

MINNESOTA STATE BOARD OF INVESTMENT

2019 Annual Report



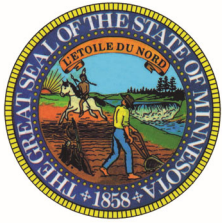


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MINNESOTA
STATE
BOARD OF
INVESTMENT



Board Members

Governor
Tim Walz

State Auditor
Julie Blaha

Secretary of State
Steve Simon

Attorney General
Keith Ellison

Executive Director

Mansco Perry

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Employer

December 2019

The Minnesota State Board of Investment (SBI) is pleased to present its report for the fiscal year ending June 30, 2019.

SBI Results for Fiscal Year 2019

In a positive economic environment, the Combined Funds returned 7.3% during the fiscal year 2019. Over the recent fiscal 10-year and 20-year time periods, the Combined Funds generated annualized returns of 10.9% and 6.5%, respectively (see **page 11**).

Financial markets in the U.S. were buoyed by the combination of solid GDP growth and the prospect of the Federal Reserve (Fed) shifting its monetary policy stance back to easing mode. The U.S. economy, as measured by real Gross Domestic Product (GDP), grew 2.3% from a year earlier and the U.S. labor market unemployment rate remained near an historic low at 3.7%. During the 12 months ended June 30, 2019, the Fed raised the target range for its overnight policy rate (the Federal Funds rate) twice, each by a quarter-point (0.25%), to end the year at a target range of 2.25% - 2.50%. However, the Fed's shift to tighter monetary policy was short-lived. A sharp escalation in trade tensions in late 2018 between the United States and its key trading partners, most notably China, dampened consumer and business sentiment globally.

Both the U.S. equity and bond market posted strong positive returns for the fiscal year ending June 30, 2019. The Russell 3000 Index, a proxy for the broad U.S. equity market, returned 9.0% for the year while the U.S. bond market, as measured by the Bloomberg Barclays U.S. Aggregate Bond Index, returned 7.9% over the same period. Non-U.S. equity markets, as measured by the MSCI World ex USA (net) benchmark, underperformed the U.S. equity markets with a 1.3% return for the fiscal year.

On June 30, 2019, assets under management totaled \$101.1 billion. This total is the aggregate of various retirement funds, non-retirement funds, cash accounts, and state sponsored savings plans, each with different investment objectives. In establishing a comprehensive management program, the Board has developed an investment strategy for each fund which reflects its unique requirements.

Investment Beliefs

A set of Investment Beliefs adopted by the State Board of Investment reflect the SBI's investment values, acknowledge its role in supporting the State's broader pension systems, and guide the development of sound investing policies. These Investment Beliefs apply to the Combined Funds and other funds under the SBI's responsibility wherever appropriate. The Investment Beliefs appear after this letter.

The primary purpose of this annual report is to communicate the investment goals, policies and performance of each fund managed by the Board. Through the investment programs presented in this report, the Minnesota State Board of Investment seeks to enhance the management and performance of the assets under its control.

Sincerely,

A handwritten signature in dark ink, appearing to read "Mansco Perry III".

Mansco Perry III
Executive Director and Chief Investment Officer

SBI Investment Beliefs

The State Board of Investment (SBI) adopted a set of Investment Beliefs for managing the assets of the Combined Funds (those funds utilized to support the defined benefit plans of the State's employees). The primary purpose of these Beliefs is to guide the SBI toward sound investing principles related to investing on behalf of the Combined Funds. In this respect, the Beliefs help provide context for SBI's actions, reflect SBI's investment values, and acknowledge SBI's role in supporting the State's broader retirement systems. When relevant, the SBI also uses these Beliefs as a guide when investing the assets of the other investment programs that it manages, as deemed appropriate.

The SBI is a long-term investor whose primary mission is to maintain the viability of the retirement systems it supports.

When determining an appropriate level of risk that the systems' assets should bear the SBI must reflect the nature of those systems' liabilities and funding policy.

The SBI's strategic allocation policy is the primary determinant of (i) the asset portfolio's long-term investment return and (ii) asset portfolio's risk.

While the SBI can sacrifice some short-term liquidity to pursue a greater long-term return, the investment portfolio's net cash flows and ability to pay benefits on a year-by-year basis are key risk considerations.

Diversification improves the risk-adjusted return profile of the SBI investment portfolio.

Diversification of the SBI investment portfolio takes place across several critical dimensions, such as allocation across global regions and country markets (e.g., U.S. versus Europe, Asia, emerging markets, etc.), allocation among different types of assets (equities, bonds, real estate, etc.), spreading assets across various sectors and industries (e.g., technology, financials, consumer-oriented, etc.), and weighting of different risk factor premiums (e.g., value vs. growth, small companies vs. big companies, carry, illiquidity, etc.). If the correlation (i.e., relationship) among the returns generated by these factors is less than perfect (i.e., less than 1.0), then diversification is beneficial.

There are long-term benefits to SBI managing investment costs.

The equity risk premium is significantly positive over a long-term investment horizon although it can vary over time.

The equity risk premium is also pervasive across several asset classes and its overall exposure should be managed accordingly.

Private market investments have an illiquidity premium that the SBI can capture.

This risk premium can increase the portfolio's long-term compound return and help diversify the portfolio's risk.

It is extremely challenging for a large institutional investor to add significant value over market-representative benchmarks, particularly in the highly-competitive public global equity markets.

Passive management should be utilized when there is low confidence that active management can add value. Active management can have potential to add value where information processing is difficult and challenging, allowing for market inefficiencies that are potentially exploitable.

SBI Investment Beliefs

The SBI benefits significantly when roles and levels of authority are clearly defined and followed.

The role of the members of the State Board of Investment (Board) is to establish investment policies that are in compliance with state statute and guide the ongoing management of the funds. The Board delegates implementation of that policy to the Executive Director/CIO, and exercises oversight with respect to the Executive Director/CIO's implementation activities and the portfolio's active risk level in the context of the portfolio's strategic allocation policy. The Board also ensures adequate resources are available to the SBI staff to perform their work;

The Investment Advisory Council (IAC) key role is advising the Board and Executive Director/CIO on general policy matters and methods to enhance the management of the investment portfolio;

The Executive Director's/CIO's key role is implementing SBI investment policies and setting the portfolio's active risk level in a prudent manner to achieve value-added over policy benchmarks.

Utilizing engagement initiatives to address environmental, social, and governance-related (ESG) issues can lead to positive portfolio and governance outcomes.

In addition to specific engagement strategies the SBI might apply, proxy rights attached to shareholder interests in public companies are also "plan assets" of the SBI and represent a key mechanism for expressing SBI's positions relating to specific ESG issues. By taking a leadership role in promoting responsible corporate governance through the proxy voting process, SBI can contribute significantly to implementing ESG best practices which should, in turn, add long-term value to SBI's investments.

Approved by State Board of Investment

State Board of Investment – Governance of Agency

Board Members

Governor Tim Walz, Chair

State Auditor Julie Blaha

Secretary of State Steve Simon

State Attorney General Keith Ellison

Investment Advisory Council

The Minnesota Legislature has established a seventeen member Investment Advisory Council (IAC) to advise the Board and its staff on investment-related matters.

The IAC fulfills its statutory duty to the State Board of Investment (SBI) by providing advice and independent due diligence review of the investment policy and implementation recommendations that guide the SBI's investment of assets.

The Board appoints ten members from the public experienced in finance and investment. These members traditionally have come from the Minneapolis and St. Paul investment community.

The Commissioner of Minnesota Management and Budget and the Executive Directors of the three statewide retirement systems are permanent members of the IAC.

Two active employee representatives and one retiree representative are appointed to the IAC by the Governor.

All proposed investment policies are reviewed by the IAC before they are presented to the Board for action.

Public Members

Gary Martin, Chair
Chief Investment Officer
Macalester College

Kim Faust, Vice Chair
Vice President and Treasurer
Fairview Health Services

Malcolm W. McDonald
Emeritis Member
Director & Corporate Secretary
(Retired)
Space Center, Inc.

Dennis Duerst
President, 3M Investment
Management Corporation
3M Company

Susanna Gibbons
Managing Director
Carlson Funds Enterprise
Carlson School of Management

Morris Goodwin, Jr.
Sr. Vice President and CFO
American Public Media Group

Dan McConnell
Business Manager
Building & Construction Trades
Council of Minneapolis

Nancy Orr
Chief Investment Officer
Fiduciary Counselling, Inc.

Public Members (cont.)

Carol Peterfeso
Chief Treasury and Investment
Officer
University of St. Thomas

Shawn Wischmeier
Chief Investment Officer
Margaret A. Cargill Philanthropies

Permanent Members

Doug Anderson
Executive Director
Public Employees Retirement
Association

Erin Leonard
Executive Director
MN State Retirement System

Myron Frans
Commissioner
MN Management and Budget

Jay Stoffel
Executive Director
Teachers Retirement Association

Employee and Retirement Representative

Denise Anderson
Governor's Appointee
Active Employee Representative

Peggy Ingison
Governor's Appointee
Retiree Member Representative

Staff, Consultants & Custodians

Mansco Perry III
Charlene Olson

Executive Director and Chief Investment Officer
Executive Assistant

Directors

Patricia Ammann
Director,
Investment Services and
Operations

Paul T. Anderson
Director,
Financial Services and
Operations

Andy Christensen
Director,
Investment Research and
Analysis

Andrew Krech
Director,
Private Markets and Asset
Allocation

John Mulé
Director,
Legal, Legislative Policy and
Shareholder Services

Erol Sonderegger
Director,
Public Markets, Cash
Management Services, and Risk
Management

Investment Staff

Nathan Blumenshine
Investment Officer

Cassandra Boll
Investment Officer

Tammy Brusehaver
Investment Officer

Stephanie Gleeson
Investment Officer

Aaron D. Griga
Investment Officer

Steven P. Kuettel
Investment Officer

Jonathan Stacy
Investment Officer

Jeffrey Weber
Investment Officer

Administrative Staff

Kailee Anderson
Accounting Officer

Shirley Baribeau
Controller

Kathy Leisz
Information Technology
Specialist 3

Melissa Mader
Office Administrative Specialist,
Senior

William J. Nicol
Investment Accounting
Specialist

Kelly Nordstrom
Office Administrative Specialist,
Intermediate

Narmada Ramaswami
Accounting Officer, Senior

Iryna Shafir
Compliance Analyst

Consultants

General Consultant
*Aon Hewitt Investment
Consulting, Inc.*
Chicago, Illinois

Special Projects Consultant
Meketa Investment Group, LLC
Portland, Oregon

Custodian Banks

Retirement and Trust Funds
State Street Corporation
Boston, Massachusetts

State Cash Accounts
*Wells Fargo Bank, National
Association*
St. Paul, Minnesota

As of December 2019

Introduction

The Minnesota State Board of Investment is responsible for the investment management of various retirement funds, trust funds and cash accounts. On June 30, 2019, the market value of all assets was \$101.1 billion.

Constitutional and Statutory Authority

The Minnesota State Board of Investment (SBI) is established by Article XI of the Minnesota Constitution to invest all state funds. Its membership as specified in the Constitution is comprised of the Governor (who is designated as chair of the Board), State Auditor, Secretary of State and Attorney General.

All investments undertaken by the SBI are governed by the prudent person rule and other standards codified in *Minnesota Statutes*, Chapter 11A and Chapter 356A.

During the course of the year, members of the board undertake numerous activities in their oversight of the State Board of Investment. Examples of board activities during 2019 include:

- Authorizing the Executive Director to negotiate 22 private market investment deals, totaling up to \$3.05 billion;
- Hearing testimony from various stakeholders and groups regarding investment issues, including but not limited to groups advocating that the SBI divest from certain sectors and companies (i.e. civilian firearms manufacturers, fossil fuel companies);
- Reviewing and adopting the SBI budget and Executive Director's annual work plan;

- Authorizing and appointing members of the SBI proxy committee;
- Appointing members to the Investment Advisory Council;
- Reviewing the Executive Director's performance;
- Meeting with the SBI consultants and Executive Director to discuss various investment initiatives; and
- Evaluating legislative initiatives that impact the SBI.

Prudent Person Rule

The prudent person rule, as codified in *Minnesota Statutes*, Section 11A.09, requires all members of the Board, Investment Advisory Council, and SBI staff to “...act in good faith and ...exercise that degree of judgment and care, under circumstances then prevailing, which persons of prudence, discretion, and intelligence exercise in the management of their own affairs, not for speculation, but for investment, considering the probable safety of their capital as well as the probable income to be derived therefrom.” *Minnesota Statutes*, Section 356A.04 contains similar codification of the prudent person rule applicable to the investment of pension fund assets.

Authorized Investments

In addition to the prudent person rule, *Minnesota Statutes*, Section 11A.24 contains a specific list of asset classes available for investment including common

stocks, bonds, short term securities, real estate, private equity, and resource funds. The section prescribes the maximum percentage of fund assets that may be invested in various asset classes and contains specific restrictions to ensure the quality of the investments.

Investment Policies

Within the requirements defined by state law, the State Board of Investment, in conjunction with SBI staff and the Investment Advisory Council, establishes investment policies for all funds under its control. These investment policies are tailored to the particular needs of each fund and specify investment objectives, risk tolerance, asset allocation, investment management structure and specific performance standards.

The Board, its staff, and the Investment Advisory Council have conducted detailed analyses that address investment objectives, asset allocation policy and management structure of each of the funds under the SBI's control. The policies guide the on-going management of these funds and are updated periodically.

ESG Initiatives

The Board also maintains the following investment belief: *Utilizing engagement initiatives to address environmental, social, and governance-related (ESG) issues can lead to positive portfolio and governance outcomes.* Staff continues to implement this investment belief through investment manager due diligence and proxy voting.

Introduction

The SBI continues to maintain membership in ESG advocacy organizations including the Council of Institutional Investors, Ceres, the United Nations Principles of Responsible Investment, and Institutional Limited Partners Association. These organizations provide engagement opportunities and other resources to more effectively address ESG issues.

Important Notes

Readers should note that the SBI's returns in this report are shown *after* transaction costs and fees are deducted. Performance is computed and reported after all applicable charges to assure that the Board's focus is on true net returns.

Due to the large number of individual securities owned by the funds managed by the SBI, this report does not include asset listings. **A complete list of securities is available on the SBI's website at <http://mn.gov/sbi>.** Asset listings are updated semi-annually as the new data becomes available.

**Market Value
June 30, 2019***

Retirement Funds and Other Tax-Sheltered Qualified Savings Plans

\$82.1 billion

Combined Funds

\$70.7 billion

The Combined Funds represent the assets for both the active and retired public employees in the three statewide retirement systems and their retirement plans:

Teachers Retirement Fund (TRA)	\$22,837 million
Public Employees Retirement Association (PERA)	
General Employees Retirement Fund	22,389 million
Police and Fire Fund	8,829 million
Correctional Fund	744 million
Minnesota State Retirement System (MSRS)**	
State Employees Retirement Fund	13,721 million
Correctional Employees Fund	1,180 million
Highway Patrol Retirement Fund	749 million
Judges Retirement Fund	211 million

Participant Directed Investment Program

\$11.5 billion

The Participant Directed Investment Program (PDIP) provides investment vehicles for a variety of retirement and other tax-advantaged savings plans. PDIP is organized into three investment platforms.

Mutual Fund Line-Up

The mutual fund platform provides thirteen investment options to the Minnesota Deferred Compensation Plan, a tax sheltered savings plan that is a supplemental plan to their primary retirement plan.

\$7,494 million

Supplemental Investment Fund

The Supplemental Investment Fund (SIF) platform provides eight investment options designed to meet a wide range of needs and objectives. A total of \$2.5 billion in assets from eligible participants were invested in the SIF Investment offerings.

Health Care Savings Plan	\$1,188 million
Local Fire Relief Plans	337 million
St. Paul Teachers' Retirement Fund Association	324 million
Unclassified State Employees Retirement Plan	323 million
Hennepin County Supplemental Retirement Plan	161 million
Statewide Volunteer Firefighter Plan	107 million
Public Employees Retirement Association Defined Contribution Plan	73 million

State Sponsored Savings Plans

The state sponsored savings plans are established under the provisions of the Internal Revenue Code Section 529 to help families meet the costs of qualified expenses within the respective plans.

Minnesota College Savings Plan	1,503 million
Minnesota Achieving a Better Life Experience (ABLE) Plan	6 million

Funds Under Management

**Market Value
June 30, 2019***

Non-Retirement Funds

The SBI manages funds for trusts and programs created by the Minnesota State Constitution and Legislature.

\$18.9 billion

Trust Funds

Permanent School Fund

The Permanent School Fund is a trust established for the benefit of Minnesota public schools.

\$1,513 million

Environmental Trust Fund

The Environmental Trust Fund is a trust established for the protection and enhancement of Minnesota's environment. It is funded with a portion of the proceeds from the state's lottery.

\$1,215 million

Other Postemployment Benefits Accounts (OPEBs)

These accounts are the assets set aside by local units of government for the payment of retiree benefits trusted by the Public Employees Retirement Association.

\$662 million

Assigned Risk Plan

The Minnesota Workers Compensation Assigned Risk Plan provides worker compensation insurance for companies unable to obtain coverage through private carriers.

\$287 million

Miscellaneous Trust Accounts****

\$258 million

Closed Landfill Investment Fund

The Closed Landfill Investment Fund is a trust created by the Legislature to invest money to pay for the long-term costs of maintaining the integrity of landfills in Minnesota once they are closed.

\$97 million

State Cash Accounts

These accounts are the cash balances of state government funds including the General Fund, transportation funds, and miscellaneous cash accounts. Assets are invested through the Invested Treasurers Cash Pool in high quality, liquid, debt securities.

\$14,630 million

Miscellaneous State Accounts***

\$273 million

Total Assets Invested by SBI

\$101.1 billion

* Totals may not add due to rounding.

** The MSRS Legislative Plan is a closed plan that is funded by the General Fund on a "pay-as-you-go" basis.

*** Includes Debt Service, Public Facilities Authority (PFA), and Housing Finance.

**** Miscellaneous Trust Accounts include Qualifying Governmental Entities.

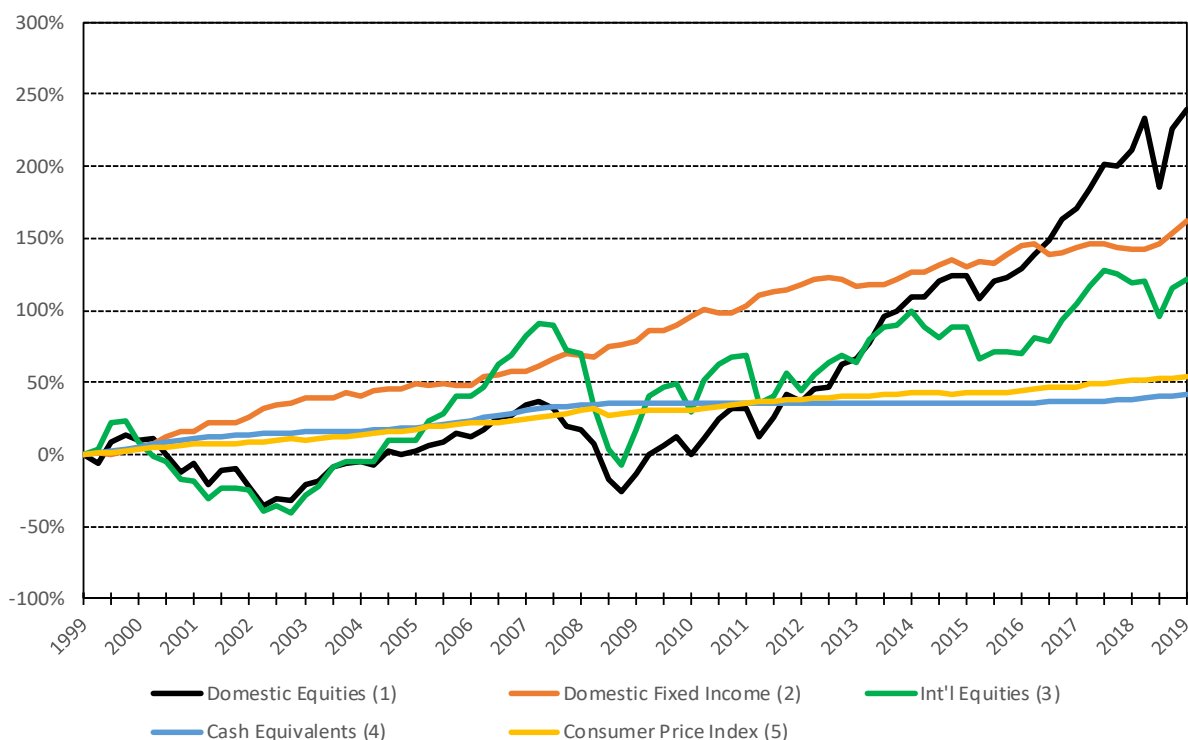
COMBINED FUNDS

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Figure 1.

