the Basic COLA. Effective July 1, 2012, SFERS members who retired before November 6, 1996 will receive a Supplemental COLA when there are sufficient "excess" investment earnings in the Plan and the Plan is also fully funded on a market value of assets basis. The "full funding" requirement does not apply to SFERS members who retired on or after November 6, 1996 and were hired before January 7, 2012. For members who were hired before January 7, 2012, all Supplemental COLAs paid to them in retirement benefits will continue into the future even where an additional Supplemental COLA is not payable in any given year. For members who are hired on and after January 7, 2012, a Supplemental COLA will be paid to retirees when there are sufficient "excess" investment earnings in the Plan and the Plan is also fully funded on a market value of assets basis. For this group, Supplemental COLAs will not be permanent adjustments to retirement benefits. In years when a Supplemental COLA is not paid, all previously paid Supplemental COLAs will expire.

Ad-hoc COLA: There is no authority for granting ad-hoc COLA increases.

(f) Deferred Retirement Option Program

In February 2008, the voters of the City and County approved a Charter amendment to provide a Deferred Retirement Option Program (DROP) for certain Police members of the Plan to be effective July 1, 2008. An eligible police officer could elect to participate in DROP for a specified period of time up to a maximum of three years depending on the rank of the police officer. While participating in DROP, the police officer continues to work and receive pay as a

police officer and accrues monthly DROP distributions posted to a nominal account maintained by the Retirement System. The monthly DROP distribution is equal to the participant's monthly service retirement allowance calculated as of the participant's entry into DROP. Interest at an annual effective rate of 4% and applicable COLAs are posted to the participant's DROP account during participation in DROP. Upon exiting from DROP, the participant receives a lump sum distribution from his or her DROP account and begins to receive a monthly service retirement allowance calculated using age, covered compensation, and service frozen as of the date of his or her entry into DROP. DROP was closed to new applicants on June 30, 2011.

The Retirement System held $45 thousand pursuant to the DROP as of June 30, 2019.

(g) Membership

Total membership in the Retirement System as of July 1, 2019 is as follows:

	Police[1]	Fire	Miscellaneous	Total
Active members	2,471	1,675	30,056	34,202
Terminated members entitled to but not yet receiving benefits	237	82	9,636	9,955
Retirees and beneficiaries currently receiving benefits	2,562	1,982	25,393	29,937
Total	5,270	3,739	65,085	74,094

1 Police counts include Sheriff and Miscellaneous Safety.

(2) Summary of Significant Accounting Policies

(a) Basis of Presentation

The accompanying financial statements are prepared on the accrual basis of accounting in accordance with accounting principles generally accepted in the United States of America as promulgated by the Governmental Accounting Standards Board (GASB).

Member contributions are recognized in the period in which the contributions are due. Employer contributions and member contributions made by the employer to the Plan are recognized when due pursuant to legal requirements. Benefits and refunds are recognized when currently due and payable in accordance with the terms of the Plan.

(b) Investments

Investments are reported at fair value. Securities traded on a national or international exchange are valued at the last reported sales price at current exchange rates. Securities that do not have an established market are reported at estimated fair value derived from third party pricing services. Purchases and sales of investments are recorded on a trade date basis.

The fair values of the Retirement System's partnership interests, which include private equity, real assets, private credit, and some public equity investments, are based on net asset values provided by the general partners and investment managers. Partnership financial statements are audited annually as of December 31 and NAV is adjusted monthly or quarterly for cash flows to/from the Retirement System, investment earnings and changes in fair value. Such fair value estimates involve subjective judgments of unrealized gains and losses, and the actual market price of the investments can only be determined by negotiation between independent third parties in a purchase and sale transaction.

The Absolute Return Program invests in limited partnerships and other alternative investment vehicles. The most common investment strategies include, but are not limited to equity, credit, macro, emerging markets, quantitative, multi-strategy, special situations/other, and commodities. These investments are valued using their respective net asset value and are audited annually. The most significant input into the NAV of such an entity is the fair value of its investment holdings. These holdings are typically valued on a monthly basis by each fund's independent administrator and for certain illiquid investments, where no market exists, the General Partner may provide pricing input. The management assumptions are based upon the nature of the investment and the underlying business. Investments have the potential to become illiquid under stressed market conditions and, in certain circumstances, investors may be subject to redemption restrictions which can impede the timely return of capital. The valuation techniques vary based upon underlying investment type but are predominantly derived from observed market prices.

(c) Administrative Expenses

All costs to administer the Retirement System are borne by the Retirement System.

(d) Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets, deferred outflows of resources, liabilities, and deferred inflows of resources, and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of additions and deductions during the reporting period. Actual results could differ from those estimates.

(e) Other Postemployment Benefits Other Than Pensions

The Retirement System adopted GASB Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*. As prescribed under GASB Statement No. 75, net other postemployment benefits (OPEB) liability, deferred outflows/inflows of resources related to OPEB, and OPEB expense are actuarially determined on a citywide basis. Net OPEB liability is measured as

the portion of the present value of projected benefit payments to be provided to current active and inactive employees attributed to those employees' past service, less the amount of the Retiree Healthcare Trust Fund investments measured at fair value.

(3) Deposits

Deposits are carried at cost, which approximates fair value. Deposits in bank accounts were $62,375,000 as of June 30, 2019.

Custodial credit risk for deposits is the risk that, in the event of the failure of a depository financial institution, a government may not be able to recover its deposits or may not be able to recover collateral securities that are in the possession of an outside party. The Retirement System does not have a specific policy addressing custodial credit risk for deposits. As of June 30, 2019, the Retirement System's deposits in bank accounts were not exposed to custodial credit risk.

(4) Investments

The Retirement System's investments are invested pursuant to investment policy guidelines as established by the Retirement Board. The objective of the policy is to maximize the expected return of the fund at an acceptable level of risk. The Retirement Board has established percentage guidelines for types of investments to ensure the portfolio is diversified.

The Retirement Board's asset allocation policies for the year ended June 30, 2019 are as follows:

Asset Class	Target Allocation since September 2017
Global Equity	31.0%
Treasuries	6.0%
Liquid Credit	3.0%
Private Credit	10.0%
Private Equity	18.0%
Real Assets	17.0%
Hedge Funds/Absolute Return	15.0%
	100.0%

Investment managers are required to diversify by issue, maturity, sector, coupon, and geography. Investment managers retained by the Retirement System follow specific investment guidelines and are evaluated against specific market benchmarks that represent their investment style. Any exemption from general guidelines requires approval from the Retirement Board. The Retirement System invests in securities with contractual cash flows, such as asset-backed securities, commercial mortgage-backed securities, and collateralized mortgage obligations. The value, liquidity, and related income of these securities are sensitive to changes in economic conditions, including real estate values, delinquencies or defaults, or both, and may be affected by shifts in the market's perception of the issuers and changes in interest rates.

The investment policy permits investments in domestic and international debt and equity securities, securities lending, foreign currency contracts, derivative instruments, private equity, real assets, private credit, and absolute return investments, which include investments in a variety of commingled partnership vehicles.

The Retirement System is not directly involved in repurchase or reverse repurchase agreements. However, external investment managers retained by the Retirement System may employ repurchase arrangements if the securities purchased or sold comply with the manager's investment guidelines. The Retirement System monitors the investment activity of its investment managers to ensure compliance with guidelines.

The Retirement System maintains its operating fund cash in the City and County's investment pool. The City and County's pool is invested pursuant to investment policy guidelines established by the City Treasurer, subject to review by the Treasury Oversight Committee. The Treasury Oversight Committee,

established under California Government Code Sections 27130 to 27137, is composed of various City and County officials and representatives of agencies with large cash balances in the pool. The investment policy addresses soundness of financial institutions in which the City and County will deposit funds, types of investment instruments as permitted by the California Government Code, and the percentage of the portfolio which may be invested in certain instruments with longer terms to maturity. The provisions of the City and County's investment policy also address interest rate risk, credit risk, and concentration of credit risk and provide for additional restrictions related to investments. The notes to the basic financial statements of the City and County provide more detailed information concerning deposit and investment risks associated with the City and County's pool of cash and investments at June 30, 2019.

(a) Interest Rate Risk

Interest rate risk is the risk that changes in interest rates may adversely affect the fair value of an investment. The Retirement System does not have a specific policy to manage interest rate risk.

The table below depicts the segmented time distribution for fixed income investments based upon the expected maturity (in years) as of June 30, 2019.

Fixed Income Investments at Fair Value as of June 30, 2019
(Dollars in thousands)

		Maturities			
Investment Type	**Fair Value**	**Less than 1 year**	**1-5 years**	**6-10 years**	**10+ years**
Asset Backed Securities	$ 34,358	$ -	$ 9,360	$ 1,600	$ 23,398
Bank Loans	102,116	-	49,484	52,632	-
City Investment Pool	31,264	17,485	13,779	-	-
Commercial Mortgage-Backed	104,576	444	1,289	2,646	100,197
Commingled and Other Fixed Income Funds	391,318	6,136	-	185,119	200,063
Corporate Bonds	304,192	10,268	123,034	131,798	39,092
Corporate Convertible Bonds	229,370	3,882	145,410	64,476	15,602
Government Bonds	1,523,421	47,949	903,873	507,285	64,314
Government Mortgage Backed Securities	40,154	-	-	4,554	35,600
Municipal/Provincial Bonds	3,580	-	-	124	3,456
Non-Government Backed Collateralized Mortgage Obligations	33,938	-	659	1,792	31,487
Options	(32)	(3)	(29)	-	-
Short Term Investment Funds	492,830	492,830	-	-	-
Swaps	3,170	424	1,599	1,109	38
Total	$ 3,294,255	$ 579,415	$ 1,248,458	$ 953,135	$ 513,247

(b) Credit Risk – Investments

Credit risk is the risk that an issuer or other counterparty to an investment may not fulfill its obligations. Fixed income investment managers retained by the Retirement System follow specific investment guidelines and are evaluated against specific market benchmarks that represent their investment style. Fixed income managers typically are limited within their portfolios to no more than 5% exposure in any single security, with the exception of United States Treasury and government agency securities. The Retirement System's credit risk policy is embedded in the individual investment manager agreements as prescribed and approved by the Retirement Board.

Investments are classified and rated using the lower of (1) Standard & Poor's (S&P) rating or (2) Moody's Investors Service (Moody's) rating corresponding to the equivalent S&P rating. If only a Moody's rating is available, the rating equivalent to S&P is used for the purpose of this disclosure.

The credit rating of the United States remains a point of concern for some investors. In 2011, S&P lowered the credit rating for U.S. long-term debt to AA+ from AAA and continues to maintain that posture. Moody's and Fitch, the other two large credit rating agencies, continue to maintain a AAA rating for U.S. long-term debt. Additional ratings changes by the credit rating agencies would likely have a material impact on the credit risk and value of the Retirement System's investments in U.S. government agency securities, U.S. government bonds, and U.S. government mortgage-backed securities.

The following table illustrates the Retirement System's exposure to credit risk as of June 30, 2019. Investments issued or explicitly guaranteed by the U.S. government of $1,419,563 thousand as of June 30, 2019, are exempt from the credit rating disclosures and are excluded from the table below.

Credit Ratings of Fixed Income Investments as of June 30, 2019
(Dollars in thousands)

Credit Rating	Fair Value	Fair Value as a Percentage of Total
AAA	$ 37,988	2.0%
AA	49,415	2.6%
A	68,250	3.6%
BBB	192,051	10.2%
BB	135,911	7.2%
B	189,274	10.1%
CCC	30,643	1.6%
CC	65	0.0%
D	5,438	0.3%
Not Rated	1,165,658	62.4%
Total	$ 1,874,693	100.0%

The securities listed as "Not Rated" include short-term investment funds, government mortgage-backed securities, and investments that invest primarily in rated securities, such as commingled funds and money market funds, but do not themselves have a specific credit rating. Excluding these investments, the "not rated" component of credit would be approximately 8.0% for 2019.

(c) Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributed to the magnitude of the Retirement System's investment in a single issuer. Securities issued or guaranteed by the U.S. government or its agencies are exempt from this limit.

As of June 30, 2019, the Retirement System had no investments of a single issuer that equaled or exceeded 5% of total Retirement System's investments or net position.

(d) Custodial Credit Risk

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, a government may not be able to recover the value of investment or collateral securities that are in the possession of an outside party. The Retirement System does not have a specific policy addressing custodial credit risk for investments, but investments are generally insured, registered, or held by the Retirement System or its agent in the Retirement System's name. As of June 30, 2019, $126,041,000 of the Retirement System's investments were exposed to custodial credit risk because they were not insured or registered in the name of the Retirement System, and were held by the counterparty's trust department or agent but not in the Retirement System's name.

(e) Foreign Currency Risk

The Retirement System's exposure to foreign currency risk derives from its positions in foreign currency denominated cash, equity, fixed income, private equity, real assets, and private credit. The Retirement System's investment policy allows international managers to enter into foreign exchange contracts, which are limited to hedging currency exposure existing in the portfolio.

The Retirement System's net exposures to foreign currency risk as of June 30, 2018 are as follows:

Foreign Currency Risk Analysis as of June 30, 2019
(Dollars in thousands)

Currency	Cash	Equities	Fixed Income	Private Equities	Real Assets	Private Credit	Foreign Currency Contracts	Total
Argentine peso	$ -	$ -	$ 1,452	$ -	$ -	$ -	$ 578	$ 2,030
Australian dollar	-	36,373	(150)	1,803	-	-	68,768	106,794
Brazil real	-	17,584	12,401	-	-	-	2,707	32,692
Canadian dollar	-	24,015	-	-	-	-	51,145	75,160
Chilean peso	-	-	594	-	-	-	657	1,251
Chinese yuan renminbi	28,678	240,203	103	-	-	-	-	268,984
Colombian peso	-	-	6,008	-	-	-	4,287	10,295
Czech koruna	-	1,076	3,105	-	-	-	2,874	7,055
Danish krone	-	28,719	-	-	-	-	(3,628)	25,091
Dominican Republic peso	-	-	1,484	-	-	-	-	1,484
Egyptian pound	-	-	-	-	-	-	5,339	5,339
Euro	-	413,076	40,484	118,202	293,032	38,431	(61,969)	841,256
Hong Kong dollar	-	86,355	-	-	-	-	634	86,989
Hungarian forint	-	2,064	13,622	-	-	-	(7,755)	7,931
Indonesian rupiah	-	3,120	12,184	-	-	-	1,788	17,092
Israeli shekel	-	3,917	195	-	-	-	2,941	7,053
Japanese yen	-	192,284	(44)	-	68,707	-	(7,026)	253,921
Kazakhstan tenge	-	-	277	-	-	-	1,027	1,304
Malaysian ringgit	-	1,469	7,233	-	-	-	307	9,009
Mexican peso	-	3,690	1,234	-	-	-	10,447	15,371
New Taiwan dollar	-	33,197	-	-	-	-	(2,710)	30,487
New Zealand dollar	-	463	-	-	-	-	41,041	41,504
Nigerian naira	3,948	-	-	-	-	-	1,623	5,571
Norwegian krone	-	2,450	-	-	-	-	(13,257)	(10,807)
Peruvian sol	-	-	15,327	-	-	-	(6,675)	8,652
Philippines peso	-	1,386	486	-	-	-	1,243	3,115
Polish zloty	-	-	16,035	-	-	-	(176)	15,859
Pound sterling	-	226,476	1,626	28,754	16,709	-	2,560	276,125
Romanian leu	-	-	1,186	-	-	-	(1,930)	(744)
New Russian ruble	-	-	12,454	-	-	-	(55)	12,399
Singapore dollar	-	6,305	-	-	-	-	2,560	8,865

Foreign Currency Risk Analysis as of June 30, 2019 (continued)
(Dollars in thousands)

Currency	Cash	Equities	Fixed Income	Private Equities	Real Assets	Private Credit	Foreign Currency Contracts	Total
South African rand	-	10,853	14,706	-	-	-	(3,013)	22,546
South Korean won	-	26,457	-	-	-	-	(1,380)	25,077
Swedish krona	-	26,736	(168)	-	-	-	(17,911)	8,657
Swiss franc	-	104,114	(14)	-	-	-	(89,647)	14,453
Thailand baht	-	3,358	2,858	-	-	-	8,982	15,198
Turkish lira	-	2,986	5,292	-	-	-	(2,413)	5,865
Ukraine hryvana	-	-	234	-	-	-	443	677
Uruguayan Peso	-	-	332	-	-	-	-	332
Total	$ 32,626	$ 1,498,726	$ 170,536	$ 148,759	$ 378,448	$ 38,431	$ (7,594)	$ 2,259,932

(f) Unfunded Investments Commitments

The Retirement System has unfunded commitments to contribute capital for real assets in the amount of $2,939,311,000, private equity in the amount of $3,477,504,000, private credit in the amount of $1,164,757,000, and absolute return in the amount of $207,103,000 totaling $7,788,675,000 as of June 30, 2019.

(g) Derivative Instruments

The Retirement System reports its derivative instruments under the provisions of GASB Statement No. 53, Accounting and Financial Reporting for Derivative Instruments. Pursuant to the requirements of this statement, the Retirement System has provided a summary of derivative instrument activities during the reporting periods presented and the related risks.

As of June 30, 2019, the derivative instruments held by the Retirement System are considered investments and not hedges for accounting purposes. The gains and losses arising from this activity are recognized as incurred in the statement of changes in fiduciary net position. All investment derivatives discussed below are included within the investment risk schedules, which precede this subsection. Investment derivative instruments are disclosed separately to provide a comprehensive and distinct view of this activity and its impact on the overall investment portfolio.

Valuation methods used by the Retirement System are described in more detail in Note 2(b). The fair value of the exchange traded derivative instruments, such as futures, options, rights, and warrants are based on quoted market prices. The fair values of forward foreign currency contracts are determined using a pricing service, which uses published foreign exchange rates as the primary source. The fair values of swaps are determined by the Retirement System's investment managers based on quoted market prices of the underlying investment instruments.

The table below presents the notional amounts, the fair values, and the related net appreciation (depreciation) in the fair value of derivative instruments that were outstanding at June 30, 2019:

Derivative Instruments as of and for the Year Ended June 30, 2019
(Dollars in thousands)

Derivative Type / Contracts	Notional Amount	Fair Value	Net Appreciation (Depreciation) in Fair Value
Forwards			
Foreign Exchange Contracts	$ 891,781	$ 96	$ 1,253
Futures			
Currency Futures Long	3,062	29	69
Equity Index Futures Long	214,700	3,073	6,897
Equity Index Futures Short	(43,024)	(410)	(854)
Treasury Futures Long	44,484	155	(236)
Options			
Foreign Exchange Contracts	(4,400)	(32)	110
Swaps			
Credit Contracts	7,867	(22)	64
Currency Contracts	2,031	(67)	(64)
Equity Index Contracts	120	(31)	1,530
Total Return Contracts	31,138	-	220
Interest Rate Contracts	314,416	3,257	2,548
Rights/Warrants			
Equity Contracts	51,613 shares	102,031	6,055
Total		$ 108,079	$ 17,592

All investment derivatives are reported as investments at fair value in the statements of fiduciary net position. Rights and warrants are reported in equity securities. Foreign exchange contracts are reported in foreign currency contracts, which also include spot contracts that are not derivatives. All other derivative contracts are reported in other debt securities. All changes in fair value are reported as net appreciation (depreciation) in fair value of investments in the statements of changes in fiduciary net position.

