ANNUAL REPORT

For Fiscal Year Ended
June 30, 2020

SFERS

San Francisco Employees' Retirement System

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INTRODUCTORY SECTION

LETTER OF TRANSMITTAL

March 10, 2021

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 2019-20.

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, 2020, the Trust was valued at $26.6 billion returning 2.41% for the fiscal year, outperforming our peers' median return, 1.26%. SFERS annual benefit payments totaled $1.55 billion paid to over 30,100 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.

In September 2019, the SFDCP transitioned from Prudential Retirement to a new recordkeeper, Voya Financial. Also, during the fiscal year, the Retirement Board approved offering advisory services to participants through Voya Retirement Advisors (VRA). The SFDCP is able to provide participants no-cost advisory services including access to an investment advisor and online advice. The SFDCP also offers access to professional account management for an additional cost.

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, communications 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, 2020.

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, 2020 fiscal year-end measurement date, the fiduciary net position as a percentage of total pension liability is 83.1% based on total pension liability of $32.0 billion and fiduciary net position of $26.6 billion. The net pension liability at June 30, 2020 is $5.4 billion. Details may be found in Note 10 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, constructs investment portfolios, recommends external managers for hire, and monitors the activities and evaluates the performance of external investment managers. For Fiscal Year 2020, amid the COVID-19 human health crisis and the deepest decline in economic activity and rise in unemployment since the Great Depression, the investment portfolio of the San Francisco Employees Retirement System posted a positive return of 2.41%.

During the fiscal year, under the authorization of the Retirement Board, and in line with the 2020 Annual Investment Plan, the investment team committed a total of $2.9 billion in new investments: $835 million in Private Equity, $325 million in the Real Assets portfolio, $660 million in Absolute Return, $350 million in Public Equity, and $755 million in private credit.

ACKNOWLEDGEMENTS

We extend our sincerest gratitude to the Retirement Board for its expert leadership now and over the years. And to our valued members, rest assured that SFERS remains secure and well-positioned for success now and into the future.

Finally, we would like to thank the SFERS staff for their continued dedication to the health and safety of our members and for their hard work to support our mission during these unprecedented times.

Respectfully submitted,

Jay P. Huish
Executive Director

Joseph Driscoll
President

The Retirement System Organization for Fiscal Year 2020

The SFERS Retirement Board

President
Joseph D. Driscoll, CFA
Captain, San Francisco Fire Department
Elected Member
Term Expires: 02/20/2021

Vice President
Leona 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

Ahsha Safai
Member, Board of Supervisors
Ex-Officio Member
Term Expires: 01/31/2021

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

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

Scott Heldfond
Director, Aon Risk Services
Appointed Member
Term Expires: 02/20/2024

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

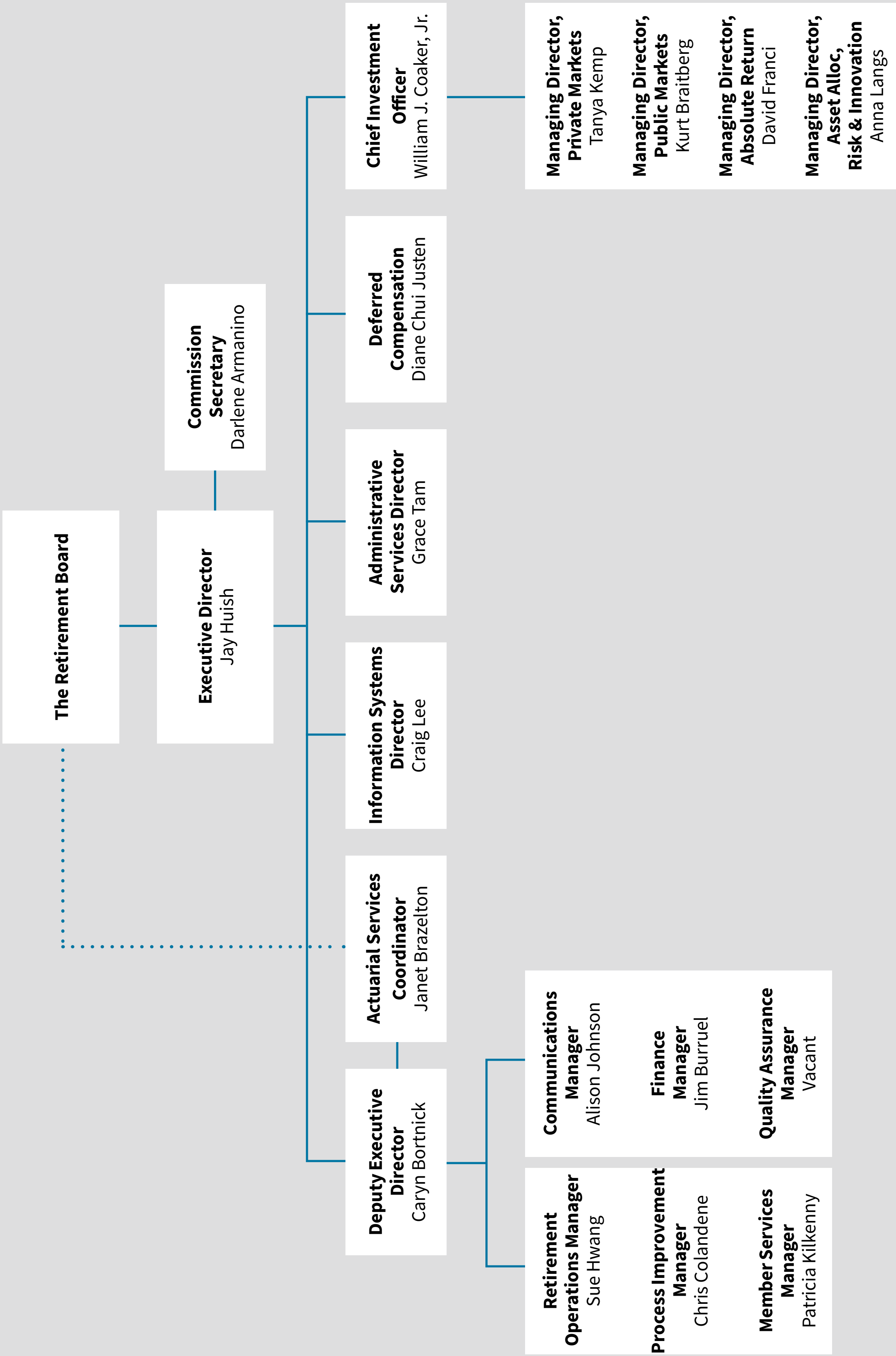
Anna Langs
Managing Director, Asset Allocation,
Risk Management and Innovative Solutions

Craig Lee
Information Systems Director

Grace Tam
Administrative Services Director

Quality Assurance Manager
Vacant

SFERS Organizational Chart - June 30, 2020



Professional Consultants

Consulting Actuary

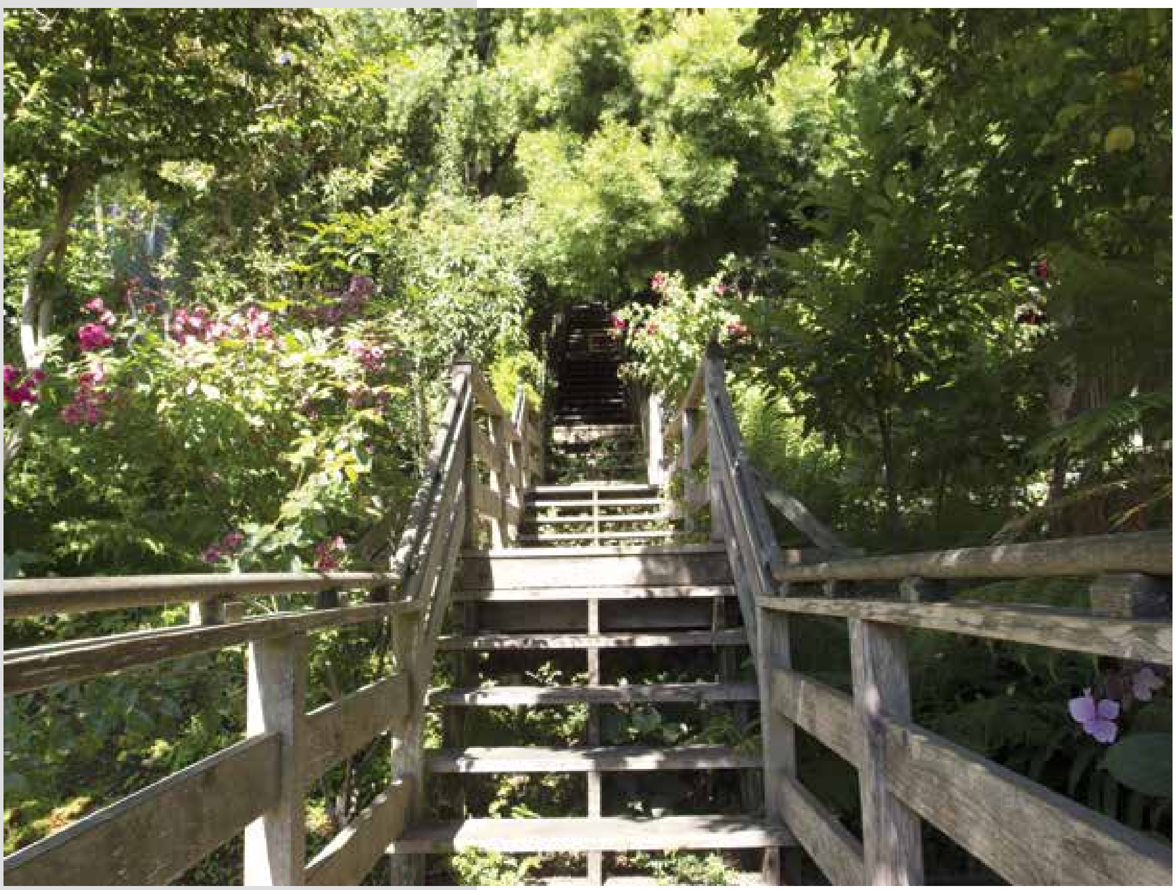
- Cheiron, Inc.

Investment Consultants

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

Governance Consultants

- Glass Lewis & Co.
- 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, 2020. 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 2020

- At the close of the year ended June 30, 2020, the Plan held $26.6 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, 2020, measurement date, the fiduciary net position was 83.1% of the total pension liability.

- For the year ended June 30, 2020, the Retirement System's net investment income of $966.3 million represents 3.7% of fiduciary net position as of the beginning of the fiscal year.

- Total fiduciary net position held in trust for pension benefits increased by $ 541.6 million, or 2.1%, primarily as a result of positive investment returns, which were 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 $400.6 million, an increase of $19.7 million or 5.2% from the prior year, primarily as a result of a 5.7% increase in covered payroll. Employee contribution rates in fiscal year 2019-20 ranged from 7.5% - 13.0%, same as in fiscal year 2018-19.
- In order to maintain the fiscal soundness of the Plan, required employer contributions to the Plan totaled $743.0 million, an increase of $97.9 million or 15.2% from the prior year, partly due to the 5.7% increase in covered payroll and partly due to increased employer contribution rates. Employer contribution rates ranged from 20.69% to 25.19% in fiscal year 2019-20 and 18.81% to 23.31% in fiscal year 2018-19.
- Total deductions from the Plan were $1,568.3 million, an increase of 6.3% from the prior year due to an increase in benefits paid during the current fiscal year, as a result of 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, 2020 and 2019. 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, 2020 and 2019.
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, 2020 and 2019.
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 exchanges 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 of this report.

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, 2020 and 2019. All of the Plan's fiduciary net position is restricted to meet the Retirement System's ongoing obligation to Plan participants and their beneficiaries.

The Plan's fiduciary net position as of June 30, 2020, 2019, and 2018 are represented in the table below: *(Dollars in thousands)*

	2020	2019	2018
Other assets	$ 539,779	$ 245,668	$ 329,188
Investments at fair value	26,704,727	26,021,469	24,327,090
Total assets	27,244,506	26,267,137	24,656,278
Deferred outflows of resources	1,587	1,027	641
Total assets and deferred outflows of resources	27,246,093	26,268,164	24,656,919
Total liabilities	624,636	188,422	98,934
Deferred inflows of resources	1,239	1,093	19
Total liabilities and deferred inflows of resources	625,875	189,515	98,953
Fiduciary Net position	$ 26,620,218	$ 26,078,649	$ 24,557,966

As of June 30, 2020, the Plan's total fiduciary net position held in trust for pension benefits increased by $541.6 million or 2.1% for the year, primarily due to positive investment returns. Payables to brokers decreased by $112.7 million and payables to borrowers of securities increased by $547.0 million due to the timing of investments and lending activities.

The Retirement Board believes that the Plan remains in a strong financial position to meet its obligations to the Plan members and beneficiaries. Fiscal year 2019-20 saw the end of the U.S.'s record setting economic expansion, a result of lockdown measures introduced to combat the global pandemic resulting from the spread of COVID-19. U.S. market volatility, which had been muted through 2019, returned in response to the pandemic and restrictions put in place to slow its spread. Global governments took extraordinary measures to combat the economic blow dealt by the crisis, including the $2.2 trillion Coronavirus Aid, Relief, and Economic Security Act passed in the U.S. The Federal Reserve Bank provided additional support by reducing interest rates to a targeted range of 0.00%-0.25%, resuming quantitative easing, and flooding markets with liquidity with similar actions taken by other central banks globally. These stimulus measures, along with optimism around a potential vaccine for COVID-19 and the easing of lockdown restrictions, resulted in one of the most dramatic reversals for risk assets historically in the last quarter of the fiscal year. U.S. stocks posted their eleventh consecutive year of positive returns and outperformed international equities, returning 7.5% as measured by the S&P 500 Index. International developed-markets equities (-5.1% for the year) lagged domestic equities by 12.6%. U.S. equity outperformance was driven in large part by big tech stocks that have seen demand for their products surge in response to the pandemic. Emerging markets equities returned -3.4%, underperforming U.S. equities and outperforming international-developed markets equities. Driven by declining interest rates, U.S. high quality fixed income investments generated a positive return of 8.7% for the year 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, 2020, 2019, and 2018

(Dollars in thousands)

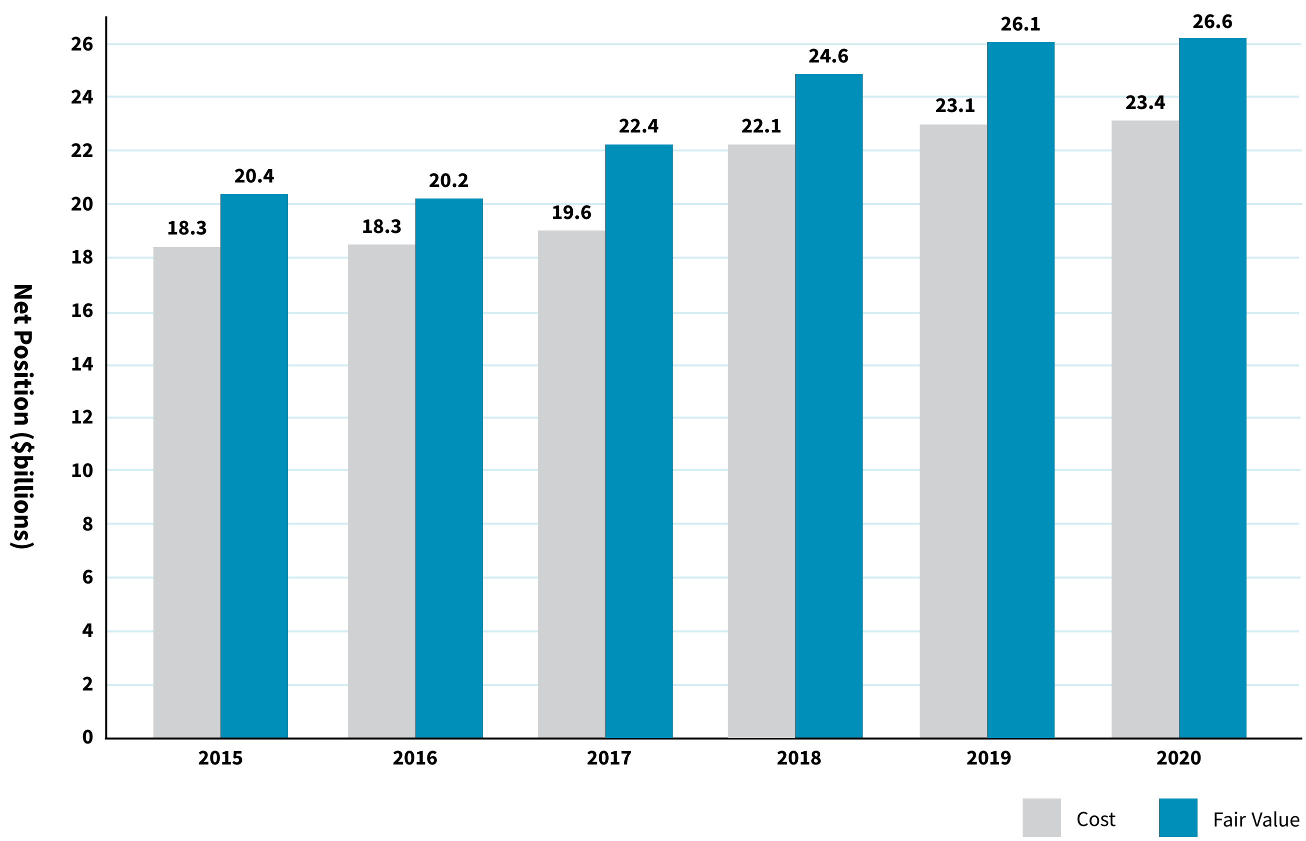
	2020	2019	2018
Additions:			
Member contributions	$400,649	$380,980	$ 364,696
Employer contributions	742,985	645,056	619,067
Interest	80,729	95,100	132,988
Dividends	108,344	203,047	244,721
Net appreciation (depreciation) in fair value of investments	822,342	1,720,605	2,221,453
Securities lending income	1,313	-	393
Investment expenses	(46,671)	(48,440)	(49,881)
Securities lending borrower rebates and expenses	225	-	-
Total additions	$ 2,109,916	$ 2,996,348	$ 3,533,437
Deductions:			
Benefits	1,531,041	1,438,935	1,350,009
Refunds of contributions	17,036	17,747	14,578
Administrative expenses	19,670	18,204	17,762
Other administrative expenses - OPEB	600	779	476
Total deductions	$ 1,568,347	$ 1,475,665	$ 1,382,825
Change in fiduciary net position	541,569	1,520,683	2,150,612
Fiduciary net position – restricted for pension benefits:			
Beginning of year (as previously reported)	26,078,649	24,557,966	22,410,350
Cumulative effect of change in accounting principle due to adoption of GASB 75	-	-	(2,996)
Beginning of year (as restated)	26,078,649	24,557,966	22,407,354
End of the year	$ 26,620,218	$ 26,078,649	$ 24,557,966