PERFORMANCE OF CAPITAL MARKETS
Cumulative Returns



Benchmark Returns for Periods Ending June 30, 2019

	1 Yr.	3 Yr.	5 Yr.	10 Yr.	20 Yr.	30 Yr.
Domestic Equity						
(1) Russell 3000	9.0%	14.0%	10.2%	14.7%	6.3%	10.0%
Russell 1000	10.0	14.1	10.5	14.8	6.2	10.1
Russell 2000	-3.3	12.3	7.1	13.4	7.8	9.3
Domestic Fixed Income						
(2) Bloomberg Barclays U.S. Aggregate	7.9	2.3	2.9	3.9	4.9	6.0
Bloomberg Barclays 5 Yr. + U.S. Treas.	10.3	1.4	4.0	4.9	6.0	N/A
International Equity						
(3) MSCI ACWI ex USA (net)	1.3	9.4	2.2	6.5	4.5	N/A
MSCI World ex USA (net) – <i>Developed</i>	1.3	9.0	2.0	6.7	4.2	5.0
MSCI Emerging Market Index	1.2	10.7	2.5	5.8	7.2	N/A
Cash						
(4) 3 month U.S. Treasury Bill	2.3	1.4	0.9	0.5	1.9	3.0
Inflation Measure						
(5) Consumer Price Index CPI-U	1.7	2.1	1.5	1.7	2.2	2.4

Combined Funds Overview

The Combined Funds represent the assets of both active and retired public employees who participate in the defined benefit plans of three statewide retirement systems: Teachers Retirement Association (TRA), Public Employees Retirement Association (PERA) and the Minnesota State Retirement System (MSRS). On June 30, 2019, the Combined Funds had a market value of \$70.7 billion.

Background

The Combined Funds consist of the assets of active employees and retired members of the three statewide retirement systems that sponsor eight different funds. The SBI commingles the assets of these plans into the Combined Funds to capture investment efficiencies.

Figure 2 identifies the eight different retirement funds which comprise the Combined Funds.

Investment Objectives

One overriding responsibility of the SBI with respect to the management of the Combined Funds is to ensure that sufficient funds are available to finance promised benefits.

Actuarial Assumed Return

Employee and employer contribution rates are specified in state law as a percentage of an employee's salary. The rates are set so that contributions plus expected investment earnings will cover the projected cost of promised pension benefits. The investment returns needed to meet these projected pension costs are set by statute. The 2018 Legislature lowered the actuarial interest rate assumption to 7.5% on an annual basis for the three statewide retirement systems composing the Combined Funds.

Time Horizon

In general, pension assets will accumulate in the Combined Funds for 30 to 40 years during an employee's years of active service. A typical retiree can be expected to draw benefits for an additional 15 to 20 years. This provides the Combined Funds with a long investment time horizon and permits the Board to take advantage of the long-run return opportunities offered by common stocks and other equity investments in order to meet the actuarial return target.

Asset Allocation

The allocation of assets among stocks, bonds, private markets (private market investments include private equity, private credit, real estate, real assets and distressed/opportunistic) and cash has a dramatic impact on investment results. In fact, asset allocation decisions overwhelm the impact of individual security selection within a total portfolio.

As illustrated in Figure 1, historical evidence indicates that U.S. Stocks have provided the greatest opportunity to maximize investment returns over the long-term. As a result,

Figure 2. Composition of Combined Funds as of June 30, 2019

Teachers Retirement Association (TRA)	32.3%
Public Employees Retirement Association (PERA)	
General Employees Retirement Fund*	31.7%
Police and Fire Fund	12.5
Correctional Fund	1.1
Total PERA	45.2
Minnesota State Retirement System (MSRS)**	
State Employees Retirement Fund	19.4
Correctional Employees Fund	1.7
Highway Patrol Retirement Fund	1.1
Judges Retirement Fund	0.3
Total MSRS	22.4
Funds Total***	100.0%

* Includes the assets of Minneapolis Employees Retirement Fund (MERF).

** The MSRS Legislative Plan is a closed plan that is funded by the General Fund on a "pay-as-you-go" basis.

*** Total may not add due to rounding.

Combined Funds Overview

the Board has chosen to incorporate a large commitment to Public Equity (common stocks) and Private Equity in the asset allocation policy for the retirement funds. In order to limit the short-run volatility of returns exhibited by common stocks, the Board includes other asset classes such as fixed income (bonds), as well as other private market investments such as real estate, real assets, distressed/opportunistic and private credit investments in the total portfolio. This diversification is intended to reduce wide fluctuations in investment returns on a year-to-year basis and enhances the Funds' ability to meet or exceed the actuarial return target over the long-term.

Long-Term Allocation Policy

The Combined Funds have a policy asset allocation that is based on the investment objectives of the Combined Funds and the expected long-run performance of the capital markets. The SBI periodically reviews this policy allocation. In December of 2017, the Board approved increasing the private markets allocation from 20 to 25% and in 2018 added a dedicated Treasury portfolio to the allocation.

The long-term Strategic Asset Allocation of the SBI is:

Public Equity	53%
Fixed Income/Treasuries	20
Private Markets	25
Cash	2
Total	100%

Included in the Fixed Income allocation is a dedicated Treasury allocation.

The uninvested allocation to private markets investments is

held in public equities until it is needed for investment. As a result, the actual amount invested in stocks at any time can be above the target allocation.

Figure 3 presents the actual asset mix of the Combined Funds at the end of fiscal year 2019. Historical asset mix data is displayed in Figure 4.

Asset Mix Compared to Other Pension Funds

The Board finds it instructive to review asset mix and performance of the Combined Funds relative to other pension fund investors. The comparison universe used by the SBI is the Master Trust portion of the Trust Universe Comparison Service (TUCS). This universe contains information on public and corporate pension and trust funds with diversified asset

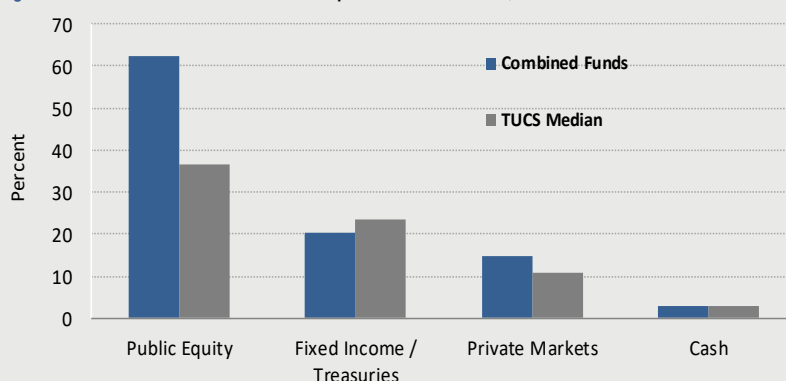
mixes and more than \$1 billion in assets.

Comparisons of the Combined Funds' actual asset mix to the median allocation to stocks, bonds and other assets of the funds in TUCS on June 30, 2019 are also displayed in Figure 3. The Combined Funds were overweighted in public equities, private markets, and cash, but underweighted in fixed income/treasuries relative to the median allocation in TUCS.

Total Return Vehicles

The SBI invests the majority of the Combined Funds' assets in **Common Stocks** (both domestic and international). A large allocation is consistent with the investment time horizon of the Combined Funds and the advantageous long-term risk-return characteristics of common stocks. Including international

Figure 3. Combined Funds Asset Mix Comparison as of June 30, 2019



Asset Groups	Combined Funds		
	Market Value (Millions)	Allocation % ⁽¹⁾	Median Allocation in TUCS ⁽²⁾
Public Equity	\$43,953	62.2%	36.5%
Fixed Income/Treasuries	14,377	20.3	23.5
Private Markets ⁽³⁾	10,281	14.6	10.8
Cash	2,048	2.9	2.8
Total	\$70,658	100.0%	

(1) May not add to 100% due to rounding.

(2) Represents the median allocation by asset class, and does not add to 100%.

(3) TUCS may include assets other than Private Markets Investments.

Combined Funds Overview

stocks in the asset mix allows the SBI to diversify holdings across world markets and offers the opportunity to enhance returns and reduce the volatility of the total portfolio. The rationale underlying the inclusion of **Private Equity** is similar.

The Board recognizes that this sizable policy allocation to common stock and private equity likely will produce more volatile portfolio returns than a more conservative policy focused on fixed income securities. It is understood that this policy may result in quarters or even years of relative underperformance. Nevertheless, the long-run return benefits of this policy have in the past and are expected in the future to compensate for the additional volatility.

Diversification Vehicles

The Board includes other asset classes in the Combined Funds to provide some protection against highly inflationary or deflationary environments and to diversify the portfolio sufficiently to avoid excessive return volatility.

The allocation to **Fixed Income and Treasuries** (bonds) is to act as a hedge against a deflationary economic environment. In the event of substantial deflation, high quality fixed income assets are expected to protect principal and generate significant capital gains. Bonds, like real estate and real assets, under normal financial conditions, help to diversify the Combined Funds, thereby controlling return volatility. The Treasury portfolio also provides strong downside protection during a market crisis.

Real Estate and Real Assets investments provide an inflation hedge that other financial assets cannot offer. Under normal financial conditions, such as low to moderate inflation, the returns on these assets are not highly correlated with common stocks. As a result, inclusion of these assets in the Combined Funds serves to dampen return volatility.

Private Credit investments provide the opportunity for higher long-term returns than those typically available from bonds, yet still generate sufficient current income. Typically, these investments (e.g., subordinated debt, mezzanine debt, or resource income investments such as producing properties) are structured more like fixed income securities with the opportunity to participate in the appreciation of the underlying assets. While these investments may have an equity component, they display a return pattern more like a bond. Therefore, they will help reduce the volatility of the total portfolio,

but should also generate higher returns relative to more traditional bond investments.

Investment Management

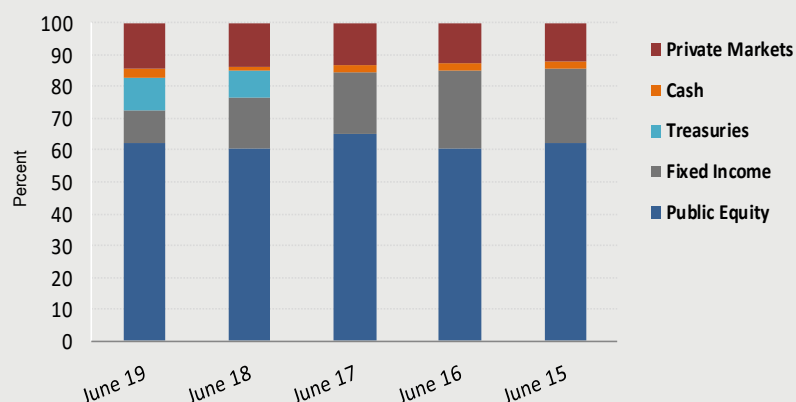
All assets in the Combined Funds are managed externally by investment management firms retained by contract. More information on the structure, management and performance of the various investment managers is included in the **Investment Program** sections of this report.

Return Objectives

The Board measures the performance of the Combined Funds relative to the following total rate of return objectives:

- **Provide Real Returns.** Over a twenty year period, the Combined Funds are expected to produce returns that exceed inflation by three to five percentage points on an annualized basis.

Figure 4. Combined Funds Historical Asset Mix Fiscal Year 2015-2019



Combined Funds Overview

- **Match or Exceed Market Returns.** Over a ten year period, the Combined Funds are expected to match or exceed a composite of market indices weighted using the asset allocation of the Combined Funds.

Performance is reported net of all fees and costs to assure that the Board's focus is on true net return.

Investment Results

Comparison to Inflation

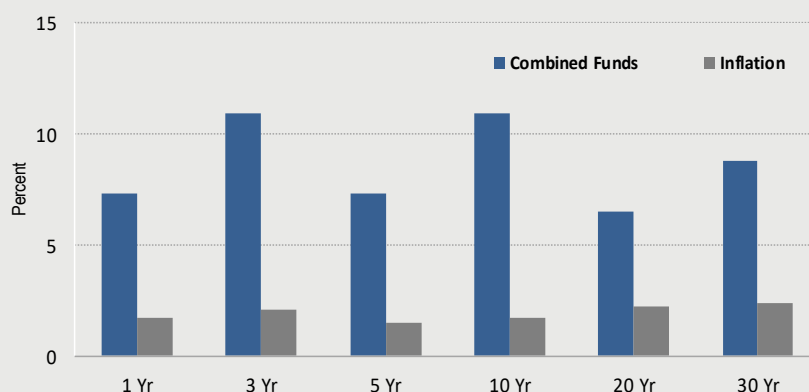
Over the last twenty years, the Combined Funds exceeded inflation by 4.3 percentage points. Historical results compared to inflation are shown in Figure 5.

Comparison to Market Returns

The Combined Funds' performance is also evaluated relative to a composite of market indices which is weighted in a manner that reflects the asset allocation of the Combined Funds. Performance relative to this standard will measure two effects:

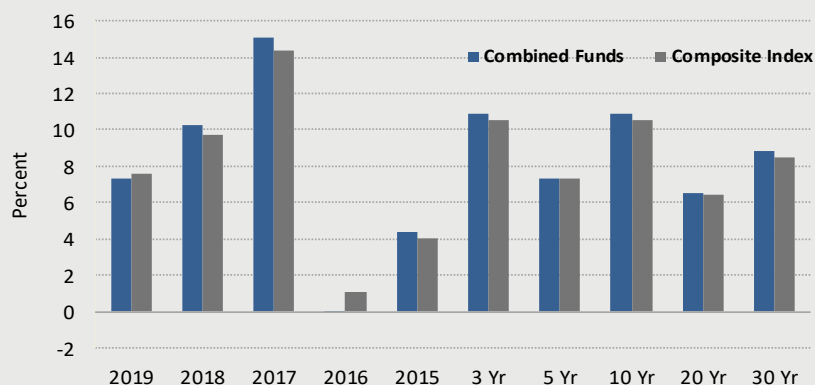
- The ability of the managers selected by the SBI, in aggregate, to add value to the returns available from the broad capital markets.
- The impact of the SBI's rebalancing activity. The SBI rebalances the total Fund when market movements take the stock (domestic and international), bond, or cash segments above or below long-term asset allocation targets. This policy imposes a low risk discipline of "buy low-sell high" among asset classes on a total fund basis.

Figure 5. Combined Funds Performance vs. Inflation For Periods Ending June 30, 2019



	1 Yr.	3 Yr.	Annualized		20 Yr.	30 Yr.
Combined Funds	7.3%	10.9%	7.3%	10.9%	6.5%	8.8%
Inflation	1.7	2.1	1.5	1.7	2.2	2.4

Figure 6. Combined Funds Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015
Combined Funds	7.3%	10.3%	15.1%	-0.1%	4.4%
Composite Index	7.6	9.7	14.4	1.1	4.0

	Annualized				
	3 Yr.	5 Yr.	10 Yr.	20 Yr.	30 Yr.
Combined Funds	10.9%	7.3%	10.9%	6.5%	8.8%
Composite Index	10.5	7.3	10.5	6.4	8.5

Combined Funds Overview

Performance results and a breakdown of the composite index are shown in Figures 6 and 7. The Combined Funds exceeded the composite index over the last ten years by 0.4 percentage point and, therefore, met the stated performance goal. The Funds met or exceeded the composite index over all time periods shown excluding fiscal years 2019 and 2016 when the Combined Funds underperformed the benchmark. Note that the Combined Funds asset allocation shown in Figure 7 represents the long-term strategic asset allocation as of June 30, 2019. These results are largely a measure of value added or lost from active management after all fees and expenses have been taken into consideration.

Comparison to Other Funds

While the SBI is concerned with how its returns compare to other pension investors, universe comparison data should be used with great care. There are two primary reasons why such comparisons will provide an “apples-to-oranges” look at performance:

— Differing Allocations.

Asset allocation has a dominant effect on returns. The allocation to stocks among the funds in TUCS typically ranges from 20% to 90%, too wide a range for meaningful comparison. In addition, it appears that many funds do not include private market holdings in their reports to TUCS. This further distorts comparisons among funds.

— Differing Goals/Liabilities.

Each pension fund structures its portfolio to meet its own liabilities and risk tolerance, leading to

different choices on asset mix. Since asset mix will largely determine investment results, a universe ranking may not be relevant to a discussion of how well a plan sponsor is meeting its long-term liabilities.

With these considerations in mind, the performance of the Combined Funds

compared to other public and corporate pension funds with over \$1 billion in assets in the Master Trust portion of TUCS is displayed in Figure 8. It shows that the Combined Funds have ranked in the top decile for three and ten years, top quartile for five years, and in the second quartile for other time periods.

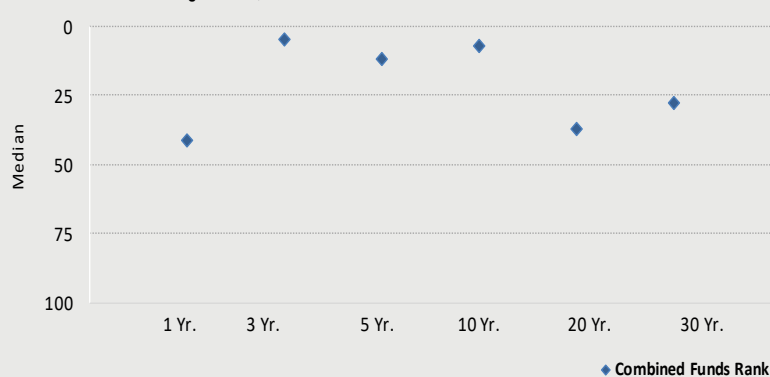
Figure 7. Composite Index For Period Ending June 30, 2019

Asset Class	Market Index	Composite Index Wts. ⁽¹⁾
Public Equity	Public Equity Benchmark ⁽²⁾	63.3%
Fixed Income	BB Barclays U.S. Aggregate	10.0
Treasuries	BB Barclays Treasury 5+ Years	10.0
Private Markets	Private Markets	14.7
Cash	3 Month T-Bills	2.0
Total		100.0%

(1) Weights are reset in the composite at the start of each month to reflect the combined allocation policies of the Combined Funds.

(2) 60.3% Russell 1000, 6.7% Russell 2000, 24.75% MSCI World Ex US (net) and 8.25% MSCI EM (net) effective 1/1/2019. From 7/1/2017 through 12/31/2018 it was 67% Russell 3000/ 33% MSCI ACWI ex USA (net).