Counterparty Credit Risk

The Retirement System is exposed to credit risk on non-exchange traded derivative instruments that are in asset positions. The table below presents those investments being classified and rated using the lower of (1) Standard & Poor's (S&P) rating or (2) Moody's Investors Service (Moody's) rating corresponding to the equivalent S&P rating. If only a Moody's rating is available, the rating equivalent to S&P is used for the purpose of this disclosure.

Custodial Credit Risk

The custodial credit risk disclosure for exchange traded derivative instruments is made in accordance with the custodial credit risk disclosure requirements of GASB Statement No. 40. At June 30, 2019, all of the Retirement System's investments in derivative instruments are held in the Retirement System's name and are not exposed to custodial credit risk.

Derivative Instruments subject to Counterparty Credit Risk as of June 30, 2019

(Dollars in thousands)

Credit Rating	Fair Value
AA	$(5)
A	92
BBB	643
Not Rated	2,505
Total	$ 3,235

Interest Rate Risk

The table below describes the maturity periods of the derivative instruments exposed to interest rate risk at June 30, 2019.

Derivative Interest Rate Risk as of June 30, 2019

(Dollars in thousands)

		Maturities			
Derivative Type / Contracts	Fair Value	Less than 1 year	1-5 years	6-10 years	10+ years
Forwards					
Foreign Exchange Contracts	$ 96	$ 168	$ (72)	$ -	$ -
Options					
Foreign Exchange Contracts	(32)	(3)	(29)	-	-
Swaps					
Credit Contracts	(22)	(30)	8	-	-
Currency Contracts	(67)	-	(60)	(7)	-
Interest Rate Contracts	3,257	454	1,650	1,115	38
Total	$ 3,232	$ 589	$ 1,497	$ 1,108	$ 38

The following table details the reference rate, notional amount, and fair value of interest rate swaps that are highly sensitive to changes in interest rates as of June 30, 2019:

Derivative Instruments Highly Sensitive to Interest Rate Changes as of June 30, 2019
(Dollars in thousands)

Investment Type	Reference Rate	Notional Value	Fair Value
Interest Rate Swap	Receive Fixed 1.04%, Pay Variable 3-Month TELBOR	$ 3,084	$ 42
Interest Rate Swap	Receive Fixed 1.05%, Pay Variable 3-Month TELBOR	2,832	42
Interest Rate Swap	Receive Fixed 1.50%, Pay Variable 6-Month BUBOR	439	7
Interest Rate Swap	Receive Fixed 1.78%, Pay Variable 6-Month PRIBOR	1,088	4
Interest Rate Swap	Receive Fixed 1.81%, Pay Variable 3-Month TELBOR	1,486	76
Interest Rate Swap	Receive Fixed 1.83%, Pay Variable 6-Month THB	717	2
Interest Rate Swap	Receive Fixed 1.83%, Pay Variable 6-Month WIBOR	134	-
Interest Rate Swap	Receive Fixed 1.90%, Pay Variable 3-Month TELBOR	897	51
Interest Rate Swap	Receive Fixed 1.92%, Pay Variable 6-Month THB	505	6
Interest Rate Swap	Receive Fixed 1.93%, Pay Variable 6-Month THB	344	2
Interest Rate Swap	Receive Fixed 1.93%, Pay Variable 6-Month THB	101	1
Interest Rate Swap	Receive Fixed 1.94%, Pay Variable 6-Month THB	489	6
Interest Rate Swap	Receive Fixed 1.94%, Pay Variable 6-Month WIBOR	2,360	10
Interest Rate Swap	Receive Fixed 1.95%, Pay Variable 6-Month THB	675	4
Interest Rate Swap	Receive Fixed 2.00%, Pay Variable 6-Month WIBOR	644	2
Interest Rate Swap	Receive Fixed 2.01%, Pay Variable 6-Month THB	1,164	16
Interest Rate Swap	Receive Fixed 2.02%, Pay Variable 6-Month THB	652	4
Interest Rate Swap	Receive Fixed 2.04%, Pay Variable 6-Month THB	515	8
Interest Rate Swap	Receive Fixed 2.12%, Pay Variable 6-Month THB	1,138	16
Interest Rate Swap	Receive Fixed 2.18%, Pay Variable 6-Month THB	82	2
Interest Rate Swap	Receive Fixed 2.19%, Pay Variable 6-Month THB	228	2
Interest Rate Swap	Receive Fixed 2.19%, Pay Variable 6-Month THB	610	17
Interest Rate Swap	Receive Fixed 2.22%, Pay Variable 6-Month THB	457	4
Interest Rate Swap	Receive Fixed 2.25%, Pay Variable 6-Month PRIBOR	1,535	36
Interest Rate Swap	Receive Fixed 2.25%, Pay Variable 6-Month PRIBOR	5,228	28
Interest Rate Swap	Receive Fixed 2.39%, Pay Variable 6-Month THB	624	29
Interest Rate Swap	Receive Fixed 2.42%, Pay Variable 6-Month THB	624	30
Interest Rate Swap	Receive Fixed 2.51%, Pay Variable 6-Month THB	355	15
Interest Rate Swap	Receive Fixed 2.56%, Pay Variable 6-Month THB	763	42
Interest Rate Swap	Receive Fixed 2.58%, Pay Variable 6-Month THB	248	12
Interest Rate Swap	Receive Fixed 2.58%, Pay Variable 6-Month THB	179	9

Derivative Instruments Highly Sensitive to Interest Rate Changes as of June 30, 2019 (continued)
(Dollars in thousands)

Investment Type	Reference Rate	Notional Value	Fair Value
Interest Rate Swap	Receive Fixed 2.63%, Pay Variable 6-Month THB	714	37
Interest Rate Swap	Receive Fixed 2.78%, Pay Variable 6-Month THB	30	2
Interest Rate Swap	Receive Fixed 2.81%, Pay Variable 6-Month THB	600	38
Interest Rate Swap	Receive Fixed 3.27%, Pay Variable 6-Month CLP	287	5
Interest Rate Swap	Receive Fixed 3.27%, Pay Variable 6-Month CLP	382	(1)
Interest Rate Swap	Receive Fixed 3.33%, Pay Variable 3-Month KLIBOR	436	-
Interest Rate Swap	Receive Fixed 3.54%, Pay Variable 6-Month CLP	730	25
Interest Rate Swap	Receive Fixed 3.76%, Pay Variable 6-Month CLP	1,822	76
Interest Rate Swap	Receive Fixed 3.77%, Pay Variable 6-Month CLP	1,801	89
Interest Rate Swap	Receive Fixed 4.26%, Pay Variable 1-Day COOVIBR	770	1
Interest Rate Swap	Receive Fixed 4.58%, Pay Variable 1-Day COOVIBR	604	1
Interest Rate Swap	Receive Fixed 4.61%, Pay Variable 1-Day COOVIBR	655	1
Interest Rate Swap	Receive Fixed 5.12%, Pay Variable 1-Day COOVIBR	496	12
Interest Rate Swap	Receive Fixed 5.17%, Pay Variable 1-Day COOVIBR	3,175	87
Interest Rate Swap	Receive Fixed 5.63%, Pay Variable 28-Day MXIBR	161	(6)
Interest Rate Swap	Receive Fixed 5.88%, Pay Variable 1-Day COOVIBR	970	48
Interest Rate Swap	Receive Fixed 6.12%, Pay Variable 1-Day COOVIBR	102	7
Interest Rate Swap	Receive Fixed 6.20%, Pay Variable 1-Day COOVIBR	94	7
Interest Rate Swap	Receive Fixed 6.26%, Pay Variable 1-Day BIDOR	1,305	1
Interest Rate Swap	Receive Fixed 6.41%, Pay Variable 1-Day COOVIBR	521	48
Interest Rate Swap	Receive Fixed 6.43%, Pay Variable 1-Day COOVIBR	30	(3)
Interest Rate Swap	Receive Fixed 6.71%, Pay Variable 28-Day MXIBR	682	(44)
Interest Rate Swap	Receive Fixed 6.80%, Pay Variable 28-Day MXIBR	125	(2)
Interest Rate Swap	Receive Fixed 6.89%, Pay Variable 1-Day BIDOR	3,027	43
Interest Rate Swap	Receive Fixed 7.05%, Pay Variable 1-Day BIDOR	2,087	35
Interest Rate Swap	Receive Fixed 7.10%, Pay Variable 1-Day BIDOR	2,922	53
Interest Rate Swap	Receive Fixed 7.18%, Pay Variable 1-Day BIDOR	1,800	36
Interest Rate Swap	Receive Fixed 7.19%, Pay Variable 1-Day BIDOR	704	14
Interest Rate Swap	Receive Fixed 7.22%, Pay Variable 1-Day BIDOR	1,383	27
Interest Rate Swap	Receive Fixed 7.25%, Pay Variable 3-Month JIBAR	525	6
Interest Rate Swap	Receive Fixed 7.38%, Pay Variable 28-Day MXIBR	822	(1)
Interest Rate Swap	Receive Fixed 7.42%, Pay Variable 1-Day BIDOR	2,792	71
Interest Rate Swap	Receive Fixed 7.48%, Pay Variable 1-Day BIDOR	2,061	41

Derivative Instruments Highly Sensitive to Interest Rate Changes as of June 30, 2019 (continued)
(Dollars in thousands)

Investment Type	Reference Rate	Notional Value	Fair Value
Interest Rate Swap	Receive Fixed 7.65%, Pay Variable 28-Day MXIBR	2,983	36
Interest Rate Swap	Receive Fixed 7.68%, Pay Variable 28-Day MXIBR	203	2
Interest Rate Swap	Receive Fixed 7.80%, Pay Variable 1-Day BIDOR	1,696	43
Interest Rate Swap	Receive Fixed 7.83%, Pay Variable 1-Day BIDOR	3,731	123
Interest Rate Swap	Receive Fixed 7.88%, Pay Variable 28-Day MXIBR	88	2
Interest Rate Swap	Receive Fixed 7.89%, Pay Variable 28-Day MXIBR	1,301	3
Interest Rate Swap	Receive Fixed 7.92%, Pay Variable 28-Day MXIBR	2,061	52
Interest Rate Swap	Receive Fixed 7.98%, Pay Variable 28-Day MXIBR	2,759	89
Interest Rate Swap	Receive Fixed 7.99%, Pay Variable 28-Day MXIBR	385	13
Interest Rate Swap	Receive Fixed 8.04%, Pay Variable 28-Day MXIBR	2,129	44
Interest Rate Swap	Receive Fixed 8.28%, Pay Variable 28-Day MXIBR	203	9
Interest Rate Swap	Receive Fixed 8.31%, Pay Variable 28-Day MXIBR	83	4
Interest Rate Swap	Receive Fixed 8.32%, Pay Variable 28-Day MXIBR	422	23
Interest Rate Swap	Receive Fixed 8.39%, Pay Variable 28-Day MXIBR	1,645	99
Interest Rate Swap	Receive Fixed 8.64%, Pay Variable 1-Day BIDOR	157	10
Interest Rate Swap	Receive Fixed 8.82%, Pay Variable 28-Day MXIBR	4,482	264
Interest Rate Swap	Receive Fixed 8.98%, Pay Variable 28-Day MXIBR	521	34
Interest Rate Swap	Receive Fixed 9.65%, Pay Variable 1-Day BIDOR	626	77
Interest Rate Swap	Receive Fixed 9.76%, Pay Variable 1-Day BIDOR	26	3
Interest Rate Swap	Receive Fixed 10.30%, Pay Variable 1-Day BIDOR	391	58
Interest Rate Swap	Receive Fixed 10.30%, Pay Variable 1-Day BIDOR	130	17
Interest Rate Swap	Receive Fixed 10.33%, Pay Variable 1-Day BIDOR	2,166	319
Interest Rate Swap	Receive Fixed 11.33%, Pay Variable 1-Day BIDOR	2,270	416
Interest Rate Swap	Receive Fixed 11.38%, Pay Variable 1-Day BIDOR	6,340	580
Interest Rate Swap	Receive Fixed 12.06%, Pay Variable 1-Day BIDOR	728	98
Interest Rate Swap	Receive Fixed 12.20%, Pay Variable 1-Day BIDOR	1,354	202
Interest Rate Swap	Receive Fixed 12.29%, Pay Variable 1-Day BIDOR	183	38
Interest Rate Swap	Receive Fixed 16.40%, Pay Variable 1-Day BIDOR	3,131	859
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 11.35%	1,226	-166
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 6.25%	24,944	-28
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 6.41%	59,463	0
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 6.93%	1,644	-24
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 6.93%	965	-14

Derivative Instruments Highly Sensitive to Interest Rate Changes as of June 30, 2019 (continued)
(Dollars in thousands)

Investment Type	Reference Rate	Notional Value	Fair Value
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 6.98%	3,757	-63
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 7.26%	2,714	-55
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 7.29%	4,331	-90
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 8.79%	1,200	-66
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 9.60%	1,070	-123
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 4.88%	1,580	-23
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 4.88%	420	-6
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 5.28%	432	14
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 6.39%	404	-37
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 6.42%	65	-6
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.87%	661	8
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 7.72%	5,205	-76
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 7.73%	796	-12
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 8.11%	1,286	-51
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 8.29%	5,726	-10
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 9.09%	1,156	-126
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 9.10%	2,717	-299
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 9.21%	442	-52
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 9.33%	312	-39
Interest Rate Swap	Receive Variable 3-Month JIBAR, Pay Fixed 7.75%	660	-6
Interest Rate Swap	Receive Variable 3-Month KLIBOR, Pay Fixed 3.74%	581	-6
Interest Rate Swap	Receive Variable 3-Month KLIBOR, Pay Fixed 3.75%	920	-10
Interest Rate Swap	Receive Variable 3-Month LIBOR, Pay Fixed 2.50%	59,600	-71
Interest Rate Swap	Receive Variable 3-Month TELBOR, Pay Fixed 0.70%	953	3
Interest Rate Swap	Receive Variable 3-Month TELBOR, Pay Fixed 0.95%	617	-6
Interest Rate Swap	Receive Variable 3-Month TELBOR, Pay Fixed 0.95%	477	-5
Interest Rate Swap	Receive Variable 3-Month TELBOR, Pay Fixed 0.96%	1,065	-11
Interest Rate Swap	Receive Variable 6-Month BUBOR, Pay Fixed 0.46%	13,529	-16
Interest Rate Swap	Receive Variable 6-Month PRIBOR, Pay Fixed 2.47%	1,477	-48
Interest Rate Swap	Receive Variable 6-Month WIBOR, Pay Fixed 1.86%	4,559	-11
Interest Rate Swap	Receive Variable 6-Month WIBOR, Pay Fixed 2.25%	456	-8
Total Interest Rate Swaps		**$ 314,416**	**$ 3,257**

Foreign Currency Risk

At June 30, 2019, the Retirement System is exposed to foreign currency risk on its investments in forwards, rights, warrants, swaps and futures denominated in foreign currencies.

Derivative Instruments Foreign Currency Risk Analysis as of June 30, 2019

(Dollars in thousands)

Currency	Forwards	Rights/ Warrants	Swaps	Futures	Total
Argentina peso	$ 578	$ -	$ (478)	$ -	$ 100
Australian dollar	68,768	-	(150)	(118)	68,500
Brazil real	2,707	-	2,535	-	5,242
Canadian dollar	51,145	-	-	17	51,162
Chilean peso	657	-	194	-	851
Colombian peso	4,287	-	152	-	4,439
Czech koruna	2,874	-	20	-	2,894
Danish krone	(3,628)	-	-	-	(3,628)
Egyptian pound	5,339	-	-	-	5,339
Euro	(61,969)	-	329	756	(60,884)
Hong Kong dollar	634	-	-	231	865
Hungarian forint	(7,755)	-	(9)	-	(7,764)
Indonesian rupiah	1,788	-	-	-	1,788
Israeli shekel	2,941	-	195	-	3,136
Japanese yen	(7,026)	-	(44)	-	(7,070)
Kazakhstan tenge	1,027	-	-	-	1,027
Malaysian ringgit	307	-	(16)	-	291
Mexican peso	10,447	-	(39)	-	10,408
New Taiwan dollar	(2,710)	-	-	-	(2,710)
New Zealand dollar	41,041	-	-	-	41,041
Nigerian naira	1,623	-	-	-	1,623
Norwegian krone	(13,257)	-	-	-	(13,257)
Peruvian sol	(6,675)	-	-	-	(6,675)
Philippines peso	1,243	-	-	-	1,243
Polish zloty	(176)	-	(7)	-	(183)
Pound sterling	2,560	-	-	54	2,614
Romanian leu	(1,930)	-	-	-	(1,930)
New Russian ruble	(55)	-	-	-	(55)
Singapore dollar	2,560	-	-	28	2,588

Derivative Instruments Foreign Currency Risk Analysis as of June 30, 2019 (continued)
(Dollars in thousands)

Currency	Forwards	Rights/ Warrants	Swaps	Futures	Total
South African rand	(3,013)	-	-	-	(3,013)
South Korean won	(1,380)	-	-	-	(1,380)
Swedish krona	(17,911)	-	(168)	(69)	(18,148)
Swiss franc	(89,647)	-	(14)	-	(89,661)
Thailand baht	8,982	-	305	-	9,287
Turkish lira	(2,413)	-	(30)	-	(2,443)
Ukraine hryvana	443	-	-	-	443
Total	$ (7,594)	$ -	$ 2,775	$ 899	$ (3,920)

Contingent Features

At June 30, 2019, the Retirement System held no positions in derivatives containing contingent features.

(5) Fair Value Measurement of Investments

The Retirement System categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles.

Fair Value Measurements as of June 30, 2019
(Dollars in thousands)

As of June 30, 2019	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Unobservable Inputs (Level 3)
Investments by fair value level				
Short-term investments	$ 479,220	$ 29	$ 3,948	$ 475,243
Debt securities:				
U.S. government and agency securities	1,461,178	1,408,872	52,306	-
Other debt securities	935,020	156	832,051	102,813
Equity securities:				
Domestic	3,690,322	3,510,704	7,783	171,835
International	2,355,081	2,351,998	3,074	9
Foreign currency contracts, net	96	-	-	96
Total investments by fair value level	$ 8,920,917	$ 7,271,759	$ 899,162	$ 749,996
Investments measured at the net asset value (NAV)				
Short-term investments	656			
Fixed income funds invested in:				
Other debt Securities	386,917			
Equity funds invested in:				
Domestic	1,895,455			
International	514,724			
Real assets	4,334,229			
Private Credit	758,662			
Private Equity	5,604,023			
Absolute return	3,574,622			
Total investments measured at the NAV	17,069,288			
Investments not subject to the fair value hierarchy				
City investment pool	31,264			
Total investments measured at fair value	$ 26,021,469			

Investments, at Fair Value

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. In some cases, a valuation technique may have multiple inputs used to measure fair value, and each input might fall into a different level of the fair value hierarchy. The level in the fair value hierarchy within which a fair value measurement falls in its entirety is determined based on the lowest level input that is significant to the measurement. The prices used in determining the fair value hierarchy are obtained from various pricing sources by the Retirement System's custodian bank.

Debt and equity securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets. Debt and equity securities classified in Level 2 of the fair value hierarchy are valued using prices determined by the use of matrix pricing techniques maintained by the various pricing vendors for these securities. Debt securities including short-term instruments are priced based on evaluated prices. Such evaluated prices may be determined by factors which include, but are not limited to, market quotations, yields, maturities, call features, ratings, institutional size trading in similar groups of securities and developments related to specific securities. For equity securities not traded on an active exchange, or if the closing price is not available, corroborated indicative quotes obtained from pricing vendors are generally used. Debt and equity securities classified in Level 3 of the fair value hierarchy are securities whose stated market prices are unobservable by the market place. Many of these securities are priced using uncorroborated indicative quotes, adjusted prices based on inputs from different sources, or evaluated prices using unobservable inputs, such as extrapolated data, proprietary models, and indicative quotes from pricing vendors.