Fiscal Year 2020

- Members' contributions to the Plan totaled $400.6 million, an increase of $19.7 million or 5.2% from the prior year, primarily as a result of a 5.7% increase in covered payroll. Employee contribution rates in fiscal year 2019-20 ranged from 7.5% - 13.0%, same as in fiscal year 2018-19.
- In order to maintain the fiscal soundness of the Plan, required employer contributions to the Plan totaled $743.0 million, an increase of $97.9 million or 15.2% from the prior year, partly due to the 5.7% increase in covered payroll and partly due to increased employer contribution rates. Employer contribution rates ranged from 20.69% to 25.19% in fiscal year 2019-20 and 18.81% to 23.31% in fiscal year 2018-19.
- Net investment income decreased by $1,004.0 million from the prior year. The majority of the decrease is attributed to the $898.3 million decline in net appreciation in fair value of investments primarily due to lower investment returns in most of the asset classes that the Retirement System invests in. Interest income decreased by $14.4 million, mainly due to the domestic fixed income markets.
- Benefit payments to Plan participants increased by $92.1 million or 6.4%, due to both a 1.5% increase in the number of payees and the Supplemental COLA and Basic COLA effective July 1, 2019.

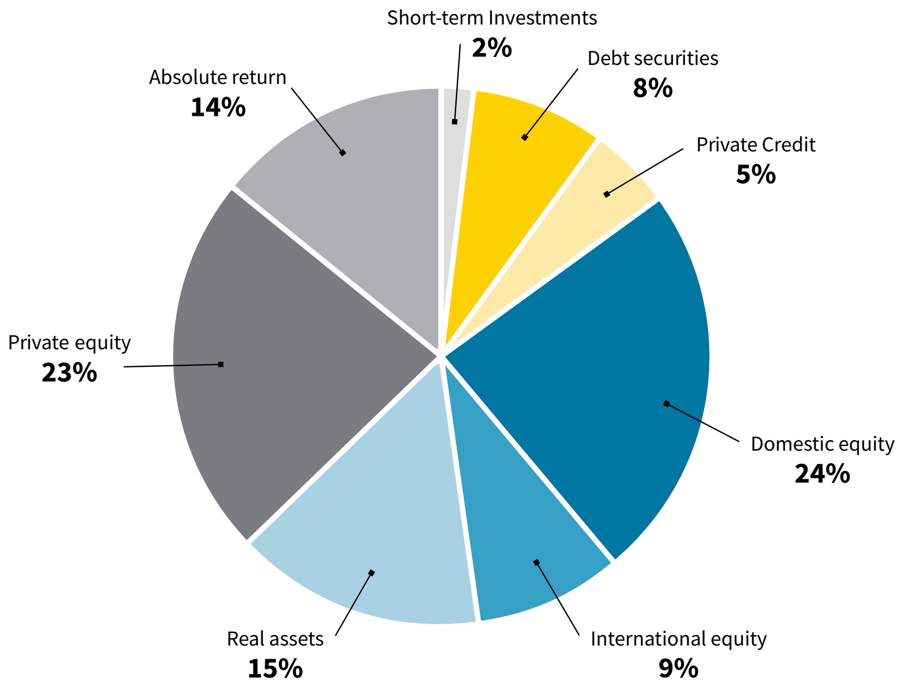
Fiduciary net position as of June 30, 2015 through 2020 expressed at cost and fair value of investments are represented in the chart below:

Plan Net Position as of June 30 ($billions)



The investment allocation at fair value based on investment category (excluding securities lending collateral and foreign currency contracts) as of June 30, 2020, is represented in the chart below:

Investment Allocation as of June 30, 2020 - 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, 2020. 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, 2020 and 2019 *(Dollars in thousands)*

	2020	2019
Assets:		
Deposits	$ 44,386	$ 62,375
Contributions receivable – members	17,959	14,532
Investment income receivable:		
Interest	10,931	17,435
Dividends	2,482	5,497
Securities lending	490	-
Receivable from brokers, general partners, others	463,531	145,829
Investments at fair value:		
Short-term investments	526,053	479,876
City investment pool	32,391	31,264
Debt securities:		
U. S. Government and agency securities	1,094,201	1,461,178
Other debt securities	958,424	1,321,937
Equity securities:		
Domestic	6,204,312	5,585,777
International	2,402,026	2,869,805
Real assets	3,840,427	4,334,229
Private credit	1,291,763	758,662
Private equity	6,105,532	5,604,023
Absolute return	3,702,667	3,574,622
Foreign currency contracts, net	(116)	96
Invested securities lending collateral	547,047	-
Total investments	26,704,727	26,021,469
Total assets	27,244,506	26,267,137
Deferred outflows of resources:		
Other postemployment benefits	1,587	1,027
Total assets and deferred outflows of resources	27,246,093	26,268,164
Liabilities		
Payable to brokers	35,774	148,518
Deferred retirement option program	-	45
Other	41,833	39,859
Payable to borrowers of securities	547,029	-
Total liabilities	624,636	188,422
Deferred inflows of resources:		
Other postemployment benefits	1,239	1,093
Total liabilities and deferred inflows of resources	625,875	189,515
Fiduciary net position – restricted for pension benefits	$ 26,620,218	$ 26,078,649

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

Statements of Changes in Fiduciary Net Position
June 30, 2020 and 2019 *(Dollars in thousands)*

	2020	2019
Additions:		
Member contributions		
Miscellaneous	$ 330,197	$ 315,059
Police	41,514	38,418
Firefighter	28,938	27,503
Total member contributions	400,649	380,980
Employer contributions:		
Miscellaneous	630,730	548,319
Police	65,059	55,533
Firefighter	47,196	41,204
Total employer contributions	742,985	645,056
Investment income (expenses):		
Interest	80,729	95,100
Dividends	108,344	203,047
Net appreciation (depreciation) in fair value of investments	822,342	1,720,605
Securities lending income	1,313	-
Investment expenses	(46,671)	(48,440)
Securities lending borrower rebates and expenses	225	-
Net investment income	966,282	1,970,312
Total additions	2,109,916	2,996,348
Deductions:		
Benefits	1,531,041	1,438,935
Refunds of contributions	17,036	17,747
Administrative expenses	19,670	18,204
Other administrative expenses - other postemployment benefits	600	779
Total deductions	1,568,347	1,475,665
Net increase in net position	541,569	1,520,683
Fiduciary net position – restricted for pension benefits:		
Beginning of year	26,078,649	24,557,966
End of year	$ 26,620,218	$ 26,078,649

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' 2020 audited financial statements dated December 22, 2020.

(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 finan¬cial 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, 2020 and 2019, 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 (50 – 100%) 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 at which time a continuation benefit equal to 100% of the member's service retirement allowance is provided to the qualified survivor.

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 $0 thousand pursuant to the DROP as of June 30, 2020.

(g) Membership

Total membership in the Retirement System as of July 1, 2020 is as follows:

	Police[1]	Fire	Miscellaneous	Total
Retirees and beneficiaries currently receiving benefits	2,730	2,164	25,234	30,128
Active members (including DROP)	2,534	1,660	30,327	34,521
Terminated members entitled to but not yet receiving benefits	275	83	10,191	10,549
Total	5,539	3,907	65,752	75,198

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 (NAV) 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, co-investments 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.

At its January 8, 2020 Board Meeting, the Retirement Board approved reinstating a securities lending program through the Retirement System's custodian bank. The Charter and Retirement Board policies permit the Retirement System to use investments of the Plan to enter into securities lending transactions – loans of securities to broker dealers and other entities for collateral with a simultaneous agreement to return the collateral for the same securities in the future. The collateral guidelines allow for both cash or non-cash collateral; non-cash collateral includes equity security baskets, investment grade corporate bonds, and sovereign debt issued by Organization for Economic Co-operation and Development (OECD) member countries.

The Retirement System's custodian, BNY Mellon, is the agent in lending the Plan's securities for cash and non-cash collateral. Contracts with the lending agent to indemnify the Retirement System if the borrowers fail to return the securities (and if the collateral were inadequate to replace the securities lent) or fail to pay the Retirement System for income distributions by the securities' issuers while the securities are on loan. BNY Mellon also indemnifies Retirement System from loss on all repurchase agreements held in the securities lending cash collateral account. If, with respect to investments of cash collateral in repurchase transactions, the counterparty fails to deliver the repurchase price upon termination, BNY Mellon will sell the purchased securities and deposit the proceeds to Retirement System's collateral account. If the proceeds are less than the repurchase price, BNY Mellon will credit the amount of such difference to Retirement System's collateral account.

To manage its counterparty risk, BNY Mellon requires additional collateral ranging between 102% and 110% depending on collateral type. As of June 30, 2020, BNY Mellon collected 102.34% for cash loans and 108.86% for non-cash loans, resulting in 106.42% over collateralization on extended loans.

Non-cash collateral cannot be pledged or sold unless the borrower defaults, and therefore, is not reported in the Retirement System's financial statements.

All securities loans can be terminated on demand by either the Retirement System or the borrower, although the average term of the loans as of June 30, 2020, was 35 days. All cash collateral received was invested in a separately managed account by the lending agent using investment guidelines developed and approved by the Retirement System. As of June 30, 2020, the weighted average maturity of the reinvested cash collateral account was 35 days. The term to maturity of the loaned securities is generally not matched with the term to maturity of the investment of said collateral.

Cash collateral invested in the separate account managed by the lending agent is reported at fair value. Payable to borrowers of securities in the statements of fiduciary net position represents the cash collateral received from borrowers. Additionally, the income and costs of securities lending transactions, such as borrower rebates and fees, are recorded respectively as revenues and expenses in the statements of changes in fiduciary net position.

(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 Health Care Trust Fund investments measured at fair value.

(3) Deposits

Deposits are carried at cost, which approximates fair value. Deposits in bank accounts were $44.4 million as of June 30, 2020.

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, 2020, 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.

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 Board's asset allocation policy for the year ended June 30, 2020 is 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%

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. In addition, the Retirement System's securities lending cash collateral separately managed account is authorized to use repurchase arrangements. As of June 30, 2020, $68.4 million (or 12.5% of cash collateral) consisted of such agreements.

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, 2020.

(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.

Below are tables depicting the segmented time distribution for fixed income investments based upon the expected maturity (in years) as of June 30, 2020.

Investments at Fair Value as of June 30, 2020

(Dollars in thousands)

		Maturities			
Investment Type	**Fair Value**	**Less than 1 year**	**1-5 years**	**6-10 years**	**10+ years**
Asset Backed Securities	$ 10,108	$ -	$ 60	$ 505	$ 9,543
Bank Loans	94,415	1,517	56,186	36,712	-
City Investment Pool	32,391	25,280	7,111	-	-
Collateralized Bonds	802	-	-	532	270
Commercial Mortgage-Backed	75,597	951	247	2,862	71,537
Commingled and Other Fixed Income Funds	315,749	444	-	83,140	232,165
Corporate Bonds	159,427	2,535	68,865	77,552	10,475
Corporate Convertible Bonds	167,019	8,612	100,002	51,691	6,714
Government Bonds	1,190,312	20,309	741,719	394,942	33,342
Government Mortgage Backed Securities	2	-	-	1	1
Municipal/Provincial Bonds	-	-	-	-	-
Non-Government Backed Collateralized Mortgage Obligations	6,871	-	601	-	6,270
Options	(1)	(1)	-	-	-
Short Term Investment Funds	553,249	553,249	-	-	-
Swaps	5,128	1,295	2,484	576	773
Total	$ 2,611,069	$ 614,191	$ 977,275	$ 648,513	$ 371,090

(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) S&P Global Ratings (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, 2020. Investments issued or explicitly guaranteed by the U.S. government of $1,094,199,000 as of June 30, 2020, are exempt from the credit rating disclosures and are excluded from the table below.

Credit Ratings of Fixed Income Investments as of June 30, 2020

(Dollars in thousands)

Credit Rating	Fair Value	Fair Value as a Percentage of Total
AAA	$ 2,607	0.2%
AA	3,824	0.3%
A	36,283	2.4%
BBB	75,990	5.0%
BB	102,632	6.8%
B	155,557	10.3%
CCC	43,517	2.9%
CC	1,798	0.1%
D	4,949	0.3%
Not Rated	1,089,713	71.7%
Total	$ 1,516,870	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 8.3% for 2020.

(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, 2020, 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, 2020, $114.7 million 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, 2020, are as follows:

Foreign Currency Risk Analysis as of June 30, 2020

(Dollars in thousands)

Currency	Cash	Equities	Fixed Income	Private Equities	Real Assets	Private Credit	Foreign Currency Contracts	Total
Argentina peso	$ -	$ -	$ 144	$ -	$ -	$ -	$ -	$ 144
Australian dollar	-	10,171	-	3,294	-	-	-	13,465
Brazil real	-	8,455	5,113	-	-	-	5,666	19,234
Canadian dollar	-	15,500	-	-	-	-	(4)	15,496
Chilean peso	-	-	1,993	-	-	-	394	2,387
Chinese yuan ren-minbi	3,334	374,375	9,751	-	-	-	21	387,481
Colombian peso	-	-	13,035	-	-	-	497	13,532
Czech koruna	-	-	4,052	-	-	-	2,516	6,568
Danish krone	-	28,004	-	-	-	-	-	28,004
Dominican rep peso	-	-	2,357	-	-	-	(2,151)	206
Egyptian pound	-	-	-	-	-	-	-	-
Euro	-	329,417	35,046	82,714	350,035	51,530	(38,620)	810,122
Hong Kong dollar	-	103,612	-	-	-	-	(2,070)	101,542
Hungarian forint	-	2,753	10,131	-	-	-	(5,014)	7,870
Indonesian rupiah	-	471	12,158	-	-	-	(128)	12,501
Israeli shekel	-	-	277	-	-	-	(334)	(57)
Japanese yen	-	78,825	-	-	53,158	-	206	132,189
Kazakhstan tenge	-	-	239	-	-	-	-	239
Malaysian ringgit	-	-	7,656	-	-	-	1,223	8,879
Mexican peso	-	2,873	5,823	-	-	-	7,020	15,716
New Taiwan dollar	-	37,573	-	-	-	-	-	37,573
New Zealand dollar	-	449	-	-	-	-	-	449
Norwegian krone	-	2,113	-	-	-	-	-	2,113
Peruvian sol	-	-	10,807	-	-	-	(6,488)	4,319
Philippines peso	-	1,495	203	-	-	-	51	1,749
Polish zloty	-	2,622	11,369	-	-	-	(1,255)	12,736
Pound sterling	-	102,755	2,239	41,150	25,385	-	(1,768)	169,761
Romanian leu	-	-	2,249	-	-	-	1,501	3,750
New Russian ruble	-	-	12,915	-	-	-	(1,620)	11,295
South African rand	-	2,664	11,910	-	-	-	(3,383)	11,191
South Korean won	-	21,595	-	-	-	-	-	21,595

Foreign Currency Risk Analysis as of June 30, 2020 (continued)

(Dollars in thousands)

Currency	Cash	Equities	Fixed Income	Private Equities	Real Assets	Private Credit	Foreign Currency Contracts	Total
Swedish krona	-	13,920	-	-	-	-	(197)	13,723
Swiss franc	-	57,320	-	-	-	-	(124)	57,196
Thailand baht	-	872	5,278	-	-	-	7,372	13,522
Turkish lira	-	-	1,206	-	-	-	1,598	2,804
Uruguayan peso	-	-	104	-	-	-	259	363
Total	$ 3,334	$ 1,197,834	$ 166,055	$ 127,158	$ 428,578	$ 51,530	$ (34,832)	$ 1,939,657

(f) Unfunded Investments Commitments

The Retirement System has unfunded commitments to contribute capital for real assets in the amount of $2,381,942,000, private equity in the amount of $3,517,312,000, private credit in the amount of $1,597,820,000 and absolute return in the amount of $302,923,000 totaling $7,799,997,000 as of June 30, 2020.