Figure 8. Combined Funds Performance Compared to Other Pension Funds For Periods Ending June 30, 2019



	Annualized					
	1 Yr.	3 Yr.	5 Yr.	10 Yr.	20 Yr.	30 Yr.
Combined Funds	41st	5th	12th	7th	37th	28th

Percentile Rank in TUCS*

* Compared to public and corporate plans greater than \$1 billion, gross of fees.

Combined Funds

Strategic Allocation Category Framework

The SBI adopted a **Strategic Allocation Category Framework** and a **Volatility Equivalent Benchmark** in September 2017 for the purpose of increasing the focus on the investment risk within the Combined Funds portfolio.

Strategic Allocation Category Framework

The objective of the Strategic Allocation Category Framework is to provide better guidance in determining the risk profile during the portfolio construction process. This approach will allow for greater awareness of the portfolio's expected volatility while managing for the variance in projected portfolio returns.

The Board approved the adoption of the Strategic Allocation Category Framework to better define the different roles that asset classes play in the portfolio. This approach focuses less in terms of “what we invest in” and rather on “why we invest.” Such approaches were developed as a response to the “Great Recession” when it was observed that supposedly diversifying asset classes could still be highly correlated to public equities during periods of market stress.

Many institutional investors have advocated approaches similar to the Strategic Allocation Category Framework to recognize that while certain asset classes may be different (e.g., public equities versus private equity), some asset classes respond to the same underlying fundamental factors and economic drivers, are highly correlated, and have limited ability to counter the investment risk of one another. The perspective that the inclusion of a number of different asset classes in a portfolio provides adequate risk reduction has now evolved to an understanding that risk reducing diversification comes from having assets which behave differently during various economic regimes. Some investors refer to this approach as a risk-based allocation approach.

Key factors in the development of a Strategic Allocation Category Framework for the SBI are 1) defining the role of the strategic allocation categories and 2) grouping asset classes that respond to similar economic drivers into the same strategic allocation category.

Following are the strategic allocation categories within the Framework and their intended roles within the portfolio. Please note that while considerable thought has gone into the approach, there is not a unique set of strategic allocation categories. As a result, the framework is based on judgement and some conclusions are arbitrary and subject to change as we move forward.

- **Growth-Appreciation:** represents the primary reason one invests, which is to achieve attractive returns. Growth is the primary return-seeking strategic allocation category with the objective of generating long-term capital appreciation by participating in global economic growth driven primarily by exposure to the equity risk premium.
- **Growth-Income-oriented:** attributes of this category include generation of stable levels of current income and capital appreciation at lower levels of risk than Growth-Appreciation assets, preservation of the principal value of assets, and diversification to the primary drivers of assets in the Growth category. (Please note for some asset classes there may be a “fine line” between whether it should be in the Growth or Income category. Out of necessity, at the end of the day, final judgements may be arbitrary.)
- **Real Assets:** to provide diversification through investments in “hard” assets which have inflation-sensitive characteristics or the ability to provide a hedge against inflation.
- **Inflation Protection:** to provide diversification through investments in “soft” assets (e.g., Inflation-linked securities, commodities) which have a direct link to inflation. These assets provide a hedge against inflation.
- **Protection:** provides stability, protection during crisis, and can act as a hedge against deflation.
- **Liquidity:** provides liquidity to meet daily obligations, primarily benefit payments and capital calls. Consists of cash and cash equivalents.
- **Opportunity:** the purpose of this bucket is to allow for investments in interesting opportunities or new strategies that do not fit within clearly-defined asset class lines. Asset allocation constraints should not preclude investors from accessing interesting and attractive opportunities.

Combined Funds

Strategic Allocation Category Framework

The Framework is an integral part of developing and managing the asset allocation of the Combined Funds.

Following is the status of the Strategic Allocation Category Framework as of June 30, 2019.

	<u>6/30/19</u> <u>(\$ millions)</u>	<u>6/30/19 Weights</u>	<u>Category Ranges</u>	
<u>Growth - Appreciation</u>				
Public Equity	\$ 43,953.08	62.2%		
Private Equity	\$ 5,621.29	8.0%		
Non-Core Real Assets	\$ 2,444.25	3.5%		
Distressed/Opportunistic	\$ 1,123.91	1.6%		
	\$ 53,142.53	75.2%	50%	75%
<u>Growth - Income-oriented</u>				
Core Fixed Income	\$ 7,207.63	10.2%		
Private Credit	\$ 600.83	0.9%		
Return-Seeking Fixed Income		0.0%		
	\$ 7,808.46	11.1%	15%	30%
<u>Real Assets</u>				
Core Real Estate		0.0%		
Real Assets	\$ 457.26	0.6%		
	\$ 457.26	0.6%	0%	10%
<u>Inflation Protection</u>				
TIPS		0.0%		
Commodities		0.0%		
		0.0%	0%	10%
<u>Protection</u>				
U.S. Treasuries	\$ 7,168.50	10.1%		
	\$ 7,168.50	10.1%	5%	20%
<u>Liquidity</u>				
Cash	\$ 2,081.53	2.9%		
	\$ 2,081.53	2.9%	0%	5%
<u>Opportunity</u>				
Opportunity	\$ -	0.0%	0%	10%
Total	\$ 70,658.28	100.0%		
Illiquid Asset Exposure	\$ 10,247.53	14.5%	0%	30%

Combined Funds

Volatility Equivalent Benchmark

Volatility Equivalent Benchmark

The Volatility Equivalent Benchmark was introduced as a metric to compare the longer-term (5 years or greater) investment performance of the Combined Funds' portfolio relative to a passively managed equity and bond portfolio which had a similar level of risk (as measured by its standard deviation) over the same time period. The comparison is an evaluation of how well our decisions made for the portfolio match up against a passively managed index strategy (which we would be unable to define on an ad hoc basis). When the comparison of the Combined Funds portfolio exceeds the Volatility Equivalent Benchmark the positive value added is a validation of how well our investment process performs.

A comparison of the Combined Funds portfolio versus the Volatility Equivalent Benchmark indicates the value added the SBI's approach to managing the investment program versus a simple buy and hold passive strategy. As can be seen in the comparison, the SBI's management results have yielded positive long-term results.

Volatility Equivalent Benchmark Comparison
Periods Ending 6/30/19

As of (Date):		6/30/2019							
		1-year	3-year	5-year	10-year	15-year	20-year	25-year	30-year
SBI Combined Funds Return		7.3%	10.9%	7.3%	10.9%	8.0%	6.5%	8.7%	8.8%
Volatility Equivalent Benchmark Return				5.1%	7.9%	6.2%	5.2%	6.7%	7.3%
Value Added				2.2%	3.0%	1.8%	1.4%	1.9%	1.5%

Standard Deviation: Benchmark = Combined Funds			7.3%	8.1%	9.0%	9.3%	9.4%	9.3%
Benchmark Stock Weight			62%	60%	58%	61%	62%	62%
Benchmark Bond Weight			38%	40%	42%	39%	38%	38%

The Volatility Equivalent Benchmark stock and bond weights are adjusted to equal the standard deviation of the SBI Combined Funds portfolio. Then a return is calculated.

Combined Funds

Domestic Stock Program

Domestic Stock Program

The Domestic Stock Program is made up of active large-cap and small-cap managers, semi-passive managers, a passive U.S. all-cap manager, a passive small-cap manager, and a passive large-cap manager.

At the end of the fiscal year 2019, the Combined Funds domestic equity program had a market value of \$29.4 billion.

Management Structure

The SBI uses three styles of management to invest the assets of the Domestic Stock Program:

- **Active Management**

At the end of fiscal year 2019, approximately 15% of the Domestic Stock Program was actively managed by a group of 14 external investment managers. Active management is used in the Combined Funds and the U.S. Actively Managed Fund. The assets allocated to each of the managers ranged in size from approximately \$226 million to \$495 million.

- **Semi-Passive Management**

At the end of fiscal year 2019, approximately 8% of the Domestic Stock Program was managed by two semi-passive external investment managers with portfolios ranging from \$1.1 billion to \$1.4 billion. Semi-passive management is used in the Combined Funds and the U.S. Actively Managed Fund.

- **Passive Management**

At the end of fiscal year 2019, approximately 77%

of the Domestic Stock Program in the Combined Funds was passively managed with three external investment mandates, Russell 3000 Index, Russell 2000 Index and Russell 1000 Index, with portfolio ranges from \$594 million to \$21.4 billion.

The goal of the Domestic Stock Program is to outperform the asset class target, which consists of the Russell 1000 Index and Russell 2000 Index. The program targets fixed policy weights of 90% large-cap and 10% small-cap managers. The Russell 3000 Index can be segmented into sub-indexes or Russell style indexes.

Assets of the Program are allocated based on the Russell style indexes. Assets within each style are then allocated to managers within the designated style. This allocation is done to minimize the style bias within the Program.

Each **active manager** is expected to add value over the long run relative to the Russell style index which reflects its investment approach or style.

The **semi-passive managers** are expected to add incremental value relative to the Russell 1000 Index. However, they employ a strategy that more closely tracks the benchmark than active management and are generally more consistent at generating modest excess returns.

The **passive managers** in the Domestic Stock Program manage their portfolios to consistently and inexpensively track their respective Russell indices.

A description of each domestic stock manager's investment approach is included in the **Investment Manager Summaries** section beginning on page 20.

FY 2019 Changes

During fiscal year 2019, one change was made to the manager structure. In October 2018, a BlackRock passive Russell 2000 mandate was added.

As of 1/1/2019, the asset class target is a custom benchmark made up of 90% Russell 1000 Index and 10% Russell 2000 Index. Prior to this change, the asset class target was the Russell 3000 Index (since 10/1/2003).

Investment Performance

A comprehensive monitoring system has been established to ensure that the many elements of the Domestic Stock Program conform to the SBI's investment policies. Published performance benchmarks are used for each domestic stock manager. These benchmarks enable the SBI to evaluate the managers' results, both individually and in aggregate, with respect to risk incurred and returns achieved.

Two primary long-term **risk objectives** have been established for the domestic stock managers:

- **Investment Approach**

Each manager (active, semi-passive, or passive) is expected to hold a portfolio that is consistent, in terms of risk characteristics, with the manager's stated investment approach. In the short-run, market fluctuations may result in a departure from the active

Combined Funds Domestic Stock Program

managers' risk targets as part of their specific investment strategies.

— **Diversification**

The passive and semi-passive managers are expected to hold highly diversified portfolios, while each active domestic stock manager may hold a more concentrated portfolio, appropriate for the particular investment strategy and style.

The domestic stock managers successfully fulfilled their long-term risk objectives during fiscal year 2019. In general, the managers constructed portfolios consistent with their stated investment approaches and maintained levels of diversification that were appropriate for their respective active, semi-passive and passive approaches.

The Board's **return objectives** for active and semi-passive stock managers are measured against the published Russell style and market capitalization indices that represent the managers' specific investment approaches. These indices take into account the equity market forces that affect certain investment styles. Thus, a Russell style index or benchmark is a more appropriate return target against which to judge these managers' returns than the Russell 3000 broad market index.

Active managers are expected to exceed their benchmark by an amount appropriate for their active risk level. This active risk level varies by manager and is influenced by the manager's stated strategy and style.

In aggregate, the Domestic Stock Program trailed its asset class target by 0.4 percentage point for the fiscal year. The active manager group trailed the benchmark by 0.4 percentage point. The semi-passive manager group matched the benchmark.

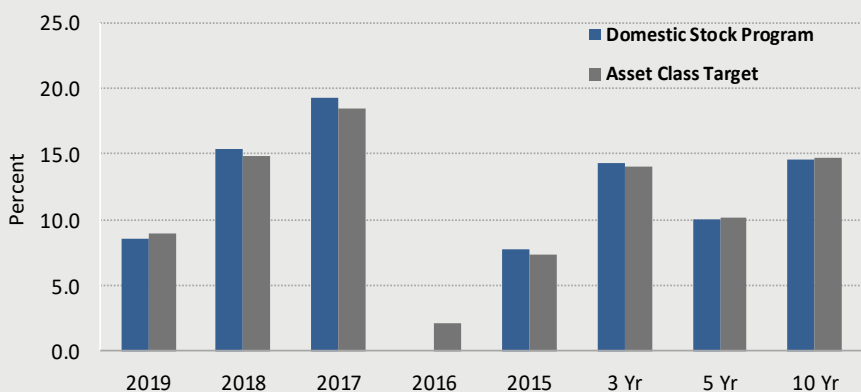
Relative to the aggregate benchmark, the underperformance of the active manager group was due to overall stock selection, especially in the Consumer Discretionary and Financial Services sectors. The semi-passive manager's performance benefited from stock selection overall, but was offset by sector allocation.

Figure 9 provides details of the historical performance of the

entire Domestic Stock Program. Manager performance relative to the respective benchmarks for the fiscal year end was mixed.

Eight of 14 active managers outperformed their assigned benchmarks, while six managers underperformed. One semi-passive manager outperformed and the other semi-passive manager underperformed the Russell 1000 Index. Both the Russell 3000 and Russell 1000 Index passive managers matched the performance of their respective benchmarks during the fiscal year. Individual manager performance for fiscal year 2019 is shown in Figure 10. Aggregate portfolio sector characteristics are shown in Figure 11.

Figure 9. Domestic Stock Program Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	3 Yr.	5 Yr.	10 Yr.
Domestic Stock Program	8.5%	15.4%	19.4%	0.0%	7.7%	14.3%	10.0%	14.7%
Asset Class Target*	8.9	14.8	18.5	2.1	7.3	14.0	10.2	14.7

* As of 1/1/2019, the benchmark is 90% Russell 1000 and 10% Russell 2000. From 10/1/2003 to 12/31/2018 it was the Russell 3000.

Combined Funds

Domestic Stock Program

Figure 10. Domestic Stock Program Manager Performance for Periods Ending June 30, 2019

	1 Year		3 Years		5 Years		Market
	Actual	Bmk ⁽¹⁾	Actual	Bmk	Actual	Bmk	Value
	%	%	%	%	%	%	(\$ in millions)
Active Managers							
Large Cap Growth (Russell 1000 Growth)							
Sands Capital Mgmt.	12.2	11.6	23.9	18.1	13.6	13.4	495.1
Winslow Capital Mgmt.	12.4	11.6	20.6	18.1	14.0	13.4	269.9
Zevenbergen Capital	15.0	11.6	28.3	18.1	14.4	13.4	462.5
Large Cap Value (Russell 1000 Value)							
Barrow, Hanley	8.8	8.5	10.9	10.2	7.7	7.5	416.0
Earnest Partners	8.8	8.5	14.2	10.2	9.6	7.5	296.9
LSV Asset Mgmt.	2.2	8.5	11.3	10.2	7.5	7.5	386.4
Small Cap Growth (Russell 2000 Growth)							
ArrowMark	-1.2	-0.5					232.7
Hood River	4.8	-0.5					265.8
Rice Hall James	-7.8	-0.5					226.9
Wellington	0.4	-0.5					259.1
Small Cap Value (Russell 2000 Value)							
Goldman Sachs	-1.2	-6.2	10.3	9.8	6.3	5.4	366.6
Hotchkis & Wiley	-8.7	-6.2	9.9	9.8	3.4	5.4	298.0
Martingale Asset Mgmt.	-8.3	-6.2	8.4	9.8	5.8	5.4	283.7
Peregrine Capital Mgmt.	-8.8	-6.2	10.1	9.8	5.0	5.4	359.4
Semi-Passive Managers (Russell 1000)							
BlackRock Institutional	10.4	10.0	15.8	14.1	11.4	10.5	1,126.7
J.P. Morgan Investment Mgmt.	9.8	10.0	14.2	14.1	10.5	10.5	1,357.8
Passive Manager (Russell 1000)							
BlackRock Institutional	10.0	10.0					21,368.3
Passive Manager (Russell 2000)							
BlackRock Institutional							594.1
Passive Manager (Russell 3000)							
BlackRock Institutional	9.0	9.0	14.0	14.0	10.2	10.2	1,618.8
Aggregate Domestic Stock Program⁽²⁾	8.5	8.9	14.3	14.0	10.0	10.2	30,684.79

(1) As of 1/1/2019, the benchmark is 90% Russell 1000 and 10% Russell 2000. From 10/1/2003 to 12/31/2018 it was the Russell 3000.

(2) Aggregate includes the performance of terminated managers and includes assets of SIF Funds.

Combined Funds

Domestic Stock Program

Figure 11. Domestic Stock Program Allocations Russell Global (U.S.) Sector Weights for Period Ending June 30, 2019

Russell Sector	Active Managers %	Semi-Passive Managers %	Passive Manager %	Aggregate Domestic Stock Program %	Benchmarks Russell 1000 %	Russell 3000 %
Consumer Discretionary	16.5	14.8	14.5	14.9	14.6	14.7
Consumer Staples	1.8	5.3	5.6	5.2	6.0	5.7
Energy	4.3	4.7	4.8	4.7	4.9	4.8
Financial Services	25.7	20.7	20.8	20.6	20.6	20.9
Health Care	9.7	13.5	13.3	13.1	13.3	13.4
Materials and Processing	3.6	3.3	3.4	3.3	3.2	3.4
Producer Durables	9.8	10.6	10.3	10.1	10.2	10.5
Technology	18.3	21.6	21.3	21.1	22.1	21.5
Utilities	3.4	5.0	5.0	4.7	5.1	5.1
Cash	2.2	0.3	1.0	1.5	N/A	N/A
Unassigned*	4.7	0.2	0.0	0.8	N/A	N/A
Assigned Benchmark:	Russell 3000	Russell 1000	Russell 3000	Russell 3000		

* Holdings not included in benchmark.

Note: Totals may not add due to rounding.

Combined Funds Investment Manager Summaries

Domestic Stock Program Managers

Active Managers

Large-Cap Growth (Russell 1000 Growth)

Sands Capital Management, LLC

Mandate:	Large-Cap Growth	Benchmark:	Russell 1000 Growth
Product assets/Firm Assets (as of 6/30):	\$19.1 billion / \$42.6 billion	# of Holdings:	28
		Expected Turnover:	20-40%
Style:	Growth	Fund/Quant:	Fundamental
Product Location:	Arlington, VA	Date Funded:	January 2005

Sands invests in concentrated portfolios of high-quality, seasoned, growing businesses. Bottom-up, company-focused and long-term oriented research is the cornerstone of the investment process. To be considered as a potential holding, companies must demonstrate superior historical and projected sales and earnings growth; have the potential for wealth creation; and reside in growing sectors. The strategy focuses on six key investment criteria: 1) sustainable above average earnings growth; 2) leadership position in a promising business space; 3) significant competitive advantages or unique business franchise; 4) management with a clear mission and value added focus; 5) financial strength; and 6) rational valuation relative to the overall market and the company's business prospects.

Winslow Capital Management, LLC

Mandate:	Large-Cap Growth	Benchmark:	Russell 1000 Growth
Product assets/Firm Assets (as of 6/30):	\$21.1 billion / \$21.4 billion	# of Holdings:	51
		Expected Turnover:	60-80%
Style:	Growth	Fund/Quant:	Fundamental
Product Location:	Minneapolis, MN	Date Funded:	January 2005

Winslow believes that investing in quality large-cap companies with above-average growth provides the best opportunity for achieving superior portfolio returns over the long-term. The investment philosophy is founded on bottom up, fundamental research. The strategy identifies companies that can grow earnings above consensus expectations to build portfolios with forward weighted earnings growth in the range of 15-20% annually. A quantitative screen is employed for factors such as revenue, earnings and cash flow growth, return on invested capital, earnings consistency, earnings revisions, low financial leverage and high free cash flow rates relative to net income. Resulting companies are subjected to a qualitative assessment within the context of industry sectors. Detailed examination of income statements, cash flow and balance sheet projections is conducted, along with a judgment on the quality of management. Attractively valued stocks are chosen based on Price to Earnings (P/E) relative to the benchmark, sector peers, the company's sustainable future growth rate and return on invested capital. Final portfolio construction includes diversification by economic sectors, earnings growth rates, price/earnings ratios and market capitalizations.