Investments, at Net Asset Value (NAV)

The equity and debt funds are commingled funds that are priced at net asset value by industry vendors and fund families. NAV is the fair value of all securities owned by a fund, minus its total liabilities, divided by the number of shares issued and outstanding. The NAV of an open-end fund is its price.

The fair value of the Retirement System's investments in private equity, real assets, private credit, absolute return, and some public equity investments are based on NAV provided by the investment managers and general partners (hereinafter collectively referred to as the "General Partners"). Such value generally represents the Retirement System's proportionate share of the net assets of the limited partnerships. The partnership financial statements are audited annually as of December 31 and the NAV is adjusted by additional contributions to and distributions from the partnership, the Retirement System's share of net earnings and losses, and unrealized gains and losses resulting from changes in fair value, as determined by the General Partners.

The General Partners may use one or more valuation methodologies outlined in FASB ASC 820, Fair Value Measurement. For some investments, little market activity may exist. The General Partners' determination of fair value is then based on the best information available in the circumstances and may involve subjective assumptions and estimates, including the General Partners' assessment of the information that market participants would use in valuing the investments. The General Partners may take into consideration a combination of internal and external factors, including but not limit to, appropriate risk adjustments for nonperformance and liquidity. Such fair value estimates involve subjective judgments of unrealized gains and losses.

The values provided by the General Partners may differ significantly from the values that would have been used had a ready market existed for these investments.

Private credit investments are held in commingled funds. These investments are mostly illiquid with distributions received over the life of the investments. They are typically not redeemed, nor do they have set redemption schedules. There are ten public equity investments held in commingled

funds valued at NAV. Two investments, valued at $1.5 million, are currently being liquidated with proceeds expected over the next 2-4 years. The remaining investments may be subject to varying lock-up provisions and redemption schedules. The real asset holdings are illiquid. Distributions are received over the life of the investments, which could equal or exceed ten years. They are not redeemed, nor do they have set redemption schedules. Private equity investment strategies include buyout, venture capital, growth capital, and special situations. Investments in the asset class are achieved primarily through commingled funds and separate account partnerships but may also include direct and co-investment opportunities. Private equity investments are illiquid, and distributions are received over the life of the investments, which could equal or exceed ten years. These investments are not typically redeemed, nor do they have set redemption schedules.

Absolute return investment strategies include equity, credit, macro, emerging markets, quantitative, multi-strategy, special situations/other, and commodities. Investments are achieved through limited partnerships. The table below provides a summary of the terms and conditions upon which the Retirement System may redeem its absolute return investments. Investments have the potential to become illiquid under stressed market conditions and, in certain circumstances, investors may be subject to redemption restrictions that differ from the standard terms and conditions summarized here, which can impede the return of capital according to those terms and conditions.

Absolute Return Investment Measured at NAV as of June 30, 2019:

% of NAV	Redemption Frequency	Redemption Notice Period
51%	Monthly	95 Days
47%	Quarterly	45-180 Days
2%	Semi-annually	60-65 Days
100%		

% of NAV in Lock Up	As of Fiscal Year End
5%	2019-2020
10%	2020-2021
9%	2021-2022

(6) Investments in Real Assets

Real assets investments represent the Retirement System's interests in real assets limited partnerships and separate accounts. The changes in these investments during the year ended June 30, 2019 are summarized as follows:

(Dollars in thousands)

	2019
Investments:	
Beginning of the year	$ 3,578,379
Capital investments	902,896
Equity in net earnings	98,521
Net appreciation in fair value	241,048
Capital distributions	(486,615)
End of the year	$ 4,334,229

(7) Benefits

Allowances and benefits incurred during the year are summarized as follows:

(Dollars in thousands)

	2019
Service retirement benefits	$ 1,131,334
Disability retirement benefits	193,016
Death benefits	8,908
COLA benefit adjustments	105,945
Adjustment to accrued DROP benefits	(268)
Total	$ 1,438,935

(8) Funding Policy

Employer and employee (member) contributions are mandated by the Charter. The Charter specifies that employer contributions are determined as normal cost plus an amortization of the unfunded liability over a period not to exceed 20 years. Retirement Board policy determines the actual amortization period subject to the Charter limitation. Schedules of both employer and employee contribution rates may be found in the Statistical Section of this report. A ten-year schedule of funding progress may be found in the Actuarial Section, while a ten-year schedule of actuarially determined employer contributions is in the Required Supplemental Information subsection of this Financial Section.

(9) Net Pension Liability of Employers

The components of the employers' net pension liability at June 30, 2019 was as follows:

(Dollars in thousands)

	June 30, 2019
Total pension liability	$ 30,555,289
Plan fiduciary net position	$ 26,078,649
Net pension liability	$ 4,476,640
Plan fiduciary net position as a percentage of total pension liability	85.3%

(a) Actuarial Assumptions

The total pension liability as of June 30, 2019 was determined by an actuarial valuation as of July 1, 2018 which was rolled forward to June 30, 2019 using standard roll forward procedures.

The following is a summary of actuarial methods and assumptions used at the June 30, 2019 measurement date:

Inflation	2.75%
Salary increases	3.50% plus merit component based on employee classification and years of service
Investment rate of return	7.40%, net of pension plan investment expense, including inflation

Mortality rates for active members and healthy annuitants were based upon adjusted Employee and Healthy Annuitant CalPERS mortality tables projected generationally from the 2009 base year using a modified version of the MP-2015 projection scale.

The actuarial assumptions used at the June 30, 2019 measurement date were based upon the results of a demographic experience study for the period July 1, 2009 through June 30, 2014 and an economic experience study as of July 1, 2018.

The Supplemental COLA assumption as of June 30, 2019 was developed based upon the probability and amount of Supplemental COLA for each future year. The tables below show the net assumed Supplemental COLA for members at sample years.

Assumed Future Supplemental COLA for Members Retiring Before 11/6/1996 or Hired After Prop C

July 1	Old Miscellaneous and all New Plans	Old Police & Fire, pre-7/1/75 Retirements	Old Police & Fire A8.595, A8.596, Retirements
2019	0.000%	0.000%	0.000%
2020	0.200%	0.140%	0.050%
2021	0.270%	0.180%	0.070%
2022	0.310%	0.210%	0.080%
2028	0.370%	0.250%	0.100%
2031+	0.375%	0.250%	0.100%

Assumed Future Supplemental COLA for Members Retiring After 11/6/1996 and Hired Before Prop C

July 1	Old Miscellaneous and all New Plans	Old Police & Fire
2019	1.000%	3.0% less assumed Basic COLA
2020+	0.750%	½ x (3.5% less assumed Basic COLA)

The long-term expected rate of return on pension plan investments was 7.40%. It was set by the Retirement Board after consideration of both expected future returns and historical returns experienced by the Retirement System. Expected future returns were determined by using a building-block method in which best-estimate ranges of expected future real rates of return were developed for each major asset class. These ranges were 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.

The target allocation and best estimates of geometric long-term expected real rates of return (expected returns, net of pension plan investment expense and inflation) for each major asset class as of June 30, 2019, are summarized in the following table:

(b) Discount Rate

The discount rate used to measure the total pension liability at June 30, 2019, was 7.40%. The projection of cash flows used to determine the discount rate assumed that plan member contributions will continue to be made at the rates specified in the Charter. Employer contributions were assumed to be made in accordance with the contribution policy in effect for the July 1, 2018, actuarial valuation. While the contributions and measure of actuarial liability in the funding valuation do not anticipate any future Supplemental COLAs, the projected contributions for the determination of the discount rate include the anticipated future amortization payments on future Supplemental COLAs for current members when they are expected to be granted. The projection of benefit payments to current members for determining the discount rate includes the payment of anticipated future Supplemental COLAs.

As of June 30, 2019, the System's fiduciary net position was projected to be available to make projected future benefit payments for current members for all future years. Projected benefit payments are discounted at the long-term expected return on assets of 7.40% to the extent the fiduciary net position is available to make the payments and at the municipal bond rate of 3.50% to the extent that they are not available. The single equivalent rate used to determine the total pension liability as of June 30, 2019, rounded to two decimals is 7.40%.

The municipal bond rate of 3.50% used to determine the above discount rate represents the yield available at June 30, 2019 on the Bond Buyer 20-Bond GO Index.

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Global Equity	31.0%	5.3%
Treasuries	6.0%	0.9%
Liquid Credit	3.0%	3.6%
Private Credit	10.0%	5.2%
Private Equity	18.0%	8.3%
Real Assets	17.0%	5.4%
Hedge Funds/Absolute Return	15.0%	3.9%
	100.0%	

(c) Sensitivity of the net pension liability to changes in the discount rate

The following presents the net pension liability, calculated using the discount rate of 7.40%, as well as what the total net pension liability would be if it were calculated using a discount rate that is one percentage-point lower (6.40%) or one -percentage-point higher (8.40%) than the current rate:

Sensitivity of the net pension liability to changes in the discount rate
(Dollars in thousands)

	Net pension liability June 30, 2019
1% Decrease	$ 8,450,047
Current Discount Rate	$ 4,476,640
1% Increase	$ 1,193,728

(d) Money Weighted Rate of Return

For the year ended June 30, 2019, the annual money-weighted rate of return on pension plan investments, net of investment expenses, adjusted for the changing amounts actually invested, was 8.19%.

(10) Postemployment Healthcare Plan

(a) Other Postemployment Benefits (OPEB)

The Retirement System participates in the City's multiple-employer defined benefit other postemployment benefits plan (the Plan). The Plan is maintained by the City and is administered through the City's Health Service System. It provides postemployment medical, dental and vision insurance benefits to eligible employees, retired employees, surviving spouses, and domestic partners. Health benefit provisions are established and may be amended through negotiations between the City and the respective bargaining units. The City does not issue a separate report on its other postemployment benefit plan.

GASB Statement No. 75 requires that reported results must pertain to liability and asset information within certain defined timeframes. For this report, the following timeframes are used.

San Francisco Health Service System Retiree Plan – Agent Multiple-Employer	
Valuation Date (VD)	June 30, 2018
Measurement Date (MD)	June 30, 2018
Measurement Period (MP)	July 1, 2017 to June 30, 2018

The Retirement System's proportionate share percentage of the Plan was determined based on its percentage of citywide "pay-as-you-go" contributions for the year ended June 30, 2018. The Retirement System's net OPEB liability, deferred outflows/inflows of resources related to OPEB, amortization of deferred outflows/inflows and OPEB expense to each department is based on the Retirement System's allocated percentage. The Retirement System's proportionate share of the City's OPEB elements was 0.33% as of the measurement date.

(11) Contingencies

Proposition C, a pension reform Charter amendment approved by voters in November 2011, included changes in the calculation of certain supplemental cost of living adjustments and was intended to reduce pension costs. These Proposition C changes in the calculation of certain supplemental cost of living adjustments were the subject of litigation and a decision of the California Court of Appeals. The California Court of Appeals held that the changes to the supplemental cost of living adjustments in Proposition C could not be applied to retirees who retired after November 1996. That decision was appealed to the California Supreme Court. The California Supreme Court denied review of the Court of Appeals decision. On October 25, 2015, the San Francisco Superior Court entered an amended judgment consistent with the Court of Appeals decision.

After due consideration and in consultation with Board legal counsel, at its July 2016 regular Board meeting, the Retirement Board determined, in light of the conclusions recited in the Court of Appeals decision, Proposition C should be interpreted to provide payment of the supplemental cost of living adjustments to pre-1996 retirees without a "fully funded" precondition to payment. On September 19, 2016, the City and County of San Francisco and the Controller filed an action against the Retirement Board and the Retirement System's Executive Director, seeking to permanently enjoin the Retirement System from paying supplemental COLA benefits to pre-1996 retirees on the same basis that those benefits have been paid to the post-1996 retirees in accordance with the Court's decision in Protect Our Benefits v. City and County of San Francisco. The San Francisco Superior Court granted the City's request for a permanent injunction. The Retirement Board and the Retirement System's Executive Director appealed that decision.

In May 2019, the California Court of Appeal affirmed the Superior Court decision granting the City's request for a permanent injunction prohibiting the Retirement System from paying supplemental COLA benefits to pre-1996 retirees on the same basis that those benefits have been paid to the post-1996 retirees. This case is now resolved, and no additional benefits are payable to the retirees and beneficiaries.

REQUIRED SUPPLEMENTARY INFORMATION

Schedule of Changes in Collective Net Pension Liability

(Dollars in thousands)

Year ended June 30	2019	2018	2017	2016	2015	2014
Total pension liability						
Service cost	$675,065	$ 632,118	$ 644,277	$ 567,576	$ 523,644	$ 509,200
Interest	2,131,847	2,041,110	1,924,206	1,669,996	1,621,582	1,542,266
Changes of benefit terms	0	0	0	1,293,714	0	0
Differences between expected and actual experience	12,484	(42,382)	57,911	(119,270)	(197,981)	0
Changes of assumptions	351,902	170,699	88,180	1,087,309	216,845	(73,315)
Benefit payments, including refunds of member contributions	(1,456,682)	(1,364,587)	(1,278,140)	(1,256,146)	(1,131,030)	(1,072,526)
Net change in total pension liability	**1,714,616**	**1,436,958**	**$ 1,436,434**	**$ 3,243,179**	**$ 1,033,060**	**$ 905,625**
Total pension liability—beginning	**28,840,673**	**27,403,715**	**25,967,281**	**22,724,102**	**21,691,042**	**20,785,417**
Total pension liability—ending, (a)	**30,555,289**	**28,840,673**	**27,403,715**	**25,967,281**	**22,724,102**	**21,691,042**
Plan fiduciary net position						
Contributions—employer	380,980	619,067	551,809	526,805	592,643	532,882
Contributions—employee	645,056	364,696	316,844	322,764	301,682	289,020
Net investment income	1,970,312	2,549,674	2,683,468	150,190	763,429	3,175,431
Benefit payments, including refunds of member contributions	(1,456,682)	(1,364,587)	(1,278,140)	(1,256,146)	(1,131,030)	(1,072,526)
Administrative expenses	(18,983)	(18,238)	(18,134)	(17,179)	(19,262)	(15,745)
Net change in plan fiduciary net position	**1,520,683**	**2,150,612**	**2,255,847**	**(273,566)**	**507,462**	**2,909,062**
Plan fiduciary net position—beginning						
Beginning of year (as reported)	24,557,966	22,410,350	20,154,503	20,428,069	19,920,607	17,011,545
Restatement due to adoption of GASB 75	-	(2,996)	-	-	-	-
Beginning of year (as restated)	**24,557,966**	**22,407,354**	**20,154,503**	**20,428,069**	**19,920,607**	**17,011,545**
Plan fiduciary net position—ending, (b)	**26,078,649**	**24,557,966**	**22,410,350**	**20,154,503**	**20,428,069**	**19,920,607**
Net pension liability—ending, (a) - (b)	**$ 4,476,640**	**$ 4,282,707**	**$ 4,993,365**	**$ 5,812,778**	**$ 2,296,033**	**$ 1,770,435**

Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

Schedule of Collective Net Pension Liability

(Dollars in thousands)

	6/30/2019	6/30/2018	6/30/2017	6/30/2016	6/30/2015	6/30/2014
Total pension liability	$ 30,555,289	$ 28,840,673	$ 27,403,715	$ 25,967,281	$ 22,724,102	$ 21,691,042
Plan fiduciary net position	(26,078,649)	(24,557,966)	(22,410,350)	(20,154,503)	(20,428,069)	(19,920,607)
Net pension liability	$ 4,476,640	$ 4,282,707	$ 4,993,365	$ 5,812,778	$ 2,296,033	$ 1,770,435
Plan fiduciary net position as a percentage of the total pension liability	85.3%	85.2%	81.8%	77.6%	89.9%	91.8%
Covered payroll	$ 3,375,447	$ 3,221,544	$ 3,041,818	$ 2,836,498	$ 2,642,752	$ 2,507,162
Net pension liability as a percentage of covered payroll	132.6%	132.9%	164.2%	204.9%	86.9%	70.6%

Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

Schedule of Employer Contributions

(Dollars in thousands)

Year Ended June 30	Actuarially Determined Contribution (ADC)	Contributions in Relation to the ADC	Contribution Deficiency (Excess)	Covered Payroll	Contributions as a Percentage of Covered Payroll
2010	223,614	223,614	-	2,544,939*	8.8%
2011	308,823	308,823	-	2,398,823*	12.9%
2012	410,797	410,797	-	2,360,413*	17.4%
2013	442,870	442,870	-	2,448,734	18.1%
2014	532,882	532,882	-	2,507,162	21.3%
2015	592,643	592,643	-	2,642,752	22.4%
2016	526,805	526,805	-	2,836,498	18.6%
2017	551,809	551,809	-	3,041,818	18.1%
2018	619,067	619,067	-	3,221,544	19.2%
2019	645,056	645,056	-	3,375,447	19.1%

* Covered compensation from actuarial projection.

Schedule of Money-Weighted Rate of Return

Year Ended June 30	Money-Weighted Rate of Return
2010	14.53%
2011	22.65%
2012	0.81%
2013	13.91%
2014	19.10%
2015	4.03%
2016	0.96%
2017	13.52%
2018	11.55%
2019	8.19%

NOTES TO REQUIRED SUPPLEMENTARY INFORMATION

Note to Schedules of Changes in Net Pension Liability and Schedules of Net Pension Liability

The total pension liability contained in the schedules was determined by the Retirement System's actuary, Cheiron, Inc. The collective net pension liability is measured as the total pension liability less the amount of the fiduciary net position of the Retirement System.

A summary of assumptions may be found in Note (9) to the financial statements. A complete description of methods and assumptions may be found in the Retirement System's *GASB 67/68 Report* for the corresponding fiscal years. The discount rates were as follows:

Year Ended June 30	Discount Rate for Total Pension Liability
2019	7.40%
2018	7.50%
2017	7.50%
2016	7.50%
2015	7.46%
2014	7.58%
2013	7.52%

Note to Schedule of Employer Contributions

Actuarially determined contribution rates are calculated based on the actuarial valuation one year prior to the beginning of the fiscal year in which contributions are reported. Assumptions used to determine contribution rates are:

Year Ended June 30	Valuation Date	Investment return	Salary Increase/ Amortization Growth	Mortality	Change in Funding Methods or Assumption from Prior Year
2010	7/1/2008	7.75%	4.50%	1994 GAM	Investment return
2011	7/1/2009	7.75%	4.50%	1994 GAM	None
2012	7/1/2010	7.75%	4.00%	RP2000 Mortality projected with Scale AA	Wage inflation and demographic assumptions including salary merit increases based upon experience study
2013	7/1/2011	7.66%	3.91%	RP2000 Mortality projected with Scale AA	Investment return and wage inflation assumptions
2014	7/1/2012	7.58%	3.83%	RP2000 Mortality projected with Scale AA	Investment return and wage inflation assumptions
2015	7/1/2013	7.58%	3.83%	RP2000 Mortality projected with Scale AA	None
2016	7/1/2014	7.50%	3.75%	RP2000 Mortality projected with Scale AA	Investment return and wage inflation assumptions
2017	7/1/2015	7.50%	3.75%	Adj. 2009 CalPERS Mortality Tables projected generationally with mod. MP-2015	Demographic assumptions including rates of retirement, termination, refund, disability and mortality and salary merit based upon experience study
2018	7/1/2016	7.50%	3.75%	Adj. 2009 CalPERS Mortality Tables projected generationally with mod. MP-2015	None
2019	7/1/2017	7.50%	3.50%	Adj. 2009 CalPERS Mortality Tables projected generationally with mod. MP-2015	Wage inflation assumption

Complete descriptions of the methods and assumptions used to determine contribution rates can be found in the corresponding actuarial valuation reports.