(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, 2020, 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 or by an external pricing service using various proprietary methods.

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, 2020:

As of and for the Year Ended June 30, 2020

(Dollars in thousands)

Derivative Type / Contracts	Notional Amount	Fair Value	Net Appreciation (Depreciation) in Fair Value
Forwards			
Foreign Exchange Contracts	$ 172,991	$ (116)	$ (212)
Futures			
Currency Futures Long	-	-	(29)
Equity Index Futures Long	55,315	1,620	(1,453)
Equity Index Futures Short	-	-	410
Treasury Futures Long	263,246	404	249
Options			
Foreign Exchange Contracts	(1,600)	(1)	14
Swaps			
Credit Contracts	11,280	247	60
Currency Contracts	7,669	580	617
Equity Index Contracts	-	-	31
Interest Rate Contracts	325,034	4,301	915
Rights/Warrants			
Equity Contracts	30,686 shares	91,806	12,471
Total		$ 98,841	$ 13,073

All investment derivatives are reported as investments at fair value in the statements of fiduciary net position. Rights, warrants, and equity index futures 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 tables below present those investments being classified and rated using the lower of (1) S&P Global Ratings (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.

Derivative Instruments Subject to Counterparty Credit Risk as of June 30, 2020

(Dollars in thousands)

Credit Rating	Fair Value
AA	$2,500
A	403
BBB	2,109
Total	$ 5,012

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, 2020, 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.

Interest Rate Risk

The table below describes the maturity periods of the derivative instruments exposed to interest rate risk at June 30, 2020.

Derivative Interest Rate Risk as of June 30, 2020

(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	$ (116)	$ (97)	$ (19)	$ -	$ -
Futures					
Treasury Futures Long	404	404	-	-	-
Options					
Foreign Exchange Contracts	(1)	(1)	-	-	-
Swaps					
Currency Contracts	580	420	120	40	-
Interest Rate Contracts	4,301	893	2,099	536	773
Total	$ 5,168	$ 1,619	$ 2,200	$ 576	$ 773

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, 2020:

Derivative Instruments Highly Sensitive to Interest Rate Changes as of June 30, 2020

(Dollars in thousands)

Investment Type	Reference Rate	Notional Value	Fair Value
Interest Rate Swap	Receive Fixed 0.02%, Pay Variable 6-Month CLP	$1,629	$9
Interest Rate Swap	Receive Fixed 0.03%, Pay Variable 6-Month CLP	11	1
Interest Rate Swap	Receive Fixed 0.48%, Pay Variable 6-Month PRIBOR	628	-
Interest Rate Swap	Receive Fixed 0.50%, Pay Variable 6-Month BUBOR	156	-
Interest Rate Swap	Receive Fixed 0.78%, Pay Variable 6-Month THB	1,369	(3)
Interest Rate Swap	Receive Fixed 0.79%, Pay Variable 6-Month BUBOR	347	2
Interest Rate Swap	Receive Fixed 0.94%, Pay Variable 6-Month THB	123	(2)
Interest Rate Swap	Receive Fixed 0.98%, Pay Variable 6-Month CLP	12	-
Interest Rate Swap	Receive Fixed 1.04%, Pay Variable 3-Month TELBOR	3,178	110
Interest Rate Swap	Receive Fixed 1.05%, Pay Variable 3-Month TELBOR	2,918	97
Interest Rate Swap	Receive Fixed 1.07%, Pay Variable 6-Month CLP	84	1
Interest Rate Swap	Receive Fixed 1.09%, Pay Variable 6-Month CLP	3,419	(12)
Interest Rate Swap	Receive Fixed 1.18%, Pay Variable 6-Month CLP	46	1
Interest Rate Swap	Receive Fixed 1.19%, Pay Variable 6-Month CLP	128	2
Interest Rate Swap	Receive Fixed 1.20%, Pay Variable 6-Month CLP	13	-
Interest Rate Swap	Receive Fixed 1.27%, Pay Variable 3-Month TELBOR	982	65
Interest Rate Swap	Receive Fixed 1.48%, Pay Variable 6-Month PRIBOR	717	54
Interest Rate Swap	Receive Fixed 1.49%, Pay Variable 6-Month WIBOR	303	17
Interest Rate Swap	Receive Fixed 1.50%, Pay Variable 6-Month BUBOR	394	12
Interest Rate Swap	Receive Fixed 1.78%, Pay Variable 6-Month PRIBOR	1,024	49
Interest Rate Swap	Receive Fixed 1.81%, Pay Variable 3-Month TELBOR	1,531	131
Interest Rate Swap	Receive Fixed 1.83%, Pay Variable 6-Month THB	712	40
Interest Rate Swap	Receive Fixed 1.83%, Pay Variable 6-Month WIBOR	126	3
Interest Rate Swap	Receive Fixed 1.86%, Pay Variable 7-Day PBOC	1,809	38
Interest Rate Swap	Receive Fixed 1.90%, Pay Variable 3-Month TELBOR	925	84
Interest Rate Swap	Receive Fixed 1.92%, Pay Variable 6-Month THB	142	7
Interest Rate Swap	Receive Fixed 1.93%, Pay Variable 6-Month THB	442	8
Interest Rate Swap	Receive Fixed 1.94%, Pay Variable 6-Month THB	485	23
Interest Rate Swap	Receive Fixed 1.94%, Pay Variable 6-Month WIBOR	3,666	197
Interest Rate Swap	Receive Fixed 1.95%, Pay Variable 6-Month THB	191	15
Interest Rate Swap	Receive Fixed 2.00%, Pay Variable 6-Month PRIBOR	1,336	100
Interest Rate Swap	Receive Fixed 2.00%, Pay Variable 6-Month WIBOR	607	1
Interest Rate Swap	Receive Fixed 2.01%, Pay Variable 6-Month THB	1,155	46
Interest Rate Swap	Receive Fixed 2.02%, Pay Variable 6-Month THB	647	1
Interest Rate Swap	Receive Fixed 2.04%, Pay Variable 6-Month THB	511	24
Interest Rate Swap	Receive Fixed 2.08%, Pay Variable 6-Month CLP	122	-
Interest Rate Swap	Receive Fixed 2.11%, Pay Variable 6-Month CLP	43	-

Derivative Instruments Highly Sensitive to Interest Rate Changes as of June 30, 2020 (continued)

(Dollars in thousands)

Investment Type	Reference Rate	Notional Value	Fair Value
Interest Rate Swap	Receive Fixed 2.12%, Pay Variable 6-Month THB	1,129	28
Interest Rate Swap	Receive Fixed 2.18%, Pay Variable 6-Month THB	81	8
Interest Rate Swap	Receive Fixed 2.19%, Pay Variable 6-Month THB	831	62
Interest Rate Swap	Receive Fixed 2.22%, Pay Variable 6-Month THB	453	3
Interest Rate Swap	Receive Fixed 2.25%, Pay Variable 6-Month PRIBOR	3,912	138
Interest Rate Swap	Receive Fixed 2.26%, Pay Variable 3-Month PRIBOR	6,644	38
Interest Rate Swap	Receive Fixed 2.38%, Pay Variable 7-Day PBOC	198	-
Interest Rate Swap	Receive Fixed 2.39%, Pay Variable 6-Month CLP	853	52
Interest Rate Swap	Receive Fixed 2.39%, Pay Variable 6-Month THB	620	70
Interest Rate Swap	Receive Fixed 2.42%, Pay Variable 6-Month CLP	77	5
Interest Rate Swap	Receive Fixed 2.42%, Pay Variable 6-Month THB	620	71
Interest Rate Swap	Receive Fixed 2.44%, Pay Variable 7-Day PBOC	325	2
Interest Rate Swap	Receive Fixed 2.46%, Pay Variable 7-Day PBOC	862	5
Interest Rate Swap	Receive Fixed 2.49%, Pay Variable 7-Day PBOC	42	-
Interest Rate Swap	Receive Fixed 2.51%, Pay Variable 6-Month CLP	1,265	85
Interest Rate Swap	Receive Fixed 2.51%, Pay Variable 6-Month THB	353	28
Interest Rate Swap	Receive Fixed 2.55%, Pay Variable 6-Month CLP	341	23
Interest Rate Swap	Receive Fixed 2.56%, Pay Variable 6-Month THB	757	80
Interest Rate Swap	Receive Fixed 2.58%, Pay Variable 6-Month THB	424	36
Interest Rate Swap	Receive Fixed 2.63%, Pay Variable 6-Month THB	709	65
Interest Rate Swap	Receive Fixed 2.64%, Pay Variable 6-Month CLP	380	22
Interest Rate Swap	Receive Fixed 2.68%, Pay Variable 6-Month CLP	609	46
Interest Rate Swap	Receive Fixed 2.78%, Pay Variable 6-Month CLP	329	26
Interest Rate Swap	Receive Fixed 2.78%, Pay Variable 6-Month THB	30	3
Interest Rate Swap	Receive Fixed 2.81%, Pay Variable 6-Month THB	596	62
Interest Rate Swap	Receive Fixed 2.88%, Pay Variable 7-Day PBOC	1,696	39
Interest Rate Swap	Receive Fixed 2.97%, Pay Variable 7-Day PBOC	1,202	11
Interest Rate Swap	Receive Fixed 3.12%, Pay Variable 6-Month CLP	111	11
Interest Rate Swap	Receive Fixed 3.27%, Pay Variable 6-Month CLP	554	40
Interest Rate Swap	Receive Fixed 3.34%, Pay Variable 3-Month KLIBOR	233	13
Interest Rate Swap	Receive Fixed 3.54%, Pay Variable 6-Month CLP	604	43
Interest Rate Swap	Receive Fixed 3.76%, Pay Variable 6-Month CLP	1,507	232
Interest Rate Swap	Receive Fixed 3.77%, Pay Variable 6-Month CLP	1,490	202
Interest Rate Swap	Receive Fixed 4.26%, Pay Variable 1-Day COOVIBR	660	26
Interest Rate Swap	Receive Fixed 4.50%, Pay Variable 1-Day BIDOR	6,429	164
Interest Rate Swap	Receive Fixed 4.58%, Pay Variable 1-Day COOVIBR	518	34
Interest Rate Swap	Receive Fixed 4.61%, Pay Variable 1-Day COOVIBR	561	38
Interest Rate Swap	Receive Fixed 4.70%, Pay Variable 28-Day MXIBR	1,099	1
Interest Rate Swap	Receive Fixed 4.72%, Pay Variable 28-Day MXIBR	840	1

Derivative Instruments Highly Sensitive to Interest Rate Changes as of June 30, 2020 (continued)

(Dollars in thousands)

Investment Type	Reference Rate	Notional Value	Fair Value
Interest Rate Swap	Receive Fixed 4.87%, Pay Variable 28-Day MXIBR	1,268	9
Interest Rate Swap	Receive Fixed 5.00%, Pay Variable 1-Day BIDOR	2,750	61
Interest Rate Swap	Receive Fixed 5.08%, Pay Variable 28-Day MXIBR	130	1
Interest Rate Swap	Receive Fixed 5.12%, Pay Variable 1-Day COOVIBR	426	18
Interest Rate Swap	Receive Fixed 5.17%, Pay Variable 1-Day COOVIBR	2,723	239
Interest Rate Swap	Receive Fixed 5.25%, Pay Variable 1-Day BIDOR	3,788	122
Interest Rate Swap	Receive Fixed 5.60%, Pay Variable 1-Day COOVIBR	1,159	81
Interest Rate Swap	Receive Fixed 5.61%, Pay Variable 1-Day COOVIBR	116	13
Interest Rate Swap	Receive Fixed 5.63%, Pay Variable 28-Day MXIBR	134	2
Interest Rate Swap	Receive Fixed 5.75%, Pay Variable 1-Day BIDOR	1,166	55
Interest Rate Swap	Receive Fixed 5.78%, Pay Variable 1-Day BIDOR	219	10
Interest Rate Swap	Receive Fixed 5.86%, Pay Variable 28-Day MXIBR	1,324	48
Interest Rate Swap	Receive Fixed 5.87%, Pay Variable 28-Day MXIBR	1,333	22
Interest Rate Swap	Receive Fixed 5.88%, Pay Variable 1-Day COOVIBR	832	104
Interest Rate Swap	Receive Fixed 5.92%, Pay Variable 1-Day BIDOR	1,202	63
Interest Rate Swap	Receive Fixed 6.01%, Pay Variable 1-Day BIDOR	255	6
Interest Rate Swap	Receive Fixed 6.12%, Pay Variable 1-Day COOVIBR	87	11
Interest Rate Swap	Receive Fixed 6.20%, Pay Variable 1-Day COOVIBR	80	10
Interest Rate Swap	Receive Fixed 6.23%, Pay Variable 1-Day BIDOR	2,586	161
Interest Rate Swap	Receive Fixed 6.26%, Pay Variable 1-Day BIDOR	911	55
Interest Rate Swap	Receive Fixed 6.41%, Pay Variable 1-Day COOVIBR	447	76
Interest Rate Swap	Receive Fixed 6.42%, Pay Variable 28-Day MXIBR	342	24
Interest Rate Swap	Receive Fixed 6.43%, Pay Variable 1-Day COOVIBR	25	(4)
Interest Rate Swap	Receive Fixed 6.51%, Pay Variable 28-Day MXIBR	844	62
Interest Rate Swap	Receive Fixed 6.52%, Pay Variable 1-Day BIDOR	656	12
Interest Rate Swap	Receive Fixed 6.60%, Pay Variable 28-Day MXIBR	2,666	205
Interest Rate Swap	Receive Fixed 6.62%, Pay Variable 28-Day MXIBR	969	75
Interest Rate Swap	Receive Fixed 6.64%, Pay Variable 28-Day MXIBR	1,809	(142)
Interest Rate Swap	Receive Fixed 6.68%, Pay Variable 1-Day BIDOR	2,131	157
Interest Rate Swap	Receive Fixed 6.71%, Pay Variable 28-Day MXIBR	567	49
Interest Rate Swap	Receive Fixed 6.80%, Pay Variable 28-Day MXIBR	104	8
Interest Rate Swap	Receive Fixed 6.89%, Pay Variable 1-Day BIDOR	2,113	94
Interest Rate Swap	Receive Fixed 6.99%, Pay Variable 1-Day BIDOR	892	37
Interest Rate Swap	Receive Fixed 7.05%, Pay Variable 1-Day BIDOR	1,457	69
Interest Rate Swap	Receive Fixed 7.10%, Pay Variable 1-Day BIDOR	2,040	99
Interest Rate Swap	Receive Fixed 7.12%, Pay Variable 1-Day BIDOR	728	34
Interest Rate Swap	Receive Fixed 7.13%, Pay Variable 28-Day MXIBR	528	53
Interest Rate Swap	Receive Fixed 7.18%, Pay Variable 1-Day BIDOR	1,257	64

Derivative Instruments Highly Sensitive to Interest Rate Changes as of June 30, 2020 (continued)

(Dollars in thousands)