Combined Funds Investment Manager Summaries

Zevenbergen Capital Investments LLC

Mandate:	Large-Cap Growth	Benchmark:	Russell 1000 Growth
Product assets/Firm Assets (as of 6/30):	\$2.8 billion / \$3.1 billion	# of Holdings:	36
		Expected Turnover:	20-40%
Style:	Growth	Fund/Quant:	Fundamental
Product Location:	Seattle, WA	Date Funded:	April 1994

Zevenbergen's investment philosophy is founded on the principles that superior fundamentals drive stock price appreciation and exceptional management combined with balance sheet strength provides capital protection. The firm employs a forward looking, bottom-up investment process designed for long-term results. Portfolios are constructed with companies presenting established and prospective revenue, cash flow and earnings growth, while diversification and risk control are accomplished through a blend of company size, expected growth rates, and appropriate portfolio weightings.

Large-Cap Value (Russell 1000 Value)

Barrow, Hanley, Mewhinney & Strauss, LLC

Mandate:	Large-Cap Value	Benchmark:	Russell 1000 Value
Product assets/Firm Assets (as of 6/30):	\$35.3 billion / \$76.5 billion	# of Holdings:	42
		Expected Turnover:	15-35%
Style:	Value	Fund/Quant:	Fundamental
Product Location:	Dallas, TX	Date Funded:	April 2004

Barrow, Hanley, Mewhinney & Strauss believes that markets are inefficient and can best be exploited through adherence to a value-oriented investment process dedicated to the selection of securities on a bottom-up basis. The overall portfolio will always reflect all three value characteristics: price/earnings and price/book ratios below the market and dividend yields above the market. The stocks must also be attractive according to the firm's dividend discount and relative return models. Analysts provide fundamental analysis in the final step of their investment process.

Earnest Partners, LLC

Mandate:	Large-Cap Value	Benchmark:	Russell 1000 Value
Product assets/Firm Assets (as of 6/30):	\$311.0 million / \$22.9 billion	# of Holdings:	52
		Expected Turnover:	0-20%
Style:	Value	Fund/Quant:	2/3 Fundamental, 1/3 Quant
Product Location:	Atlanta, GA	Date Funded:	July 2000

Earnest Partners utilizes a proprietary valuation and performance model, and rigorous fundamental review to identify stocks with the most attractive risk adjusted returns. They have identified six performance drivers – valuation measures, operating trends, market trends, growth measures, profitability measures and macroeconomic measures – and have done research to determine which combination of performance drivers, or return patterns, precede outperformance for stocks in each sector. The firm's fundamental review generally includes conversations with the company's management team and industry specialists, a review of the company's financial reports, analysis of industry and company-specific studies, as well as independent field research. They control risk using a statistical approach designed to measure and control the prospects of substantially underperforming the benchmark. The portfolio is diversified across industry groups.

Combined Funds Investment Manager Summaries

LSV Asset Management

Mandate:	Large-Cap Value	Benchmark:	Russell 1000 Value
Product assets/Firm Assets (as of 6/30):	\$30.5 billion / \$115.9 billion	# of Holdings:	152
		Expected Turnover:	5-25%
Style:	Value	Fund/Quant:	Quantitative
Product Location:	Chicago, IL	Date Funded:	April 2004

LSV's philosophy is that superior long-term results can be achieved by systematically exploiting the judgmental biases and behavioral weaknesses that influence the decisions of many investors. They use quantitative techniques to rank securities based on fundamental measures of value, past performance, and indicators of near-term appreciation potential. Their risk control discipline limits the portfolio's industry and sector concentrations.

Small-Cap Growth (Russell 2000 Growth)

ArrowMark Colorado Holdings, LLC

Mandate:	Small-Cap Growth	Benchmark:	Russell 2000 Growth
Product assets/Firm Assets (as of 6/30):	\$2.8 billion / \$19.3 billion	# of Holdings:	115
		Expected Turnover:	30-50%
Style:	Growth	Fund/Quant:	Fundamental
Product Location:	Denver, CO	Date Funded:	November 2016

ArrowMark manages a fundamentally driven small-cap growth portfolio and prioritizes downside risk while maintaining a long-term investment horizon. They believe companies with sustainable competitive advantages, growing from a low share of a large market at returns on capital that exceed cost of capital, can compound for longer and create more value than is often priced into small-cap stocks. The team undertakes both quantitative analysis and qualitative assessments including interviews with management. The core of the fundamental research process is extensive financial modeling to forecast cash flow generation and value creation potential. Scenario analysis is utilized to project a range of outcomes (best/base/stressed).

Hood River Capital Management, LLC

Mandate:	Small-Cap Growth	Benchmark:	Russell 2000 Growth
Product assets/Firm Assets (as of 6/30):	\$2.1 billion / \$2.1 billion	# of Holdings:	93
		Expected Turnover:	100-150%
Style:	Growth	Fund/Quant:	Fundamental
Product Location:	Portland, OR	Date Funded:	November 2016

Hood River believes the small-cap market is inefficient, which is caused by many factors: a decline in the quantity and quality of sell-side coverage; higher probability of errors in analysts' models; accessible but under-followed management teams; and pure-play companies whose fundamentals are less certain than those of their larger-cap counterparts. In-depth, original research can uncover companies whose future fundamentals, such as sales or earnings, are likely to exceed the market's expectations. They call this difference between reality and the market's perception the "information gap." Hood River is focused on identifying and monetizing the information gap. They aggressively pursue a research advantage by speaking to management teams, customers, competitors, suppliers and other primary sources.

Combined Funds Investment Manager Summaries

Rice Hall James & Associates, LLC

Mandate:	Small-Cap Growth	Benchmark:	Russell 2000 Growth
Product assets/Firm Assets (as of 6/30):	\$1.5 billion / \$3.4 billion	# of Holdings:	69
		Expected Turnover:	20-40%
Style:	Growth	Fund/Quant:	Fundamental
Product Location:	Los Angeles, CA	Date Funded:	November 2016

Rice Hall James Small-Cap Opportunities strategy employs a fundamental, bottom-up analytical process to identify companies that meet three primary criteria; high earnings growth, high or improving returns-on-invested capital (ROIC), and sustainable competitive advantages. The team's investment philosophy is rooted in historical analysis indicating the high relative return potential of these factors in combination. The team believes that superior results can be achieved by owning companies that exhibit not only high earnings growth, but also the ability to sustainably generate high ROIC over long periods of time.

Wellington Management Company LLP

Mandate:	Small-Cap Growth	Benchmark:	Russell 2000 Growth
Product assets/Firm Assets (as of 6/30):	\$4.8 billion / \$1.1 trillion	# of Holdings:	164
		Expected Turnover:	40-60%
Style:	Growth	Fund/Quant:	Fundamental
Product Location:	Boston, MA	Date Funded:	November 2016

Wellington Management Company's Disciplined U.S. Small-Cap Growth's investment philosophy is based on three core beliefs: 1) changes in the quality of a company's fundamentals are often not reflected in its stock price; 2) the persistence of a company's fundamentals is frequently underestimated by the market; and 3) active managers frequently underestimate the range of possible outcomes. Central to the investment process is fundamental research focused on uncovering companies with improving quality metrics, business momentum and attractive relative valuations. This process is aided by a proprietary screening process that narrows the investment universe to companies consistent with the investment philosophy. The investment team spends most of its time conducting fundamental research on companies elevated by this screening process. This research relies on extensive management meetings and a high level of collaboration with Wellington Management's Global Industry Analysts.

Small-Cap Value (Russell 2000 Value)

Goldman Sachs Asset Management, L.P.

Mandate:	Small-Cap Value	Benchmark:	Russell 2000 Value
Product assets/Firm Assets (as of 6/30):	\$9.5 billion / \$1.4 trillion	# of Holdings:	236
		Expected Turnover:	30-60%
Style:	Value	Fund/Quant:	Fundamental
Product Location:	New York, NY	Date Funded:	January 2004

Goldman Sachs manages a small-cap value portfolio using a strong valuation discipline to purchase well-positioned, cash generating businesses run by shareholder-oriented management teams. Portfolio managers are organized by industry, and use industry-specific valuation measures to evaluate companies within their area. They decompose the historical financial reports, meet with management to evaluate their competitive position within the industry, and evaluate each company's valuation attractiveness relative to other comparable companies within the sector.

Combined Funds

Investment Manager Summaries

Hotchkis and Wiley Capital Management, LLC

Mandate:	Small-Cap Value	Benchmark:	Russell 2000 Value
Product assets/Firm Assets (as of 6/30):	\$2.1 billion / \$31.1 billion	# of Holdings:	63
		Expected Turnover:	30-50%
Style:	Value	Fund/Quant:	Fundamental
Product Location:	Los Angeles, CA	Date Funded:	January 2004

Hotchkis and Wiley seeks to exploit mispriced securities in the small-cap market by investing in “undiscovered” and “out of favor” companies. They invest in stocks of which the present value of the company’s future cash flows exceeds the current market price. Industry analysts determine a company’s normal earnings power, or sustainable earnings level under equilibrium economic and competitive market conditions, which becomes the basis for security valuation.

Martingale Asset Management, L.P.

Mandate:	Small-Cap Value	Benchmark:	Russell 2000 Value
Product assets/Firm Assets (as of 6/30):	\$309 million / \$9.8 billion	# of Holdings:	313
		Expected Turnover:	90-110%
Style:	Value	Fund/Quant:	Quantitative
Product Location:	Boston, MA	Date Funded:	January 2004

Martingale employs a systematic, quantitatively-driven investment approach that seeks to exploit behavioral biases. The process uses a 21 factor model, where the factors are fairly evenly distributed among the three broad buckets of value, growth, and quality, culminating in an alpha score for each stock in the viable universe. This score is then added to an industry rating, yielding an overall composite score for each stock. Value traps are avoided by favoring stocks with positive relative strength and earnings estimate revisions versus peers. Martingale builds a risk-aware portfolio of the highest ranked stocks by maintaining industry, sector, style, and size exposures that are similar to the benchmark.

Peregrine Capital Management

Mandate:	Small-Cap Value	Benchmark:	Russell 2000 Value
Product assets/Firm Assets (as of 6/30):	\$854.0 million / \$4.5 billion	# of Holdings:	104
		Expected Turnover:	60-80%
Style:	Value	Fund/Quant:	Fundamental
Product Location:	Minneapolis, MN	Date Funded:	July 2000

Peregrine’s small-cap value investment process begins with their proprietary valuation analysis, which is designed to identify the small-cap value stocks most likely to outperform. The valuation analysis identifies the most underpriced securities on a sector-by-sector basis. The firm analyzes sixty fundamental factors to identify the most relevant factors in each sector. The focus of the team’s fundamental research is to determine if one or more of the style’s “Value Buy Criteria” are present. These include resolvable short-term problems, unrecognized assets, take-over potential, fundamental undervaluation and catalysts for change. The portfolio is diversified and sector weights are aligned closely to the benchmark allowing stock selection to drive performance.

Combined Funds Investment Manager Summaries

Semi-Passive Managers

Semi-Passive Managers (Russell 1000)

BlackRock Institutional Trust Company, N.A.

Mandate:	Semi-Passive U.S. Equity	Benchmark:	Russell 1000 Index
Product assets/Firm Assets (as of 6/30):	\$5.7 billion / \$6.5 trillion	# of Holdings:	317
		Expected Turnover:	162%
Style:	Core	Fund/Quant:	Quantitative
Product Location:	San Francisco, CA	Date Funded:	January 1995

BlackRock has a disciplined, rigorous and repeatable investment process incorporating a unique blend of bottom-up stock selection insights across relative value, earnings quality and sentiment while combining broader top-down thematic insights to generate risk controlled and consistent active returns. The relative value criteria assesses intrinsic value relative to market price. Earnings quality criteria help identify companies likely to sustain earnings growth and avoid negative surprises. Sentiment criteria help identify market participants' beliefs regarding valuation. The thematic criteria seeks to exploit opportunities from a collection of stocks that move together because they share a common exposure which is currently less obvious to the market. Research is incorporated through top-down thematic insights to capture macro views as well as through a program which utilizes big data techniques to capture alpha from the large volumes of unstructured data (text, internet search and social media). Implementation costs are also considered when balancing return potential with risk profile of trades.

J.P. Morgan Investment Management Inc.

Mandate:	Semi-Passive U.S. Equity	Benchmark:	Russell 1000 Index
Product assets/Firm Assets (as of 6/30):	\$7.2 billion / \$1.8 trillion	# of Holdings:	363
		Expected Turnover:	37%
Style:	Core	Fund/Quant:	Fundamental
Product Location:	New York, NY	Date Funded:	January 1995

J.P. Morgan believes that superior stock selection is necessary to achieve excellent investment results. To accomplish this objective, the firm uses fundamental research and a systematic valuation model. Analysts forecast earnings and dividends for the stock universe and enter these into a stock valuation model that calculates a dividend discount rate for each security. The stocks are ranked according to this valuation measure within their economic sectors. Stocks most undervalued are placed in the first quintile. The portfolio takes overweight positions in stocks in the first and second quintiles, while underweighting stocks in the fourth and fifth quintiles. In addition, the portfolio will closely approximate the sectors and style of the benchmark. The portfolio remains fully invested at all times.

Combined Funds Investment Manager Summaries

Passive Managers

Passive Manager (R3000)

BlackRock Institutional Trust Company, N.A.

Mandate:	Passive U.S. Equity	Benchmark:	Russell 3000 Index
Product assets/Firm Assets (as of 6/30):	\$60.8 billion / \$6.5 trillion	# of Holdings:	2,646
		Expected Turnover:	2.2%
Style:	Core	Fund/Quant:	N.A.
Product Location:	San Francisco, CA	Date Funded:	July 1995

For the passive account, BlackRock seeks to match the total rate of return of the Russell 3000 Index. BlackRock uses their proprietary risk management and optimization tools to identify a portfolio with characteristics that closely match those of the benchmark with less exposure to some of the less liquid stocks in the index.

Passive Manager (R1000)

BlackRock Institutional Trust Company, N.A.

Mandate:	Passive U.S. Equity	Benchmark:	Russell 1000 Index
Product assets/Firm Assets (as of 6/30):	\$135.0 billion / \$6.5 trillion	# of Holdings:	1,007
		Expected Turnover:	2.5%
Style:	Core	Fund/Quant:	N.A.
Product Location:	San Francisco, CA	Date Funded:	October 2016

For this passive account, BlackRock seeks to match the total rate of return of the Russell 1000 Index. BlackRock aims to fully replicate the benchmark when managing against this index. BlackRock uses their proprietary risk management and optimization tools to help manage day-to-day activity in an attempt to keep transaction costs low.

Passive Manager (R2000)

BlackRock Institutional Trust Company, N.A.

Mandate:	Passive U.S. Equity	Benchmark:	Russell 2000 Index
Product assets/Firm Assets (as of 6/30):	\$59.3 billion / \$6.5 trillion	# of Holdings:	2,008
		Expected Turnover:	14.5%
Style:	Core	Fund/Quant:	N.A.
Product Location:	San Francisco, CA	Date Funded:	October 2018

For this passive account, BlackRock seeks to replicate the return of the Russell 2000 Index as closely as possible. Proprietary risk management and optimization tools are utilized to identify a portfolio with characteristics that closely match those of the Russell 2000 Index with less exposure to some of the less liquid stocks in the index.

Combined Funds International Stock Program

International Stock Program

The International Stock Program is made up of active, semi-passive, and passive developed markets managers, and active and passive emerging markets managers.

At the end of the fiscal year 2019, the Combined Funds International Program had a market value of \$14.5 billion.

Management Structure

Currently, the SBI uses three styles of management to invest the assets of the International Stock Program:

- **Active Management**

At the end of fiscal year 2019, approximately 31% of the program was actively managed by a group of 13 external investment managers with portfolios ranging in size from \$265 million to over \$600 million. Six of these managers manage portfolios in the developed markets and seven manage portfolios in the emerging markets.

- **Semi-Passive Management**

At the end of fiscal year 2019, 2% of the program was semi-passively managed by a single external investment manager, AQR Capital Management, LLC with a portfolio of \$344 million.

- **Passive Management**

At the end of fiscal year 2019, approximately 67% of the International Stock Program was passively managed by State Street

Global Advisors in two separate portfolios, one a developed markets equity index account and the other an emerging markets equity index account, with \$8.6 billion and \$1.2 billion, respectively.

The goal of the International Stock Program is to outperform the asset class target, which is the MSCI World ex USA Index (net) and MSCI Emerging Markets Index (net). The program targets fixed policy weights of 75% developed markets and 25% emerging markets. At the end of fiscal year 2019, the International Stock Program was invested at policy weight.

Six of the 13 **active** managers and the **semi-passive** manager invest entirely in developed markets and use a variety of investment approaches in an effort to maximize the value added to the MSCI World ex USA Index (net) over time. These managers address currency management as part of their investment process. Their views on currency may be factored into their country and security selection, they may explicitly hedge currency exposure on an opportunistic basis, or they may seek to add value by actively managing currency positions. Managers are not required to hedge currency risk.

Seven of the 13 **active** managers invest entirely in emerging markets. They are expected to add incremental value, over time, relative to the MSCI Emerging Markets Index (net) which is made up of markets in developing countries throughout the world.

The **passive** manager in the International Stock Program designs one of its portfolios to consistently and inexpensively track the developed markets MSCI World ex USA Index (net) and designs the other portfolio to track the MSCI Emerging Markets Index (net).

A description of each international stock manager's investment approach is included in the **Investment Manager Summaries** section beginning on page 31.

FY 2019 Changes

As of 1/1/2019, the International Stock Program benchmark changed to 75% MSCI World ex USA Index (net) and 25% MSCI Emerging Markets Index (net). Prior to this change, the asset class target was MSCI ACWI ex U.S. (net) since 10/1/2003.

Investment Performance

Similar to the Domestic Stock Program, two long-term **risk objectives** exist for the international equity managers:

- **Investment Approach.** Each manager (active, semi-passive or passive) is expected to hold a portfolio that is consistent with the manager's stated investment approach.

- **Diversification.** The index manager is expected to hold a well-diversified portfolio which closely tracks its target index. The semi-passive managers are expected to hold risk-adjusted portfolios which modestly outperform the index, and each active manager is expected to hold a portfolio which represents

Combined Funds International Stock Program

its best ideas for outperforming the index.

The international stock managers successfully fulfilled their long-term risk objectives during fiscal year 2019. In general, the managers constructed portfolios consistent with their stated investment approaches and maintained appropriate levels of diversification.

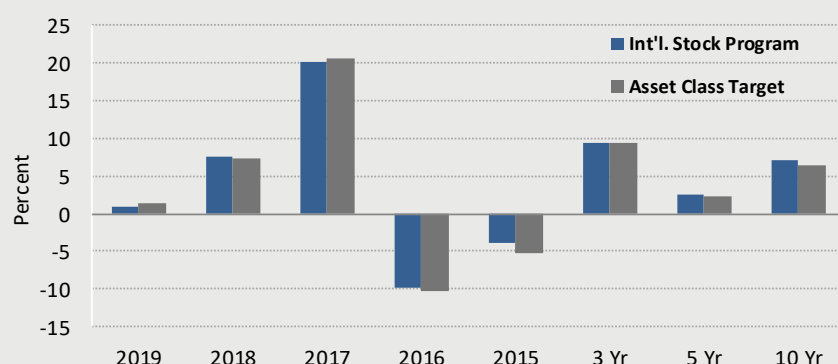
The Board's *return objectives* for the International Stock Program are stated relative to the Morgan Stanley Capital International (MSCI) Standard indices which includes large and mid-capitalization stocks. The indices are capitalization weighted and measured in U.S. dollar terms, with currencies unhedged. Individual active managers are expected to exceed their benchmark by an amount appropriate for their level of active risk. The active risk level varies by manager and is influenced by the manager's stated strategy and style. Performance results for the International Stock Program are shown in Figure 12. In aggregate, performance over the last ten year period exceeded the benchmark by 0.5 percentage point and performance over the last five year period exceeded the benchmark by 0.4 percentage point. The program trailed the target by 0.2 percentage point for the fiscal year.