Salary increase assumptions in above table are shown before the addition of merit components based upon employee classification and years of service.

Summaries of plan provisions used in each valuation can be found in each applicable actuarial valuation report.

OTHER SUPPLEMENTARY INFORMATION

Comparison of Contributions

Employer Contributions

(Dollars in thousands)

Member Plan	Plan Year 2018-19	Plan Year 2017-18	Plan Year 2016-17
Miscellaneous Plans	$ 548,319	$ 525,315	$ 465,671
Police Plans	55,533	54,150	49,640
Firefighter Plans	41,204	39,602	36,498
Total	**$ 645,056**	**$ 619,067**	**$ 551,809**

Employee Contributions

(Dollars in thousands)

Member Plan	Plan Year 2018-19	Plan Year 2017-18	Plan Year 2016-17
Miscellaneous Plans	$ 315,059	$ 302,865	$ 262,647
Police Plans	38,418	35,791	31,085
Firefighter Plans	27,503	26,040	23,112
Total	**$ 380,980**	**$ 364,696**	**$ 316,844**

Pension Fund Net Investment Income

Fiscal Year 2018-19

(Dollars in thousands)

	Income[1]	Realized Gain/Loss	Unrealized Gain/Loss	Total
Interest Earned	$ 95,100	$ -	$ -	$ 95,100
Dividends Earned	203,047	-	-	203,047
Net Appreciation in Fair Value of Investments:				
Recaptured Commission Income	30	-	-	30
Short-term Securities	-	(2,818)	260	(2,558)
Equities	-	858,127	(639,734)	218,393
Debt Securities	-	7,022	105,758	112,780
Real Assets	98,521	115,805	125,226	339,552
Private Credit	16,714	30,194	14,760	61,668
Private Equities	(100,080)	310,662	602,430	813,012
Absolute Returns	-	-	96,646	96,646
Other Assets	-	(18,751)	99,833	81,082
Investment Expenses	(48,440)	-	-	(48,440)
Total Net Investment Income (including Net Appreciation)	**$ 264,892**	**$ 1,300,241**	**$ 405,179**	**$ 1,970,312**

1 Total investment income excludes employee and employer contributions.

Pension Fund Disbursements

Fiscal Year 2018-19

(Dollars in thousands)

Payments/Expenses	Amount
Service Retirement Payments	$ 1,131,334
Disability Retirement Payments	193,016
Cost of Living Adjustments	105,945
Death Allowance Payments	4,467
Death Benefits	2,706
Retired Annuitant Rolls (Option 1 Death Benefit)	1,735
DROP Program Accrued Retirement Benefits	(268)
Refunds of Contributions – Death Benefits	3,820
Refunds of Contributions – Other than Death Benefits	13,927
Administrative Expenses: Retirement Services/ Administration	18,983
Total Payments & Expenses, FY2018-19	$1 ,475,665
Total Payments & Expenses, FY2017-18	$ 1,382,825
Increase from FY 2017-18:	$ 92,840

Comparison of Actual Administrative Expenditures
Retirement Services & Administration Divisions
(Dollars in thousands)

Description of Expenditures	2018-19	2017-18	2016-17
Personnel Services	$ 11,667	$ 11,971	$ 10,329
Equipment Purchase	0	77	131
Materials and Supplies	38	47	101
Services of Other Departments	3,689	3,613	3,320
Other Services	3,589	2,530	2,705
Total	**$ 18,983**	**$ 18,238**	**$16,586**

Investment Division
(Dollars in thousands)

Description of Expenditures	2018-19	2017-18	2016-17
Personnel Services	$ 6,973	$ 6,132	$ 5,142
Equipment Purchase	0	4	0
Materials and Supplies	2	6	8
Services of Other Departments	3,627	3,470	1,782
Recaptured Commission Expense	1,670	1,578	1,469
Other Services	36,168	38,691	38,994
Total	**$ 48,440**	**$ 49,881**	**$ 47,395**

Investment Section

STATEMENT FROM THE CHIEF INVESTMENT OFFICER

1 - Overview

In the fiscal year ended June 30, 2019, the investments of the San Francisco Employees Retirement System (SFERS) gained 8.18%, outperforming our peers' median return of 5.39%. Our returns this year ranked in the top 1% compared to our peers' universe of public pension plans with over $1 billion in assets. Our outperformance was generated by strong manager selection throughout the portfolio. The value of our portfolio rose from $24.3 billion one year ago to $25.9 billion at June 30, 2019.

SFERS investment objective is to maximize long-term return on investments within prudent guidelines. Further, SFERS seeks to achieve both high long-term returns and reduce the impact caused by a major decline in the equity market. We seek to achieve both objectives through an asset allocation that reduces equity market risk and to outperform the markets through manager selection. In manager selection, we emphasize unique, niche and specialist strategies, which we believe outperform broad based, generalist strategies. Our approach is augmented by an extra emphasis on investing in science, technology, and innovation, and a comprehensive approach to risk management and ESG, all backed by a talented investment team.

Beginning in 2014, SFERS began instituting changes in asset allocation, strategy, research, risk management, and the investment team. The results have been encouraging. Over the past one-year SFERS returns ranked in the top 1% versus peers, and over the past 3 and 5 years our returns ranked in the top 4% and 3%, respectively. Our high returns versus peers has been generated while also reducing risk. Earlier in the decade the volatility of our returns ranked closer to the median. The past three years our volatility has ranked in the lowest 11% of our peers.

2 - Asset Allocation

In September 2017 the Retirement Board approved the strategic asset allocation policy summarized in Table 1.

Table 1 - Strategic Asset Allocation

Public Equity	31%	Real Assets	17%	Private Credit	10%
Private Equity	18%	Absolute Return	15%	Liquid Credit	9%
Growth Assets	49%	Diversifying Assets	32%	Income Assets	19%

The S&P 500 has earned 10.1% annualized since 1926. However, public equity periodically experiences large declines. Since 1960, the S&P 500 has lost 34% or more on five occasions and three times it has lost 48% or more. A large loss in plan assets would significantly reduce our funded status and likely lead to higher employee and employer contributions. To reduce the potential for such a development, our strategy emphasizes earning high long-term returns while also reducing the impact caused by a large market decline.

The actual asset allocation as of June 30, 2019 is found at the end of this section in the Summary of Investments and Performance. The implementation of the strategic asset allocation is complete except for private credit which is expected to take another three to four years.

3 - Investment Performance

This section highlights SFERS investment returns on an absolute basis and compared to our peers. Our peer universe is public pension plans with assets over $1 billion. All returns are annualized and net of fees.

- **Total Plan Returns**

  In fiscal year ended June 30, 2019, SFERS investments returned 8.18%, outperforming the median return of our peer universe of 5.39%. Table 2 shows that SFERS returns consistently rank near the top, posting returns in the top 1% over the past one year and in the top 4% and top 3% over the past 3 and 5 years, respectively.

Table 2 - Total Fund Returns

	SFERS (%)	Peer Median (%)	Value Added (%)	Rank (%)	No. of Peers
1 Year	8.18	5.39	2.79	1	77
3 Years	11.03	8.72	2.31	4	77
5 Years	7.56	5.64	1.92	3	73
10 Years	10.43	9.00	1.43	3	65
20 Years	7.02	5.66	1.36	1	47

Table 3 - SFERS Investment Performance for Periods Ending June 30, 2019

Description	1 Year Return (%)	Rank	3 Years Return (%)	Rank	5 Years Return (%)	Rank	10 Years Return (%)	Rank	20 Years Return (%)	Rank
Total Fund	8.18	1	11.03	4	7.56	3	10.43	3	7.02	1
Peer Median	5.39		8.72		5.64		9.00		5.66	
Value Added vs Peers	2.79		2.31		1.92		1.43		1.36	
Public Equity	5.63	14	12.64	9	6.77	22	11.24	38	5.62	18
Peer Median	3.94		11.54		6.25		10.92		4.98	
Value Added vs Peers	1.69		1.10		0.52		0.32		0.64	
Private Equity	18.39	1	16.07	22	14.88	18	15.54	7	14.16	12.25
Peer Median	10.85		12.47		10.69		11.17		9.53	
Value Added vs Peers	7.54		3.60		4.19		4.37		2.72	
Real Assets	9.32	13	13.02	9	12.54	1	10.05	1	8.81	21
Peer Median	4.44		4.75		1.97		6.37		7.18	
Value Added vs Peers	4.88		8.27		10.57		3.68		1.63	
Absolute Return	3.03	31	5.17	47						
Peer Median	1.80		4.79							
Value Added vs Peers	1.23		0.38							
Private Credit	9.42	5	11.80	1	9.14	14	13.63	1		
Peer Median	5.97		7.34		6.26		9.94			
Value Added vs Peers	3.45		4.46		2.88		3.69			
Liquid Credit	7.22	48	3.29	71	2.99	54	6.31	19	5.85	8
Peer Median	7.14		4.08		3.03		5.42		5.63	
Value Added vs Peers	0.08		-0.79		-0.04		0.89		0.22	

Source: Tables 2-9, 11-12, and 15: BNY Mellon for SFERS returns; NEPC for median peer returns and rankings.

Notes: Peer universe for Real Assets is the InvMetrics Total Funds Public and Private Real Estate Universes. Peer Universe for Private Equity is the InvMetrics Total Funds Private Equity Universe. Peer Universe for Private Credit is the InvMetrics All DB Plans greater than $1.0 bn Fixed Income Universe. Peer universe for all other asset classes and the Total Fund are their respective universes within the InvMetrics All DB Plans greater than $1.0 bn group. Returns of the Absolute Return program are since inception (October 2016), a period of 2.75 years.

Asset Class Returns

Public Equity

Several years ago, SFERS began an initiative to increase the excess returns in our Public Equity portfolio by investing in managers with unique strategies and specialist skill, such as in the life sciences, technology, innovation, sustainability, quantitative strategies, China, and others. As shown in Table 4, the results have been encouraging, as our excess returns (value added) and our peer ranking have moved higher.

Table 4 - Public Equity Returns

	SFERS (%)	Peer Median (%)	Value Added (%)	Rank (%)
1 Year	5.63	3.94	1.69	14
3 Years	12.64	11.54	1.10	9
5 Years	6.77	6.25	0.52	22
10 Years	11.24	10.92	0.32	38
20 Years	5.62	4.98	0.64	18

Private Equity

In the fiscal year ended June 30, 2019, our Private Equity portfolio returned 18.39%, outperforming our median peer return of 10.85% and ranking in the top 1%. Over the past five years, our Private Equity strategy has posted returns of 14.88% compared to our peer universe return of 10.69%, outperforming by 4.19%. Over the past 10 years, SFERS Private Equity portfolio has returned 15.54%, outperforming our peers by 4.37% and ranking in the top 7%. Table 5 shows that SFERS has posted high returns investing in private equity across all time periods.

Table 5 - Private Equity Returns

	SFERS (%)	Peer Median (%)	Value Added (%)	Rank (%)
1 Year	18.39	10.85	7.54	1
3 Years	16.07	12.47	3.60	22
5 Years	14.88	10.69	4.19	18
10 Years	15.54	11.17	4.37	7
20 Years	12.25	9.53	2.72	1

Real Assets

For the fiscal year ended June 30, 2019, our Real Assets portfolio returned 9.32%, more than doubling our peers whose median return was 4.44%. For the past five years, our Real Assets portfolio posted returns of 12.54% while our peers returned 1.97%, an outperformance of 10.57% annualized. Table 6 shows that over the past five years SFERS Real Assets portfolio ranks in the top 1% compared to our peers.

Table 6 - Real Assets Returns

	SFERS (%)	Peer Median (%)	Value Added (%)	Rank (%)
1 Year	9.32	4.44	4.88	13
3 Years	13.02	4.75	8.27	9
5 Years	12.54	1.97	10.57	1
10 Years	10.05	6.37	3.68	1
20 Years	8.81	7.18	1.63	21

Absolute Return

For the fiscal year ended June 30, 2019, the Absolute Return portfolio returned 3.03%, outperforming our peers who returned 1.80%. Since the inception of the program in October 2016 our Absolute Return portfolio has edged our peers 5.17% vs. 4.79%. Over the same period, SFERS Absolute Return program has topped the HFRI Fund of Funds Index by 5.17% v. 3.78%.

Table 7 - Absolute Return

	SFERS (%)	Peer Median (%)	Value Added (%)	Rank (%)
1 Year	3.03	1.80	1.23	31
2.75 Years	5.17	4.79	0.38	47

Private Credit

SFERS Private Credit portfolio returned 9.42% in Fiscal Year 2019, outperforming our median peer return of 5.97% and ranking in the top 5%. Over the past 3, 5, and 10 years, our Private Credit strategy has posted annualized outperformance ranging from 2.88% to 4.46%, and peer rankings in the top 1% over the past 3 years, in the top 14% over the past 5 years, and the top 1% for the past 10 years.

Table 8 - Private Credit Returns

	SFERS (%)	Peer Median (%)	Value Added (%)	Rank (%)
1 Year	9.42	5.97	3.45	5
3 Years	11.80	7.34	4.46	1
5 Years	9.14	6.26	2.88	14
10 Years	13.63	9.94	3.69	1

Fixed Income

The objectives of SFERS Fixed Income strategy are to provide capital preservation, income, and liquidity. Here, we are more interested in making sure the objectives for our Fixed Income investments are met rather than outperforming our peers.

In the fiscal year ended June 30, 2019, our Fixed Income portfolio returned 7.22%, slightly edging our peers return of 7.14%. Our three and five-year returns have been 3.29% and 2.99%, respectively. In 2014 we anticipated low bond returns and began reducing our allocation to Fixed Income. Our allocation to Fixed Income has declined from 27% five years ago to 10% today, with a long-term strategic allocation of 9%.

Table 9 - Fixed Income Returns

	SFERS (%)	Peer Median (%)	Value Added (%)	Rank (%)
1 Year	7.22	7.14	0.08	48
3 Years	3.29	4.08	-0.79	71
5 Years	2.99	3.03	-0.04	54
10 Years	6.31	5.42	0.89	19
20 Years	5.85	5.63	0.22	8

4- Performance Analysis

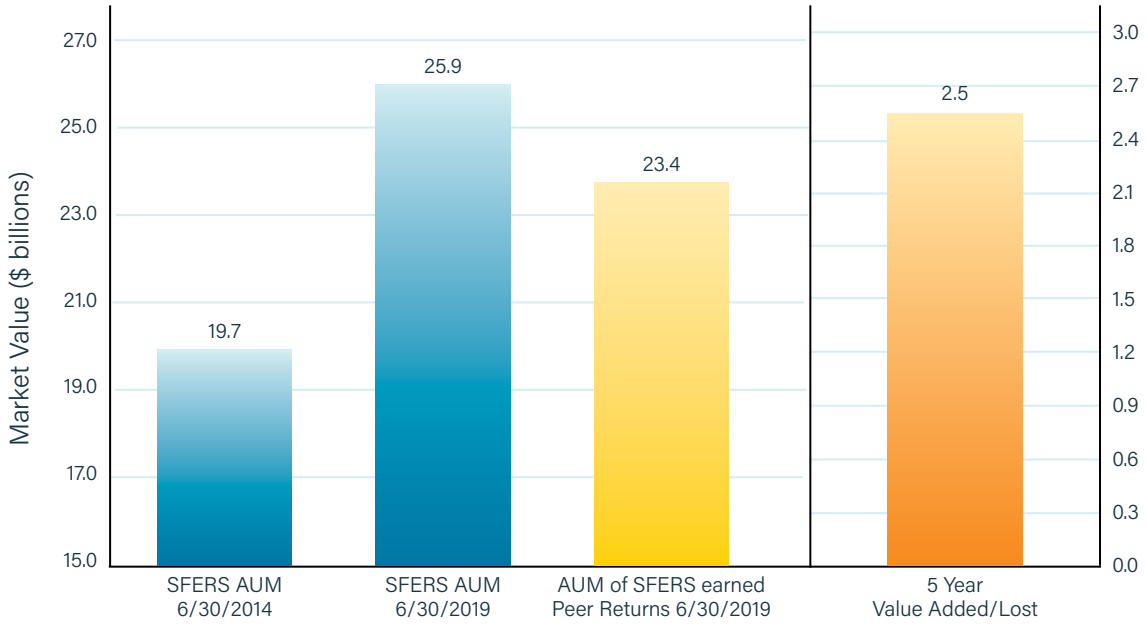
SFERS investments returned 8.18% this past year versus our peers' median return of 5.39%, an outperformance of 2.79%, ranking in the top 1% compared to our peer universe. Our excess returns were generated by strong manager selection throughout the portfolio, as follows:

- Private Equity outperformed our median peer by 7.54%
- Real Assets outperformed our median peer by 4.88%
- Private Credit outperformed our median peer by 3.45%
- Public Equity outperformed our median peer by 1.69%
- Absolute Return outperformed our median peer by 1.23%

Value Added

As shown earlier in Tables 1 and 2, the past five years SFERS has posted annualized returns of 7.56% while our median peer returned 5.64%. In terms of dollars, our returns of 7.56% have added $2.5 billion in value compared to if SFERS had earned the median return of our peers of 5.64%.

Chart 1 – Value Added: 5 Years Ended June 30, 2019



Notes: Peer universe represented by InvestorForce's universe of Public Defined Benefit Plans with more than 1 billion in assets. "Assuming Peer Return" Market Value adjusted for SFERS' net flows.

The value added of $2.5 billion over the past five years contrasts with the five-year period from 2009 to 2013 when SFERS underperformed the median peer return by a total of $400 million. The following initiatives undertaken by SFERS have resulted in $2.5 billion of outperformance over the past five years:

Investment Team	Hired an investment team with distinguished credentials and insight
Asset Allocation	Enhanced our diversification and ability to perform well in different markets
Investment Strategy	Designed a unique strategy for each asset class
Manager Research	Formed more than 50 new partnerships with top rated managers
Due Diligence	Enhanced our due diligence research in asset allocation and selection
Risk Management	Implemented advanced tools to measure, monitor and report risk
Support	Staff has received extraordinary support from our Board and Executive Director

In addition to evaluating our performance versus other defined benefit plans, another way to measure our returns is versus a passive portfolio consisting of 60% global public equity and 40% U.S. bonds. As shown in Table 10, this past year SFERS outperformed 60/40 by 2.86% and over the past five years we topped a 60/40 portfolio by 3.44% annualized.

Table 10 - SFERS Value Added vs. 60% Stock and 40% Bonds

	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years	30 Years
SFERS Total Fund	8.18	11.03	7.56	10.43	7.80	7.02	8.81
60/40 Benchmark	5.32	7.32	4.12	7.24	6.00	5.22	8.69
Outperformance	2.86	3.71	3.44	3.19	1.80	1.80	0.12

Source: SFERS Total Fund, BNY Mellon; 60/40 Benchmark: Comprises 60% MSCI All Country World Index from January 1999 through current (MSCI World Index prior to 1999) and 40% Bloomberg Barclays US Aggregate Bond Index.

Risk-Adjusted Returns

In addition to evaluating our performance on a total return basis and versus our peers, SFERS also evaluates our risk-adjusted returns. Three measures of risk-adjusted returns are Standard Deviation, the Sharpe Ratio, and the Sortino Ratio.