Investment Type	Reference Rate	Notional Value	Fair Value
Interest Rate Swap	Receive Fixed 7.19%, Pay Variable 1-Day BIDOR	492	25
Interest Rate Swap	Receive Fixed 7.22%, Pay Variable 1-Day BIDOR	965	49
Interest Rate Swap	Receive Fixed 7.25%, Pay Variable 3-Month JIBAR	426	39
Interest Rate Swap	Receive Fixed 7.31%, Pay Variable 1-Day BIDOR	455	25
Interest Rate Swap	Receive Fixed 7.38%, Pay Variable 28-Day MXIBR	684	87
Interest Rate Swap	Receive Fixed 7.42%, Pay Variable 1-Day BIDOR	1,949	167
Interest Rate Swap	Receive Fixed 7.48%, Pay Variable 1-Day BIDOR	1,439	123
Interest Rate Swap	Receive Fixed 7.63%, Pay Variable 28-Day MXIBR	294	47
Interest Rate Swap	Receive Fixed 7.64%, Pay Variable 28-Day MXIBR	307	50
Interest Rate Swap	Receive Fixed 7.65%, Pay Variable 28-Day MXIBR	2,480	201
Interest Rate Swap	Receive Fixed 7.68%, Pay Variable 28-Day MXIBR	169	27
Interest Rate Swap	Receive Fixed 7.80%, Pay Variable 1-Day BIDOR	255	20
Interest Rate Swap	Receive Fixed 7.83%, Pay Variable 1-Day BIDOR	2,604	167
Interest Rate Swap	Receive Fixed 7.88%, Pay Variable 28-Day MXIBR	74	6
Interest Rate Swap	Receive Fixed 7.89%, Pay Variable 28-Day MXIBR	1,082	207
Interest Rate Swap	Receive Fixed 7.92%, Pay Variable 28-Day MXIBR	1,714	188
Interest Rate Swap	Receive Fixed 7.98%, Pay Variable 28-Day MXIBR	2,294	396
Interest Rate Swap	Receive Fixed 7.99%, Pay Variable 28-Day MXIBR	320	56
Interest Rate Swap	Receive Fixed 8.04%, Pay Variable 28-Day MXIBR	1,770	369
Interest Rate Swap	Receive Fixed 8.06%, Pay Variable 28-Day MXIBR	4,544	(2)
Interest Rate Swap	Receive Fixed 8.28%, Pay Variable 28-Day MXIBR	169	40
Interest Rate Swap	Receive Fixed 8.31%, Pay Variable 28-Day MXIBR	69	16
Interest Rate Swap	Receive Fixed 8.32%, Pay Variable 28-Day MXIBR	351	78
Interest Rate Swap	Receive Fixed 8.39%, Pay Variable 28-Day MXIBR	294	62
Interest Rate Swap	Receive Fixed 8.64%, Pay Variable 1-Day BIDOR	109	13
Interest Rate Swap	Receive Fixed 8.82%, Pay Variable 28-Day MXIBR	3,726	505
Interest Rate Swap	Receive Fixed 8.98%, Pay Variable 28-Day MXIBR	433	61
Interest Rate Swap	Receive Fixed 9.65%, Pay Variable 1-Day BIDOR	437	84
Interest Rate Swap	Receive Fixed 9.76%, Pay Variable 1-Day BIDOR	18	4
Interest Rate Swap	Receive Fixed 10.30%, Pay Variable 1-Day BIDOR	364	78
Interest Rate Swap	Receive Fixed 10.33%, Pay Variable 1-Day BIDOR	1,512	331
Interest Rate Swap	Receive Fixed 11.33%, Pay Variable 1-Day BIDOR	1,111	285
Interest Rate Swap	Receive Fixed 12.06%, Pay Variable 1-Day BIDOR	508	86
Interest Rate Swap	Receive Fixed 12.20%, Pay Variable 1-Day BIDOR	945	175

Derivative Instruments Highly Sensitive to Interest Rate Changes as of June 30, 2020 (continued)

(Dollars in thousands)

Investment Type	Reference Rate	Notional Value	Fair Value
Interest Rate Swap	Receive Fixed 12.29%, Pay Variable 1-Day BIDOR	127	36
Interest Rate Swap	Receive Fixed 16.40%, Pay Variable 1-Day BIDOR	2,185	690
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 2.15%	21,236	-
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 2.64%	31,289	(1)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 3.99%	2,058	(35)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 4.00%	9,489	(164)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 4.50%	3,715	(57)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 4.80%	1,166	(36)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 4.99%	127	(4)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 5.44%	1,111	(45)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 5.65%	401	(19)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 6.25%	200	-
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 6.34%	237	(15)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 6.50%	674	(4)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 6.55%	710	(12)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 6.71%	200	(11)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 6.81%	2,349	(139)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 6.93%	1,821	(82)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 6.95%	219	(9)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 6.98%	2,623	(124)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 7.17%	1,111	(56)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 7.26%	1,894	(96)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 7.29%	3,023	(155)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 8.79%	838	(73)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 9.60%	747	(130)
Interest Rate Swap	Receive Variable 1-Day BIDOR, Pay Fixed 11.35%	856	(146)
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 1.20%	2,729	(183)
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 2.72%	6,680	(61)
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 4.16%	951	(37)
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 4.35%	475	(26)
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 4.45%	327	(19)
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 4.49%	88	(6)
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 4.88%	1,715	(132)
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 5.19%	669	(50)

Derivative Instruments Highly Sensitive to Interest Rate Changes as of June 30, 2020 (continued)

(Dollars in thousands)

Investment Type	Reference Rate	Notional Value	Fair Value
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 5.28%	371	28
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 6.39%	346	(58)
Interest Rate Swap	Receive Variable 1-Day COOVIBR, Pay Fixed 6.42%	56	(8)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.38%	329	(2)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.43%	251	(3)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.48%	437	(8)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.52%	653	(46)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.54%	649	(17)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.55%	221	(6)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.60%	286	(22)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.62%	831	(65)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.65%	3,237	(87)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.77%	303	(9)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.83%	558	(53)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.85%	381	(37)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.86%	744	(67)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 6.87%	550	(1)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 7.07%	299	(27)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 7.18%	974	(103)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 7.72%	4,328	(367)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 7.73%	662	(56)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 8.11%	1,069	(203)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 9.09%	961	(246)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 9.10%	2,259	(579)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 9.21%	368	(97)
Interest Rate Swap	Receive Variable 28-Day MXIBR, Pay Fixed 9.33%	260	(71)
Interest Rate Swap	Receive Variable 3-Month JIBAR, Pay Fixed 7.46%	299	(12)
Interest Rate Swap	Receive Variable 3-Month JIBAR, Pay Fixed 7.49%	299	(13)
Interest Rate Swap	Receive Variable 3-Month JIBAR, Pay Fixed 7.75%	535	(45)
Interest Rate Swap	Receive Variable 3-Month KLIBOR, Pay Fixed 3.74%	560	(21)
Interest Rate Swap	Receive Variable 3-Month KLIBOR, Pay Fixed 3.75%	887	(33)
Interest Rate Swap	Receive Variable 3-Month TELBOR, Pay Fixed 0.48%	1,011	(13)
Interest Rate Swap	Receive Variable 3-Month TELBOR, Pay Fixed 0.49%	982	(13)
Interest Rate Swap	Receive Variable 3-Month TELBOR, Pay Fixed 0.51%	1,300	(19)

Derivative Instruments Highly Sensitive to Interest Rate Changes as of June 30, 2020 (continued)

(Dollars in thousands)

Investment Type	Reference Rate	Notional Value	Fair Value
Interest Rate Swap	Receive Variable 3-Month TELBOR, Pay Fixed 0.70%	982	(21)
Interest Rate Swap	Receive Variable 3-Month TELBOR, Pay Fixed 0.80%	2,514	(73)
Interest Rate Swap	Receive Variable 3-Month TELBOR, Pay Fixed 0.95%	1,127	(35)
Interest Rate Swap	Receive Variable 3-Month TELBOR, Pay Fixed 0.96%	1,098	(35)
Interest Rate Swap	Receive Variable 3-Month WIBOR, Pay Fixed 1.71%	6,699	(28)
Interest Rate Swap	Receive Variable 6-Month BUBOR, Pay Fixed 0.98%	2,112	(25)
Interest Rate Swap	Receive Variable 6-Month CLP, Pay Fixed 0.02%	1,845	(46)
Interest Rate Swap	Receive Variable 6-Month CLP, Pay Fixed 0.03%	396	(19)
Interest Rate Swap	Receive Variable 6-Month CLP, Pay Fixed 1.34%	763	(14)
Interest Rate Swap	Receive Variable 6-Month CLP, Pay Fixed 1.81%	1,989	(67)
Interest Rate Swap	Receive Variable 6-Month CLP, Pay Fixed 1.84%	1	-
Interest Rate Swap	Receive Variable 6-Month CLP, Pay Fixed 1.88%	1,570	(35)
Interest Rate Swap	Receive Variable 6-Month CLP, Pay Fixed 1.94%	2,511	(9)
Interest Rate Swap	Receive Variable 6-Month CLP, Pay Fixed 1.95%	316	(10)
Interest Rate Swap	Receive Variable 6-Month CLP, Pay Fixed 2.26%	318	(23)
Interest Rate Swap	Receive Variable 6-Month CLP, Pay Fixed 2.27%	325	(24)
Interest Rate Swap	Receive Variable 6-Month CLP, Pay Fixed 2.32%	464	(25)
Interest Rate Swap	Receive Variable 6-Month CLP, Pay Fixed 2.34%	490	(27)
Interest Rate Swap	Receive Variable 6-Month CLP, Pay Fixed 2.59%	799	(56)
Interest Rate Swap	Receive Variable 6-Month CLP, Pay Fixed 3.22%	693	(77)
Interest Rate Swap	Receive Variable 6-Month PRIBOR, Pay Fixed 0.77%	843	(10)
Interest Rate Swap	Receive Variable 6-Month PRIBOR, Pay Fixed 0.85%	1,387	(22)
Interest Rate Swap	Receive Variable 6-Month PRIBOR, Pay Fixed 0.93%	548	(12)
Interest Rate Swap	Receive Variable 6-Month PRIBOR, Pay Fixed 2.47%	1,391	(99)
Interest Rate Swap	Receive Variable 6-Month THB, Pay Fixed 0.78%	654	2
Interest Rate Swap	Receive Variable 6-Month THB, Pay Fixed 0.96%	230	(2)
Interest Rate Swap	Receive Variable 6-Month THB, Pay Fixed 1.12%	421	(1)
Interest Rate Swap	Receive Variable 6-Month THB, Pay Fixed 1.28%	2,168	(44)
Interest Rate Swap	Receive Variable 6-Month THB, Pay Fixed 1.33%	1,200	(31)
Interest Rate Swap	Receive Variable 6-Month WIBOR, Pay Fixed 0.66%	1,062	(5)
Interest Rate Swap	Receive Variable 6-Month WIBOR, Pay Fixed 0.98%	708	(8)
Interest Rate Swap	Receive Variable 6-Month WIBOR, Pay Fixed 1.83%	3,084	(168)
Interest Rate Swap	Receive Variable 6-Month WIBOR, Pay Fixed 1.86%	4,298	(104)
Interest Rate Swap	Receive Variable 6-Month WIBOR, Pay Fixed 2.25%	430	(28)
Total Interest Rate Swaps		325,034	4,301

Foreign Currency Risk

At June 30, 2020, the Retirement System is exposed to foreign currency risk on its derivative investments denominated in foreign currencies.

Derivative Instruments Foreign Currency Risk Analysis as of June 30, 2020

(Dollars in thousands)

Currency	Forwards	Swaps	Total
Argentina peso	$ -	$ (282)	$ (282)
Brazil real	5,666	2,206	7,872
Canadian dollar	(4)	-	(4)
Chilean peso	394	359	753
Chinese yuan renminbi	21	95	116
Colombian peso	497	93	590
Czech koruna	2,516	236	2,752
Dominican rep peso	(2,151)	-	(2,151)
Euro	(38,620)	-	(38,620)
Hong Kong dollar	(2,070)	-	(2,070)
Hungarian forint	(5,014)	(11)	(5,025)
Indonesian rupiah	(128)	-	(128)
Israeli shekel	(334)	277	(57)
Japanese yen	206	-	206
Malaysian ringgit	1,223	(40)	1,183
Mexican peso	7,020	641	7,661
Peruvian sol	(6,488)	-	(6,488)
Philippines peso	51	-	51
Polish zloty	(1,255)	(123)	(1,378)
Pound sterling	(1,768)	-	(1,768)
Romanian leu	1,501	-	1,501
New Russian ruble	(1,620)	-	(1,620)
South African rand	(3,383)	(31)	(3,414)
Swedish krona	(197)	-	(197)
Swiss franc	(124)	-	(124)
Thailand baht	7,372	597	7,969
Turkish lira	1,598	(1,396)	202
Uruguayan peso	259	-	259
Total	$ (34,832)	$ 2,621	$ (32,211)

Contingent Features

At June 30, 2020, 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.

The Retirement System has the following recurring fair value measurements as of June 30, 2020:

As of June 30, 2020	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	$ 524,408	$ -	$ -	$ 524,408
Debt securities:				
U.S. government and agency securities	1,094,201	1,094,199	2	-
Other debt securities	820,556	179,683	546,063	94,810
Equity securities:				
Domestic	2,884,344	2,876,298	8,046	-
International	1,867,980	1,867,041	930	9
Foreign currency contracts, net	(116)	-	-	(116)
Invested securities lending collateral	547,047	-	420,514	126,533
Total investments by fair value level	$ 7,738,420	$ 6,017,221	$ 975,555	$ 745,644
Investments measured at the net asset value (NAV)				
Short-term investments	1,645			
Fixed income funds invested in:				
Other debt Securities	137,868			
Equity funds invested in:				
Domestic	3,319,968			
International	534,046			
Real assets	3,840,427			
Private Credit	1,291,763			
Private Equity	6,105,532			
Absolute return	3,702,667			
Total investments measured at the NAV	18,933,916			
Investments not subject to the fair value hierarchy				
City investment pool	32,391			
Total investments measured at fair value	$ 26,704,727			

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 marketplace. 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 investment strategies include capital preservation, return maximization and opportunistic. Investments in the asset class are achieved through commingled funds and separate account partnerships. Private credit investments are mostly illiquid and distributions are received over the life of the investments. These investments are not typically redeemed, nor do they have set redemption schedules. There are fourteen public equity investments held in commingled funds valued at NAV. Two investments, valued at $0.8 million, are currently being liquidated with proceeds expected over the next 1-3 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, co-investments 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.

% of NAV	Redemption Frequency (excludes illiquid)	Redemption Notice Period
44%	Monthly	5-95 Days
46%	Quarterly	45-180 Days
10%	Semi-annually	60-180 Days
100%		

% of NAV in Lock Up	As of Fiscal Year End
13%	2020-2021
9%	2021-2022
4%	2022-2023
1%	2023-2024

(6) Securities Lending

The Retirement System lends U.S. government obligations, domestic and international bonds, and equities to various brokers with a simultaneous agreement to return collateral for the same securities plus a fee in the future. The securities lending agent manages the securities lending program and receives securities and cash as collateral. Cash and non-cash collateral is pledged at 102% to 110% depending on security type. There are no restrictions on the number of securities that can be lent at one time. The term to maturity of the loaned securities is generally not matched with the term to maturity of the investment of the corresponding collateral.

The Retirement System does not have the ability to pledge or sell collateral securities unless a borrower defaults. The securities collateral is not reported on the statements of fiduciary net position. As of June 30, 2020, the Retirement System has no credit risk exposure to borrowers because the amounts the Retirement System owes them exceed the amounts they owe the Retirement System. As with other extensions of credit, the Retirement System may bear the risk of delay in recovery or of rights in the collateral should the borrower of securities fail financially. However, the lending agent indemnifies the Retirement System against all borrower defaults.

As of June 30, 2020, the Retirement System has lent $1,433,684,000 in securities and received collateral of $547,029,000 and $969,557,000 in cash and securities, respectively, from borrowers. The cash collateral is invested in a separate account managed by the lending agent using investment guidelines approved by the Retirement Board. Due to the increase in the fair value of assets held in the separately managed account, the Retirement System's invested cash collateral was valued at $547,047,000. The net unrealized gain of $18,000 is presented as part of the net appreciation (depreciation) in fair value of investments in the statement of changes in fiduciary net position in the year in which the unrealized gains and losses occur. The Retirement System is exposed to investment risk including the possible loss of principal value in the separately managed cash collateral reinvestment account due to the fluctuation in the fair value of the assets held in the account.

The Retirement System's securities lending transactions as of June 30, 2020 are summarized in the following table.

Securities Lending as of June 30, 2020

(Dollars in thousands)

Investment Type	Fair Value of Loaned Securities	Cash Collateral	Fair Value of Non-Cash Collateral
Securities on Loan for Cash Collateral	$ 41,564	$ 42,504	$ -
U.S. Corporate Fixed Income	419,809	424,541	-
U.S. Equities	66,421	67,882	-
U.S. Government Fixed Income	2,057	2,298	-
International Fixed Income	9,248	9,804	-
International Equities			
Securities on Loan for Non-Cash Collateral	-		
U.S. Equities	265,391	-	278,246
U.S. Government Fixed Income	542,456	-	592,478
International Fixed Income	1,087	-	1,135
International Equities	85,651	-	97,698
	$ 1,433,684	$ 547,029	$ 969,557

The following table presents the segmented time distribution for the reinvested cash collateral account based upon the expected maturity (in years) as of June 30, 2020.

Fair Value of Cash Collateral Account as of June 30, 2020

(Dollars in thousands)

Investment Type	Fair Value	Maturity Less Than 1 Year
Agencies	$ 549	$ 549
Negotiable Certificate of Deposit	124,267	124,267
Commercial Paper	122,720	122,720
Fixed Rate Notes	7,920	7,920
Floating Rate Notes	140,445	140,445
Money Funds	82,507	82,507
Repurchase Agreements	68,431	68,431
Payable/Receivable	208	208
Total	$ 547,047	$ 547,047

The Retirement System's exposure to credit risk in its reinvested cash collateral account as of June 30, 2020 is as follows:

Credit Rating of Cash Collateral Account as of June 30, 2020

(Dollars in thousands)

Credit Rating	Fair Value	Fair Value as a Percentage of Total
A-1	$ 251,059	46.0%
AAA	82,507	15.1%
AA	54,905	10.0%
A	89,937	16.4%
Not Rated *	68,639	12.5%
Total	$ 547,047	100.0%

* This figure includes $68,431 in repurchase agreements.