Individual manager performance during fiscal year 2019 is shown in Figure 13. Three of the active developed market managers outperformed the benchmark over the year and three underperformed. Three out of seven active emerging markets managers outperformed the

benchmark. The semi-passive developed market manager underperformed the benchmark over the year. The developed markets passively managed portfolio outperformed the return of the MSCI World ex USA Index (net). The emerging markets passively managed portion of the program slightly trailed the return of the MSCI Emerging Markets Index (net).

The International Stock Program's country weights are displayed in Figure 14.

Figure 12. Int'l. Stock Program Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	3 Yr.	5 Yr.	10 Yr.
Int'l. Stock Program	1.1%	7.5%	20.2%	-9.7%	-3.8%	9.3%	2.6%	7.0%
Asset Class Target*	1.3	7.3	20.5	-10.2	-5.3	9.4	2.2	6.5

* Since 1/1/2019 the benchmark is 75% MSCI World ex USA Index (net) and 25% MSCI Emerging Markets Index (net). From 6/1/08 to 12/31/2018 the target was the MSCI ACWI ex U.S. (net).

Combined Funds International Stock Program

Figure 13. International Stock Program Manager Performance for Periods Ending June 30, 2019

	1 Year		3 Years		5 Years		Market Value
	Actual %	Bmk ⁽¹⁾ %	Actual %	Bmk %	Actual %	Bmk %	(\$ in millions)
Active Managers							
Developed Mkts (MSCI World ex USA net)							
Acadian Asset Mgmt.	-3.1	1.3	12.5	9.0	5.9	2.0	387.1
Columbia Mgmt. Investment Advisers	3.0	1.3	11.4	9.0	5.0	2.0	357.8
Fidelity Institutional Asset Management	2.6	1.3	10.0	9.0	3.6	2.0	387.8
J.P. Morgan Investment Management	3.3	1.3	11.7	9.0	3.0	2.0	268.2
Marathon Asset Management	-0.6	1.3	8.4	9.0	3.2	2.0	458.4
McKinley Capital Management	-0.5	1.3	9.5	9.0	2.7	2.0	265.2
Semi-Passive Managers							
Developed Mkts (MSCI World ex USA net)							
AQR Capital Management	-1.9	1.3	7.4	9.0	1.6	2.0	344.2
Active Managers							
Emerging Mkts (MSCI Emerging Markets net)							
Earnest Partners	5.8	1.2					311.1
Macquarie Investment Management Advisers	0.9	1.2					317.5
Martin Currie	-0.2	1.2					336.6
Morgan Stanley Investment Management	1.6	1.2	8.5	10.7	2.4	2.5	607.1
Neuberger Berman Investment Advisers	-0.1	1.2					318.2
Pzena Investment Management	2.4	1.2					296.4
Rock Creek	-0.9	1.2					294.7
Passive Managers							
Developed Mkts (MSCI World ex USA net)							
State Street Global Advisors	1.6	1.3	9.3	9.0	2.4	2.0	8,591.0
Passive Managers							
Emerging Mkts (MSCI Emerging Markets net)							
State Street Global Advisors	1.1	1.2	10.5	10.7	2.6	2.5	1,192.0
Aggregate International Stock Program⁽²⁾	1.1	1.3	9.3	9.4	2.6	2.2	14,734.8

(1) Since 1/1/2019 the benchmark is 75% MSCI World ex USA Index (net) and 25% MSCI Emerging Markets Index (net).
From 6/1/08 to 12/31/2018 the target was the MSCI ACWI ex U.S. (net).

(2) Aggregate includes the performance of terminated managers includes assets of SIF Funds.

Combined Funds

International Stock Program

Figure 14. International Stock Program Aggregate Country Weights for Period Ending June 30, 2019

Country	Program Weights* %	Benchmark Weights** %
Argentina	0.0	0.0
Australia	4.8	4.7
Austria	0.3	0.2
Belgium	0.8	0.7
Brazil	1.0	1.5
Canada	7.0	6.6
Chile	0.1	0.3
China	4.5	8.2
Colombia	0.1	0.1
Cyprus	0.0	0.0
Czech Republic	0.1	0.0
Denmark	1.4	1.1
Egypt	0.0	0.0
Finland	0.9	0.7
France	7.2	7.5
Germany	6.0	6.5
Greece	0.0	0.1
Hong Kong	3.0	2.5
Hungary	0.2	0.1
India	1.1	2.2
Indonesia	0.4	0.5
Ireland	0.5	0.4
Israel	0.4	0.4
Italy	1.5	1.7
Japan	16.9	16.4
Malaysia	0.4	0.6
Mexico	0.7	0.7
Netherlands	2.8	2.5
New Zealand	0.2	0.1
Norway	0.6	0.5
Pakistan	0.0	0.0
Peru	0.2	0.1
Philippines	0.2	0.2
Poland	0.3	0.3
Portugal	0.1	0.1
Russia	0.6	0.9
Singapore	1.1	0.9
South Africa	0.9	1.6
South Korea	2.4	3.6
Spain	2.0	2.1
Sweden	1.8	1.8
Switzerland	5.3	5.3
Taiwan	1.7	2.9
Thailand	0.2	0.5
Turkey	0.1	0.2
United Arab Emirates	0.0	0.2
United Kingdom	13.9	12.3
United States	0.8	0.1
Cash	3.1	0.0
Other	2.6	0.0
Total***	100.0	100.0

* Grouped by country of Domicile. Source: FactSet.

** Benchmark listed is the MSCI ACWI ex USA Index (net). Source: FactSet.

*** Totals may not add due to rounding.

Combined Funds Investment Manager Summaries

International Stock Program Managers*

Active Developed Markets Managers

Acadian Asset Management LLC

Mandate:	Non U.S. Equity	Benchmark:	MSCI World ex. USA Index (net)
Product Assets/Firm Assets (as of 6/30):	\$6.1 billion / \$99.0 billion	# of Holdings:	408
Style:	Core	Fund/Quant:	Quantitative
Product Location:	Boston, MA	Expected Turnover:	40-60%
		Date Funded:	July 2005

Acadian first uses a quantitative process to rank their universe of 40,000 stocks by relative attractiveness. In its process, Acadian also applies separate models to forecast how well each stock's region/industry peer group will perform relative to world equities. The two forecasts are combined to determine a relative return forecast for each stock in the allowable universe. At the individual stock level, Acadian uses a wide range of factors including valuation, earnings, size and price movements in their quantitative process. At the peer group level, Acadian utilizes valuation, risk, growth and economic indicators. Portfolios are normally fully invested with a minimal amount of cash. Country and sector weights fall out of the bottom-up stock selection process, with overall portfolio risk control ensuring the desired level of diversification. The last step of the process is a careful review of optimized portfolios by the investment team, before trading, to ensure the portfolio meets the client's investment goals.

Columbia Threadneedle Investments

Mandate:	Threadneedle EAFE Equities Strategy	Benchmark:	MSCI World ex USA Index (net)
Product Assets/Firm Assets (as of 6/30):	\$597.7 million / \$459.0 billion	# of Holdings:	61
Style:	Core Growth	Fund/Quant:	Fundamental
Product Location:	London, England	Expected Turnover:	50-75%
		Date Funded:	March 2000

Columbia believes that a good understanding of the company level impact of thematic "key forces of change" in the market, in addition to management's ability to exploit these changes, creates significant opportunities to pick winners and avoid losers. "Top-down" views on macroeconomics and trends in global sectors are combined with "bottom-up" company analysis along regional and global sector lines. Analysts rate approximately 150 to 200 stocks in each region based on the expected 12-month performance. The global equity team then conducts additional research to determine which ones are potential portfolio candidates and decide as a group which ones to add or delete. Final portfolio construction is the responsibility of the lead portfolio manager.

* Presented in U.S. dollars unless otherwise noted.

Combined Funds Investment Manager Summaries

Fidelity Institutional Asset Management LLC

Mandate:	Fidelity International Growth	Benchmark:	MSCI World ex USA Index (net)
Product Assets/Firm Assets (as of 6/30):	\$5.3 billion / \$187.5 billion	# of Holdings:	157
Style:	Core Growth	Fund/Quant:	Fundamental
Product Location:	Smithfield, RI	Expected Turnover:	50-75%
		Date Funded:	July 2005

Fidelity's International Growth strategy is a core, growth-oriented strategy that provides diversified exposure to the developed international markets benchmark. The investment process combines active stock selection and regional asset allocation. Four portfolio managers in London, Smithfield, Rhode Island, and Toronto construct regional sub-portfolios, selecting stocks based on Fidelity analysts' bottom-up research as well as their own judgment and expertise. The four regional portfolios are combined according to the policy determined by Fidelity's Asset Allocation Group (AAG). The AAG is comprised of senior investment professionals who base their decisions on micro-economic data derived from portfolio manager inputs, analysts' field research, and proprietary data on liquidity, market activity, and fund flows. Portfolio guidelines are designed to ensure risk is appropriate with the performance target and to ensure that active risk is focused on stock selection.

J.P. Morgan Investment Management Inc.

Mandate:	EAFE Plus Strategy	Benchmark:	MSCI World ex USA Index (net)
Product Assets/Firm Assets (as of 6/30):	\$12.5 billion / \$1.7 trillion	# of Holdings:	79
Style:	Quality/Large-Cap Growth	Fund/Quant:	Fundamental
Product Location:	New York, NY	Expected Turnover:	20-40%
		Date Funded:	July 2005

J.P. Morgan's international equity process focuses on stock selection as the primary source of added value and seeks to build a portfolio diversified by both sector and region. Analysts regional teams generate local market insights and conduct research on companies in an effort to identify the highest conviction stocks within their region. The highest conviction regional stocks are further analyzed by a team of London-based Global Sector Specialists looking to identify global "industry winners". Their goal is to find well-managed, profitable companies that possess solid financial positions as well as companies whose earnings are growing faster than their competitors. In addition, J.P. Morgan considers valuation and seeks stocks that are trading at or below market multiples. Each global sector specialist ranks the stocks within his or her sector based on a variety of factors including the information gathered from the regional investment professionals and the global sector specialists' own knowledge of industry dynamics and relative valuations. The final stage of the investment process rests with a team of senior portfolio managers who are responsible for constructing risk controlled portfolios that capture the best thinking of both the local and global teams.

Combined Funds Investment Manager Summaries

Marathon Asset Management LLP

Mandate:	World ex U.S. Strategy	Benchmark:	MSCI World ex USA Index (net)
Product Assets/Firm Assets (as of 6/30):	\$3.2 billion / \$61.6 billion	# of Holdings:	358
Style:	Contrarian Growth	Fund/Quant:	Fundamental
Product Location:	London, England	Expected Turnover:	10-20%
		Date Funded:	November 1993

At the heart of Marathon's investment philosophy is the "capital cycle" approach to investment. This approach is based on the idea that the prospect of high returns will attract excessive capital and vice versa. In addition, Marathon believes that an assessment of how management responds to the forces of the capital cycle, (i.e. particularly whether they curtail investment when returns have been poor) and how they are incentivized, are critical to the investment outcome. Given the contrarian and long-term nature of the capital cycle, the approach results in strong views versus the market and long holding periods of more than five years. The investment philosophy guides a focused team of investment generalists who seek investment opportunities in the growth and value universes and across the capitalization spectrum.

McKinley Capital Management, LLC

Mandate:	MSCI EAFE Growth	Benchmark:	MSCI World ex USA Index (net)
Product Assets/Firm Assets (as of 6/30):	\$423.0 million / \$4.6 billion	# of Holdings:	65
Style:	Growth	Fund/Quant:	Quantitative
Product Location:	Anchorage, AK	Expected Turnover:	60-80%
		Date Funded:	July 2005

Using proprietary quantitative models, McKinley's investment process identifies companies that have signs of accelerating growth. The initial universe consists of all publicly traded non-U.S. stocks from all capitalization categories in more than 60 countries. Their primary model includes a risk-adjusted relative return measurement that is designed to identify inefficiently priced common stocks relative to the market. After the risk-adjusted relative return process has been applied the remaining candidates must then pass through liquidity and earnings acceleration tests. For final portfolio construction, McKinley examines a variety of qualitative factors which could ultimately impact earnings including a qualitative data check and street research analysis of economic factors, specific industry themes and company fundamentals. The final portfolio will hold between 50-75 stocks, providing diversification and risk control by issue, industry, sector and country.

Combined Funds Investment Manager Summaries

Semi-Passive Developed Markets Managers

AQR Capital Management, LLC

Mandate:	Semi-Passive Developed Markets Equity	Benchmark:	MSCI World ex USA Index (net)
Product Assets/Firm Assets (as of 6/30):	\$14.4 billion / \$193.9 billion	# of Holdings:	307
Style:	Value	Fund/Quant:	Quantitative
Product Location:	Greenwich, CT	Expected Turnover:	78%
		Date Funded:	July 2005

AQR employs a disciplined quantitative approach emphasizing both top-down country/currency allocation and bottom-up security selection decisions to generate excess returns. AQR's investment philosophy is based on the fundamental concepts of value and momentum. AQR's international equity product incorporates stock selection, country selection, and currency selection models as the primary alpha sources. Dynamic strategy allocation (between the three primary alpha sources) and style weighting are employed as secondary alpha sources.

Passive Developed Markets Managers

State Street Global Advisors

Mandate:	Passive Developed Markets Equity	Benchmark:	MSCI World ex USA Index (net)
Product Assets/Firm Assets (as of 6/30):	\$49.0 billion / \$2.9 trillion	# of Holdings:	1,032
Style:	Core	Fund/Quant:	N.A.
Product Location:	Boston, MA	Expected Turnover:	2.3%
		Date Funded:	October 1992

State Street Global Advisors uses a replication strategy to construct the portfolio. Exchange-traded stock index futures, approved by the Commodity Futures Trading Commission, are also used to minimize tracking error and trade cash flows in order to minimize transactions costs.

Active Emerging Markets Managers

Earnest Partners LLC

Mandate:	Global Emerging Markets Equity	Benchmark:	MSCI Emerging Markets Index
Product Assets/Firm Assets (as of 6/30):	\$1.1 billion / \$22.9 billion	# of Holdings:	44 (including China A share fund as 1)
Style:	Growth	Fund/Quant:	Fundamental Bottom Up
Product Location:	Atlanta, GA	Expected Turnover:	10-20%
		Date Funded:	April 2017

Earnest Partners' objective is to outperform the benchmark while controlling volatility and risk. Earnest Partners emphasizes a team decision making approach and uses a proprietary screening process, fundamental analysis, and risk management to minimize the likelihood of meaningfully underperforming the benchmark. Each company identified in the screening process is put through a fundamental review conducted by the investment team. Sector/industry weightings are driven by selection of individual securities, subject to risk concentration limits. In summary, Earnest Partners seeks companies in attractive industries with developed strategies, talented and honest management teams, sufficient funding, and strong financial results.

Combined Funds Investment Manager Summaries

Macquarie Investment Management Advisers

Mandate:	Global Emerging Markets Equity	Benchmark:	MSCI Emerging Markets Index
Product Assets/Firm Assets (as of 6/30):	\$8.1 billion / \$249.0 billion	# of Holdings:	85
Style:	Growth	Fund/Quant:	Fundamental Bottom Up
Product Location:	Philadelphia, PA	Expected Turnover:	10-40%
		Date Funded:	April 2017

Macquarie invests in companies with sustainable franchises that trade sufficiently below the team's intrinsic value estimate. They define a sustainable company as one with an evolving business model, resistant to competitive pressures, that demonstrates an identifiable framework for why it will exist over the next five years. Although bigger is not always better, Macquarie tends to focus on mid/large-cap companies due to competitive advantage and dominant market share, combined with greater market liquidity. Regarding valuation, the team uses a long-term perspective of what they feel the company will be worth based on a shared vision of its future. From there, they apply an appropriate valuation model to determine intrinsic value.

Martin Currie Inc.

Mandate:	Active Emerging Markets Equity	Benchmark:	MSCI Emerging Markets Index
Product Assets/Firm Assets (as of 6/30):	\$2.5 billion / \$16.2 billion	# of Holdings:	49
Style:	Growth	Fund/Quant:	Fundamental Bottom Up
Product Location:	Edinburgh, United Kingdom	Expected Turnover:	< 30%
		Date Funded:	April 2017

The Martin Currie Global Emerging Market's (GEMs) team builds long-term, high conviction stock portfolios, driven by fundamental research. They seek to identify those emerging market companies that can sustain cash flow growth and generate returns in excess of their cost of capital. The Martin Currie GEMs team believes that an assessment of a company's environmental, social and governance (ESG) performance, or sustainability, can help identify those business models that are most likely to sustain high returns and resist competitive pressures. The research process is designed to deliver high-conviction stock ideas based on fundamental bottom-up analysis. All GEMs portfolio managers are responsible for internal research, idea generation and analysis and the management of client portfolios top-down factors are viewed as a source of risk and are largely captured within a country-specific cost of equity used in valuation.

Combined Funds Investment Manager Summaries

Morgan Stanley Investment Management Inc.

Mandate:	Active Emerging Markets Equity	Benchmark:	MSCI Emerging Markets Index
Product Assets/Firm Assets (as of 6/30):	\$7.0 billion / \$497.3 billion	# of Holdings:	124
Style:	Growth	Fund/Quant:	Fundamental Bottom Up / Top Down
Product Location:	New York, NY	Expected Turnover:	30-50%
		Date Funded:	January 2001

The Morgan Stanley Investment Management (MSIM) Emerging Markets Equity team believes that future economic growth and currency movements are critical drivers of stock returns. MSIM conducts original macro-thematic research and integrates it with fundamental bottom-up company analysis to amplify returns in a growth-oriented portfolio. Using a proprietary “Rules of the Road” framework that includes rigorous credit and currency analysis, MSIM overweights those countries where growth is likely to accelerate and underweights those countries with macro risks which may not be fully appreciated by consensus. MSIM focuses on investing in companies with quality management dedicated to expanding earnings growth, which can include privately managed as well as state-owned enterprises expected to benefit from reform. The team takes active position sizes to generate meaningful long-term returns.

Neuberger Berman Investment Advisers LLC

Mandate:	Global Emerging Markets Equity	Benchmark:	MSCI Emerging Markets Index
Product Assets/Firm Assets (as of 6/30):	\$6.7 billion / \$333.0 billion	# of Holdings:	95 stocks
Style:	Growth	Fund/Quant:	Fundamental and Quant
Product Location:	New York, NY	Expected Turnover:	30-50%
		Date Funded:	April 2017

Neuberger Berman seeks to maximize performance by constructing its portfolios with high quality, growing companies trading at attractive valuations, which have the potential to outperform the benchmark at low risk. It is their belief that emerging markets are less efficient than developed ones and, because of this lack of market transparency, mispricing opportunities should exist. The team’s main emphasis is on bottom-up stock picking and fundamental analysis, but will also use both qualitative and quantitative processes at times during portfolio construction.