Standard Deviation calculates the volatility of returns, with lower rankings indicating less volatility and less risk. Sharpe Ratio measures risk-adjusted returns, with higher ranks reflecting higher returns in relation to the amount of risk incurred. The Sortino Ratio computes an investor's risk-adjusted returns in down markets, with higher rankings indicating better returns in down markets.

SFERS high returns versus peers has been generated while also taking lower risk and posting high risk-adjusted returns. Our Standard Deviation over the past 3 and 5 years ranks in the lowest 11% and lowest 25%, respectively. We also recorded high risk-adjusted returns, as measured by Sharpe and Sortino Ratios, both of which rank in the top 5% over the past 3 and 5 years.

Table 11 - Risk-Adjusted Returns 3 Years Ended June 30, 2019

	Standard Deviation	Rank	Sharpe Ratio	Rank	Sortino Ratio	Rank
SFERS Total Fund	4.96%	11	1.94	3	2.27	2
Policy Benchmark Total Fund	6.57%	64	1.27	37	1.42	32
InvMetrics Public DB > $1 Billion Median	6.04%	50	1.19	50	1.34	50

Table 12 - Risk-Adjusted Returns 5 Years Ended June 30, 2019

	Standard Deviation	Rank	Sharpe Ratio	Rank	Sortino Ratio	Rank
SFERS Total Fund	5.75%	25	1.16	4	1.63	5
Policy Benchmark Total Fund	7.07%	69	0.87	28	1.24	19
InvMetrics Public DB > $1 Billion Median	6.55%	50	0.72	50	0.96	50

We also evaluate our risk-adjusted performance versus a 60/40 allocation of global stocks and U.S. bonds. Tables 13 and 14 show that SFERS has incurred 25-30% less volatility and posted much higher risk-adjusted returns versus a 60/40 allocation over the past 3 and 5 years, respectively.

Table 13 - Risk-Adjusted Returns 3 Years Ended June 30, 2019

	Standard Deviation	Sharpe Ratio	Sortino Ratio
SFERS Total Fund	4.96%	1.94	2.27
Policy Benchmark Total Fund	6.57%	1.27	1.42
60/40 Benchmark	7.45%	0.79	1.28

Table 14 - Risk-Adjusted Returns 5 Years Ended June 30, 2019

	Standard Deviation	Sharpe Ratio	Sortino Ratio
SFERS Total Fund	5.75%	1.16	1.63
Policy Benchmark Total Fund	7.07%	0.87	1.24
60/40 Benchmark	7.70%	0.42	0.88

Source Tables 13 and 14: SFERS Total Fund, BNY Mellon; 60/40 Benchmark: Comprises 60% MSCI All Country World Index from January 1999 through current (MSCI World Index prior to 1999) and 40% Bloomberg Barclays US Aggregate Bond Index.

5- Investment Strategy

To meet our return objectives of earning high long-term returns and reducing the impact caused by a large short-term market decline, SFERS has a differentiated investment strategy in both asset allocation and manager selection.

Asset Allocation

SFERS has less exposure to Public Equity and Fixed Income and more exposure to Private Equity, Real Assets, Private Credit, and Absolute Return, than our peers. Our asset allocation reduces the impact caused by a large loss in the equity markets, smooths our investment returns, enhances diversification, reduces our dependence on the markets to provide us with good returns, and improves our potential to earn excess returns above the market returns through good manager selection.

Public Equity

The role of Public Equity is to provide high long-term returns and liquidity. Public Equity consists of investments in publicly traded stocks in the U.S., international developed markets, and emerging markets.

We have a 31% strategic allocation to Public Equity, which according to NEPC, the General Investment Consultant to the Retirement Board, is 19% lower than our peers whose average is 50%. A lower allocation to Public Equity reduces the potential for a large loss to our total portfolio while still providing exposure to high returns over the long-term.

Private Equity

The role of Private Equity is to provide high long-term returns and superior risk-adjusted returns than Public Equity. Private Equity primarily consists of buyouts, venture capital, and growth capital. Additional strategies include special situations, co-investments and secondary transactions.

We have a strategic allocation to private equity of 18%, much higher than our peers' average of 10%. Our higher allocation is due to our talented investment team, supportive Retirement Board and Executive Director, reputation with private equity managers, success investing in Private Equity, and the potential to earn high excess returns through manager selection. SFERS Private Equity portfolio has meaningfully outperformed Public Equity, as noted in Table 15.

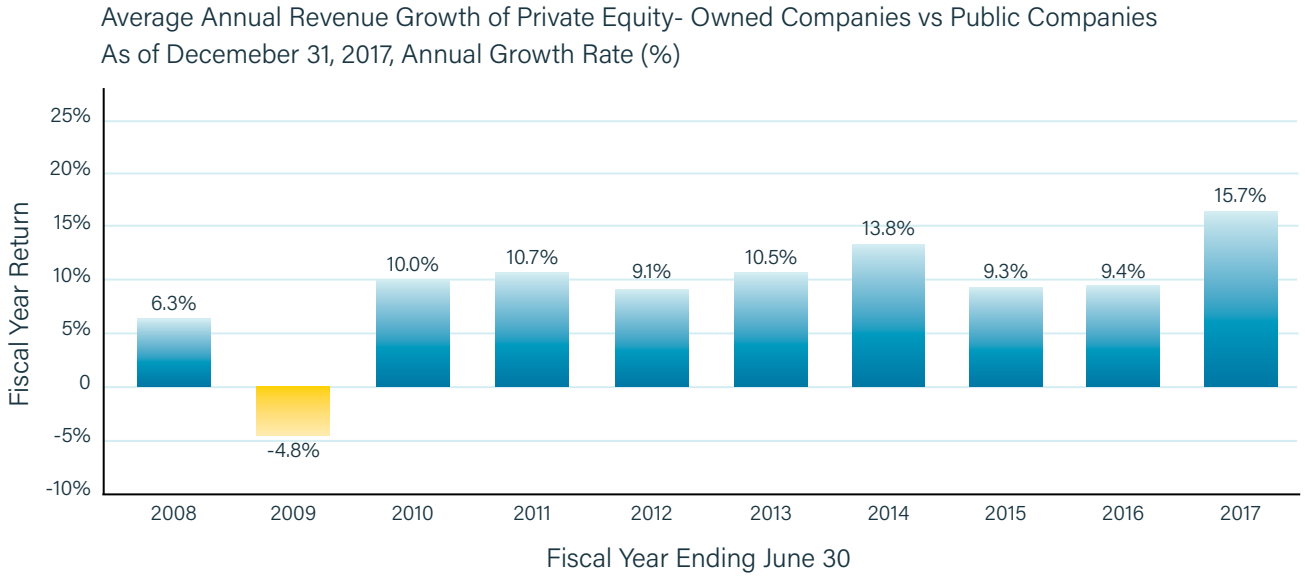
Table 15 - SFERS Private Equity

	1 Year	3 Years	5 Years	10 Years	20 Years
SFERS Private Equity	18.39%	16.07%	14.88%	15.54%	12.25%
Private Equity Peers	10.85%	12.47%	10.69%	11.17%	9.53%
SFERS Public Equity	5.63%	12.64%	6.77%	11.24%	5.63%
Public Equity Peers	3.94%	11.54%	6.25%	10.92%	4.98%

Another reason why SFERS allocation to Private Equity is considerably larger than our peers is because private businesses have consistently posted higher revenue growth than publicly traded companies. Chart 2 shows that private companies have averaged just over 3% a year higher revenue growth over the past decade. Further, the spread has increased to 4% annually the past six years.

Chart 2 – Private Companies Revenue Growth Exceeds the Revenue Growth of Public Companies

Private equity companies grew revenue faster than publics in each year
Revenue growth has averaged 11.1% since the 2009 recession



Source: Cambridge Associates.
Note: Green bar and blue diamond represent revenue growth for private and public companies, respectively.

Real Assets

The role of Real Assets is to provide strong returns, enhance diversification, and inflation protection. Real assets investments consist of private real estate, natural resources, renewable energy, communications infrastructure such as cell towers, and intangible assets such as music royalties.

We have a strategic allocation to Real Assets of 17%, which is much higher than our peers' average of about 8%. Our allocation is higher to enhance portfolio diversification, utilize the large opportunity set in the space, to provide inflation protection, and due to the potential to earn high excess returns thru manager selection. Our Real Assets strategy places greater emphasis on earning high returns than income.

Absolute Return

The role of Absolute Return is to meaningfully outperform when stocks experience a large loss, outperform bonds, provide better liquidity than private investments, incur low net market exposure, and post high risk-adjusted returns. Overall, its role is to reduce total portfolio volatility and provide more consistent returns.

Whereas the returns of long-only stocks and bonds are determined by market direction, Absolute Return is less dependent on directionality. That's because Absolute Return invests both long and short, and invests in more than just stocks and bonds, to include put and call options, currencies, interest rates, and macroeconomic trends and forecasts.

Our 15% allocation to Absolute Return is higher than our peers' average of 5% though it is lower than the 20% average of endowments and foundations. Our allocation is higher than our public plan peers due to our ability to

access top performing managers, the large size of the investment opportunity set, the potential to add significant alpha through manager selection, to reduce total portfolio volatility, our expectation that Absolute Return will earn higher returns than bonds, earn higher risk-adjusted returns, to provide liquidity, and earn much better returns than stocks in large market declines.

Private Credit

The role of Private Credit is to provide high cash flow, strong returns, and to return capital to us more quickly than other private markets investments such as Private Equity and Real Assets. Private Credit includes investments in senior debt, direct lending, mezzanine financing, specialty finance, real estate lending, and distressed debt.

Our strategic allocation to Private Credit is 10%. NEPC estimates our peers on average have 3-5% invested in Private Credit. Our higher allocation is driven by Private Credit's high cash yield, the substantial size of the investment universe, the potential to earn significant alpha through manager selection, and its higher expected returns compared to Fixed Income.

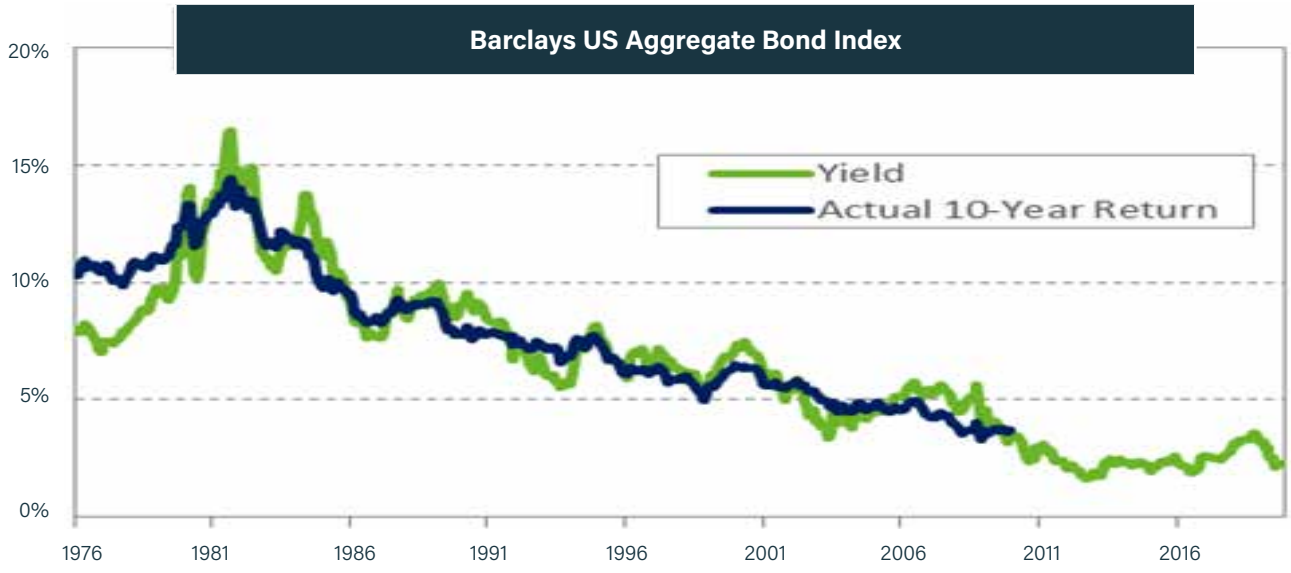
Fixed Income

The Fixed Income portfolio consists of investments in publicly traded bonds. Approximately two-thirds of our Fixed Income portfolio is allocated to U.S. Treasuries, with the remainder invested in Liquid Credit strategies such as high yield corporate bonds, emerging market debt, commercial mortgages, and other asset-backed securities.

The role of U.S. Treasuries is to provide protection in down markets, liquidity, and income. The role of Liquid Credit is to earn a higher return and cash yield than U.S. Treasuries.

Our strategic allocation to Fixed Income of 9% is less than our peers average of 25%, due to low expected returns. Chart 3 shows that existing U.S. Treasury bond yields are closely linked to future 10-year bond returns. The chart also shows that existing U.S. Treasury bond yields are around 2%. SFERS could pick up some extra return with still low credit risk by investing more in high quality U.S. bonds, but NEPC estimates that high quality core bonds over the next 5 to 7 years will still earn only 3.0% annualized.

Chart 3 – Existing Bond Yields and Subsequent 10-Year Bond Returns



Source: NEPC.

Characteristics of Each Asset Class

Table 16 summarizes the characteristics of SFERS asset classes. Each asset class provides important traits to enhance our dual objectives of maximizing long-term returns while reducing the impact of a large loss in market returns.

Table 16 - Characteristics of Each Asset Class

Asset Type	Asset Class Returns	Volatility	Diversification	Liquidity	Yield	Risk-Adjusted Returns	Beta Exposure	Alpha Potential
Public Equity	High	High	Low	High	Low	Moderate	High	High
Private Equity	Very High	High	Low	Very Low	Very Low	Moderate	High	Very High
Real Assets	Moderate	High	Moderate	Very Low	Low	Moderate	Moderate	Very High
Absolute Return	Moderate	Low	High	Moderate	Low	High	Low	High
Private Credit	Moderate	Moderate	Moderate	Low	High	Moderate	Moderate	High
Fixed Income	Low	Low	High	High	Moderate	Moderate	Low	Low

Note: Beta measures systematic risk to public equity. Alpha measures excess returns above median peer returns and benchmarks through manager selection.

Manager Selection

As noted earlier, SFERS has outperformed our peers by 1.92% annualized over the past 5 years, adding $2.5 billion in value compared to the median peer return. NEPC, the General Investment Consultant to the Retirement Board, reports that essentially all of SFERS excess returns have been achieved through manager selection.

Earning high excess returns through manager selection is intentional on SFERS part. We seek managers with unique, significant, and sustainable competitive advantages, and with whom there is a high alignment of interests. We tend to hire managers with specialty skill and managers with unique or niche strategies. We have formed more than 80 new manager relationships the past five years. These new relationships have been instrumental in posting our recent outperformance.

Table 17 - SFERS Excess Returns vs. Median Peer

	1 Year	3 Years	5 Years	10 Years
SFERS	**2.79%**	**2.31%**	**1.92%**	**1.43%**
Public Equity	1.69%	1.10%	0.52%	0.32%
Private Equity	7.54%	3.60%	4.19%	4.37%
Real Assets	4.88%	8.27%	10.57%	3.68%
Absolute Return	1.23%	0.38%		
Private Credit	3.45%	4.46%	2.88%	3.69%
Fixed Income	0.08%	-0.79%	-0.04%	0.89%

Source: NEPC.

Risk Management

Managing risk is engrained throughout our investment process in both asset allocation and manager selection.

Asset allocation modeling requires extensive data gathering, macroeconomic inputs, valuation metrics, benefit payments, cash flow and liquidity analysis, statistical modeling, forecasting estimates, historical and scenario-based stress testing, and the judgement of our senior investment staff and our investment consultants.

In manager selection, the due diligence process requires 100 to 500 hours of work for each investment, lower amounts for certain reups with whom we have a long history and more hours for newer strategies. Manager weightings are determined by modeling managers in a portfolio context. We are also diligent after managers are hired, speaking with them and meeting in person on a regular basis.

In recent years SFERS has implemented comprehensive risk management tools. These tools have enhanced our understanding of the impact different market environments, especially major down markets, could have on our returns, funded status, and liquidity.

ESG Platform

In recent years SFERS has implemented numerous actions to strengthen its approach to managing Environmental, Social and Governance (ESG) issues across the Trust. These actions have included:

1 - Created a dedicated ESG team to develop and implement SFERS' ESG efforts.

2 - Introduced a three-pillar ESG Platform, focusing on (1) Active Ownership, (2) ESG Integration into Investment Management, and (3) Collaboration & Communication on ESG Matters.

3 - Designed a framework for evaluating investment risks related to climate change, which has been recognized nationally by large, prominent peers.

4 - Joined the United Nation-supported Principles for Responsible Investing (PRI) and integrated the Principles throughout our investment process.

5 - Joined a variety of shareholder initiatives such as the Ceres Investment Network on Climate Risk & Sustainability, the Climate Action 100+, the Thirty Percent Coalition, and the Principles for a Responsible Civilian Firearms Industry.

6 - Begun to integrate ESG considerations in manager selection across the entire SFERS investment portfolio.

7 - Hired a variety of ESG-focused managers, including a public equity manager with a strong emphasis on ESG incorporation, an indexed strategy that has a 50% reduced carbon footprint, several private renewable energy strategies, and a private equity impact investing strategy.

8 - Increased direct shareholder engagement and advocacy with companies through letter writing, in-person meetings, and collaboration with other shareholders.

9 - Invested significantly in the Life Sciences sector, our second largest sector allocation behind only Technology, which we believe creates positive impacts by improving human health.

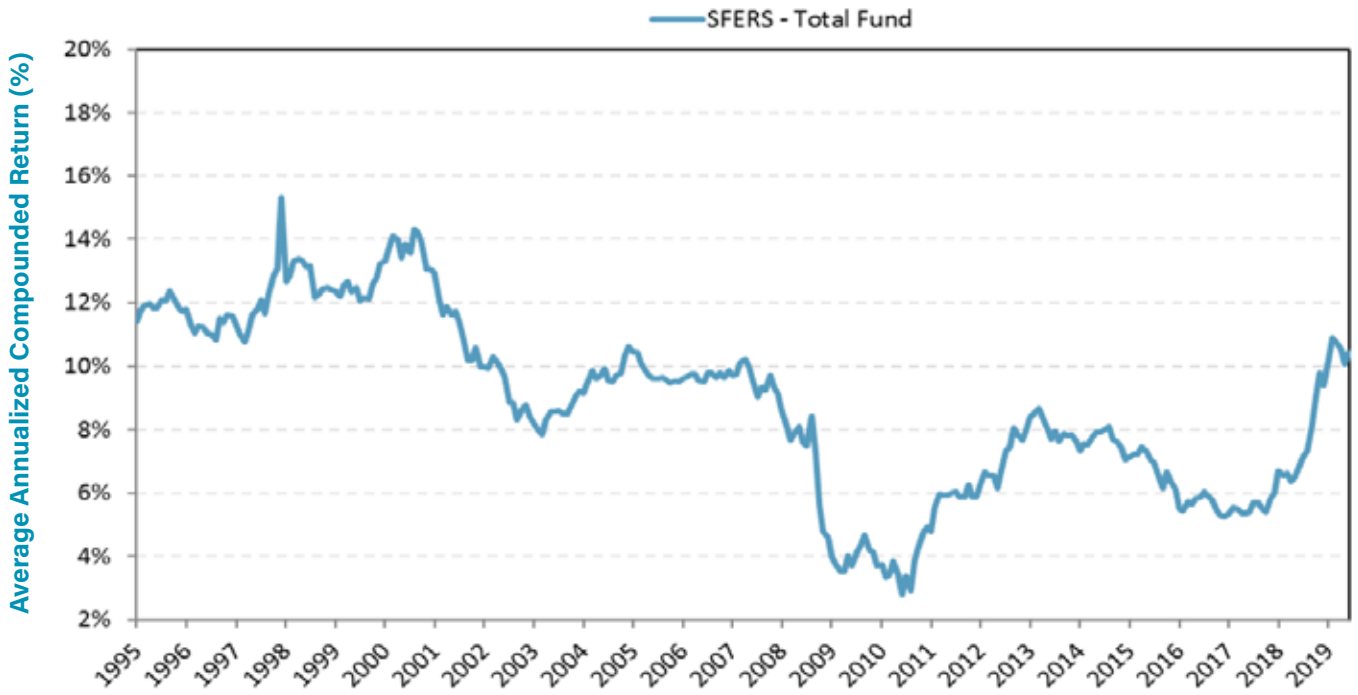
6 – Historical Returns

Long-Term Returns

Chart 4 shows that our rolling 10-year returns declined sharply from 2007 to 2018, due to the large loss we experienced in the Global Financial Crisis. Our rolling 10-year returns have moved higher recently, as the GFC is no longer in the 10-year time frame and due to the current economic expansion which is the longest in history.