(7) 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, 2020, is summarized as follows:
(Dollars in thousands)

Investments	2020
Beginning of the year	$ 4,334,229
Capital investments	763,762
Equity in net earnings	54,982
Net appreciation (depreciation) in fair value	(344,955)
Capital distributions	(967,591)
End of the year	$ 3,840,427

(8) Benefits

Allowances and benefits incurred during the year are summarized as follows:
(Dollars in thousands)

	2020
Service retirement benefits	$ 1,209,024
Disability retirement benefits	199,655
Death benefits	8,667
COLA benefit adjustments	113,695
Adjustment to accrued DROP benefits	-
Total	$ 1,531,041

(9) 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.

(10) Net Pension Liability of Employers

The components of the employers' net pension liability at June 30, 2020 was as follows:
(Dollars in thousands)

	June 30, 2020
Total pension liability	$ 32,031,018
Plan fiduciary net position	$ 26,620,218
Net pension liability	$ 5,410,800
Plan fiduciary net position as a percentage of total pension liability	83.1%

(a) Actuarial Assumptions

The total pension liability as of June 30, 2020 was determined by an actuarial valuation as of July 1, 2019 which was rolled forward to June 30, 2020 using standard roll forward procedures.

The following is a summary of actuarial methods and assumptions used at the June 30, 2020 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
Plan fiduciary net position as a percentage of total pension liability	83.1%

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, 2020 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, 2019.

The Supplemental COLA assumption as of June 30, 2020 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
2020	0.000%	0.000%	0.000%
2021	0.110%	0.070%	0.030%
2022	0.190%	0.130%	0.050%
2028	0.330%	0.220%	0.090%
2031	0.360%	0.240%	0.100%
2034+	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
2020	0.000%	0.0%
2021+	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, 2020, are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Global Equity	31.0%	4.9%
Treasuries	6.0%	-0.5%
Liquid Credit	3.0%	2.7%
Private Credit	10.0%	4.8%
Private Equity	18.0%	7.9%
Real Assets	17.0%	5.7%
Hedge Funds/Absolute Return	15.0%	3.0%
	100.0%	

(b) Discount Rate

The discount rate used to measure the total pension liability at June 30, 2020, 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, 2019, 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, 2020, the System's fiduciary net position was projected to be available to make projected future benefit payments for current members until fiscal year end 2099, when only a portion of the projected benefit payments are expected to be made from the projected fiduciary net position. 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 2.21% to the extent that they are not available. The single equivalent percentage rate used to determine the total pension liability as of June 30, 2020, rounded to two decimals is 7.40%.

The municipal bond rate of 2.21% used to determine the above discount rate represents the yield available at June 30, 2020 on the Bond Buyer 20-Bond GO Index.

(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, 2020
1% Decrease	$9,566,972
Current Discount Rate	$5,410,800
1% Increase	$1,977,024

(d) Money Weighted Rate of Return

For the year ended June 30, 2020, the annual money-weighted rate of return on pension plan investments, net of investment expenses, adjusted for the changing amounts actually invested, was 3.86%.

(11) 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, 2019
Measurement Date (MD)	June 30, 2019
Measurement Period (MP)	July 1, 2018 to June 30, 2019

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, 2019. 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.

(12) Subsequent Event

At its meeting on November 10, 2020, the Retirement Board approved a revised strategic asset allocation, as follows:

Asset Class	Current Allocation	Revised Allocation
Global Equity	31.0%	37.0%
Treasuries	6.0%	8.0%
Liquid Credit	3.0%	5.0%
Private Credit	10.0%	10.0%
Private Equity	18.0%	23.0%
Real Assets	17.0%	10.0%
Absolute Return	15.0%	10.0%
Leverage	0.0%	-3.0%
	100.0%	100.0%

Required Supplementary Information

Schedule of Changes in Collective Net Pension Liability

(Dollars in thousands)

Year ended June 30	2020	2019	2018
Total pension liability			
Service cost	$ 704,637	$ 675,065	$ 632,118
Interest	2,230,441	2,131,847	2,041,110
Changes of benefit terms	-	-	-
Differences between expected and actual experience	205,869	12,484	(42,382)
Changes of assumptions	(117,141)	351,902	170,699
Benefit payments, including refunds of member contributions	(1,548,077)	(1,456,682)	(1,364,587)
Net change in total pension liability	**1,475,729**	**1,714,616**	**1,436,958**
Total pension liability—beginning	**30,555,289**	**28,840,673**	**27,403,715**
Total pension liability—ending, (a)	**32,031,018**	**30,555,289**	**28,840,673**
Plan fiduciary net position			
Contributions—employer	400,649	380,980	364,696
Contributions—employee	742,985	645,056	619,067
Net investment income	966,282	1,970,312	2,549,674
Benefit payments, including refunds of member contributions	(1,548,077)	(1,456,682)	(1,364,587)
Administrative expenses	(20,270)	(18,983)	(18,238)
Net change in plan fiduciary net position	**541,569**	**1,520,683**	**2,150,612**
Plan fiduciary net position—beginning			
Beginning of year (as reported)	26,078,649	24,557,966	22,410,350
Restatement due to adoption of GASB 75	-	-	(2,996)
Beginning of year (as restated)	**26,078,649**	**24,557,966**	**22,407,354**
Plan fiduciary net position—ending, (b)	**26,620,218**	**26,078,649**	**24,557,966**
Net pension liability—ending, (a) – (b)	**$ 5,410,800**	**$ 4,476,640**	**$ 4,282,707**

Schedule of Changes in Collective Net Pension Liability (continued)

(Dollars in thousands)

Year ended June 30	2017	2016	2015	2014
Total pension liability				
Service cost	$644,277	$567,576	$523,644	$509,200
Interest	1,924,206	1,669,996	1,621,582	1,542,266
Changes of benefit terms	-	1,293,714	-	-
Differences between expected and actual experience	57,911	(119,270)	(197,981)	0
Changes of assumptions	88,180	1,087,309	216,845	(73,315)
Benefit payments, including refunds of member contributions	(1,278,140)	(1,256,146)	(1,131,030)	(1,072,526)
Net change in total pension liability	**1,436,434**	**3,243,179**	**1,033,060**	**905,625**
Total pension liability—beginning	**25,967,281**	**22,724,102**	**21,691,042**	**20,785,417**
Total pension liability—ending, (a)	**27,403,715**	**25,967,281**	**22,724,102**	**21,691,042**
Plan fiduciary net position				
Contributions—employer	316,844	322,764	592,643	289,020
Contributions—employee	551,809	526,805	301,682	532,882
Net investment income	2,683,468	150,190	763,429	3,175,431
Benefit payments, including refunds of member contributions	(1,278,140)	(1,256,146)	(1,131,030)	(1,072,526)
Administrative expenses	(18,134)	(17,179)	(19,262)	(15,745)
Net change in plan fiduciary net position	**2,255,847**	**(273,566)**	**507,462**	**2,909,062**
Plan fiduciary net position—beginning				
Beginning of year (as reported)	20,154,503	20,428,069	19,920,607	17,011,545
Restatement due to adoption of GASB 75	-	-	-	-
Beginning of year (as restated)	**20,154,503**	**20,428,069**	**19,920,607**	**17,011,545**
Plan fiduciary net position—ending, (b)	**22,410,350**	**20,154,503**	**20,428,069**	**19,920,607**
Net pension liability—ending, (a) – (b)	**$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)

	6/30/2020	6/30/2019	6/30/2018	6/30/2017	6/30/2016	6/30/2015	6/30/2014
Total pension liability	$ 32,031,018	$ 30,555,289	$ 28,840,673	$ 27,403,715	$ 25,967,281	$ 22,724,102	$ 21,691,042
Plan fiduciary net p osition	(26,620,218)	(26,078,649)	(24,557,966)	(22,410,350)	(20,154,503)	(20,428,069)	(19,920,607)
Net pension liability	$ 5,410,800	$ 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	83.1%	85.3%	85.2%	81.8%	77.6%	89.9%	91.8%
Covered payroll	$ 3,566,991	$ 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	151.7%	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
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%
2020	742,985	742,985	-	3,566,991	20.8%

* Covered compensation from actuarial projection.

Schedule of Money-Weighted Rate of Return

Year Ended June 30	Money-Weighted Rate of Return
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%
2020	3.86%

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 10 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
2013	7.52%
2014	7.58%
2015	7.46%
2016	7.50%
2017	7.50%
2018	7.50%
2019	7.40%
2020	7.40%

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
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
2020	7/1/2018	7.40%	3.50%	Adj. 2009 CalPERS Mortality Tables projected generationally with mod. MP-2015	Discount rate

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.

Comparison of Contributions
Employer Contributions
(Dollars in thousands)

Member Plan	Plan Year 2019-20	Plan Year 2018-19	Plan Year 2017-18
Miscellaneous Plans	$ 630,730	$ 548,319	$ 525,315
Police Plans	65,059	55,533	54,150
Firefighter Plans	47,196	41,204	39,602
Total	**$ 742,985**	**$ 645,056**	**$ 619,067**

Employee Contributions
(Dollars in thousands)

Member Plan	Plan Year 2019-20	Plan Year 2018-19	Plan Year 2017-18
Miscellaneous Plans	$ 330,197	$ 315,059	$ 302,865
Police Plans	41,514	38,418	35,791
Firefighter Plans	28,938	27,503	26,040
Total	**$ 400,649**	**$ 380,980**	**$ 364,696**

Pension Fund Net Investment Income
Fiscal Year 2019-20
(Dollars in thousands)

	Income[1]	Realized Gain/Loss	Unrealized Gain/Loss	Total
Interest Earned	$ 80,729	$ -	$ -	$ 80,729
Dividends Earned	108,344	-	-	108,344
Net Appreciation in Fair Value of Investments:				
Recaptured Commission Income	15	-	-	15
Short-term Securities	-	(1,400)	112	(1,288)
Equities	-	229,769	309,825	539,594
Debt Securities	-	96,844	(51,974)	44,870
Real Assets	54,982	117,932	(463,869)	(290,955)
Private Credit	27,833	17,043	(44,784)	92
Private Equities	(70,822)	318,634	491,450	739,262
Absolute Returns	-	117,953	(233,259)	(115,306)
Other Assets	-	(101,164)	7,204	(93,960)
Securities Lending Income - Net	1,538	-	18	1,556
Investment Expenses	(46,671)	-	-	(46,671)
Total Net Investment Income (including Net Appreciation)	$ 155,948	$ 795,611	$ 14,723	$ 966,282

1 Total investment income excludes employee and employer contributions.

Pension Fund Disbursements
Fiscal Year 2019-20
(Dollars in thousands)

Payments/Expenses	Amount
Service Retirement Payments	$ 1,209,024
Disability Retirement Payments	199,655
Cost of Living Adjustments	113,695
Death Allowance Payments	4,704
Death Benefits	2,116
Retired Annuitant Rolls (Option 1 Death Benefit)	1,847
DROP Program Accrued Retirement Benefits	0
Refunds of Contributions – Death Benefits	3,690
Refunds of Contributions – Other than Death Benefits	13,346
Administrative Expenses: Retirement Services/Administration	20,270
Total Payments & Expenses, FY2019-20	$ 1,568,347
Total Payments & Expenses, FY2018-19	$ 1,475,665
Increase from FY 2018-19:	$ 92,682

Comparison of Actual Administrative Expenditures

Retirement Services & Administration Divisions

(Dollars in thousands)

Description of Expenditures	2019-20	2018-19	2017-18
Personnel Services	$ 13,125	$ 11,667	$ 11,971
Equipment Purchase	0	0	77
Materials and Supplies	121	38	47
Services of Other Departments	3,763	3,689	3,613
Other Services	3,261	3,589	2,530
Total	**$ 20,270**	**$ 18,983**	**$ 18,238**

Investment Division

(Dollars in thousands)

Description of Expenditures	2019-20	2018-19	2017-18
Personnel Services	$ 8,024	$ 6,973	$ 6,132
Equipment Purchase	0	0	4
Materials and Supplies	32	2	6
Services of Other Departments	3,038	3,627	3,470
Recaptured Commission Expense	1,471	1,670	1,578
Other Services	34,106	36,168	38,691
Total	**$ 46,671**	**$ 48,440**	**$ 49,881**

INVESTMENT SECTION

STATEMENT FROM THE CHIEF INVESTMENT OFFICER

The investment landscape for the fiscal year ended June 30, 2020 was marked by the COVID-19 pandemic, the largest human health crisis in a century. The impact was swift and immense. In the second half of 1Q2020, the virus spread quickly, causing a sudden collapse in economic activity. From February 20 to March 23, 2020, the S&P 500 nosedived 35%, its worst decline in such a short time. In 2Q2020, U.S. Gross Domestic Product (GDP) plunged at an annualized rate of 32% and unemployment soared from 3.5% to 15%, the largest rate of unemployment since the Great Depression.

The enormous rise in unemployment led policymakers to pass legislation that provided several trillions of dollars of assistance to households and business. With that backstop in place, stock markets in 2Q2020 roared back. However, the returns of individual stocks and sectors varied substantially. Technology stocks finished the fiscal year with high returns while most sectors finished in the red. Companies in industries such as cloud computing, mobile communications, software, and internet security finished the year with large gains while airlines, hotels, energy, transportation, theme parks, and other businesses dependent on social gatherings posted large losses.

Amid the extreme volatility in the financial markets and the extraordinary dispersion of returns among individual companies, for the fiscal year ended June 30, 2020, the investments of the San Francisco Employees Retirement System (SFERS) posted a positive return of 2.41%, outperforming our median peer return of 1.26%. Our returns this year ranked in the top 32% compared to our peer universe of public pension plans with over $1 billion in assets. Our outperformance was generated by strong manager selection and sector tilts toward technology and health care in our public equity and private equity portfolios. The value of the SFERS Trust rose from $25.9 billion one year ago to $26.0 billion at June 30, 2020.

Beginning in 2014, SFERS began instituting changes in asset allocation, strategy, research, and risk management. The results have been encouraging. Over the past three and five years, our returns ranked in the top 2% and top 4%, respectively. Further, our high returns versus peers has been generated while also reducing risk. Earlier in the decade the volatility of our returns ranked near the median. The past three and five years our volatility has ranked in the lowest 7% and lowest 8%, respectively, compared to our peers, and our risk-adjusted returns have ranked in the top 1% over both time periods.

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 large 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, and passive strategies. We have begun to make co-investments, which, while on a small scale thus far, are off to a strong start, outperforming our fund investments.

Our approach to investing is augmented by an emphasis on investing in science, technology, and innovation, and investing in leaders invested in how business will be done in the future. Lastly, we utilize a comprehensive approach to risk management and incorporate environmental, social, and governance (ESG) factors into decision-making to further boost returns and reduce risk. All that we do is backed by a talented investment team dedicated to providing retirement security to the workers and retirees of the City and County of San Francisco.

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

The S&P 500 has earned 10.0% annualized since 1926. That is a very good long-term return, but it has been achieved with periodic shockingly large declines. We had one such experience this year, when from February 20 to March 23 stocks tanked 35% in just over a month. In the past 60 years stocks have lost 35% or more on six occasions, and three times they have lost 48% or more. A large loss in plan assets would significantly reduce our funded status and could lead to higher employee and employer contributions. To reduce the potential for such a development, our investment 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, 2020 is found on page 77. The implementation of the strategic asset allocation is complete except for private credit which is expected to take several more 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, 2020, SFERS investments returned 2.41%, outperforming the median return of our peer universe of 1.26%. Table 2 shows that SFERS' returns consistently rank near the top, in the highest 4% over the past three years, in the top 2% the past five years, and in the highest 4% over the past ten years.