Combined Funds Investment Manager Summaries

Pzena Investment Management, LLC

Mandate:	Global Emerging Markets Equity	Benchmark:	MSCI Emerging Markets Index
Product Assets/Firm Assets (as of 6/30):	\$3.9 billion / \$35.0 billion	# of Holdings:	59
Style:	Value	Fund/Quant:	Fundamental Bottom Up
Product Location:	New York, NY	Expected Turnover:	20-40%
		Date Funded:	April 2017

Pzena is the SBI's deepest value-style Emerging Markets Equity manager. As such, they focus on companies that are underperforming their historically demonstrated earnings power. They apply fundamental research to these companies to determine whether the problems that caused the earnings shortfall are temporary or permanent. Beginning with a proprietary screening tool called Stock Analyzer, Pzena focuses research on the cheapest 20% of its universe. The subsequent decision to dedicate research resources to a security is made by the four co-portfolio managers who make an initial judgement as to whether the causes of the under-valuation are likely temporary or permanent, and whether the research process is likely to reasonably forecast the company's normalized earnings power. Once the team becomes extremely knowledgeable about the company and industry, the analyst and one of the portfolio managers meet with company management, and seeks a meaningful discussion about their business and the strategic options available to them over the next several years and their plans to restore the earnings power.

The Rock Creek Group, LLC

Mandate:	Global Emerging Markets Equity	Benchmark:	MSCI Emerging Markets Index
Product Assets/Firm Assets (as of 6/30):	\$8.9 billion / \$14.3 billion	# of Holdings:	Fund of Fund with 15-17 portfolio companies
Style:	Growth	Fund/Quant:	Fundamental Bottom Up
Product Location:	Washington, DC	Expected Turnover:	40-60%
		Date Funded:	April 2017

Rock Creek Emerging Markets Equity, organized as a fund-of-fund, utilizes an actively managed all-cap approach in which their top-down views drive country and sector selection, while their 15-17 local investment teams provide on-the-ground stock picking talent that drives security selection. The emerging markets investment team then adjusts the bottom-up derived portfolio using an overlay strategy to reflect top-down views on country exposures and betas. Rock Creek's local investment teams are located in the markets in which they invest, which tends to result in small/mid-cap size companies. Rock Creek's domicile of Washington, DC supports its ability to interact with policy makers, economists and strategists that help define their top-down views and themes.

Combined Funds Investment Manager Summaries

Passive Emerging Markets Managers

State Street Global Advisors

Mandate:	Passive Emerging Markets Equity	Benchmark:	MSCI Emerging Markets Index (net)
Product assets/Firm Assets (as of 6/30):	\$71.0 billion / \$2.9 trillion	# of Holdings:	1,037
Style:	Core	Fund/Quant:	N.A.
Product Location:	Boston, MA	Expected Turnover:	5.5%
		Date Funded:	December 2011

State Street Global Advisors (SSGA) manages an emerging markets equity index portfolio designed to track the Morgan Stanley Capital International MSCI Emerging Markets Index. SSGA uses an optimized strategy to construct the portfolio. Exchange traded stock index futures, approved by the Commodity Futures Trading Commission, are also used to minimize tracking error, obtain exposure where local access is inaccessible, and to trade cash flows in order to minimize transactions costs.

Combined Funds Fixed Income Program

Fixed Income Program

The Fixed Income Program is made up of active and semi-passive fixed income managers.

At the end of fiscal year 2019, the Combined Funds fixed income program had a market value of \$7.2 billion.

Investment Management

The SBI uses a two part approach for the management of the Fixed Income Program:

— **Active**

At the end of fiscal year 2019, approximately 55% of the Fixed Income Program was actively managed by four external investment managers with portfolios ranging in size from \$950 million to \$1.2 billion.

— **Semi-Passive Management**

At the end of fiscal year 2019, approximately 45% of the bond segment was invested by three investment managers with portfolios of \$1.0 to \$1.1 billion each.

The group of **active** bond managers is retained for its blend of investment styles. Each active manager has the goal of outperforming the Bloomberg Barclays U.S. Aggregate Bond Index by focusing on high quality fixed income securities across all sectors of the market. The managers vary, however, in the emphasis they place on interest rate anticipation (duration) and in the manner in which they approach security selection and sector weighting decisions. In

keeping with the objective of utilizing the Fixed Income Program as a deflation hedge, the active managers are restricted regarding the duration of their portfolios. This requirement is designed to prevent the dilution of the deflation hedge of the total program due to an excessively short duration position. In addition, the duration restriction helps to avoid extreme variability in total returns relative to the benchmark. The SBI constrains the duration range of the active managers' portfolios to a band of plus or minus two years around the duration of the Bloomberg Barclays U.S. Aggregate. The active bond managers focus on high quality (BBB or better) rated bonds. Four managers have been granted authority to invest a limited portion of their portfolios in BB and B rated dollar denominated debt and three have been given authority to invest in investment grade non-dollar denominated issues. The managers use this additional authority on a tactical basis.

The goal of the **semi-passive** managers is to add incremental value relative to the Bloomberg Barclays U.S. Aggregate Bond Index through superior bond selection and sector allocation rather than through interest rate exposure. Semi-passive managers' portfolios are constrained to plus or minus 0.5 years around the duration of the Bloomberg Barclays U.S. Aggregate. One manager has been granted authority to invest a limited portion of its portfolio in BB and B rated dollar denominated debt and in investment grade non-dollar

denominated issues. The manager uses this additional authority on a tactical basis.

A description of each bond manager's investment approach is included in the **Investment Manager Summaries** section beginning on page 42.

FY 2019 Changes

During fiscal year 2019, no changes were made to the manager structure.

Investment Performance

The SBI constrains the **risk** of the active bond managers' portfolios to ensure that they fulfill their deflation hedge and total fund diversification roles. As noted earlier, the managers are restricted in terms of the duration of their portfolios and the quality of their fixed income investments. The active and semi-passive bond managers successfully fulfilled their long-term risk objectives during fiscal year 2019.

The managers constructed portfolios consistent with stated investment approaches and maintained appropriate levels of quality and duration.

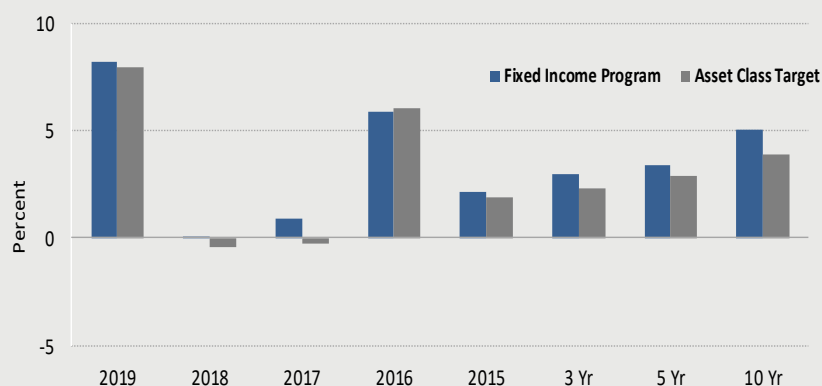
The **returns** of each of the bond managers are compared to the Bloomberg Barclays U.S. Aggregate Bond Index. Individual managers are expected to exceed the target, net of fees, on an annualized basis. In total, the program outperformed the Bloomberg Barclays U.S. Aggregate Bond Index by 0.3 percentage point for the recent fiscal year.

Combined Funds

Fixed Income Program

Relative to the benchmark, the program benefited from overweight positions in credit related sectors such as CMBS, ABS and Corporates. Managers also outperformed the benchmark over the long-term. The program outperformed the asset class target by 1.1 percentage points over the ten year period ending June 30, 2019. Three of four active managers outperformed the benchmark. All semi-passive managers outperformed for the fiscal year. Figure 15 shows historical performance for the entire program. Individual manager performance is shown in Figure 16. Aggregate portfolio sector and portfolio characteristics are shown in Figure 17.

Figure 15. Fixed Income Program Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
	2019	2018	2017	2016	2015	3 Yr.	5 Yr.	10 Yr.
Fixed Income Program	8.2%	0.1%	0.9%	5.9%	2.1%	3.0%	3.4%	5.0%
Asset Class Target*	7.9	-0.4	-0.3	6.0	1.9	2.3	2.9	3.9

* The Fixed Income Program asset class target has been the Bloomberg Barclays U.S. Aggregate Bond Index since July 1994.

Figure 16. Fixed Income Program Manager Performance for Periods Ending June 30, 2019

	1 Year		3 Years		5 Years		Market Value
	Actual	Bmk ⁽¹⁾	Actual	Bmk	Actual	Bmk	(\$ in millions)
	%	%	%	%	%	%	
Active Managers							
Columbia Mgmt.	8.9	7.9	3.8	2.3	3.9	2.9	1,061.6
Dodge & Cox	7.6	7.9	3.6	2.3	3.4	2.9	1,152.7
PIMCO	8.1	7.9	3.0	2.3	3.4	2.9	953.8
Western Asset Mgmt.	8.7	7.9	3.8	2.3	4.0	2.9	1,098.7
Semi-Passive Managers							
BlackRock Financial Mgmt.	8.1	7.9	2.5	2.3	3.1	2.9	1,062.4
Goldman Sachs Asset Mgmt.	7.9	7.9	2.6	2.3	3.2	2.9	1,167.7
Neuberger Investment Mgmt.	8.0	7.9	2.4	2.3	3.1	2.9	1,103.5
Aggregate Fixed Income Program⁽²⁾	8.2	7.9	3.0	2.3	3.4	2.9	7,600.3

(1) The Fixed Income Program asset class target has been the Bloomberg Barclays U.S. Aggregate Bond Index since July 1994.

(2) Aggregate includes the performance of terminated managers and includes assets of SIF Funds.

Combined Funds

Fixed Income Program

Figure 17. Fixed Income Program Sector Weights and Portfolio Characteristics for Period Ending June 30, 2019

	Active Managers %	Semi-Passive Managers %	Aggregate Fixed Income Program %	BB Barclays Benchmark %
Treasury	23.2	27.2	25.3	39.3
Government-Related	0.6	1.3	1.0	5.3
Corporate	30.1	31.3	31.0	25.0
U.S. Mortgage	29.7	27.8	28.8	27.2
Commercial Mortgage	3.3	2.0	3.0	2.0
Asset Backed	10.8	4.1	6.8	0.5
Municipal	1.3	0.8	1.0	0.7
Other	1.0	5.5	3.2	0.0

Note: May not equal 100% due to rounding.

	Active Managers %	Semi-Passive Managers %	Aggregate Fixed Income Program %	BB Barclays Benchmark %
Average Quality	A+	A+	A+	AA-
Average Yield to Maturity (%)	3.6	2.9	3.3	2.5
Effective Duration* (yrs)	4.8	5.9	5.3	5.7
Weighted Average Life** (yrs)	7.9	8.1	8.0	7.9

* Measures the interest rate sensitivity of a bond. It is the approximation of the percentage price change of the bond per 100 bp increase or decrease in prevailing market interest rates. Effective duration takes into consideration how the cashflows of the bonds change when interest rates change. This measure is most appropriate for bonds (and portfolios) with optionality, such as callable bonds and mortgage bonds.

** The weighted average life (WAL) of a bond is the average number of years for which each dollar of unpaid principal of a bond remains outstanding. Once calculated, WAL tells how many years it will take to pay half of the outstanding principal.

Combined Funds Investment Manager Summaries

Fixed Income Program Managers

Active Managers

Columbia Threadneedle Investments

Mandate:	Public Fixed Income	Benchmark:	Bloomberg Barclays U.S. Aggregate
Product Assets/Firm Assets (as of 6/30):	\$30.5 billion / \$337.1 billion	# of Holdings:	534
Style:	Active Core Plus	Fund/Quant:	Fundamental
Product Location:	Minneapolis, MN	Tracking Error Target	250 bps
		Date Funded:	July 1993

Columbia Threadneedle manages portfolios using a bottom-up, relative value approach in combination with a top-down, macro outlook that guides the firm's relative value decisions. Columbia uses security selection and sector allocation as the primary drivers of relative return, while duration and yield curve positioning provide less frequent opportunities. The fixed income team is divided into sector specialists such as Global Rates and Currency, Investment Grade Credit and Structured Assets, who provide input to the portfolio managers in determining an overall investment strategy. The overall investment objective is to deliver positive relative returns within a risk-managed approach, striving for competitive risk-adjusted performance over time.

Dodge & Cox

Mandate:	Public Fixed Income	Benchmark:	Bloomberg Barclays U.S. Aggregate
Product Assets/Firm Assets (as of 6/30):	\$90.5 billion / \$313.0 billion	# of Holdings:	244
Style:	Active Core	Fund/Quant:	Fundamental
Product Location:	San Francisco, CA	Tracking Error Target:	132 bps over 5 yrs.
		Date Funded:	February 2000

Dodge & Cox manages a diversified portfolio of securities that are selected through bottom-up, fundamental analysis. The firm believes that by combining fundamental research with a long-term investment horizon it is possible to uncover and act upon inefficiencies in the valuation of market sectors and individual securities. The investment process begins with idea generation by fixed income traders and analysts, which is then combined with global industry analysts and deliberation among sector committees, and which culminates with recommendations to senior fixed income members/CIO. Dodge & Cox core bond portfolios tend to overweight corporate bond sectors while maintaining a relatively concentrated issuer profile.

Combined Funds Investment Manager Summaries

Pacific Investment Management Company LLC (PIMCO)

Mandate:	Public Fixed Income	Benchmark:	Bloomberg Barclays U.S. Aggregate
Product Assets/Firm Assets (as of 6/30):	\$146.3 billion / \$1.84 trillion	# of Holdings:	572
Style:	Core Plus Total Return	Fund/Quant:	Fundamental
Product Location:	Newport Beach, CA	Tracking Error Target:	150-250 bps
		Date Funded:	September 2008

PIMCO's investment process starts with an annual Secular Forum. The goal of the Secular Forum is to look beyond the current business cycle and determine how secular forces will play out over the next three to five years. Quarterly, PIMCO holds Economic Forums to evaluate global growth and inflation over the next six to twelve months. The PIMCO Investment Committee (IC) then works, on a consensus basis, to develop major strategies that serve as a model for all portfolios. The IC makes use of the top-down outlook provided by the Forum, PIMCO's Global Advisory Board and strategists and generalist portfolio managers as well as bottom-up input from the Chief Investment Officers and specialists of the asset classes. The IC defines a set of target risk exposures for portfolios. Generalist portfolio managers collaborate with sector specialists, who perform in-depth research and recommend individual securities, for portfolio implementation.

Western Asset Management Company

Mandate:	Public Fixed Income	Benchmark:	Bloomberg Barclays U.S. Aggregate
Product Assets/Firm Assets (as of 6/30):	\$74.6 billion / \$450.0 billion	# of Holdings:	1,204
Style:	U.S. Core Full Discretion	Fund/Quant:	Fundamental
Product Location:	Pasadena, CA	Tracking Error Target	200-300 bps
		Date Funded:	July 1984

Western uses multiple strategies in different environments, so no single strategy dominates performance. Western believes that this approach adds consistent value over time and can reduce volatility. In making their sector decision, the firm seeks the greatest long-term value by analyzing all fixed income market sectors and their economic expectations. Individual issues are identified based on relative credit strength, liquidity, issue structure, event risk, covenant protection, and market valuation. Western will tactically trade the portfolio's overall duration within a stated band around the benchmark, and duration and curve strategies will often comprise a meaningful portion of Western's total risk profile.

Combined Funds Investment Manager Summaries

Semi-Passive Managers

BlackRock Financial Management, Inc.

Mandate:	Semi-Passive Public Fixed Income	Benchmark:	Bloomberg Barclays U.S. Aggregate
Product Assets/Firm Assets (as of 6/30):	\$8.3 billion / \$6.3 trillion	# of Holdings:	1,300
Style:	U.S. Core Enhanced Index	Fund/Quant:	Blend
Product Location:	New York, NY	Tracking Error Target:	30-100 bps
		Date Funded:	April 1996

BlackRock manages a semi-passive portfolio that closely tracks the Bloomberg Barclays U.S. Aggregate Index. BlackRock employs a controlled-duration, relative value sector rotation and security selection approach, which can be described as active management with tighter duration, sector, and quality constraints. BlackRock seeks to add value through managing portfolio duration within a narrow band relative to the benchmark, relative value sector/sub-sector rotation and security selection, rigorous quantitative analysis of the valuation of each security and of the portfolio as a whole, intense credit analysis and review, and the judgment of experienced portfolio managers. As with other semi-passive managers with limited risk budgets, BlackRock attempts to add value largely through security selection and sector rotation, which comprises the more efficient, repeatable forms of alpha. To a lesser extent BlackRock seeks to add value through duration and curve strategies.

Goldman Sachs Asset Management

Mandate:	Semi-Passive Public Fixed Income	Benchmark:	Bloomberg Barclays U.S. Aggregate
Product Assets/Firm Assets (as of 6/30):	\$34.9 billion / \$1.3 trillion	# of Holdings:	690
Style:	U.S. Core High Quality Fixed Income	Fund/Quant:	Fundamental
Product Location:	New York, NY	Target Tracking Error:	35 bps
		Date Funded:	July 1993

Goldman manages a semi-passive portfolio within a risk-controlled framework to closely track the Bloomberg Barclays U.S. Aggregate Index. The firm relies primarily on sector allocation and security selection strategies to generate incremental return relative to the benchmark. To a lesser degree, term structure and highly controlled interest rate anticipation strategies are also implemented. Portfolios are diversified among various sectors and individual securities. Strategic investments are based on fundamental and quantitative sector research that seeks to optimize the long-term risk/return profile of portfolios.

Combined Funds Investment Manager Summaries

Neuberger Berman Investment Advisers LLC

Mandate:	Semi-Passive Public Fixed Income	Benchmark:	Bloomberg Barclays U.S. Aggregate
Product Assets/Firm Assets (as of 6/30):	\$10.0 billion / \$333.0 billion	# of Holdings:	845
Style:	Enhanced Bond Index	Fund/Quant:	Blend
Product Location:	Chicago, IL	Target Tracking Error:	10-30 bps
		Date Funded:	July 1988

Neuberger manages a semi-passive portfolio that closely tracks the Bloomberg Barclays U.S. Aggregate Index. Neuberger's process relies on a combination of quantitative tools and active management judgment. Explicit quantification and management of risks are at the heart of their investment process. Neuberger's proprietary risk exposure analysis includes all relevant factors. Neuberger then calculates a bond's expected return with respect to changes in interest rates and spreads. As with other semi-passive managers with limited risk budgets, Neuberger Berman attempts to add value largely through security selection and sector rotation, and to a lesser extent through duration and curve strategies.

Combined Funds Treasury Portfolio

Treasury Portfolio

The Treasury Portfolio, launched in early 2018, is used exclusively by the Combined Funds.

As of June 30, 2019, the program had a market value of \$7.2 billion.

The SBI's objectives included offsetting credit risk inherent in the bond program, and providing downside protection for the overall retirement program during periods of significant equity drawdowns.

Investment Management

A group of three bond managers were retained for their blend of investment styles. Each manager has been given a modest risk budget with the goal of outperforming the Bloomberg Barclays Treasury 5+ Years Total Return over time, while largely retaining the primary characteristics of the benchmark.

The manager is required to remain within +/- 0.5 years of the overall benchmark duration (currently 11 years), but may employ interest rates strategies that result in overweight or underweight positions in certain maturities along the curve. In addition, managers finding relative value in the short end may choose to hold out-of-benchmark Treasury securities of less than five years duration, either through direct purchases or through those becoming shorter than five years due to the passage of time/roll down the curve.

The managers are also permitted to purchase limited amounts of out-of-benchmark U.S.

Agencies, U.S. Supranationals, and Treasury Inflation Protected Securities (TIPS). A description of each bond manager's investment approach is included in the **Investment Manager Summaries** section beginning on page 47.

Investment Performance

The SBI constrains the risk of the Treasury Portfolio managers to ensure that their accounts continue to be comparable to the benchmark and fulfill their total fund diversification roles. Since inception in February 2018, the Treasury Portfolio returned 7.4% through June 30, 2019 slightly underperforming benchmark performance of 7.5%.