In 1982 valuations were very low, which combined with a strong economy enabled the S&P 500 to post 18% annualized returns from 1983 to 1999. However, by year 2000 valuations were at historic highs. In the 2000's, high valuations plus two major bear markets pushed our subsequent rolling 10-year returns to the low single digits. As Chart 4 shows, returns over periods even as long as 10 years can sometimes be very low.

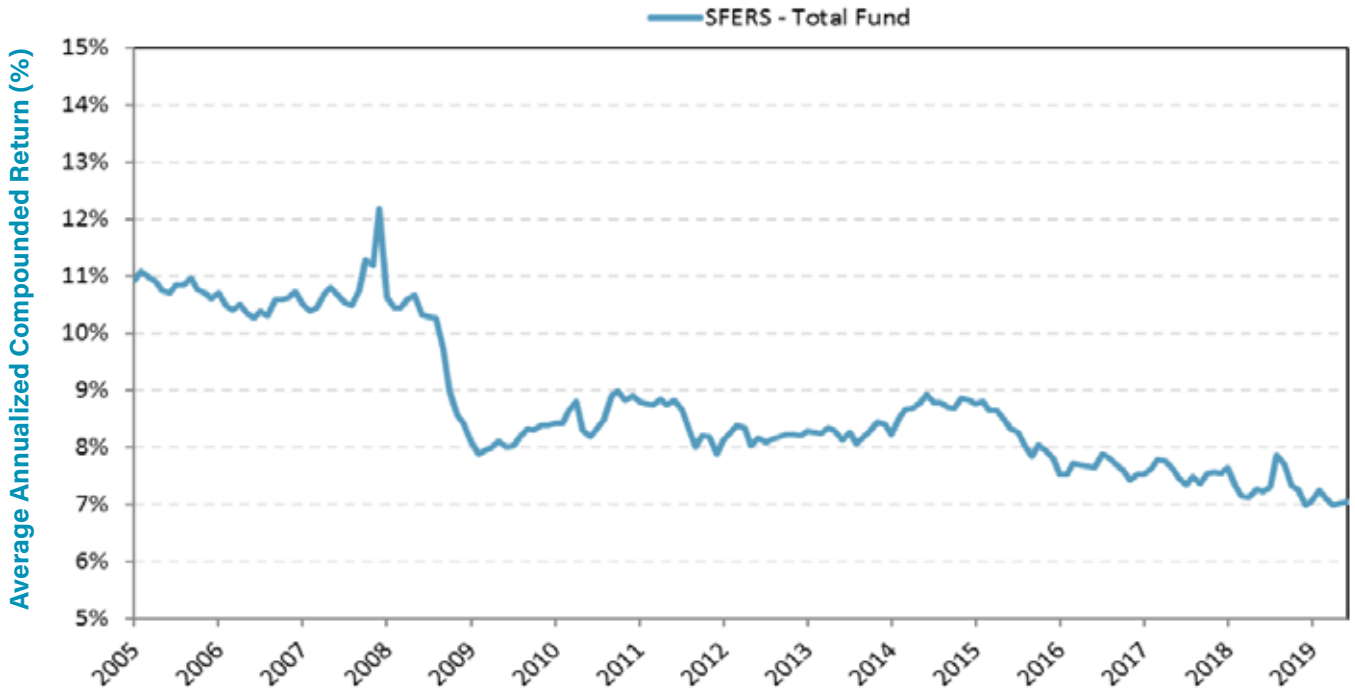
Chart 4 – SFERS Rolling 10-Year Returns (July 1, 1985 to June 30, 2019)



Source: BNY Mellon.

Chart 5 shows our rolling 20-year returns have also declined, but they have been much more consistent than our rolling 10-year returns. Charts 4 and 5 show that success in investing requires a long-time horizon, even as much as 20 years.

Chart 5 – SFERS Rolling 20-Year Returns - (July 1, 1985 to June 30, 2019)



Source: BNY Mellon.

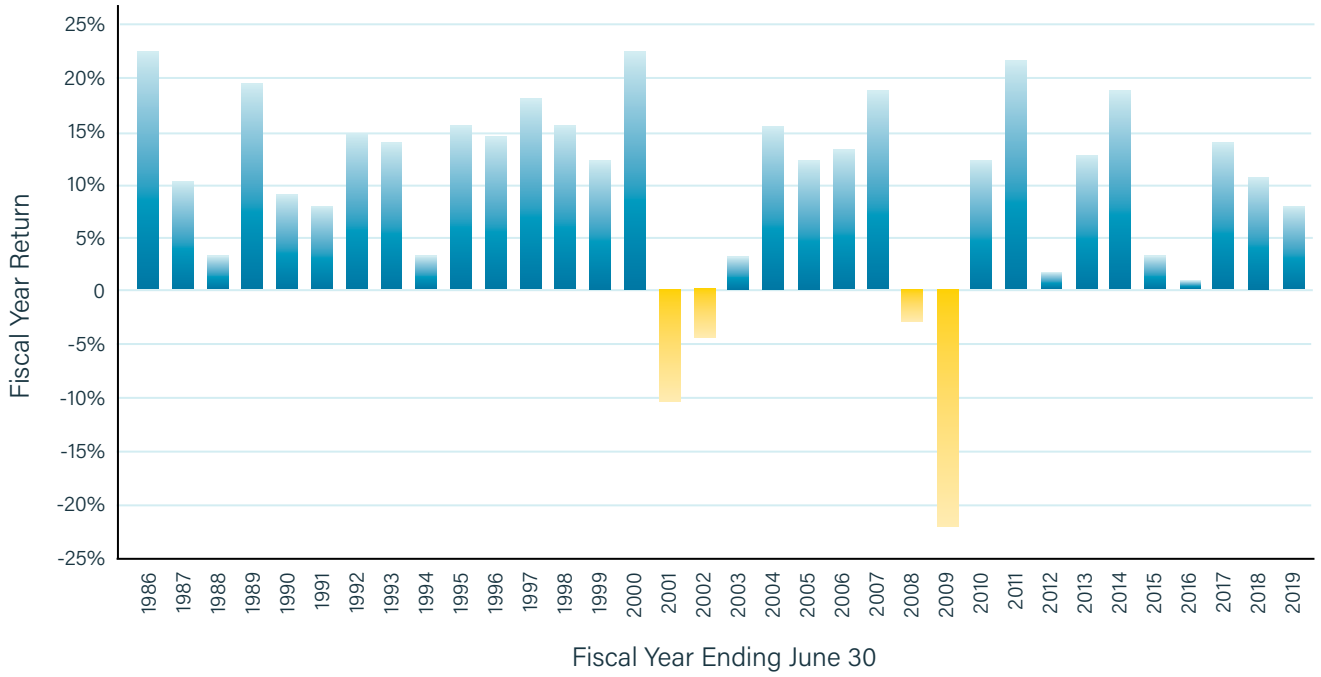
Fiscal Year Returns

Chart 6 shows SFERS fiscal year returns since 1985-86. The highlights are as follows:

- SFERS has recorded positive returns in 30 of the past 34 fiscal years.
- SFERS experienced negative returns four times in the past 34 years, all of which occurred during two major bear markets involving the bursting of the internet bubble and the Global Financial Crisis (GFC).
- SFERS has lost more than 10.5% just once, in fiscal year ended June 2009 when we lost more than 22%.
- SFERS has returned 7.4% or higher in 24 of the past 34 years.
- SFERS has posted returns of 10% or higher in 21 of the past 34 years.

Our historic returns have been backed by the long bull market throughout the 1980's and '90's, a strong market from 2003 to 2006, and the current bull market which is the longest in history.

Chart 6 – SFERS Fiscal One-Year Returns



In preparation for the significant changes SFERS will experience in the next 10 and 20 years, in 2019 the Investment Staff furnished the Retirement Board with an initial draft of our Long-Term Strategic Plan. The Strategic Plan increases our allocation to co-investments to 20% of Trust Assets over the next 10 years. In 2020 Staff will formalize our Strategic Plan for achieving long-term success as SFERS liabilities and net cash outflows increase significantly over the next decade and beyond.

Summary

The objective of the SFERS Trust is to achieve high long-term returns while reducing the impact a large loss in the equity markets would have on our funded status. Staff pursues its dual objectives by:

1 - Emphasizing an asset allocation that reduces equity market risk and increases diversification,

2 - Manager selection and co-investments to meaningfully outperform the market return, and,

3 - Risk management, to manage portfolio risks and ensure that our pursuit of returns and acceptance of risks are intentional. All three components of our strategy are backed by deep research.

As our liabilities and cash outflows rise significantly over the next decade and beyond, we will experience new challenges amidst an unpredictable market. Meanwhile, the SFERS investment staff will invest to continue posting returns that rank highly on both an absolute basis and on a risk-adjusted basis compared to our public plan peers.

Respectfully submitted,

William J. Coaker, Jr.
Chief Investment Officer

SUMMARY OF INVESTMENTS & PERFORMANCE

As of June 30, 2019, approximately 95% of SFERS assets were managed by external managers. The remainder of SFERS assets are managed internally in index funds and co-investments.

Table 18 - Asset Allocation as of June 30, 2019 and June 30, 2018

	2019		2018	
	Market Value ($thousands)	Weight (%)	Market Value ($thousands)	Weight (%)
Public Equity	$ 8,970,143	34.7	$ 10,236,408	42.1
Private Equity	5,356,449	20.7	4,094,001	16.8
GROWTH ASSETS	**14,326,592**	**55.5**	**14,330,410**	**58.9**
Real Assets	4,284,504	16.6	3,535,531	14.5
Absolute Return	3,575,151	13.8	2,623,813	10.8
DIVERSIFYING ASSETS	**7,859,655**	**30.4**	**6,159,344**	**25.3**
Fixed Income	2,589,930	10.0	3,148,152	12.9
Private Credit	837,775	3.2	556,135	2.3
INCOME GENERATING ASSETS	**3,427,705**	**13.3**	**3,704,287**	**15.2**
Cash	210,708	0.8	116,596	0.5
Total Investment Portfolio	**$ 25,824,660**	**100.0%**	**$ 24,310,636**	**100.0%**

Investment portfolio totals are net of management fees and expenses and therefore does not track to pension net assets reported in SFERS audited financial statements. Source: BNY Mellon.

Table 19 - Investment Performance vs. Benchmarks for periods ending June 30, 2019

Description	1-Year	3-Years	5-Years	10-Years	20-Years
Public Equity	5.63	12.64	6.77	11.24	5.62
Public Equity Policy Benchmark [1]	4.56	11.42	6.03	10.58	5.26
Private Equity	18.39	16.07	14.88	15.54	12.25
Private Equity Policy Benchmark [2]	10.27	1703	14.56	19.52	10.97
Real Assets	9.32	13.02	12.54	10.05	8.81
Real Assets Policy Benchmark [3]	3.50	6.67	7.20	7.95	8.76
Absolute Return	3.03	5.17	N/A	N/A	N/A
Absolute Return Policy Benchmark [4]	7.37	4.25			
Fixed Income	7.22	3.29	2.99	6.31	5.85
Fixed Income Policy Benchmark [5]	7.07	2.60	3.04	4.30	5.10
Private Credit	9.42	11.80	9.14	13.63	N/A
Private Credit Policy Benchmark [6]	7.98	7.88	5.91	9.06	
Cash	2.24	1.54	1.01	0.94	2.04
Total Fund	**8.19**	**11.03**	**7.57**	**10.43**	**7.02**
Total Fund Policy Benchmark [7]	**6.40**	**9.77**	**7.00**	**10.17**	**6.62**

Source: BNY Mellon

1. Public Equity Policy consists of 100% MSCI ACWI IMI (ND) from 10/1/2012 through current, 47% MSCI ACWI IMI Ex-US (ND) and 53% Russell 3000 from 10/1/2008 through 9/30/2012, 42% MSCI ACWI Ex-US (ND) and 58% Russell 3000 from 9/1/2005 through 9/30/2008, 33% MSCI ACWI Ex-US (ND) and 67% Russell 3000 from 10/1/2002 to 8/31/2005, 36% MSCI ACWI Ex-US (ND) and 64% Russell 3000 from 4/1/2000 to 9/30/2002, 36% MSCI EAFE (ND) and 64% Russell 3000 from 12/1/1989 to 3/31/2000.
2. Private Equity Policy consists of 25% MSCI ACWI Ex-US (ND) and 75% Russell 3000 plus 300 bps from 1/1/2018 through current, S&P 500 plus 500 bps prior to 12/31/2017.
3. Real Assets Policy consists of 50% NCREIF ODCE and 50% Cambridge Associates NR Quarter Lag from 1/1/2018 through current, 8% annual return from 10/1/2011 to 12/31/2017, NCREIF Property Index plus 150 bps from 10/1/1999 to 9/30/2011.
4. Absolute Return Policy consists of the 90-day Treasury Bill plus 500 bps.
5. Fixed Income Policy consists of 50% Bloomberg Barclays US Aggregate and 50% Bloomberg Barclays Intermediate Treasury from 4/1/2019 through current, 53.85% Bloomberg Barclays US Aggregate and 46.15% Bloomberg Barclays Intermediate Treasury from 7/1/2018 to 3/31/2019, 71.43% Bloomberg Barclays US Aggregate and 28.57% Bloomberg Barclays Intermediate Treasury from 4/1/2018 to 6/30/2019, 81.25% Bloomberg Barclays US Aggregate and 18.75% Bloomberg Barclays Intermediate Treasury from 1/1/2018 to 3/31/2018, Bloomberg Barclays US Universal from 7/1/2007 to 12/31/2017, 75% Bloomberg Barclays Universal and 25% Bloomberg Barclays Global Aggregate from 10/1/2005 to 6/30/2007, 80% Bloomberg Barclays Universal and 20% Bloomberg Barclays Global Aggregate from 10/1/2002 to 9/30/2005, Bloomberg Barclays Universal from 10/1/2000 to 9/30/2002, Bloomberg Barclays Aggregate 12/1/1984 to 9/30/2002.
6. Private Credit Policy consists of 50% Bank of America Merrill Lynch US High Yield BB/B Constrained Index and 50% Credit Suisse Leveraged Loan Index plus 150bps.
7. The current SFERS policy benchmark (starting 4/1/2019) consists of 36% MSCI-ACWI IMI (ND), 6% Bloomberg Barclays Intermediate US Treasury, 6% Bloomberg Barclays Capital US Aggregate, 3% Private Credit Policy, 17% Real Assets Policy, 18% Private Equity Policy and 14% 90-day Treasury Bill plus 500 bps.

Actuarial Section

Actuarial valuations are conducted annually to determine the funding requirements of the Retirement System. San Francisco City Charter specifies that the Retirement Board determines the employer contribution as a normal cost rate plus an amortization of the unfunded actuarial liability over a period not to exceed 20 years. Sponsoring employers are required to contribute 100% of the Board-approved actuarially determined contribution. Member contribution rates are also specified in City Charter.

Actuarial assumptions and methods are adopted by the Retirement Board with input from the consulting actuary. Key economic assumptions are reviewed annually, while demographic assumptions are studied every five years. The current demographic assumptions were adopted at the November 18, 2015 Board meeting for the July 1, 2015 actuarial valuation and are based upon the June 2015 Demographic Experience Study for the period covering July 1, 2009 through June 30, 2014. The study covered rates of retirement, termination, refund, disability, and mortality in addition to merit salary increases, final year salary increases, administrative expenses, and family composition.

A brief summary of the plan provisions may be found in the Notes to the Basic Financial Statements found in the Financial Section. A detailed summary of plan provisions may be found in the July 1, 2018 actuarial funding report issued in February 2019.

The pension plan is a cost-sharing multiple-employer defined benefit pension plan as the plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan. Here the term "cost-sharing" refers to the sharing of costs between the employers: plan assets are pooled and individual employer contributions are not segregated from each other. The Introductory Section contains more details of the Retirement System, the Board, and its members.

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

July 1, 2018 Actuarial Valuation

Actuarial Asset Valuation Method for Funding Policy

The actuarial value of assets is used to determine the employers' contribution to SFERS. The asset adjustment method dampens the volatility in asset values that could occur because of the fluctuation in market conditions. Use of an asset smoothing method is consistent with the long-term nature of the actuarial valuation process.

The actuarial value is calculated by recognizing 20% of each of the past five years of actual investment returns compared to the expected return (7.50% for the years ending 2015 through 2018 and 7.58% for the year ending 2014) on the actuarial asset value. The expected return on actuarial value of assets is determined using actual cash flows and the assumed return. The balance of the actual investment experience is recognized in a similar fashion in future years.

This asset smoothing method started with the market value as of July 1, 2004. The Retirement Board adopted the method upon recommendation from the actuarial audit of 2005.

Actuarial Cost Method

The individual Entry Age Normal actuarial cost method was used for active employees, whereby the normal cost is computed as the level annual percentage of pay required to fund the retirement benefits between each member's date of hire and assumed termination of employment. The normal costs calculated relate only to current member payroll. The actuarial liability is the difference between the present value of future benefits and the present value of future normal costs. Actuarial gains or losses which arise from the deviation of actual experience from expected experience lead to decreases or increases in the unfunded actuarial liability.

This cost method meets the Charter requirement that normal cost be determined as a level percent of pay.

Amortization Method for Funding Policy

The Retirement Board's funding policy specifies the various periods over which different components of the unfunded actuarial liability must be amortized subject to the Charter requirement that amortization periods not exceed 20 years.

The Retirement Board adopted the following amortization methods beginning with the July 1, 2014 actuarial funding valuation:

- 20-year closed periods for net actuarial gains and losses
- 20-year closed periods for assumption or method changes
- 15-year closed periods for Charter amendments (five-year closed periods for retirement incentive programs and amendments for inactive members)
- 5-year closed periods for supplemental COLAs
- The portion of the unfunded actuarial liability not attributable to Charter amendments as of July 1, 2013 was re-amortized over a closed 19-year period as of July 1, 2014.

Any Charter amendment prior to July 1, 2014 has been amortized over 20 years from the date it was first recognized in the valuation. Prior to July 1, 2014, the portion of the unfunded actuarial liability not attributable to Charter amendments was amortized over a rolling 15-year period.