Table 2 - Total Fund Returns for Periods Ending June 30, 2020

Total Fund	SFERS (%)	Peer Median (%)	Value Added (%)	Rank (%)	No. of Peers
1 Year	2.41	1.26	1.15	32	71
3 Years	7.17	4.97	2.20	4	71
5 Years	7.25	5.39	1.86	2	70
10 Years	9.39	7.78	1.61	4	64
20 Years	6.05	5.38	0.67	18	48

Table 3 - SFERS Investment Performance for Periods Ending June 30, 2020										
Description	**1 Year Return (%)**	**Rank**	**3 Years Return (%)**	**Rank**	**5 Years Return (%)**	**Rank**	**10 Years Return (%)**	**Rank**	**20 Years Return (%)**	**Rank**
Total Fund	2.41	32	7.17	4	7.25	2	9.39	4	6.05	18
Peer Median	1.26		4.97		5.39		7.78		5.38	
Value Added vs Peers	1.15		2.20		1.86		1.61		0.67	
Public Equity	7.90	1	8.68	1	8.13	1	10.67	7	5.05	21
Peer Median	0.85		5.09		5.99		9.68		4.56	
Value Added vs Peers	7.05		3.59		2.14		0.99		0.49	
Private Equity	6.04	24	13.79	18	12.28	22	14.05	10	8.88	1
Peer Median	2.34		10.61		10.36		11.35		8.39	
Value Added vs Peers	3.70		3.18		1.92		2.70		0.49	
Real Assets	-5.57	50	5.90	22	9.02	6	12.12	1	7.85	
Peer Median	-5.71		2.82		2.65		5.54		N/A	
Value Added vs Peers	0.14		3.08		6.37		6.58		N/A	
Absolute Return	-3.21	77	1.46	70						
Peer Median	0.25		2.76							
Value Added vs Peers	-3.46		-1.30							
Private Credit	-0.05	33	8.07	11	8.36	20	10.07	33		
Peer Median	-1.72		4.17		4.69		7.90			
Value Added vs Peers	1.67		3.90		3.67		2.17			
Liquid Credit	4.28	70	3.82	72	3.71	78	4.87	36	5.81	32
Peer Median	5.27		4.54		4.18		4.50		5.67	
Value Added vs Peers	-0.99		-0.72		-0.47		0.37		0.14	

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.

Asset Class Returns

Public Equity

Beginning five years ago, SFERS has sought to increase the excess returns in our Public Equity portfolio by investing in managers with unique strategies and specialist skill. Gradually over the past five years, the SFERS Public Equity team has added strategies focused on technology, software, biotech, innovation, sustainability, quantitative strategies, China, and investing in great businesses that are leaders in how business will be done in the future.

As shown in Table 4, the results have been encouraging. This past year, SFERS Public Equity portfolio outperformed our median peer by 7.06%, and over the past one, three and five years our Public Equity book has posted top ranked returns compared to our peers. Further, the Public Equity managers SFERS has hired the past five years have outperformed their respective benchmarks by an average of 5.9% annualized.

Table 4 - Public Equity Returns for Periods Ending June 30, 2020

Public Equity	SFERS (%)	Peer Median (%)*	Value Added (%)	Rank (%)
1 Year	7.91	0.85	7.06	1
3 Years	8.68	5.09	3.59	1
5 Years	8.13	5.99	2.14	1
10 Years	10.67	9.68	0.99	7
20 Years	5.05	4.56	0.49	21

*Peer group is the InvMetrics Public Defined Benefit > $1 billion Public Equity

Private Equity

In the fiscal year ended June 30, 2020, our Private Equity portfolio returned 6.04%, outperforming our median peer return of 2.34%. Over the past five years, our Private Equity strategy has posted returns of 12.28% compared to our peer median return of 10.36%, outperforming by 1.92%. Over the past 10 years, SFERS Private Equity book has returned 14.05%, outperforming our peers by 2.70% and ranking in the top 10%.

In our Private Equity book, we have significantly repositioned the portfolio, from large, generalist managers to managers with unique, niche, or specialist skill. The results here have also been encouraging. The managers we have added the past five years have outperformed our legacy private equity managers by more than 5% annualized.

Table 5 - Private Equity Returns for Periods Ending June 30, 2020

Public Equity	SFERS (%)	Peer Median (%)*	Value Added (%)	Rank (%)
1 Year	6.04	2.34	3.70	24
3 Years	13.79	10.61	3.18	18
5 Years	12.28	10.36	1.92	22
10 Years	14.05	11.35	2.70	10
20 Years	8.88	8.39	0.49	1

*Peer group is the InvMetrics Public Defined Benefit > $1 billion Private Equity

Real Assets

For the fiscal year ended June 30, 2020, our Real Assets portfolio lost -5.57%, nearly identical to the loss experienced by of our median peer of -5.71%. Our Real Assets book consists of two groups of investments: real estate and natural resources. COVID-19 negatively impacted large segments of real estate especially hard, especially hotels, office, and senior assisted living. The pandemic also caused a record-setting plunge in demand for oil, as transportation by auto and air came to a screeching halt. Demand for oil has historically been very steady, rising or falling about 1% annually. But due to COVID-19, in a very short time demand for oil plunged about 30%.

Over longer time periods, our Real Assets portfolio has posted strong returns. For the past five years, our Real Assets portfolio posted returns of 9.02% while our peers returned 2.65%, an outperformance of 6.37% annualized. Over the past ten years, our Real Assets book posted returns of 12.12%, more than double the return of our median peer of 5.54%. Table 6 shows that over the past five and ten years SFERS Real Assets returns rank in the top 6% and the top 1%, respectively, compared to our peers.

Table 6 - Real Assets Returns for Periods Ending June 30, 2020

Public Equity	SFERS (%)	Peer Median (%)*	Value Added (%)	Rank (%)
1 Year	-5.57	-5.71	0.14	50
3 Years	5.90	2.82	3.08	22
5 Years	9.02	2.65	6.37	6
10 Years	12.12	5.54	6.58	1
20 Years	7.85	N/A	N/A	N/A

*Peer group is the InvMetrics Public Defined Benefit > $1 billion Real Assets/Commodities

Absolute Return

For the fiscal year ended June 30, 2020, the Absolute Return portfolio lost -3.21%, underperforming our median peer return of 0.25%. Our returns were negatively impacted by markdowns in the prices of structured and mortgage related debt. Staff thinks these investments will prove to be money good, meaning we expect to receive our interest income plus our principal. Since the inception of the program in October 2016 our Absolute Return portfolio has lagged our peers, 2.87% v. 3.69%, due to our results this year. Prior to this year, our Absolute Return book was outperforming peers by nearly 1% per year.

Table 7 - Absolute Return Returns for Periods Ending June 30, 2020

Public Equity	SFERS (%)	Peer Median (%)*	Value Added (%)	Rank (%)
1 Year	-3.21	0.25	-3.46	77
3 Years	1.46	2.76	-1.30	70
3.75 Years**	2.87	3.69	-0.82	63

*Peer group is the InvMetrics Public Defined Benefit > $1 billion Hedge Funds **Since inception

Private Credit

For the fiscal year ended June 30, 2020, SFERS Private Credit portfolio returned -0.05%, but that outperformed our median peer return of -1.72%. Our low returns in Private Credit this year were caused by markdowns in the prices of loans. Here again, when COVID-19 passes and economic recovery takes hold, we expect a large portion of these investments will be money good, backed by strong underwriting and asset quality.

Over longer periods of time, our Private Credit book has posted strong returns. In the past three and five years our Private Credit book has returned 8.07% and 8.36%, respectively, outperforming our median peer by 3.90% the past three years and by 3.67% the past five years. Over the past ten years, our Private Credit strategy has recorded returns of 10.07%, outpacing our median peer return of 7.90% by 2.17%. Over the past ten years our returns in Private Credit rank in the top 33% compared to our peers, and over the past five and three years our returns rank in the top 20% and 11%, respectively.

Table 8 - Private Credit Returns for Periods Ending June 30, 2020

Public Equity	SFERS (%)	Peer Median (%)*	Value Added (%)	Rank (%)
1 Year	-0.05	-1.72	1.67	33
3 Years	8.07	4.17	3.90	11
5 Years	8.36	4.69	3.67	20
10 Years	10.07	7.90	2.17	33

*Peer group is the NEPC Defined Benefit Private Credit

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, 2020, our Fixed Income portfolio returned 4.28%, lagging our peers median return of 5.27%. Our three and five-year returns in Fixed Income have been 3.82% and 3.71%, respectively.

Table 9 - Fixed Income Returns for Periods Ending June 30, 2020

Public Equity	SFERS (%)	Peer Median (%)*	Value Added (%)	Rank (%)
1 Year	4.28	5.27	-0.99	70
3 Years	3.82	4.54	-0.72	72
5 Years	3.71	4.18	-0.47	78
10 Years	4.87	4.50	0.37	36
20 Years	5.81	5.67	0.14	32

*Peer group is the InvMetrics Public Defined Benefit > $1 billion Fixed Income

4 - Performance Analysis

Fiscal Year 2019-2020

SFERS investments returned 2.41% this past year versus our peer's median return of 1.26%, an outperformance of 1.15%, ranking in the top 32% compared to our peer universe.

Our excess returns were generated by strong manager selection in our Public Equity and Private Equity portfolios. SFERS Public Equity book returned 7.90% this fiscal year while our median peer posted returns of 0.85%. Our Private Equity portfolio recorded a return of 6.04% compared to our peer median whose Private Equity book gained 2.34%.

SFERS returns this fiscal year were dampened by COVID-19's impact on our Private Credit, Absolute Return, and Real Assets portfolios.

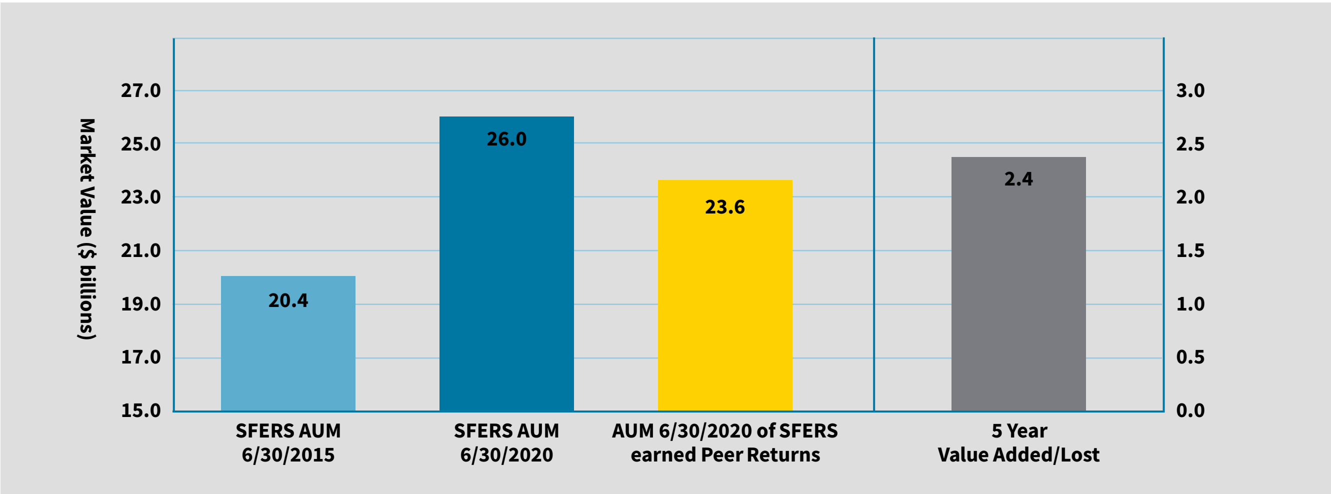
Our Private Credit book lost -0.05%, though that was a better experience than our peers median return in Private Credit of -1.67%. Our Absolute Return portfolio lost -3.12% this fiscal year, lagging our median peer which edged out a return of 0.25%. In both Private Credit and Absolute Return, our returns were impacted by marking down the value of loan related investments, particularly in mortgage loans and structured credit. Staff thinks that the markdown of these loans was due to investor worries about the value of certain real estate and business loans. However, our real estate loans are backed by properties with low loan-to-value – meaning, the borrower has significant equity in the property – and our structured credit loans are backed by tangible assets. When COVID-19 passes, an improving economy should restore the value of these investments. In sum, Staff thinks the loans in our Private Credit and Absolute Return portfolios will prove to be money good.

Our Real Assets book suffered the most this fiscal year as COVID-19 negatively impacted real estate properties, particularly hotel, office, and senior assisted living facilities, as well as a historic plunge in demand for oil. While the value of real estate and natural resources assets should begin to recover when the human health crisis passes, COVID-19 may leave longer lasting impact on certain aspects of real estate and natural resources compared to other investments.

Past Five Years

As shown earlier in Tables 1 and 2, the past five years SFERS has posted annualized returns of 7.25% while our median peer returned 5.39%. In terms of dollars, our returns the past five years of 7.25% have added $2.4 billion in value compared to if SFERS had earned the median return of our peers of 5.39%. In other words, if SFERS had earned the median peer return the past five years, our assets at fiscal year-end would have totaled $23.6 billion. Due to our outperformance versus peers of 1.86% annualized the past five years, our assets at FYE totaled $26.0 billion.

Chart 1 – Value Added: 5 Years Ended June 30, 2020



Notes: Peer universe represented by InvMetrics 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 $2.4 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 $300 million. Staff thinks our outperformance the past five years is attributable to numerous factors, including the following:

- Investment Team — Hired an investment team with distinguished experience and capabilities
- Asset Allocation — Enhanced our diversification to reduce market risk and boost returns
- Investment Strategy — Designed a unique strategy for each asset class
- Manager Research — New partnerships with top rated managers to outperform market returns
- ESG — Incorporating ESG factors to reduce risk and increase return
- Risk Management — Implemented advanced tools to measure, monitor and report risk
- Due Diligence — Enhanced our due diligence research in asset allocation and manager selection
- Support — Staff has received valued 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, over the past five and ten years SFERS has outperformed a 60/40 portfolio by 1.81% and 2.78% annualized, respectively.

Table 10 - SFERS Value Added v. 60% Stocks and 40% Bonds

	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years	30 Years
SFERS Total Fund	2.41	7.17	7.25	9.39	7.12	6.05	8.56
60/40 Benchmark*	3.15	5.29	5.44	6.61	5.53	4.90	6.78
Outperformance	-0.74	1.88	1.81	2.78	1.59	1.15	1.78

*60/40 benchmark comprises 60% MSCI ACWI IMI (Net) and 40% FTSE WGBI. Prior to June 1994, S&P 500 is used instead of MSCI ACWI IMI.

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. Our Standard Deviation over the past 3 and 5 years ranks in the lowest 7% and lowest 8%, respectively.

SFERS also recorded high risk-adjusted returns, as measured by Sharpe and Sortino Ratios, both of which rank in the top 1% over the past 3 and 5 years.

Table 11 - Risk-Adjusted Returns 3 Years Ending June 30, 2020

	Standard Deviation	Rank (%)	Sharpe Ratio	Rank (%)	Sharpe Ratio	Rank (%)
SFERS Total Fund	6.56	7	0.84	1	1.08	1
Policy Benchmark	9.29	51	0.44	26	0.69	21
Peer Median*	9.29	50	0.35	50	0.52	50

*Peer group is the InvMetrics Public Defined Benefit > $1 billion Net

Table 12 - Risk-Adjusted Returns 5 Years Ending June 30, 2020

	Standard Deviation	Rank (%)	Sharpe Ratio	Rank (%)	Sharpe Ratio	Rank (%)
SFERS Total Fund	6.36	8	0.96	1	1.26	1
Policy Benchmark	8.49	60	0.64	25	0.90	18
Peer Median*	8.26	50	0.51	50	0.66	50

*Peer group is the InvMetrics Public Defined Benefit > $1 billion Net

We also evaluate our risk-adjusted performance versus a 60/40 allocation of global stocks and U.S. bonds. As shown in Table 13, over the past three years SFERS has incurred 36% less volatility than 60/40 and about twice the risk-adjusted returns than a 60/40 benchmark. Table 14 shows that over the past five years SFERS has experienced 31% less volatility and again posted about twice the risk-adjusted returns compared to 60/40.

Table 13 - Risk-Adjusted Returns 3 Years Ending June 30, 2020

	Standard Deviation	Sharpe Ratio	Sortino Ratio
SFERS Total Fund	6.56	0.84	1.08
Policy Benchmark	9.29	0.44	0.69
60/40 Benchmark*	10.28	0.35	0.58
SFERS v. 60/40	-36%	140%	86%

*60/40 benchmark comprises 60% MSCI ACWI IMI (Net) and 40% FTSE WGBI

Table 14 - Risk-Adjusted Returns 5 Years Ending June 30, 2020

	Standard Deviation	Sharpe Ratio	Sortino Ratio
SFERS Total Fund	6.36	0.96	1.26
Policy Benchmark	8.49	0.64	0.90
60/40 Benchmark*	9.26	0.47	0.72
SFERS v. 60/40	-31%	104%	75%

*60/40 benchmark comprises 60% MSCI ACWI IMI (Net) and 40% FTSE WGBI

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, and enhances diversification. Our approach toward asset allocation is the main reason why the volatility of our returns has been 36% lower than our peers over the past three years and 31% less over the past five years.

Manager Selection

SFERS seeks higher excess returns through manager selection than most of our peers, by emphasizing managers with unique or niche strategies and specialist skill. Our focus on seeking higher excess returns than traditional index approaches reduces our dependence on the markets to provide us with good returns. Our approach toward manager selection is the main reason why SFERS has outperformed our peers by 1.86% annualized the past five years, even as the volatility of our returns has been 31% less than our median peer over the same time period.

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 peer's 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 added significant value, as shown in Table 15 by its outperformance versus Public Equity.