Individual manager performance is shown below.

Treasury Portfolio Characteristics

	Total Portfolio	Benchmark
Effective Duration (yrs)	11.0	11.0
Convexity	2.0	1.9
Coupon Rate (%)	2.7	2.8
Yield to Maturity (%)	2.2	2.1
Option Adjusted Spread (bps)	5.0	0.0

	1 Year Actual %	Bmk ⁽¹⁾ %	Market Value (\$ in millions)
Treasury Managers			
BlackRock Financial Mgmt.	10.3	10.4	2,390.4
Goldman Sachs Asset Mgmt.	10.3	10.4	2,378.1
Neuberger Investment Mgmt.	10.2	10.4	2,400.0
Aggregate Treasury Program	7.4	7.5	7,168.5

(1) The Treasury benchmark is the Bloomberg Barclay Treasury +5 years.

Combined Funds Investment Manager Summaries

Treasury Portfolio Managers

BlackRock Financial Management, Inc.

Mandate:	U.S. Treasury Portfolio	Benchmark:	Bloomberg Barclays Treasury 5+ Yr. Index
Product assets/Firm Assets (as of 6/30):	\$2.0 billion / \$6.3 trillion	# of Holdings:	97
Style:	Long Duration Treasury	Fund/Quant:	Fundamental
Product Location:	New York, NY	Target Tracking Error:	50-75 bps
		Date Funded:	December 2017

BlackRock manages a fixed income protection portfolio that closely tracks the Bloomberg Barclays Treasury 5+ Year Index. BlackRock employs a controlled-duration, relative value sector rotation and security selection approach (sectors include Treasuries, TIPS, Agencies and Supranational securities), which is considered as active management within the guideline constraints and the nature of the mandate. BlackRock seeks to add value through managing portfolio duration, relative value sector rotation and security selection, rigorous quantitative analysis of the valuation of each security and of the portfolio as a whole, and the judgment of experienced portfolio managers.

Goldman Sachs Asset Management

Mandate:	U.S. Treasury Portfolio	Benchmark:	Bloomberg Barclays Treasury 5+ Yr. Index
Product assets/Firm Assets (as of 6/30):	\$2.6 billion / \$1.3 trillion	# of Holdings:	60
Style:	Long Duration Treasury	Fund/Quant:	Fundamental
Product Location:	New York, NY	Target Tracking Error:	50-75 bps
		Date Funded:	December 2017

Goldman manages a fixed income protection portfolio that closely tracks the Bloomberg Barclays U.S. Treasury 5+ Year Index. Goldman manages the portfolio within a risk-controlled framework. The firm relies primarily on security selection strategies, term structure and highly controlled interest rate anticipation strategies to generate incremental return relative to the benchmark. Goldman combines long-term strategic investments with short-term tactical trading opportunities. Tactical trades between Treasuries, Agencies, Supranational and TIPS are implemented to take advantage of short-term market anomalies.

Combined Funds Investment Manager Summaries

Neuberger Berman Investment Advisers LLC

Mandate:	U.S. Treasury Portfolio	Benchmark:	Bloomberg Barclays Treasury 5+ Yr. Index
Product assets/Firm Assets (as of 6/30):	\$7.0 billion / \$333.0 billion	# of Holdings:	59
Style:	Long Duration Treasury	Fund/Quant:	Fundamental
Product Location:	Chicago, IL	Target Tracking Error:	50-75 bps
		Date Funded:	December 2017

Neuberger manages a fixed income protection portfolio that seeks to replicate the interest rate risk characteristics of the Bloomberg Barclays Treasury 5+ Year Index. The manager has limited discretion to actively manage the underlying portfolio. The manager may purchase or sell fixed income instruments, and interest rate derivative instruments defined as interest rate futures on U.S. Treasury securities, Eurodollar futures, and interest rate options on U.S. Treasury futures and Eurodollar futures.

Combined Funds

Private Markets Funds

Private Markets Program

Like the stock and bond segments, private markets assets (real estate, private equity, real assets, private credit, and distressed/opportunistic investments) are managed on a program basis. The Private Markets Program is not offered to the Supplemental Investment Fund.

As of June 30, 2019, the market value of current private markets investments was \$10.2 billion, or 14% of the Combined Funds.

Statutory Constraints

The statutory constraints for any private markets asset investment for the Combined Funds are as follows:

- Each investment must involve at least four other investors.
- SBI's participation in an investment may not exceed 20% of the total investment.

Management Structure

Given their long investment time horizon, the Combined Funds are especially well suited for private markets investments. Up to 25% of the market value of the Combined Funds is targeted for private markets investments. Market value plus unfunded commitments may be up to 35% of the total market value of the Combined Funds. A breakdown of the program by segment is shown in Figure 18. The SBI does not establish an allocation target for each segment.

Descriptions of each of the private markets investments are included in the **Investment**

Manager Summaries section beginning on page 51.

Private Equity

The private equity investment strategy is to establish and maintain a broadly diversified private equity portfolio comprised of investments that provide diversification by industry type, stage of corporate development and location.

Prospective private equity managers are reviewed and selected based, primarily, on the manager's experience, investment strategy, diversification potential and performance history.

During fiscal year 2019, the SBI approved commitments with BlackRock, Blackstone Strategic Partners, Blackstone Group, Advent International, Summit Partners, Oak Hill Capital Management, Arsenal Capital Partners, Apax Partners, IK Investment Partners, KKR, Permira, TPG Partners, and Warburg Pincus & Co. The SBI will continue to review and add new private equity investments as attractive opportunities are identified.

Private Credit

The strategy for private credit investments is to target funds that typically provide a current return and may have an equity component. Structures such as subordinated debt, mezzanine, and direct lending investments are typical private credit investments. Managers are selected based on the manager's performance, experience and investment strategy. During fiscal year 2019, the SBI approved commitments with Energy Capital Partners, LBC Credit Partners, and TCW Asset Management. The SBI will

continue to review private credit investment opportunities for inclusion in the program.

Real Estate

The real estate investment strategy calls for the establishment and maintenance of a broadly diversified real estate portfolio comprised of investments that provide overall diversification by property type and location. The main components of this portfolio consist of investments in closed-end commingled funds. The remaining portion of the portfolio may include investments in less diversified, more focused (specialty) commingled funds and REITs.

Prospective real estate managers are reviewed and selected based on the manager's experience, investment strategy and performance history. During fiscal year 2019, the SBI approved commitments with Blackstone Real Estate Partners, TA Associates Realty, and Rockpoint. The SBI will continue to review real estate managers for possible inclusion in the program.

Real Assets

The strategy for real asset investments is to establish and maintain a diversified portfolio of investment vehicles comprised of tangible assets, which provide an inflation hedge and additional diversification. Real asset investments may include natural resources, infrastructure, and agricultural and timber assets. The portfolio will be diversified by geographic area as well as by type.

Real asset investments are selected based on the manager's experience, investment strategy and performance history. During

Combined Funds Private Markets Funds

fiscal year 2019, the SBI approved commitments with BlackRock, Energy & Minerals Group and Merit Energy Company. The SBI will continue to review real asset investments for possible inclusion in the program.

Distressed and Opportunistic

The strategy for distressed and opportunistic investments is to seek funds that target equity and/or debt investments in companies in some form of distress, as well as unique or idiosyncratic investments that may share characteristics of other private asset classes. Managers are selected based on the manager's performance, experience and investment strategy. During fiscal year 2019, the SBI approved a commitment with Värde Partners. The SBI will continue to review distressed and opportunistic investment opportunities for inclusion in the program.

Investment Performance

The SBI reviews performance of its private markets investments relative to inflation, as measured by changes in the Consumer Price Index (CPI), and expects that private markets investments in the aggregate will be accretive to other investments in the Combined Funds. The Private Markets Program provided a 10.4% return in fiscal year 2019 and has provided a 12.5% return annualized over the past ten years, which provided a positive contribution to overall fund performance for the Combined Funds.

Performance of the Private Markets Program is shown in Figure 19 for the period ending June 30, 2019. At this time, benchmarks have not been established for the

private markets fund managers. The long-term nature of these investments and the lack of comprehensive data on the returns provided by the private markets investments preclude comprehensive performance evaluation. In the future, as markets for these asset classes become more institutionalized, the SBI hopes to integrate

appropriate performance standards for these assets into its performance analysis. A listing of individual investment funds can be found in the **Investment Manager Summaries** section beginning on page 51.

Figure 18. Private Markets Program Asset Mix as of June 30, 2019

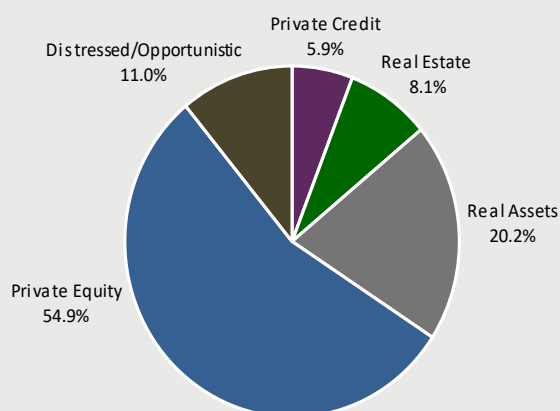
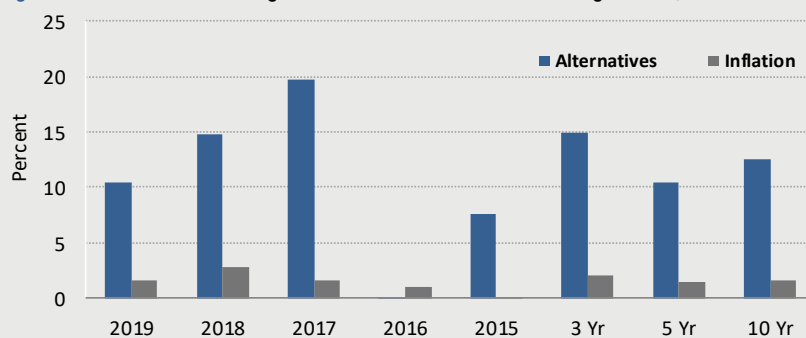


Figure 19. Private Markets Program Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
Alt. Investments	10.4%	14.8%	19.7%	0.2%	7.6%	14.9%	10.4%	12.5%
Inflation	1.7	2.8	1.7	1.0	0.2	2.1	1.5	1.7

Combined Funds

Investment Manager Summaries

Private Markets Managers

Private Equity Managers

Adams Street Partners

Adams Street (formerly Brinson Partners) Global Secondary Funds invest in private equity limited partnership interests which are sold by investors who, for a variety of reasons, have decided to sell some or all of their partnership interests. Adams Street Partners is based in Chicago, IL.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Global Secondary Fund 5	53,902,821	23,470,250	2012
Global Secondary Fund 6	11,543,494	88,800,000	2017

Advent International

Advent International Global Private Equity (“GPE”) program focuses on investing primarily in buyout and recapitalization opportunities in upper middle-market companies with a focus on value creation through business transformation and earnings growth. Advent’s geographic focus is Europe and North America and selectively in Asia. Advent has regional headquarters in Boston, MA and London.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Advent International GPE VI	9,704,411	0	2008
Advent International GPE VII	75,004,405	5,400,000	2012
Advent International GPE VIII	97,562,728	15,900,000	2016
Advent International GPE IX	0	115,000,000	2019

Affinity Capital

Affinity Ventures makes venture capital investments exclusively in the health care industry, with a focus on companies in the medical device, health care service, health care information technology, and biotechnology sectors. Affinity Capital is based in Minneapolis, MN.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Affinity Ventures IV	576,089	0	2004
Affinity Ventures V	2,263,538	0	2008

Apax Partners

Apax Partners flagship funds invest in buyouts globally across its four sectors, Tech & Telco, Services, Healthcare and Consumer, with its digital capability as a horizontal specialization spanning across sectors. Apax is headquartered in London and has additional offices in New York, Munich, Mumbai, Tel Aviv, Shanghai, and Hong Kong.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Apax VIII	130,148,428	14,644,515	2013
Apax IX	94,704,841	81,077,199	2016

Combined Funds

Investment Manager Summaries

Arsenal Capital Partners

Arsenal Capital Partners focuses on making private equity investments in the Specialty Industrials and Healthcare sectors in the lower end of the U.S. middle market. Arsenal has completed more than 150 transactions since its founding in 2000. The firm is headquartered in New York.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Arsenal Fund V	0	75,000,000	2019

Asia Alternatives

Asia Alternatives pursues investment opportunities with top-performing private equity managers and will hold a diversified portfolio of Asian private equity funds. The Fund intends to be diversified across buyout, growth and expansion, venture capital and special situations. Asia Alternatives is headquartered in San Francisco, CA, but has regional offices in Hong Kong, Beijing, and Shanghai.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Asia Alternatives V	10,156,916	82,385,202	2017

The Banc Funds Co.

Banc Funds invest primarily in sub-regional banks, across the U.S., which have demonstrated above average growth and are likely acquisition targets. Banc Funds also provides value-added counsel to its portfolio companies to improve growth, profitability, and enhance franchise value.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Banc Fund VIII	69,662,533	0	2008
Banc Fund IX	113,653,190	0	2014
Banc Fund X	21,858,535	48,280,364	2018

BlackRock Long Term Private Capital

BlackRock Long Term Private Capital makes equity investments in established businesses with strong, recurring revenues, prudent capital structures and stable growth potential over a long-term horizon. The Fund is focused on longer-term themes than traditional private equity investments. The Long Term Private Capital team is based in New York and London.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
BlackRock Long-Term Private Capital	0	250,000,000	2019

Blackstone Group

Blackstone Capital Partners funds make equity investments in the upper end of the middle market globally. Blackstone invests in the majority of sectors in the global economy. Typically, the firm will add value to underlying portfolio companies by using their functional experts and strategic support groups to improve operations. Blackstone is headquartered in New York.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Blackstone Capital Partners Fund IV	3,076,227	1,862,355	2002
Blackstone Capital Partners Fund V	6,102,292	7,027,560	2006
Blackstone Capital Partners Fund VI	88,138,191	13,199,714	2008
Blackstone Capital Partners Fund VII	81,023,331	64,800,687	2015
Blackstone Capital Partners Fund VIII	0	150,000,000	2019

Combined Funds Investment Manager Summaries

Blackstone Strategic Partners (formerly Credit Suisse)

Strategic Partners invests in secondary leveraged buyout, venture capital, and mezzanine debt limited partnership interests which are sold by investors who, for a variety of reasons have decided to liquidate all or a portion of their private equity holdings. Strategic Partners is based in New York, NY. In 2013, the Strategic Partners funds platform was sold to The Blackstone Group and is now wholly-owned by Blackstone.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Strategic Partners Fund III B	4,261,237	14,934,308	2005
Strategic Partners Fund III VC	2,981,276	1,067,943	2005
Strategic Partners Fund IV B	9,746,794	17,798,494	2008
Strategic Partners Fund IV VC	9,747,180	2,439,627	2008
Strategic Partners Fund V	19,909,727	38,034,796	2011
Strategic Partners Fund VI	54,003,596	60,956,184	2014
Strategic Partners Fund VII	114,291,115	68,912,171	2016
Strategic Partners Fund VIII	7,951,243	142,048,757	2019

Bridgepoint

Bridgepoint focuses on making equity investments in middle market companies headquartered or with significant operations in Europe. Bridgepoint focuses on companies with sustainable end market growth and high quality of earnings. The firm has offices globally with eight investment offices in Europe, portfolio offices in Shanghai and New York, and a funds management office in Luxembourg.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Bridgepoint Europe VI	7,883,738	160,837,483	2018

Brookfield Asset Management

Brookfield Asset Management is a global operator and asset manager of real assets related businesses. The Capital Partners strategy targets investments in complex situations, out of favor sectors and companies that require operational changes. Brookfield Capital Partners is based in Toronto.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Brookfield Capital Partners Fund IV	89,588,356	27,499,345	2015
Brookfield Capital Partners Fund IV	-1,017,621	250,000,000	2018

Cardinal Partners (formerly DSV Management)

DSV focuses on start-up and early stage investments. The firm has offices in Princeton, NJ.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
DSV Partners IV	30,883	0	1985

Carlyle Group

Carlyle Partners funds seek to make control-oriented and strategic minority equity investments, targeting market-leading businesses with solid cash flows and attractive fundamentals, where it looks to drive further growth and operational improvement. The Carlyle Group is headquartered in Washington, D.C.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Carlyle Partners VII	18,634,883	127,904,392	2017

Combined Funds Investment Manager Summaries

Chicago Growth Partners (formerly William Blair)

Chicago Growth Partners (“CGP”) funds focus on buyouts of small growth companies across the Education, Tech-Enabled Services, Healthcare, and Industrial Growth sectors. CGP seeks to partner with entrepreneurs attempting to maintain or accelerate revenue and EBITDA growth in their businesses. The firm is headquartered in Chicago.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
William Blair Capital Partners VII	1,075,428	1,650,000	2001
Chicago Growth Partners I	1,873,424	300,000	2005
Chicago Growth Partners II	3,441,868	1,652,374	2008

Court Square Capital Partners

Court Square Capital Partners invests in North American middle-market growth companies in the Business Services, Healthcare, Industrial, and Technology & Telecommunications sectors. Established in 2001, Court Square traces its roots back to 1979 where senior members of the team worked together at Citigroup Venture Capital. Court Square is based in New York, NY.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Court Square Capital Partners II	18,395,992	16,176,139	2006
Court Square Capital Partners III	173,531,817	13,624,629	2012
Court Square Capital Partners IV	0	150,000,000	2018

Crescendo Ventures

Crescendo Ventures makes venture capital investments in companies throughout the U.S. The firm has offices in Minneapolis and Palo Alto, CA.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Crescendo Venture Fund IV	2,145,317	0	2000

CVC Capital Partners

CVC focuses on making control-oriented buyout investments in Western Europe and North America. CVC seeks to invest in high quality businesses with competitive leadership positions and to work with management to create sustainable long-term value. The firm was established in 1981 and currently has 15 offices across Europe and the Americas and 9 offices in the Asia Pacific region.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
CVC European Equity Partners V	26,938,137	1,626,479	2008
CVC Capital Partners VI	260,188,310	51,621,020	2013

Elevation Partners

Elevation Partners was formed in 2005 for the purpose of making private equity investments targeting the media and entertainment sectors, with a focus on content and intellectual property. Elevation has offices in Menlo Park, CA and New York, NY.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Elevation Partners	144,367	799,634	2005

Combined Funds

Investment Manager Summaries

Goldner Hawn Johnson and Morrison

Goldner Hawn Johnson and Morrison (“GHJM”) invests primarily in middle market private equity investments located in the Midwest and other parts of the U.S. GHJM has a value-oriented approach to investing and looks to add value by executing add-on acquisitions, facilitating new strategic initiatives, and/or solving company issues that previously detracted from company value. The firm is headquartered in Minneapolis.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
GHJM Trailhead Fund	34,369,639	3,935,813	2012

Glouston Capital Partners (fka Permal Capital)

Glouston Private Equity Opportunities Fund was inherited from the Duluth Teachers Retirement Fund Administration in 2015. Glouston is a small investment firm based in New York, NY and was formed to purchase small portfolios of private equity investments on the secondary market.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Glouston PE Opportunities IV, L.P.	1,300,762	1,090,000	2015

Goldman Sachs Capital Partners

Goldman Sachs Capital Partners and West Street Capital Partners funds seek long-term capital gains through the creation of a diversified global portfolio of direct or indirect investments in equity, equity-related and similar securities. The Vintage Fund series focuses on acquiring and structuring portfolios of private equity partnerships and assets in the secondary market. All of the funds are based in New York.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
GS Capital Partners V	1,092,872	1,041,099	2005
GS Capital Partners VI	13,296,247	2,801,717	2007
West Street Capital Partners	41,100,369	110,258,025	2016
Vintage VII	69,623,518	42,963,816	2016
GS China-US Cooperation Fund	8,603,918	89,820,000	2018