The amortization payment on the July 1, 2015 assumption changes is being phased in over a five-year period.

All amortization schedules are determined on a level percent of pay basis which means that for the duration of the amortization schedule, payment amounts increase each year at the assumed wage inflation rate.

Investment Return Assumption

SFERS' assets are assumed to earn 7.40% net of investment expenses. This assumption was adopted beginning with the July 1, 2018 valuation. The investment return assumption was 7.50% at the previous valuation. For funding purposes, the discount rate used to calculate the actuarial liabilities and normal costs is set equal to the assumed investment return.

Inflation

Wage inflation is assumed to be 3.50% compounded annually. This assumption was adopted effective July 1, 2017. Consumer price inflation is assumed to be 2.75% compounded annually effective July 1, 2018 which is lower than the 3.00% assumed at the July 1, 2017 actuarial valuation.

Cost-of-Living Increase in Benefits

The following cost-of-living assumptions were adopted at the July 1, 2017 actuarial valuation:

Old Plans - Police and Fire, Charters 8.559 and 8.585	4.20% per year
Old Plans - Police and Fire, Charters 8.595 and 8.596	3.10% per year
Old Plans - Police and Fire, pre-7/1/75 retirement	2.50% per year
Old Plans - Miscellaneous	2.00% per year
New Plans - Police, Fire and Miscellaneous	2.00% per year

Supplemental Cost-of-Living Increases

Future supplemental COLAs are assumed to be 0% in the actuarial funding valuation. An assumption for future supplemental COLAs is included in the financial reporting valuation; see Note (9) to the financial statements.

Salary Increase Rate

- Wage inflation component: 3.50% (adopted July 1, 2017)
- The additional merit component at selected years of service:

Years of Service	Police	Fire	Muni Drivers	Craft	Other Misc.
0	8.00%	15.00%	15.00%	3.50%	5.25%
5	3.50	2.25	0.00	0.55	1.25
10	1.80	1.60	0.00	0.15	0.50
15	1.50	1.50	0.00	0.00	0.25

Extra covered wages in the last year before service retirement are assumed to be as follows:

Safety	3.5% per year
Muni Drivers	4.5% per year
Craft Workers	4.5% per year
Other Miscellaneous	2.5% per year

Future Interest Crediting Rate on Member Contributions

4.50% compounded annually.

Administrative Expense Assumption

There is a 0.60% of Payroll assumption included in the normal cost rates for administrative expenses.

Member Refunds

Non-vested terminated members are assumed to receive a refund of their contributions with interest. The rates of refund for vested terminated members in the year of termination are shown below at selected ages.

	Rates of Refund for Vested Terminated Members	
Age	**Police & Fire**	**Misc.**
Under 25	50.0%	60.0%
30	30.0	37.5
40	15.0	22.5
50	0.0	5.0

In estimating refund amounts, it is assumed that employee contribution rates are, on average, not changed by the cost-sharing provisions of the November 2011 Proposition C.

Family Composition

The percentage assumed to be married (including assumption for Domestic Partners, 1994 Proposition H) is shown in the table below. Spouses of male members are assumed to be four years younger than the member and spouses of female members are assumed to be two years older than the member.

	Percentage Married
Safety Males	85%
Safety Females	55
Miscellaneous Males	75
Miscellaneous Females	52

Rates of Termination of Employment

Sample rates of termination by age and service for Miscellaneous (excluding Muni drivers and Craft) members are shown below:

	Years of Service		
Age	0	3	5+
20	37.5%	12.0%	6.5%
30	24.0	9.0	5.5
40	17.5	6.0	3.0
50	15.0	4.5	2.6
60	15.0	4.5	5.0

Sample rates of termination by service for Police, Fire, Muni Drivers and Craft members are shown below:

Service	Police	Fire	Muni Drivers	Craft
0	10.00%	4.00%	12.00%	10.00%
5	0.75	1.50	3.25	3.25
10	0.75	0.75	3.00	1.75
15	0.50	0.50	3.00	1.75
20	0.50	0.50	3.00	1.75

20% of terminating employees are assumed to subsequently work for a reciprocal employer and receive pay increases equal to the wage inflation assumption.

In estimating termination benefits for Miscellaneous members, it is assumed that employee contribution rates are, on average, not changed by the cost-sharing provisions of the November 2011 Proposition C.

Rates of Disability

Sample disability rates of active participants are provided below:

Age	Police	Fire	Muni Drivers	Craft	Other Misc. Female	Other Misc. Male
30	0.05%	0.06%	0.01%	0.01%	0.01%	0.01%
40	0.16	0.38	0.11	0.12	0.10	0.08
50	0.79	1.20	0.75	0.44	0.55	0.30
60	6.10	12.75	0.00	0.00	0.00	0.00

100% of safety and 0% of miscellaneous disabilities are assumed to be duty related. If projected disability occurs prior to service retirement eligibility, the level of duty disability is assumed to 55% of pay for Police and 55% of pay for Fire.

Rates of Retirement

Rates of retirement are based upon years of service and age. Members hired on or after January 7, 2012 (Tier III Plans) reach the highest benefit multiplier at later ages than the other members and have separate assumed rates of retirement. Sample retirement rates for active participants are provided in the following two tables:

Old Plans and New Plans' Tiers I and II

	Years of Service		
Age	**19 or less (24 or less for Safety)**	**20-29 (25-29 for Safety)**	**30 or more**
Muni Drivers			
55	0.0000	0.0500	0.1500
60	0.1000	0.1000	0.2000
65	0.2750	0.3500	0.4500
Craft			
55	0.0000	0.0400	0.0750
60	0.1000	0.1000	0.3750
65	0.1500	0.2750	0.3000
Other Misc.			
55	0.0000	0.0400	0.0550
60	0.1050	0.1150	0.3750
65	0.2375	0.3000	0.3250
Police			
55	0.0700	0.2400	0.4000
60	0.0900	0.3400	0.5000
65	1.0000	1.0000	1.0000
Fire			
55	0.0750	0.2250	0.3500
60	0.2000	0.3500	0.3500
65	1.0000	1.0000	1.0000

Tier III Plans (includes Sheriffs Plan and Miscellaneous Safety Plan)

	Years of Service		
Age	**19 or less (24 or less for Safety)**	**20-29 (25-29 for Safety)**	**30 or more**
Muni Drivers			
55	0.0000	0.0300	0.1000
60	0.0500	0.1000	0.1500
65	0.2500	0.3000	0.5000
Craft			
55	0.0000	0.0300	0.0500
60	0.0500	0.0750	0.2000
65	0.2000	0.3250	0.4000
Other Misc.			
55	0.0000	0.0400	0.0400
60	0.0750	0.1000	0.1500
65	0.3000	0.4000	0.4000
Police			
55	0.0700	0.2000	0.3500
60	0.0900	0.3400	0.5000
65	1.0000	1.0000	1.0000
Fire			
55	0.0750	0.1750	0.2500
60	0.2000	0.3500	0.3500
65	1.0000	1.0000	1.0000

The assumed retirement age for terminated vested members is age 55 for all groups except for Tier I and Tier II Safety whose assumed retirement age is 51.

Rates of Mortality for Healthy Lives

Mortality rates for non-disabled members are based upon adjusted Employee and Healthy Annuitant CalPERS mortality tables projected generationally from the 2009 base year using a modified version of the MP-2015 projection scale as described further below.

The table immediately below provides a sample of the mortality rates prior to any projection for mortality improvements.

	Actives			Annuitants	
Age	Male	Female	Age	Male	Female
25	0.04%	0.02%	55	0.58%	0.47%
35	0.06	0.03	65	0.96	0.76
45	0.11	0.07	75	2.71	2.22
55	0.23	0.14	85	8.57	6.77
65	0.48	0.30	95	23.01	21.14

For active members, 25% of Safety deaths and 0% of Miscellaneous deaths are assumed to be duty related.

Rates of Mortality for Retired Disabled Lives

Mortality rates for disabled Safety members are based upon adjusted CalPERS' industrial disability mortality tables projected generationally from the 2009 base year. Rates for disabled Miscellaneous members are based upon the RP-2014 Disabled Retiree Tables projected generationally from the 2006 base year. The projection scale is the same as used for healthy mortality and is described below.

This next table provides a sample of these rates prior to any projection for mortality improvements.

	Police and Fire		All Miscellaneous	
Age	Male	Female	Male	Female
55	0.58%	0.45%	2.34%	1.60%
65	1.30	1.05	3.42	2.70
75	3.49	2.90	6.31	5.24
85	9.44	7.82	12.92	11.57
95	23.01	20.50	26.34	24.16

Mortality Projection Scale

The mortality rates shown in the base tables above are projected generationally from the base year using a modified version of the MP-2015 projection scale. The scale was modified using the Society of Actuaries' model implementation tool with rates converging to the ultimate rate in 2017 (instead of 2029) and an ultimate rate of improvement of 0.85% (instead of 1.0%) up to age 85 decreasing to 0.70% (instead of 0.85%) at age 95.

Sample rates of improvement are shown in the table below.

	Female			Male		
Age	2009	2013	2017+	2009	2013	2017+
30	-0.0064	0.0031	0.0085	0.0066	0.0132	0.0085
50	0.0036	0.0101	0.0085	0.0167	0.0170	0.0085
70	0.0211	0.0146	0.0085	0.0227	0.0140	0.0085
90	0.0145	0.0113	0.0078	0.0158	0.0120	0.0078

Recent Changes

The following changes in actuarial assumptions were made since the July 1, 2017 valuation:

Discount Rate: 7.50% to 7.40%
Inflation: 3.00% to 2.75%

The July 1, 2018 actuarial liability reflects the July 1, 2018 supplemental COLA. There have been no other significant changes in plan provisions reflected since the July 1, 2017 actuarial valuation.

There have been no changes in retained actuary or actuarial firm.

Contribution Information

The funding policy of the Retirement System is described in this Actuarial Section and also in Note 8 of the financial statements. A ten-year schedule of employer contributions may be found in the Required Supplementary Information of the Financial Section. Information on rates of employer and member contributions based on covered payroll may be found in the Statistical Section.

Total Pension Liability for GASB 67 Financial Reporting

The Actuarial Accrued Liability of this Actuarial Section differs from the Total Pension Liability found in Note (9) of the financial statements and in the required supplementary information in three ways:

- The Actuarial Accrued Liability (AAL) developed for the funding valuation does not include an assumption of future supplemental COLAs. The AAL does include all liabilities for supplemental COLAs that have already occurred as of the valuation date. Total Pension Liability incorporates the probability that future supplemental COLAs may occur in years after the valuation date.
- The census date of the AAL is the same as the valuation date of July 1. The census date for the June 30 fiscal year-end Total Pension Liability is as of previous July 1 valuation date. The Total Pension Liability is a roll-forward liability using standard roll-forward procedures, adjusted for significant changes during the fiscal year.
- The AAL is valued at a discount rate equal to the assumed investment return, while the Total Pension Liability is valued at a discount rate that could be lower than the assumed investment return.

Note (9) contains further information about the assumed probabilities of future supplemental COLAs, the roll-forward of liabilities, and the assumed discount rate for GASB 67 financial reporting. Other than these differences, the actuarial assumptions used for funding purposes are the same assumptions used for financial reporting purposes.

ACTUARIAL ANALYSIS OF FINANCIAL EXPERIENCE

The analysis of financial experience is a gain/loss analysis of changes in the unfunded actuarial accrued liability (UAAL) that considers variances between actual experience and assumed experience. The net expected changes in the UAAL from one year to the next include the sum of the additional benefits accrued during the year (the normal cost) and the interest accrual on the UAAL reduced by the payment of employer contributions.

The analysis also shows the impact on the UAAL due to changes in benefits due to voter-approved propositions and supplemental COLAs and also due to changes in assumptions such as mortality, investment return, or salary merit scale. Changes in the UAAL due to asset returns include the impacts of the five-year smoothing of investment returns inherent in the actuarial asset valuation method.

(Dollars in millions)

As of July 1	2018	2017	2016	2015	2014
Prior Valuation Unfunded Actuarial Accrued Liability	$ 3,520.8	$ 3,749.2	$ 3,317.60	$ 3,110.5	$ 3,921.4
Expected change from Prior Valuation	(157.7)	(82.5)	(25.2)	(70.7)	(98.6)
Expected Unfunded Actuarial Liability as of Valuation Date	$ 3,363.1	$ 3,666.7	$ 3,292.4	$ 3,039.8	$ 3,822.8
Changes in Benefits due to Propositions and/or Supplemental COLAs	200.8	200.1	429.3	0.0	0.0
Changes in Assumptions	297.7	50.2	0.0	1,084.4	153.1
Salary Increases Greater/(Less) than Expected	(53.7)	(80.6)	4.9	(79.9)	(214.6)
Asset Return Less/(Greater) than Expected	(408.9)	(405.7)	51.5	(545.5)	(749.2)
All Other Experience	70.4	90.1	(28.9)	(145.2)	98.4
Unfunded Actuarial Accrued Liability as of Valuation Date	**$ 3,469.4**	**$ 3,520.8**	**$ 3,749.2**	**$ 3,317.6**	**$ 3,110.5**

SCHEDULE OF FUNDING PROGRESS

The schedule below presents valuation results for the last 10 years based upon actuarial methods and assumptions used for funding purposes.

(Dollars in thousands)

Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b)-(a)	Funded Ratio (a)/(b)	Covered Payroll[1]	UAAL as a % of Covered Payroll
7/01/2009	16,004,730	16,498,649	493,919	97.0%	2,537,785	19.5%
7/01/2010	16,069,058	17,643,394	1,574,336	91.1%	2,398,823	65.6%
7/01/2011	16,313,120	18,598,728	2,285,608	87.7%	2,360,413	96.8%
7/01/2012	16,027,683	19,393,854	3,366,171	82.6%	2,393,842	140.6%
7/01/2013	16,303,397	20,224,777	3,921,380	80.6%	2,535,963	154.6%
7/01/2014	18,012,088	21,122,567	3,110,479	85.3%	2,640,153	117.8%
7/01/2015	19,653,339	22,970,892	3,117,553	85.6%	2,820,968	110.5%
7/01/2016	20,654,703	24,403,882	3,749,179	84.6%	3,062,422	122.4%
7/01/2017	22,185,244	25,706,090	3,520,846	86.3%	3,242,468	108.6%
7/01/2018	23,866,028	27,335,417	3,469,389	87.3%	3,385,517	102.5%

1 Covered payroll based upon actuarial projection of annualized pay for the year beginning on the valuation date.

ACTUARIAL SOLVENCY TEST

The solvency test compares aggregate actuarial liabilities by various categories with the plan's present assets. Category (A), active member contributions, includes both employee contributions and earned interest. Category (B) includes all liabilities for members no longer working, both retirees and beneficiaries who are receiving payments and also other inactives entitled to future payments. Category (C) includes the actuarial accrued liability for active members in excess of the active member contributions.

The table below shows a 100% funded status over the last ten years for employee contributions with interest (Category A) and for members who have terminated service with rights to future payments (Category B). The liabilities for service already rendered by active members (Category C) is not fully funded for valuations after 7/1/2008. The decline in funding percentages for Category C reflects both the 2008-2009 financial crisis (phased-in over five years in the actuarial value of assets) and the lowering of the discount rate over the last ten years from 7.75% at July 1, 2008 to 7.40% at July 1, 2018. The decline in Category C funding percentages also reflects changes in benefits and revisions in actuarial assumptions other than discount rate. Significant changes include the adoption of generational projection of mortality improvements at July 1, 2015 and retroactive supplemental COLAs recognized at July 1, 2016.

(Dollars in millions)

	Actuarial Accrued Liability (AAL)				Percentage of AAL Covered by Assets		
Valuation Date	Active Member Contributions (A)	Retirees, Beneficiaries, and Inactives (B)	Employer Financed Portion of Active Members (C)	Actuarial Value of Assets	(A)	(B)	(C)
7/1/2009	2,376	9,028	5,095	16,005	100%	100%	90%
7/1/2010	2,331	10,171	5,141	16,069	100%	100%	69%
7/1/2011	2,364	10,987	5,248	16,313	100%	100%	56%
7/1/2012	2,451	11,658	5,285	16,028	100%	100%	36%
7/1/2013	2,633	12,257	5,335	16,303	100%	100%	26%
7/1/2014	2,825	12,901	5,397	18,012	100%	100%	42%
7/1/2015	2,995	13,931	6,045	19,653	100%	100%	45%
7/1/2016	3,175	14,941	6,288	20,655	100%	100%	40%
7/1/2017	3,325	15,847	6,535	22,185	100%	100%	46%
7/1/2018	3,496	17,024	6,816	23,866	100%	100%	49%

SCHEDULE OF ACTIVE MEMBER VALUATION DATA

Valuation Date	Plan Type	Count[1]	Annual Covered Pay[1]	Average Annual Covered Pay	% Increase in Average Covered Pay
7/1/2009	General	26,205	1,981,788,543	75,626	(1.3)%
	Safety	3,714	402,975,857	108,502	2.9%
7/1/2010	General	24,689	1,915,169,605	77,572	2.6%
	Safety	3,533	400,262,779	113,293	4.4%
7/1/2011	General	24,701	1,883,122,340	76,237	-1.7%
	Safety	3,255	380,458,039	116,884	3.2%
7/1/2012	General	24,878	1,928,148,586	77,504	1.7%
	Safety	3,219	395,842,540	122,971	5.2%
7/1/2013	General	25,392	2,031,987,811	80,025	3.3%
	Safety	3,325	417,543,208	125,577	2.1%
7/1/2014	General	26,053	2,109,100,013	80,954	1.2%
	Safety	3,463	429,618,756	124,060	(1.2)%
7/1/2015	General	27,233	2,259,320,255	82,963	2.5%
	Safety	3,604	441,419,658	122,480	(1.3)%
7/1/2016	General	28,623	2,439,969,498	85,245	2.8%
	Safety	3,783	462,752,871	122,324	(0.1)%
7/1/2017	General	29,545	2,621,632,438	88,734	4.1%
	Safety	3,902	481,039,920	123,280	0.8%
7/1/2018	General	29,910	2,733,626,773	91,395	3.0%
	Safety	4,036	502,353,057	124,468	1.0%

1 July 1, 2008 through July 1, 2010 include DROP members. DROP members are excluded from July 1, 2011 forward. There are no active DROP members on or after July 1, 2016. Annual Covered Pay represents the sum of the annualized valuation salary for the prior fiscal year for each active member as of the July 1 valuation date.

RETIREES AND BENEFICIARIES IN PAYEE STATUS

	Added to Rolls		Removed from Rolls		Rolls at End of Year			
Fiscal Year	Member Count	Annual Allowance	Member Count	Annual Allowance	Member Count	Annual Allowance	% Increase in Annual Allowance	Average Annual Allowance
2008-09	1,545	60,356,100	765	20,550,523	22,294	755,029,081	9.1%	33,867
2009-10	2,004	85,601,938	798	22,483,938	23,500	834,425,915	10.5%	35,507
2010-11	1,672	66,575,560	880	24,641,442	24,292	905,053,471	8.5%	37,257
2011-12	1,769	70,868,367	871	26,958,609	25,190	982,250,287	8.5%	38,994
2012-13	1,577	66,437,220	733	22,406,077	26,034	1,045,547,799	6.4%	40,161
2013-14	1,588	65,923,470	770	25,170,856	26,852	1,103,959,803	5.6%	41,113
2014-15	1,564	63,136,134	931	29,314,643	27,485	1,157,081,680	4.8%	42,099
2015-16	1,657	72,049,646	856	30,384,191	28,286	1,247,230,245	4.7%	44,094
2016-17	1,769	80,214,008	928	35,082,179	29,127	1,332,430,263	6.8%	45,746
2017-18	1,797	84,574,963	959	36,284,323	29,965	1,424,324,641	6.9%	47,533

Statistical Section

The Statistical Section provides financial and operational information in further detail to assist users in understanding trends in the Basic Financial Statements, Notes to Basic Financial Statements, and Required Supplemental Information.