Table 15: SFERS Equity Returns

	1 Year	3 Years	5 Years	10 Years	20 Years
SFERS Private Equity	6.04	13.79	12.28	14.05	8.88
Private Equity Peer Median*	2.34	10.61	10.36	11.35	8.39
SFERS Public Equity	7.91	8.68	8.13	10.67	5.05
Public Equity Peer Median*	0.85	5.09	5.99	9.68	4.56

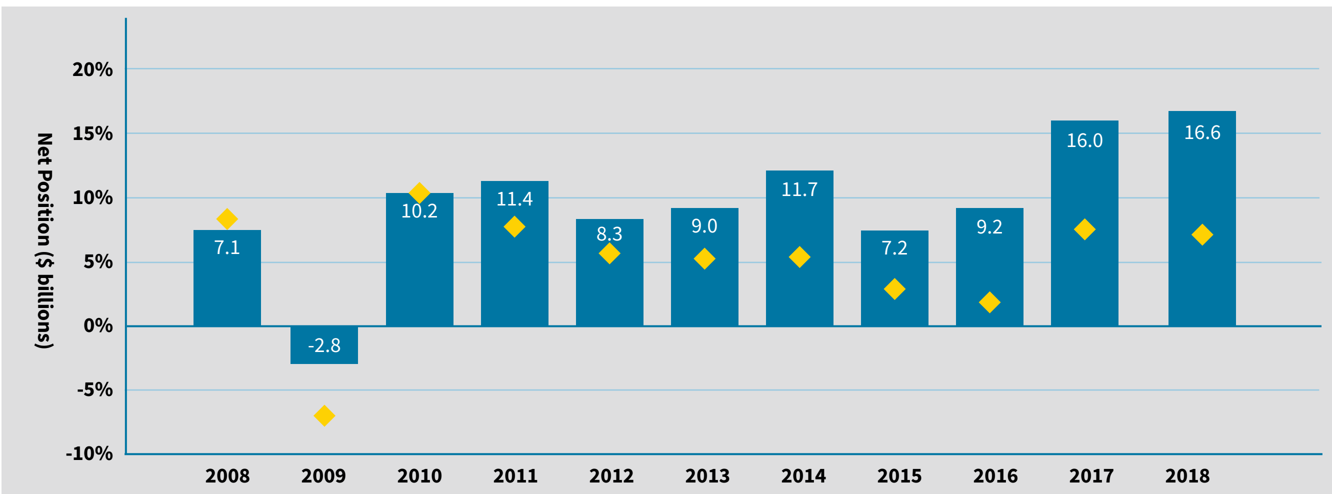
*Peer group is the InvMetrics Public Defined Benefit > $1 billion

Another reason why SFERS allocation to Private Equity is considerably larger than our peers is because private businesses have achieved higher growth than publicly traded companies. Chart 2 shows that private companies have averaged just over 4% a year higher revenue growth over the past decade.

Chart 2 also shows that the revenue growth of private companies compared to publics has recently increased. The edge in revenue growth of privates over publics has averaged 4% over the past decade, but it has risen to 6% per year the past six years and to more than 8% the past three years. There are several probable reasons why. First, in recent years fast-growing private companies have been staying private for longer than they have historically. Second, private equity benchmarks have a much larger weight to technology stocks. Tech has been the fastest growing sector for many years, but its growth rate relative to the broader economy has recently accelerated. Third, the pace of innovation is accelerating, backed by mobile communications, modern computing power, and the ability to reach many more customers than any time in history.

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

Average Annual Revenue Growth of Private Equity - Owned Companies vs Publc Companies
As of December 31, 2018 • Annual Growth Rate (%)



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 consist of private real estate, natural resources, renewable energy, communications infrastructure such as cell towers, and intangible assets such as music royalties. Real Estate is the largest segment, consisting of Office, Hotel, Apartments, Industrial, Storage, Senior Assisted Living, and other properties.

We have a strategic allocation to Real Assets of 17%, which is much higher than our peer's 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 systematic risk to the market, and post high risk-adjusted returns. Overall, its role is to reduce total portfolio volatility and provide more steady returns.

Whereas the returns of long-only stocks and bonds are determined by market direction, Absolute Return is less dependent on whether stocks and bonds go up or down. 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 higher allocation is to reduce total portfolio volatility, our expectation that Absolute Return will earn higher returns than bonds, access top managers with strategies different than long-only, to earn higher risk-adjusted returns than most asset classes, to provide liquidity, and to perform better than stocks in large market declines.

Private Credit

The role of Private Credit is to provide high cash flow, post 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 about 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.

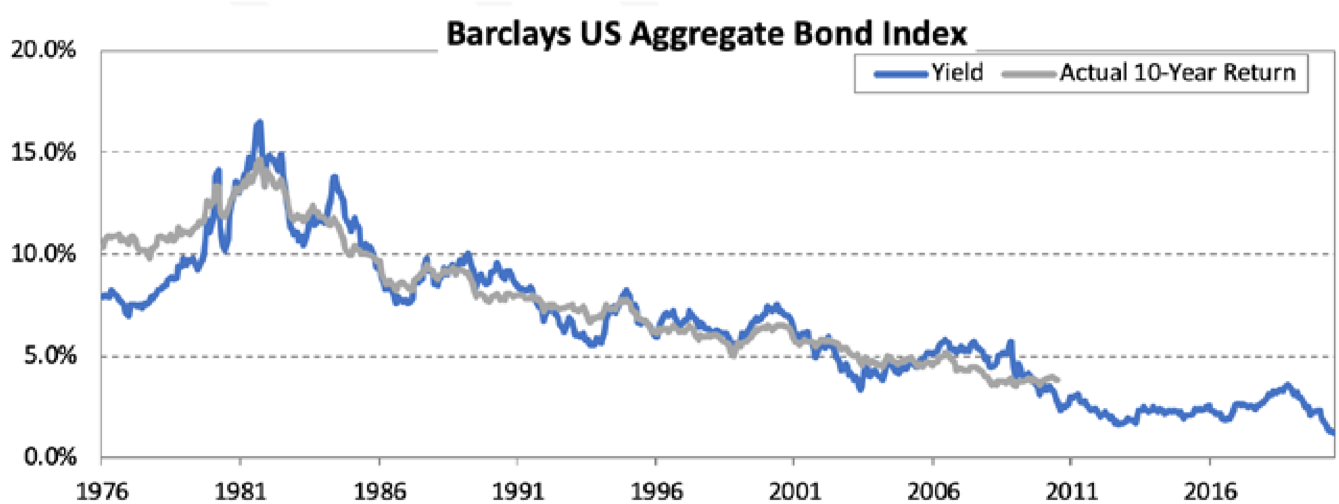
Fixed Income

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 20%, due to low expected returns. Chart 3 shows that existing bond yields have been closely linked to subsequent 10-year bond returns. Chart 3 also shows that existing bond yields are currently less than 2%. Today's very low yields suggest that the returns on high quality bonds over the next decade will be very low. NEPC, the Retirement Board's General Consultant, expects high quality bonds will return 2.6% annualized the next 10 years.

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



Characteristics of Each Asset Class

Table 16 summarizes the characteristics of SFERS asset classes. Each asset class provides important traits to achieve our dual objectives for the SFERS Trust as a whole: to maximize long-term returns while also reducing the impact of a large decline in stocks.

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

Results from Manager Selection

Table 17 shows SFERS outperformance at the total plan level and by asset class compared to our median peer. Over the past five years, SFERS has outperformed our peers by 1.86%, adding $2.4 billion in outperformance, even as the volatility of our returns has been 31% less than our peers over the same time period.

Earning high excess returns through manager selection is an important aspect of SFERS investment strategy. While we do not believe there are many exceptional managers, we do believe there are some. We seek managers with unique, significant, and sustainable competitive advantages, those with specialist skill, and with whom there is a high alignment of interests. The past six years we formed more than 90 new manager relationships. These new relationships have been instrumental in achieving our recent outperformance. Our outperformance has been especially strong in our strategies for Public Equity, Private Equity, Real Assets and Private Credit. Our most recent manager selections have added significant value. For example, the new manager hires the past five years in our Public Equity and Private Equity portfolios have outperformed our legacy relationships by more than 5% per year.

Table 17 - SFERS Excess Returns vs. Median Peer

	1 Year	3 Years	5 Years	10 Years
SFERS Total Fund	**1.15**	**2.20**	**1.86**	**1.61**
Public Equity	7.06	3.59	2.14	0.99
Private Equity	3.70	3.18	1.92	2.70
Real Assets	0.14	3.08	6.37	6.58
Absolute Return	-3.46	-1.30	--	--
Private Credit	1.67	3.90	3.67	2.17
Fixed Income	-0.99	-0.72	-0.47	0.37

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 on a regular basis.

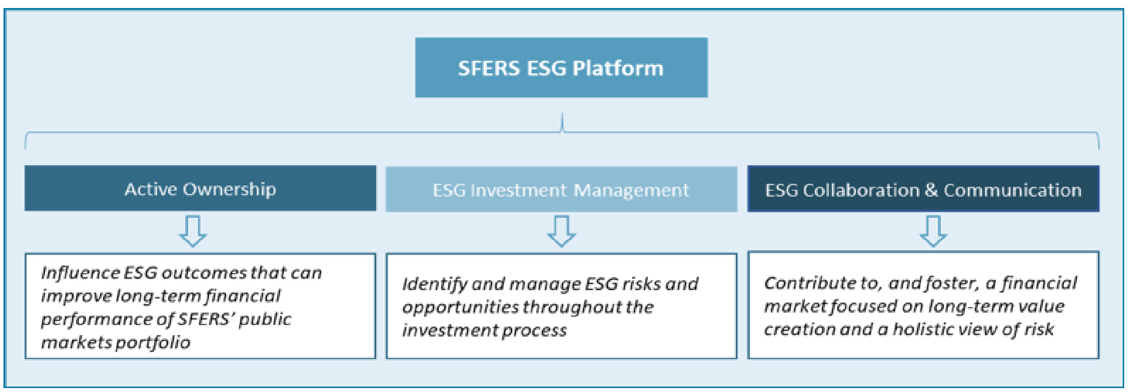
In recent years SFERS has implemented comprehensive risk management tools. These tools have enhanced our understanding of the impact different market environments, especially major down markets, could have on our returns, funded status, and liquidity.

Environmental, Social and Governance (ESG) Platform

SFERS believes that ESG factors can have a material impact on the value of companies and securities, as well as affect the macroeconomic environment more broadly. The consideration of these factors alongside traditional financial factors should, therefore, provide a better understanding of the risk and return characteristics of investments. SFERS, therefore, incorporates ESG factors into its management of the Trust. At all times, ESG factors are considered in a manner that is consistent with the Retirement Board and Staff's fiduciary responsibilities to act in the best interests of the members, retirees, and beneficiaries of the Retirement System and consistent with SFERS' role as a prudent, long-term investor.

SFERS' ESG journey began in 1988 when SFERS first adopted Social Investment Policies which eventually evolved into our current ESG Policy. Over the years SFERS has taken steps to divest from tobacco, Sudan, firearms, and thermal coal companies. Beginning in 2017, SFERS began a more integrated and formalized approach to ESG investing. SFERS became a signatory to the Principles for Responsible Investing (PRI) and joined the Ceres Investor Network. The following year SFERS hired its first Director of ESG Investing, dedicated $1 billion to low carbon investing, introduced a Climate Transition Risk Framework, established a partnership with the Thirty Percent Coalition to advocate for specific measures to increase racial and gender diversity on corporate boards, and joined the Climate Action 100+. Most recently, in March 2020, to address the mounting investment risks related to climate change, SFERS announced the ambition that SFERS' investment portfolio be net zero emissions by 2050.

SFERS acknowledges that the relevance of particular ESG issues may differ and vary in degree across companies, sectors, regions, asset classes and over time. Therefore, SFERS takes a differentiated and materiality-based approach to integrating ESG considerations into its investment process. SFERS does so by implementing a three-pillar ESG Platform that consists of:



1. Active Ownership
   - Engagement – Engaging directly with companies in SFERS' underlying portfolio to encourage them to incorporate ESG considerations into their strategy, governance, and operational management.
   - Proxy Voting – Executing proxy votes according to SFERS' Proxy Voting Guidelines and supporting shareholder proposals on material environmental and social topics.

2. ESG Investment Management
   - Manager Due Diligence & Monitoring – Engaging with existing and potential external managers across asset classes to understand their process for incorporating ESG considerations into their investment process.
   - Investment – Investing in sustainable strategies across asset classes that meet SFERS' risk and return expectations, including renewable energy, life sciences, and impact investing strategies.
   - Divestment – Restricting investment in companies and/or industries that have high, unmitigated investment risks due to ESG factors.
   - Analytics, Metrics, and Modeling – Utilizing quantitative and qualitative tools to assess ESG risks and opportunities across the SFERS portfolio.

3. ESG Collaboration & Communication
   - Partnerships – Actively participating in ESG-related investor initiatives such as Principles for Responsible Investing, Ceres Investor Network, Council of Institutional Investors, Thirty Percent Coalition, Taskforce for Climate-related Financial Disclosures, and the Principles for a Responsible Civilian Firearms Industry.
   - Reporting – Annually responding to the PRI Framework, providing regular updates to the SFERS Board, and responding to stakeholder inquiries around ESG matters.

In support of its ESG efforts, SFERS maintains a formal set of Environmental, Social, and Governance Investment Policies and Procedures and Proxy Voting Guidelines.

6 – Historical Returns

Long-Term Returns

Chart 4 shows our rolling 10-year returns since 1985. The chart shows that returns even over periods as long as ten years can be very volatile and sometimes very low.

Our returns for the 10-years ended through the mid and late 1990's ranged from 10% to as high as 15%. Just a decade later, in the late 2000's our 10-year results were in the range of 2% to 4%, due to the two large bear markets in the bursting of the internet bubble from 2000 to 2002 and the Global Financial Crisis in 2008. Our rolling 10-year returns have moved higher recently, as the GFC is no longer in the 10-year time frame and because the economic expansion from March 2009 to February 2020 was the longest on record.

Chart 4 – SFERS Rolling 10-Year Returns (July 1, 1985 to June 30, 2020)

Source: BNY Mellon.

Chart 5 shows our rolling 20-year returns have also declined. The last time SFERS posted 20-year returns of more than 8% was in early 2015, whereas previously our results were consistently at that level or higher. Amid record low bond yields that have persisted since 2009, many investment professionals have been stating for quite some time that investing is now in a low-return environment. That appears to be the case.

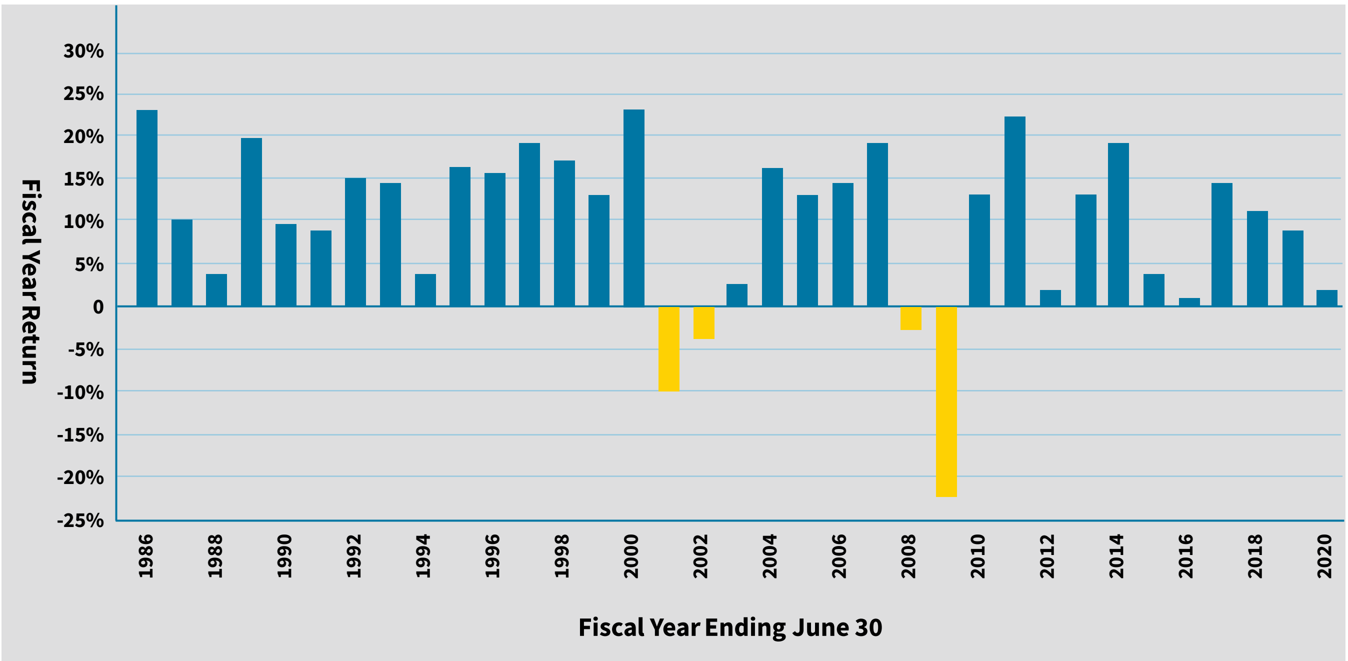
Chart 5 – SFERS Rolling 20-Year Returns - (July 1, 1985 to June 30, 2020)

Source: BNY Mellon.