Financial Information

- ***Additions to Pension Plan by Source*** reflects the various sources of income to SFERS
- ***Deductions to Pension Plan by Type*** displays the major expenses to SFERS which are benefits paid to members, refunds of employee contributions to members, and administrative expenses
- ***Changes in Fiduciary Net Position*** shows the changes in net position during each of the last 10 fiscal years
- ***Benefit Expenses of Pension Plan by Type*** details the benefits paid during the fiscal year due to retirements, disability, death, newly granted COLAs, and accruals for DROP

Operational Information

- ***Average Pension Benefit Payments*** highlights benefit levels paid to newly retired and disabled members with differing amounts of credited service
- ***Active Members by Employer*** compares the current active member counts for each SFERS cost-sharing employer to counts from 2012
- ***Employer Contribution Rates*** details the components that comprise the last ten years of employer contribution rates
- ***Employer and Employee Contribution Rates for Fiscal Year 2018-19*** shows the contribution rates for various member classes after application of the cost-sharing provisions of 2011 Proposition C

ADDITIONS TO PENSION PLAN BY SOURCE

(Dollars in thousands)

Fiscal Year Ending June 30	Member Contributions	Employer Contributions	Gross Return on Investments	Investment Expenses	Total
2010	189,948	223,614	1,699,307	(44,206)	2,068,663
2011	181,755	308,823	2,932,154	(44,579)	3,378,153
2012	198,160	410,797	124,942	(44,540)	689,359
2013	258,726	442,870	2,106,204	(41,654)	2,766,146
2014	289,020	532,882	3,223,030	(47,599)	3,997,333
2015	301,682	592,643	808,340	(44,911)	1,657,754
2016	322,764	526,805	197,216	(47,026)	999,759
2017	316,844	551,809	2,730,863	(47,395)	3,552,121
2018	364,696	619,067	2,599,555	(49,881)	3,533,437
2019	380,980	645,056	2,018,752	(48,440)	2,996,348

DEDUCTIONS TO PENSION PLAN BY TYPE

(Dollars in thousands)

Fiscal Year Ending June 30	Benefits Paid	Refunds of Contributions	Administrative Expenses	Total
2010	792,776	11,997	13,833	818,606
2011	889,744	11,548	14,808	916,100
2012	968,528	11,030	14,916	994,474
2013	1,023,354	9,453	15,518	1,048,325
2014	1,062,229	10,297	15,745	1,088,271
2015	1,118,691	12,339	19,262	1,150,292
2016	1,243,260	12,886	17,179	1,273,325
2017	1,264,633	13,507	18,134	1,296,274
2018	1,350,009	14,578	18,238	1,382,825
2019	1,438,935	17,747	18,983	1,475,665

Together, the above two tables present the changes in fiduciary net position during each of the last 10 fiscal years. Total additions less total deductions equal the net increase or decrease in fiduciary net position.

CHANGES IN FIDUCIARY NET POSITION

(Dollars in thousands)

Fiscal Year Ending June 30	Additions	Deductions	Net Change	Fiduciary Net Position	
				Beginning of Year	End of Year
2010	2,068,663	818,606	1,250,057	11,886,729	13,136,786
2011	3,378,153	916,100	2,462,053	13,136,786	15,598,839
2012	689,359	994,474	(305,115)	15,598,839	15,293,724
2013	2,766,146	1,048,325	1,717,821	15,293,724	17,011,545
2014	3,997,333	1,088,271	2,909,062	17,011,545	19,920,607
2015	1,657,754	1,150,292	507,462	19,920,607	20,428,069
2016	999,759	1,273,325	(273,566)	20,428,069	20,154,503
2017	3,552,121	1,296,274	2,255,847	21,154,503	22,410,350
2018	3,533,437	1,382,825	2,150,612	22,407,354	24,557,966
2019	2,996,348	1,475,665	1,520,683	24,557,966	26,078,649

Note that 2018 fiscal year fiduciary net position at beginning of year was restated due to adoption of GASB No. 75.

BENEFIT PAYMENTS OF PENSION PLAN BY TYPE

(Dollars in thousands)

Fiscal Year	Retirement Benefits	Disability Benefits	Death Benefits	COLA Benefit Adjustments	DROP Accrued Retirement	Total
2010	593,048	149,122	8,325	35,287	6,994	792,776
2011	662,277	154,631	8,234	48,514	16,088	889,744
2012	716,744	161,782	8,198	57,234	24,570	968,528
2013	770,521	168,365	8,387	54,816	21,265	1,023,354
2014	827,311	172,619	7,998	53,098	1,203	1,062,229
2015	878,834	175,620	7,492	51,447	5,298	1,118,691
2016	937,388	179,056	8,990	118,012	(186)	1,243,260
2017	994,408	184,376	11,163	74,890	(294)	1,264,633
2018	1,063,184	187,365	10,224	89,236	0	1,350,009
2019	1,131,334	193,016	8,908	105,945	(268)	1,438,935

Fiscal year 2016 COLA benefits include retroactive supplemental COLA benefits for 2013 and 2014 paid after the October 2015 Superior Court judgment. See Note (11) of the Basic Financial Statements in the Financial Section for additional information. Benefit payments for the most recent fiscal year are provided in further detail in the Financial Section under Other Supplementary Information.

AVERAGE PENSION BENEFIT PAYMENT FOR RETIRED AND DISABLED MEMBERS

	Years of Credited Service					
Retirement Effective Dates	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30+
07/1/11 to 6/30/12						
Average Mo. Benefit	$ 899	$ 1,769	$ 2,675	$ 3,373	$ 5,084	$ 7,308
Average Final Comp.	$ 7,543	$ 7,050	$ 7,044	$ 7,099	$ 8,258	$ 9,405
Number	138	228	179	207	235	331
07/1/12 to 6/30/13						
Average Mo. Benefit	$ 909	$ 1,776	$ 2,792	$ 3,579	$ 5,720	$ 7,340
Average Final Comp.	$ 7,225	$ 6,982	$ 7,409	$ 7,564	$ 8,699	$ 9,758
Number	116	195	120	193	253	275
07/1/13 to 6/30/14						
Average Mo. Benefit	$ 980	$ 1,971	$ 2,812	$ 3,826	$ 5,720	$ 6,927
Average Final Comp.	$ 7,866	$ 7,214	$ 7,530	$ 7,905	$ 8,656	$ 9,143
Number	138	181	170	155	212	257
7/1/14 to 6/30/15						
Average Mo. Benefit	$ 969	$ 1,817	$ 2,930	$ 4,321	$ 5,237	$ 6,654
Average Final Comp.	$ 6,627	$ 6,844	$ 7,759	$ 8,267	$ 7,977	$ 8,827
Number	109	177	163	165	187	245
7/1/15 to 6/30/16						
Average Mo. Benefit	$ 1,051	$ 2,077	$ 2,906	$ 4,071	$ 5,716	$ 6,514
Average Final Comp.	$ 7,363	$ 8,266	$ 7,485	$ 8,404	$ 9,534	$ 9,016
Number	110	184	196	175	211	291
7/1/16 to 6/30/17						
Average Mo. Benefit	$ 1,113	$ 2,057	$ 3,184	$ 4,657	$ 6,138	$ 7,275
Average Final Comp.	$ 8,182	$ 7,989	$ 8,106	$ 9,205	$ 9,455	$ 9,651
Number	129	197	211	167	199	263
7/1/17 to 6/30/18						
Average Mo. Benefit	$ 1,150	$ 2,139	$ 3,293	$ 4,294	$ 6,762	$ 7,249
Average Final Comp.	$ 7,949	$ 8,229	$ 8,369	$ 8,647	$ 10,158	$ 9,590
Number	98	210	289	251	244	429
7/1/18 to 6/30/19						
Average Mo. Benefit	$ 1,212	$ 2,204	$ 3,372	$ 4,474	$ 6,827	$ 7,114
Average Final Comp.	$ 7,656	$ 8,688	$ 8,579	$ 9,243	$ 10,307	$ 9,978
Number	135	188	224	241	227	304

ACTIVE MEMBERS BY EMPLOYER

Employer	July 1, 2019	Percentage of System	July 1, 2012	Percentage of System
City and County of San Francisco[1]	32,058	93.8%	26,001	91.9%
San Francisco Unified School District	1,140	3.3%	1,180	4.2%
San Francisco Community College District	594	1.7%	686	2.4%
San Francisco Trial Courts	410	1.2%	415	1.5%
Total	**34,202**	**100.0%**	**28,282**	**100.0%**

1 Includes active DROP

EMPLOYER CONTRIBUTION RATES

Before Adjustment for Cost-Sharing Provisions[1]

Fiscal Year	Normal Cost	Remaining Cost of Propositions	Other UAL	Employee Contributions	Administrative Expenses	Total
2010	18.16%	5.41%	(7.03%)	(7.50%)	0.45%	9.49%
2011	18.18%	5.53%	(3.09%)	(7.51%)	0.45%	13.56%
2012	17.90%	6.51%	0.73%	(7.50%)	0.45%	18.09%
2013	17.90%	6.21%	3.66%	(7.51%)	0.45%	20.71%
2014	17.91%	6.11%	7.88%	(7.53%)	0.45%	24.82%
2015	18.26%	5.99%	9.60%	(7.54%)	0.45%	26.76%
2016	18.38%	5.86%	5.65%	(7.54%)	0.45%	22.80%
2017	18.65%	5.69%	4.02%	(7.56%)	0.60%	21.40%
2018	18.56%	5.12%	6.75%	(7.57%)	0.60%	23.46%
2019	17.25%	5.07%	7.97%	(7.58%)	0.60%	23.31%

1 Cost sharing provisions effective July 1, 2012 following passage of Proposition C in November of 2011

FISCAL YEAR 2018-2019 EMPLOYER AND EMPLOYEE CONTRIBUTION RATES

Employer and employee contribution rates are shown below after adjustment for the Proposition C cost-sharing provisions. Proposition C was passed by voters in the November 2011 election and established cost-sharing provisions between employee-members and employers. When the unadjusted employer contribution rates are higher than 12.00%, a portion of the employer contribution (up to 6.00%) is transferred to the member contribution rate. When unadjusted employer contribution rates are lower than 11.01%, a portion of the member contribution rate (up to 6.00%) would be transferred to the employer. Contribution rates are adjusted once a year based on the unadjusted employer contribution rate adopted by the Retirement Board and the member's hourly base rate of pay as of the June 30 prior to the effective date of the contribution rate.

FISCAL YEAR 2018-2019 EMPLOYER CONTRIBUTION RATES

After Cost-Sharing Provisions

Member Group	Base Rate of Pay less than $29 per hour	Base Rate of Pay at or above $29 but less than $57 per hour	Base Rate of Pay at or above $57 per hour
Miscellaneous Non-Safety Plans	23.31%	19.81%	19.31%
Police and Firefighter Old Plans	18.81%	18.81%	18.81%
Police and Firefighter New Plans Tier I	18.81%	18.81%	18.81%
Police and Firefighter New Plans Tiers II and III	19.81%	19.81%	19.31%
Miscellaneous Safety and Sheriffs Plans	19.81%	19.81%	19.31%

FISCAL YEAR 2018-2019 EMPLOYEE CONTRIBUTION RATES

After Cost-Sharing Provisions

Member Group	Base Rate of Pay less than $29 per hour	Base Rate of Pay at or above $29 but less than $57 per hour	Base Rate of Pay at or above $57 per hour
Miscellaneous Old Plans	8.0%	11.5%	12.0%
Miscellaneous New Plans	7.5%	11.0%	11.5%
Police and Firefighter Old Plans	11.5%	11.5%	11.5%
Police and Firefighter New Plans Tier I	12.0%	12.0%	12.0%
Police and Firefighter New Plans Tiers II and III	12.5%	12.5%	13.0%
Miscellaneous Safety and Sheriffs Plans	12.5%	12.5%	13.0%

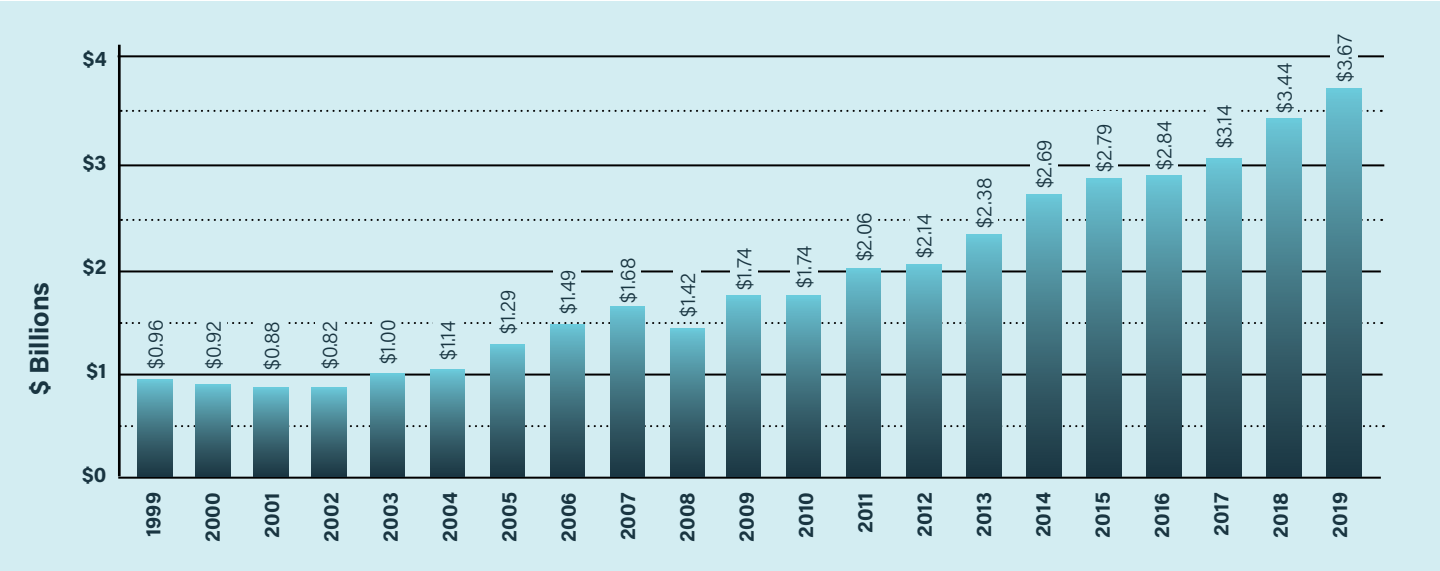
Deferred Compensation Plan (SFDCP)

The San Francisco 457(b) Deferred Compensation Plan (SFDCP) was adopted in 1979 to offer active members an opportunity to acquire additional retirement savings intended to complement pension benefits. The SFDCP allows City employees to voluntarily defer a portion of their regular earnings until after they retire or separate from service. This method of tax deferral has become increasingly popular and the Plan also offers Roth after-tax contributions. During the past fiscal year, plan assets for the SFDCP grew at approximately 6%, and the average account balance per participant was $116,768.

The Plan provides a diverse selection of thirteen core investment funds, a suite of Target Date Funds, and access to a self-directed brokerage account. In addition to an enhanced line up of investment options, the SFDCP offers participants low fees, a customized website, client communications, online transactions, and dedicated retirement counselors available daily at the SFDCP office. For the reporting period ending June 30, 2019, Prudential Retirement served as the Plan's recordkeeper. The Plan transitioned to a new recordkeeper, Voya Financial, in September 2019.

As of June 30, 2019, there were 31,120 participants in the SFDCP with Plan assets valued at $3.674 billion. The following chart and table provide detailed information about the investments that make up the City's 457(b) Deferred Compensation Plan, as well as customer service and participation activity for the Fiscal Year 2018-19.

SFDCP ASSETS UNDER MANAGEMENT



SFDCP VALUES AS OF JUNE 30, 2019

Funds	Total Assets	Percent of Total Assets	Annual Performance
SFDCP Stable Value Fund	$ 1,023,579,355	28.17%	2.39%
SFDCP Core Bond Fund	$ 178,528,942	4.91%	8.39%
SFDCP Bond Index Fund	$ 9,615,296	0.26%	7.88%
SFDCP Retirement Fund	$ 133,326,218	3.67%	6.62%
SFDCP Target Date 2020 Fund	$ 110,226,706	3.03%	6.53%
SFDCP Target Date 2025 Fund	$ 143,009,220	3.94%	6.26%
SFDCP Target Date 2030 Fund	$ 128,860,275	3.55%	5.84%
SFDCP Target Date 2035 Fund	$ 98,254,483	2.70%	4.82%
SFDCP Target Date 2040 Fund	$ 71,448,369	1.97%	4.36%
SFDCP Target Date 2045 Fund	$ 47,831,638	1.32%	4.36%
SFDCP Target Date 2050 Fund	$ 16,943,982	0.47%	4.36%
SFDCP Target Date 2055 Fund	$ 7,853,845	0.22%	4.36%
SFDCP Target Date 2060 Fund**	$ 56,637	0.00%	1.37%**
SFDCP Target Date 2065 Fund**	$ 42,365	0.00%	1.39%**
SFDCP Large Cap Value Equity Fund	$ 107,606,748	2.96%	4.52%
SFDCP Large Cap Equity - S&P 500 Index Fund	$ 321,655,771	8.85%	10.41%
SFDCP Large Cap Social Equity Fund	$ 54,838,647	1.51%	11.32%
SFDCP Large Cap Growth Equity Fund	$ 565,552,578	15.57%	9.48%
SFDCP Active Equity Fund	$ 122,712,768	3.38%	-0.84%
SFDCP Small-Mid Cap Equity Index Fund	$ 201,714,697	5.55%	1.90%
SFDCP Small-Mid Cap Equity Fund	$ 2,837,969	0.08%	0.75%
SFDCP International Equity Fund	$ 229,561,455	6.32%	0.11%
SFDCP International Equity Index Fund	$ 6,653,529	0.18%	1.31%
SFDCP Real Estate Fund	$ 35,725,896	0.98%	2.98%
Self Directed Brokerage	$ 15,008,146	0.41%	N/A
TOTAL PLAN ASSETS	**$ 3,633,445,535**	**100.00%**	

* Assets are rounded up to the nearest dollar
** New investment option as of April 8, 2019

SFDCP STATISTICS SUMMARY

Plan Year Ended June 30, 2019

ASSET SUMMARY	
Beginning Assets July 1, 2018	$ 3,471,933,727.05
Contributions	178,223,737.94
Roll-ins	14,111,880.77
Less Distributions	162,828,504.03
Outstanding Loans	40,583,212.61
Ending Assets June 30, 2019[1]	**$ 3,674,028,746.46**
PARTICIPANT SUMMARY	
Beginning Participants July 1, 2018	30,195
New Participants	1,874
Actively Contributing Participants	19,849
Ending Participants June 30, 2019	**31,120**
SERVICE SUMMARY	
Group Meetings	450
Field and Office Individual Counseling Sessions	7,920
Customer Service Calls (IVR and Representatives)	20,310
Web Logins	455,905

* Data certified by Prudential Retirement Insurance and Annuity Company

1 Includes miscellaneous transactions, loan repayments and net appreciation (earnings)