Fiscal Year Returns

Chart 6 shows SFERS fiscal year returns since 1985-86. While it is encouraging that the chart shows mostly positive numbers, it's worth noting that our annual returns have been less than 5% in 6 of the past 13 years. Even as SFERS has considerably outperformed our peers, a low return environment has been in place for a while now.

Chart 6 – SFERS Fiscal One-Year Returns



Strategic Plan

Over the next decade, SFERS will become a more mature plan. Our cash outflows for pension benefits will increase from about $500 million in 2020 to approximately $1.3 billion in 2030.

Amid an environment of low market returns, low bond yields, above average equity market valuations, and our increasing cash outflows, in January 2020 the Investment Staff developed a Long-Term Strategic Plan which the Retirement Board approved. The Strategic Plan summarizes initiatives for SFERS to build upon its recent achievements to achieve long-term success.

7 - 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 and evaluation of ESG factors 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.

The landscape of investing is certain to periodically experience new challenges amid an always unpredictable market. Whatever challenges lay ahead, the SFERS investment staff will invest to continue posting high long-term returns that rank favorably on both an absolute basis and on a risk-adjusted basis compared to our peers.

Very Appreciatively,

William J. Coaker, Jr.
Chief Investment Officer

Summary of Investments & Performance

As of June 30, 2020, 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, 2020 and June 30, 2019

	2020		2019	
	Market Value ($thousands)	Weight (%)	Market Value ($thousands)	Weight (%)
Public Equity	8,979,291	34.5	8,970,143	34.7
Private Equity	5,545,276	21.3	5,356,449	20.7
GROWTH ASSETS	14,524,567	55.8	14,326,592	55.4
Real Assets	3,874,050	14.9	4,284,504	16.6
Absolute Return	3,703,261	14.2	3,575,151	13.8
DIVERSIFYING ASSETS	7,577,312	29.1	7,859,655	30.4
Fixed Income	1,879,265	7.2	2,589,930	10.0
Private Credit	1,259,996	4.8	837,775	3.2
INCOME GENERATING ASSETS	3,139,261	12.1	3,427,705	13.3
Cash	782,419	3.0	242,807	0.9
Total Investment Portfolio	26,023,559	100.0	25,856,759	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.

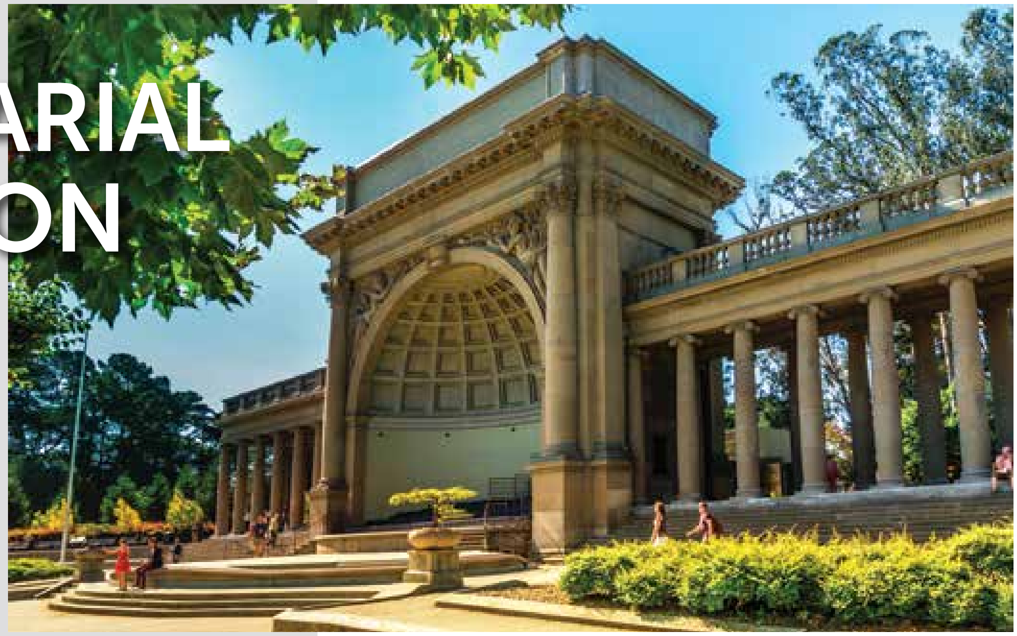
Table 19 - Investment Performance vs. Benchmarks for periods ending June 30, 2020

Description	1-Year	3-Years	5-Years	10-Years	20-Years
Public Equity	7.91	8.68	8.13	10.67	5.05
Public Equity Policy Benchmark[1]	1.17	5.55	6.11	9.28	4.71
Private Equity	6.04	13.79	12.28	14.05	8.88
Private Equity Policy Benchmark[2]	6.74	11.42	13.31	18.12	10.62
Real Assets	-5.57	5.90	9.02	12.12	7.85
Real Assets Policy Benchmark[3]	-13.73	-0.99	2.52	6.38	7.56
Absolute Return	-3.21	1.46			
Absolute Return Policy Benchmark[4]	6.63	6.80			
Fixed Income	4.28	3.82	3.71	4.87	5.81
Fixed Income Policy Benchmark[5]	7.84	4.90	4.27	4.04	5.26
Private Credit	-0.05	8.07	8.36	10.07	8.85
Private Credit Policy Benchmark[6]	0.63	4.43	5.43	7.02	
Cash	1.50	1.73	1.29	0.76	1.83
Total Fund	2.41	7.17	7.25	9.39	6.05
Total Fund Policy Benchmark[7]	1.64	5.77	6.55	9.17	6.19

Source: BNY Mellon

1. The current Public Equity Policy (starting 10/1/2012) consists of 100% MSCI ACWI IMI (ND).
2. The current Private Equity Policy (starting 1/1/2018) consists of 25% MSCI ACWI Ex-US (ND) and 75% Russell 3000 plus 300 bps.
3. The current Real Assets Policy (starting 1/1/2018) consists of 50% NCREIF ODCE and 50% Cambridge Associates NR Quarter Lag.
4. The Absolute Return Policy consists of the 90-day Treasury Bill plus 500 bps.
5. The current Fixed Income Policy (starting 7/1/2019) consists of 45% Bloomberg Barclays US Aggregate and 55% Bloomberg Barclays Intermediate Treasury.
6. The 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 10/1/2019) consists of 35% Public Equity Policy, 6% Bloomberg Barclays Intermediate US Treasury, 5% Bloomberg Barclays Capital US Aggregate, 4% Private Credit Policy, 17% Real Assets Policy, 18% Private Equity Policy and 15% 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, 2019 actuarial funding report issued in February 2020.

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, 2019 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 (7.40% for the plan year ending 2019 and 7.50% for the years ending 2016 through 2018) 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. 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.

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 (10) 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	Misc. Females	Misc. Males
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.

	Females					
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

There have been no changes in actuarial assumptions since the July 1, 2018 valuation:

The July 1, 2019 actuarial liability reflects the July 1, 2019 supplemental COLA. There have been no other significant changes in plan provisions reflected since the July 1, 2018 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 9 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 (10) 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 (10) 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 supplemental COLAs and voter-approved propositions 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	2019	2018	2017	2016	2015
Prior Valuation Unfunded Actuarial Accrued Liability	$ 3,469.4	$ 3,520.8	$ 3,749.2	$ 3,317.60	$ 3,110.5
Expected change from Prior Valuation	(232.4)	(157.7)	(82.5)	(25.2)	(70.7)
Expected Unfunded Actuarial Liability as of Valuation Date	3,237.0	3,363.1	3,666.7	3,292.4	3,039.8
Changes in Benefits due to Propositions and/or Supplemental COLAs	141.0	200.8	200.1	429.3	0.0
Changes in Assumptions	0.0	297.7	50.2	0.0	1,048.4
Salary Increases Greater/(Less) than Expected	46.0	(53.7)	(80.6)	4.9	(79.9)
Asset Return Less/(Greater) than Expected	(58.6)	(408.9)	(405.7)	51.5	(545.5)
All Other Experience	185.6	70.4	90.1	(28.9)	(145.2)
Unfunded Actuarial Accrued Liability as of Valuation Date	**$ 3,551.0**	**$ 3,469.4**	**$ 3,520.8**	**$ 3,749.2**	**$ 3,317.6**

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
7/01/2010	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%
7/01/2019	25,247,549	28,798,581	3,551,032	87.7%	3,549,936	100.0%

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) has not been fully funded since the July 1, 2008 actuarial valuation. 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)
7/1/2010	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%
7/1/2019	3,675	18,074	7,050	25,248	100%	100%	50%

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
7/1/2010	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%
7/1/2019	General	30,056	2,843,589,575	94,610	3.5%
	Safety	4,146	535,124,687	129,070	3.7%

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
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
2018-19	1,770	83,661,179	957	36,959,870	30,778	1,513,436,081	6.3%	49,173

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 2019-20*** 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
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
2020	400,649	742,985	1,012,953	(46,671)	2,109,916

Deductions to Pension Plan by Type

(Dollars in thousands)

Fiscal Year Ending June 30	Benefits Paid	Refunds of Contributions	Administrative Expenses	Total
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
2020	1,531,041	17,036	20,270	1,568,347

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)

				Fiduciary Net Position	
Fiscal Year Ending June 30	Additions	Deductions	Net Change	Beginning of Year	End of Year
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
2020	2,109,916	1,568,347	541,569	26,078,649	26,620,218

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
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
2020	1,209,024	199,655	8,667	113,695	0	1,531,041

Fiscal year 2016 COLA benefits include retroactive supplemental COLA benefits for 2013 and 2014. See Note 1(e) of the Basic Financial Statements in the Financial Section for additional information about COLA benefits. 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

Retirement Effective Dates	Years of Credited Service 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
7/1/19 to 6/30/20						
Average Mo. Benefit	$ 1,258	$ 2,462	$ 3,499	$ 4,501	$ 6,855	$ 7,685
Average Final Comp.	$ 8,682	$ 9,641	$ 9,008	$ 9,508	$ 10,722	$ 10,468
Number	107	135	161	196	145	211

Active Members by Employer

Employer	July 1, 2020	Percentage of System	July 1, 2012	Percentage of System
City and County of San Francisco[1]	32,203	93.3%	26,001	91.9%
San Francisco Unified School District	1,349	3.9%	1,180	4.2%
San Francisco Community College District	588	1.7%	686	2.4%
San Francisco Trial Courts	381	1.1%	415	1.5%
Total	**34,521**	**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
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%
2020	17.71%	4.80%	9.67%	(7.59%)	0.60%	25.19%

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

Fiscal Year 2019-2020 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 2019-2020 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 $59 per hour	Base Rate of Pay at or above $59 per hour
Miscellaneous Non-Safety Plans	25.19%	21.69%	21.19%
Police and Firefighter Old Plans	20.69%	20.69%	20.69%
Police and Firefighter New Plans Tier I	20.69%	20.69%	20.69%
Police and Firefighter New Plans Tiers II and III	21.69%	21.69%	21.19%
Miscellaneous Safety and Sheriffs Plans	21.69%	21.69%	21.19%

Fiscal Year 2019-2020 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 $59 per hour	Base Rate of Pay at or above $59 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%

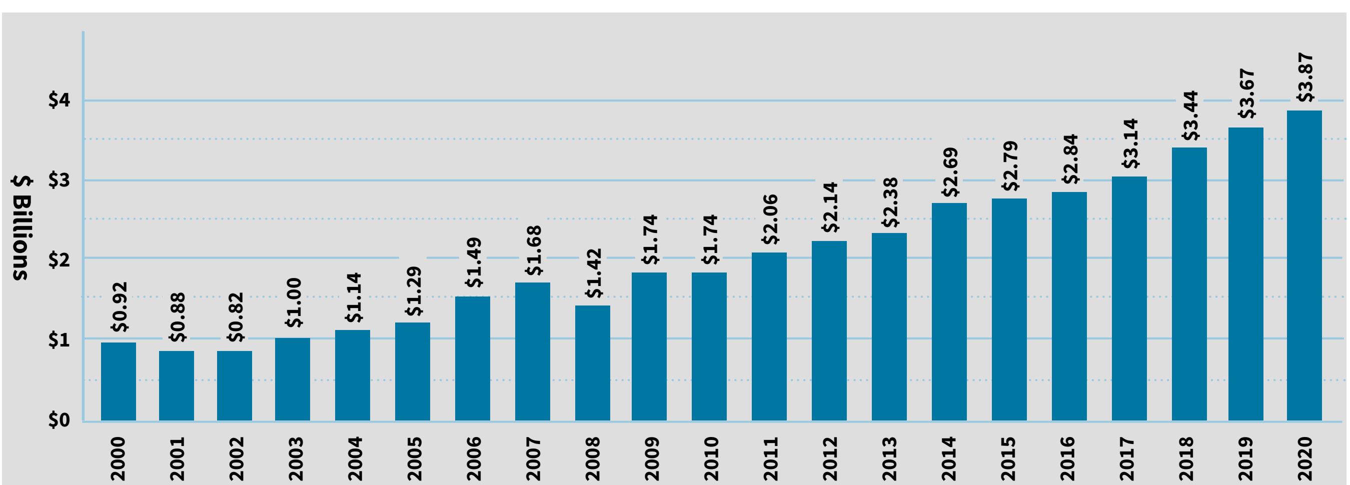
DEFERRED COMPENSATION PLAN (SFDCP)

The San Francisco 457(b) Deferred Compensation Plan (SFDCP) was adopted in 1976 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 5%, and the average account balance per participant was $120,393.

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. The Plan transitioned from Prudential Retirement to a new recordkeeper, Voya Financial, in September 2019.

As of June 30, 2020, there were 31,780 participants in the SFDCP with Plan assets valued at $3.869 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 2019-20.

SFDCP Assets under Management



SFDCP Values as of June 30, 2020

Funds	Total Assets *	Percent Of Total Assets	Annual Performance
SFDCP Stable Value Fund	$ 1,004,030,888	26.24%	2.56%
SFDCP Core Bond Fund	$ 153,914,965	4.02%	8.83%
SFDCP Bond Index Fund	$ 162,050,844	4.24%	8.71%
SFDCP Retirement Fund	$ 229,562,860	6.00%	4.42%
SFDCP Target Date 2025 Fund	$ 150,162,387	3.92%	4.17%
SFDCP Target Date 2030 Fund	$ 135,752,710	3.55%	3.47%
SFDCP Target Date 2035 Fund	$ 102,723,979	2.68%	1.90%
SFDCP Target Date 2040 Fund	$ 74,426,929	1.95%	-0.63%
SFDCP Target Date 2045 Fund	$ 51,428,342	1.34%	-0.89%
SFDCP Target Date 2050 Fund	$ 20,236,618	0.53%	-0.89%
SFDCP Target Date 2055 Fund	$ 9,871,976	0.26%	-0.89%
SFDCP Target Date 2060 Fund	$ 309,719	0.01%	-0.88%
SFDCP Target Date 2065 Fund	$ 393,821	0.01%	-0.86%
SFDCP Large Cap Value Equity Fund	$ 49,812,457	1.30%	-12.67%
SFDCP Large Cap Equity - S&P 500 Index Fund	$ 451,751,085	11.81%	7.51%
SFDCP Large Cap Social Equity Fund	$ 76,917,342	2.01%	11.18%
SFDCP Large Cap Growth Equity Fund	$ 559,374,424	14.62%	21.71%
SFDCP Active Equity Fund	$ 95,451,980	2.49%	-3.64%
SFDCP Small-Mid Cap Equity Index Fund	$ 202,044,591	5.28%	0.90%
SFDCP Small-Mid Cap Equity Fund	$ 7,303,273	0.19%	-3.64%
SFDCP International Equity Fund	$ 140,026,867	3.66%	-4.00%
SFDCP International Equity Index Fund	$ 106,459,747	2.78%	-4.62%
SFDCP Real Estate Fund	$ 23,284,720	0.61%	-25.78%
Self Directed Brokerage	$ 18,783,520	0.49%	N/A
Total Plan Assets	**$ 3,826,076,045**	**100.00%**	

* Assets are rounded up to the nearest dollar

SFDCP Statistics Summary
Plan Year Ended June 30, 2020

Asset Summary	
Beginning Assets July 1, 2019	$ 3,674,028,746
Contributions	186,990,561
Roll-ins	12,744,464
Less Distributions	168,756,803
Outstanding Loans	43,272,924
Ending Assets June 30, 2020[1]	**$ 3,869,348,969**
Participant Summary	
Beginning Participants July 1, 2019	31,120
New Participants	1,478
Actively Contributing Participants	20,134
Ending Participants June 30, 2020	**31,780**
Service Summary	
Group Meetings	421
Field and Office Individual Counseling Sessions	4,169
Customer Service Calls (IVR and Representatives)	30,849
Web Logins	432,664

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