GTCR Golder Rauner

GTCR focuses on building diversified private equity funds by partnering with exceptional management leaders, developing deep domain expertise in the sectors on which they focus, and executing transformational opportunities. The firm was founded in 1980 and is headquartered in Chicago.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
GTCR Fund IX	165,020	3,585,067	2006
GTCR Fund X	20,799,688	6,751,396	2010
GTCR Fund XI	92,206,797	13,716,556	2013

Combined Funds

Investment Manager Summaries

HarbourVest

The HarbourVest funds were inherited from the Duluth Teachers Retirement Fund Administration in 2015. Based in Boston, MA, HarbourVest is a global investment firm with multiple investment products. The following funds were formed to make direct or secondary investments in established buyout and venture capital funds.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Dover Street VII Cayman Fund L.P.	314,508	132,416	2015
HarboutVest Intl PE Partners V-Cayman US	721,576	182,208	2015
HarboutVest Intl PE Partners VI-Cayman	3,799,442	239,148	2015
HarboutVest Partners VIII-Cayman Buyout	1,595,542	234,000	2015
HarboutVest Partners VIII-Cayman Venture	3,820,778	140,000	2015

Hellman and Friedman

Hellman and Friedman (“H&F”) seeks to build diversified private equity funds by making large-scale investments high quality, growing businesses in the developed markets. The firm operates in the Software, Financial Services, Internet and Media, Business and Information Services, Healthcare, Insurance, Retail and Consumer, and Energy and Industrials sectors. H&F has offices in San Francisco, New York, and London.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Hellman and Friedman VI	11,149,880	5,084,864	2007
Hellman and Friedman VII	67,642,880	2,343,044	2009
Hellman and Friedman VIII	-313,512	172,258,308	2018

IK Investment Partners

IK, based in London, makes equity investments in lower middle-market business in Europe’s northern countries. IK’s primary focus is businesses in the consumer industrial, businesses services and healthcare sectors. Once IK makes an investment in a business, it seeks to expand the business internationally through a combination of organic growth and via mergers and acquisitions.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
IK Fund VII	183,148,220	8,128,847	2013
IK Fund VIII	146,370,930	49,082,080	2016

Kohlberg, Kravis, Roberts & Co. (KKR)

KKR’s private equity funds engage primarily in buyouts, build-ups, control, growth and other private equity investments globally. Private equity teams are supported by a global network of KKR consultants, operational professionals, and capital markets professionals. The Millennium, 2006, and Americas Funds invest across North America, and the Asia and Europe funds invest in their respective continents.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
KKR Millennium Fund	178,659	0	2002
KKR 2006 Fund	61,498,848	3,360,223	2006
KKR Americas Fund XII	63,225,469	89,511,167	2016
KKR Asia Fund III	38,622,892	63,499,193	2017
KKR Europe V	0	100,000,000	2018

Combined Funds Investment Manager Summaries

Leonard Green & Partners

Leonard Green & Partners (“LGP”) focuses on investing in market-leading companies with attractive growth prospects across a broad range of industries with a preference for companies providing services, including Consumer, Business, and Healthcare Services, as well as Retail, Distribution, and Industrials. LGP is based in Los Angeles, CA.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Green Equity Investors VI	213,155,198	20,574,386	2012

Lexington Capital Partners

Lexington Capital Partners funds seek to make investments in established buyout, mezzanine, and venture capital funds, primarily through secondary transactions. Lexington Middle Market funds seek to acquire U.S. growth capital, small and middle market buyout interests through negotiated secondary market purchases. Lexington Co-Investment Partners funds focus on making equity co-investments in transactions alongside leading buyout sponsors in U.S., European, and Asian companies. The funds are based in New York.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Lexington Capital Partners VI	9,113,811	1,634,703	2006
Lexington Capital Partners VII	51,325,173	38,059,995	2009
Lexington Capital Partners VIII	110,116,433	37,620,383	2014
Lexington Middle Market Investors IV	10,622,751	88,976,559	2016
Lexington Co-Investment Partners IV	137,748,821	75,389,099	2017
Lexington Capital Partners IX	4,498,002	150,000,000	2018

Madison Dearborn Capital Partners

Madison Dearborn Capital Partners is a medium-sized private equity investment firm based in Chicago, IL. The firm makes buyout and growth equity investments in established middle and upper middle-market companies located primarily in the United States.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Madison Dearborn Capital Partners VII	71,741,418	38,393,836	2015

Neuberger Berman

Neuberger Berman formed the Dyal Capital Partners strategy to make minority equity investments in established investment management companies. The firm seeks to build a portfolio that will be diversified by investment strategy, vintage year, and geography. Dyal Capital is based in New York, NY.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Dyal Capital Partners III	101,280,011	112,982,304	2016
Dyal Capital Partners IV	9,291,800	241,250,918	2018

Nordic Capital

Nordic Capital is based in Stockholm, Sweden and performs buyouts of middle-market businesses, primarily in the Nordic region of Europe. Nordic focuses on healthcare and information technology businesses where they can use their expertise in these sectors to create value.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Nordic Capital VIII	157,264,890	104,451,774	2013
Nordic Capital IX	33,899,055	143,344,444	2017

Combined Funds

Investment Manager Summaries

North Sky Capital

North Sky Capital funds were inherited from the Duluth Teachers Retirement Fund Administration in 2015. Based in Minneapolis, MN, North Sky manages several different investment strategies. The following funds were formed to make direct investments in established buyout and venture capital funds.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
North Sky Capital LBO Fund III, LP	300,141	350,000	2015
North Sky Capital Venture Fund III, LP	381,065	106,250	2015

Oak Hill Capital Management

Oak Hill Capital seeks to make middle-market buyout investments across the Consumer, Retail & Distribution, Industrials, Media & Communications, and Services sectors. The firm began its investment activities in 1986 as the family office of Robert M. Bass and raised its first outside capital and formed its first fund in 1999. The firm is based in New York, NY and has offices in Menlo Park, CA and Stamford, CT.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Oak Hill Capital Partners IV	93,266,820	69,551,869	2016
Oak Hill Capital Partners V	0	100,000,000	2018

Paine Schwartz

Paine Schwartz is a small private equity firm with offices in New York, Chicago and San Mateo, CA. Paine Schwartz seeks to make control investments in companies involved in the global food and agribusiness sectors. The firm has a focus on innovation and sustainability and carries it out with a proactive and thesis-driven approach.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Paine Schwartz IV	54,802,423	20,858,445	2014
Paine Schwartz V	-1,403,561	150,000,000	2018

Permira

Permira performs buyouts of middle-market companies in Europe, North America, and Asia. Permira typically makes investments in the Retail, Consumer & Business Services, Healthcare and Telecom, Media and Technology sectors. Headquartered in London, Permira has 13 additional offices across Europe, the U.S., and Asia.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Permira V	208,221,956	25,384,767	2013
Permira VI	104,315,059	44,548,305	2016
Permira VII	0	142,350,048	2019

Public Pension Capital Management (PPC)

PPC developed an innovated approach to private equity investing, tailored to the needs and demands of modern public pensions in the United States. The fund's evergreen structure allows flexibility, increased transparency and alignment of interests of the GP and LPs. The fund invests in middle-market businesses in the technology, financial and industrial sectors. PPC is based in New York, NY.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Public Pension Capital Fund	75,135,151	80,350,177	2014

Combined Funds

Investment Manager Summaries

RWI Ventures

RWI Ventures was formed in 2000 to make venture capital investments. The firm is based in Menlo Park. The RWI Funds were transferred to the SBI from the Minneapolis Teachers Retirement Fund Association (MTRFA) on June 30, 2006 pursuant to the merger of MTRFA into TRA.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
RWI Ventures I	453,038	0	2006

Silver Lake Partners

Silver Lake Partners seeks to achieve superior risk-adjusted returns by pursuing large-scale growth and private equity investments in companies within the technology, technology-enabled and related growth industries. Silver Lake was founded in 1999 and has offices in Silicon Valley, New York, London, and Hong Kong.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Silver Lake Partners II	912,328	11,771,953	2004
Silver Lake Partners III	19,915,095	10,559,311	2007
Silver Lake Partners IV	137,886,690	7,057,636	2012
Silver Lake Partners V	57,066,935	66,780,621	2017

Split Rock Partners

Split Rock Partners Management (formerly part of St. Paul Venture Capital) formed the Split Rock Partners funds to focus on private equity investments in seed and early-stage healthcare and software companies. The firm has offices in Minneapolis and Menlo Park.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Split Rock Partners I	6,074,471	2,109,094	2005
Split Rock Partners II	29,133,475	835,000	2008

Summit Partners

Summit Partners sources and partners with exceptional entrepreneurs to help them accelerate their growth. Summit Partners has a flexible investment approach and investments range from structured transactions to control buyouts. The firm was founded in 1984 and currently has more than 100 investment professionals across their Boston, Menlo Park, and London offices.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Summit Partners Growth Equity VIII	68,829,457	24,040,551	2011
Summit Partners Growth Equity IX	78,408,823	33,123,626	2015
Summit Partners Growth Equity X	0	150,000,000	2019

Thoma Bravo Equity Partners

Thoma Bravo is a successor firm to the private equity firm of Golder, Thoma, Cressey and Rauner ("GTCR"). Thoma Bravo pursues buy-and-build control buyouts of software and technology companies in North America. The firm has offices in San Francisco and Chicago.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Thoma Bravo Fund XII	85,800,882	5,207,940	2016
Thoma Bravo Fund XIII	53,256,553	96,413,138	2018

Combined Funds

Investment Manager Summaries

Thoma Cressey Bravo Equity Partners

Thoma Cressey Bravo is a successor firm to the private equity firm of Golder, Thoma, Cressey and Rauner (“GTCR”). Based in Chicago, IL, the funds focus primarily on a wide variety of private equity investments in consolidating and fragmented industries.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Thoma Cressey Fund VII	468,920	0	2000
Thoma Cressey Fund VIII	457,758	770,000	2006

Thomas H. Lee Partners

Thomas H. Lee invests in growth-oriented businesses, headquartered primarily in North America, through buyout transactions. The firm was founded in 1974 and has invested in more than 140 portfolio companies and completed over 350 add-on acquisitions since inception. Headquartered in Boston, the firm has more than 40 investment professionals.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Thomas H. Lee Equity Fund VII	102,863,280	12,690,548	2015
Thomas H. Lee Equity Fund VIII	1,705,856	146,091,906	2018

Thomas, McNerney & Partners

Thomas, McNerney & Partners is based in Connecticut with additional offices in Minneapolis and San Francisco. The Thomas, McNerney & Partners funds were formed to make venture capital investments in all stages of development and across all sectors of the health care industry.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Thomas, McNerney & Partners Fund I	6,987,335	0	2003
Thomas, McNerney & Partners Fund II	7,979,476	1,875,000	2006

TPG

TPG Partners seeks attractive risk-adjusted returns by investing in traditional buyouts, transformational transactions, and off-the-beaten-path transactions. Founded in 1993, TPG has over 90 investment professionals and can leverage the broader TPG platform, which has over 570 professionals located in 17 offices globally.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
TPG Partners VII	97,638,555	16,597,098	2015
TPG Partners VIII	0	150,000,000	2018

Vestar Capital Partners

Vestar Capital Partners is a middle-market private equity firm specializing in management buyouts, recapitalizations, and growth equity investments. Vestar has completed over 80 platform investments and 200 add-on acquisitions since its inception in 1988. The firm is headquartered in New York and has offices in Denver and Boston.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Vestar Capital Partners IV	747,071	57,313	1999
Vestar Capital Partners V	9,520,459	0	2006
Vestar Capital Partners VI	68,301,014	1,821,992	2011
Vestar Capital Partners VII	23,431,483	123,437,337	2017

Combined Funds

Investment Manager Summaries

Warburg Pincus & Co.

Warburg Pincus is based in New York City and has a global presence with seven additional offices around the world. These funds will invest private equity in a wide variety of businesses located domestically and abroad. The Warburg Pincus China and China-Southeast-Asia funds are companion funds and will invest alongside the current Warburg Pincus global fund. Similarly, the Warburg Pincus Financial Sector fund will invest alongside the current global and China funds.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Warburg Pincus Equity Partners	386,522	0	1998
Warburg Pincus Private Equity Partners VIII	1,392,922	0	2002
Warburg Pincus Private Equity Partners IX	6,021,559	0	2005
Warburg Pincus Private Equity Partners X	56,970,774	0	2007
Warburg Pincus Private Equity Partners XI	179,449,542	0	2012
Warburg Pincus Private Equity Partners XII	114,023,133	28,623,500	2016
Warburg Pincus China	40,697,959	8,820,000	2017
Warburg Pincus Financial Sector	34,594,762	52,830,000	2017
Warburg Pincus Global Growth	2,195,811	247,000,000	2018
Warburg Pincus China-Southeast Asia II	1,750,000	48,250,000	2019

Wellspring Capital Partners

Wellspring Capital Partners seeks to make value-oriented, control investments in undermanaged, but strong middle-market companies based principally in North America. Wellspring looks to employ executional expertise to transform businesses and create significant value. The firm is headquartered in New York, NY.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Wellspring Capital Partners VI	33,011,491	89,559,183	2016

Welsh, Carson, Anderson and Stowe

Founded in 1979, Welsh, Carson, Anderson and Stowe is a private equity investor focused on growth businesses in the healthcare and business/information services industries. They seek to partner with outstanding management teams and build value through a combination of operational improvements, growth initiatives, and strategic acquisitions. The firm is headquartered in New York, NY.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Welsh, Carson, Anderson and Stowe Fund XI	35,364,295	0	2008
Welsh, Carson, Anderson and Stowe Fund XII	135,669,422	24,173,871	2014
Welsh, Carson, Anderson and Stowe Fund XIII	494,427	248,166,175	2018

Windjammer Capital Investors

Windjammer Capital Investors ("Windjammer") invests equity, minority equity, and subordinated debt as a control investor in leading middle market businesses and in partnership with their management teams. Since its inception in 1990, the firm has completed over 50 platform investments and 100 add-on acquisitions. Windjammer has offices in Boston and Newport Beach.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Windjammer Mezzanine & Equity Fund II	66,484	10,139,363	2000
Windjammer Senior Equity Fund III	401,894	13,380,380	2005
Windjammer Senior Equity Fund IV	116,213,120	18,397,478	2012
Windjammer Senior Equity Fund V	505,479	97,281,028	2017

Combined Funds Investment Manager Summaries

Private Credit Managers

Audax

Based in New York, NY, Audax invests in a diversified portfolio of mezzanine securities, with a specific focus on the middle market. Audax's deal flow is generated through a combination of direct marketing efforts to middle market private equity sponsors and long-standing relationships with numerous deal intermediaries.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Audax Mezzanine III	16,920,264	5,369,457	2010
Audax Mezzanine Fund IV	31,501,527	59,697,426	2015

BlackRock

BlackRock Middle Market Senior Fund was formed to invest primarily in a portfolio of senior secured income-generating debt and debt-related instruments. It is expected the investments will be in medium-sized companies domiciled in, or exercising the main part of their economic activity in, the United States. BlackRock is headquartered in New York, NY.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
BlackRock Middle Market Senior Fund	28,229,576	68,817,557	2018

Crescent Capital Group (formerly TCW/Crescent)

TCW/Crescent Mezzanine Partners III is a Los Angeles, CA based limited partnership formed in 2001. The Fund makes mezzanine investments including subordinated debt with equity participations primarily in profitable, middle market companies. Crescent Capital Group became formerly independent of TCW in 2011.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
TCW/Crescent Mezzanine Partners III	227,398	29,733,852	2001

Energy Capital Partners

Energy Capital Partners Credit Solutions strategy is focused on primarily credit-oriented opportunities in high quality North American-based assets and business across the entire energy infrastructure value chain. Examples include traditional and renewable power, midstream pipeline, storage, transportation assets, environmental infrastructure, and energy-related assets and equipment. The firm is headquartered in Short Hills, New Jersey, and has offices in San Diego, Houston, and New York, NY.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Energy Capital Credit Solutions II	0	100,000,000	2019

Goldman Sachs Mezzanine Partners

Based in New York, the Funds' investment objectives are to achieve long-term capital appreciation and current returns through investments in mezzanine securities. These securities will principally include fixed income securities such as debt and preferred stock, often with an equity component, such as warrants, options, a convertible feature, or common stock associated with the debt or preferred stock purchase.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
GS Mezzanine Partners 2006	923,532	9,858,563	2006
GS Mezzanine Partners V	1,819,620	37,564,028	2007

Combined Funds

Investment Manager Summaries

Gold Hill Venture Lending Partners

Gold Hill Venture Lending Partners generate returns through secured loans, gains on the sales of securities acquired upon the exercise of warrants, and through the disposition of direct equity investments. Prior to forming Gold Hill, the partners executed a similar mandate for Silicon Valley Bank, and they expect to continue a close relationship for purposes of deal-sourcing. Gold Hill has offices in Santa Clara, CA and Boston, MA.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Gold Hill Venture Lending	360,588	0	2004
Gold Hill 2008	5,668,508	0	2008

KKR

Based in New York, KKR is a large global investment firm with a variety of private equity investment products. KKR Lending Partners will make investments primarily in the senior debt securities of middle-market U.S. companies. The funds will focus on originated transactions into both sponsored and non-sponsored companies.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
KKR Lending Partners II	25,985,857	8,802,924	2015
KKR Lending Partners III	69,661,994	132,302,062	2017

LBC Credit Partners

LBC Credit Partners originates and manages a diversified portfolio of high-yielding loans in the middle market. LBC will originate and manage investments with maturities ranging generally from three to seven years. LBC is headquartered in Philadelphia, PA with offices in Chicago, IL and Greenwich, CT.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
LBC Credit Partners IV	69,418,193	31,013,872	2016

Merit Capital Partners (formerly William Blair Mezzanine Partners)

Based in Chicago, IL, Merit Capital Partners will invest primarily in fixed rate subordinated debt securities. These securities generally will be purchased with a significant equity component in the form of warrants, common stock or contingent interest.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Merit Capital Partners IV	1,912,671	4,821,429	2004
Merit Capital Partners V	43,316,055	4,334,694	2009
Merit Capital Partners VI	60,693,585	47,388,060	2016

Portfolio Advisors (formerly DLJ/Credit Suisse)

Based in New York, NY, Portfolio Advisors will invest in a variety of securities, including subordinated debt with warrants, preferred stock with warrants, common stock or other securities, including interests in joint ventures. Credit Suisse sold the DLJ Investment Partners platform to Portfolio Advisors in 2013.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
DLJ Investment Partners III	583,958	509,988	2006

Combined Funds

Investment Manager Summaries

Prudential Capital Group

Based in Chicago, IL, Prudential makes mezzanine investments, typically including convertible debt, preferred stock and warrants, with a specific focus on middle market companies. Investments will generally be made to facilitate the financing of recapitalizations, acquisitions, internal growth opportunities and buyouts.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Prudential Capital Partners II	6,053,800	11,112,955	2005
Prudential Capital Partners III	3,700,203	14,896,373	2009
Prudential Capital Partners IV	60,803,277	3,818,601	2012
Prudential Capital Partners V	89,031,263	67,865,788	2016

Summit Partners

Based in Boston, MA, the funds invest in many of the same companies as the Summit Venture funds. Investments by those partnerships principally take the form of subordinated debt with equity features. These yield-oriented investments provide current income over the life of the investment with the potential for additional returns.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Summit Subordinated Debt Fund III	3,728,682	2,250,000	2004
Summit Subordinated Debt Fund IV	4,498,506	19,926,328	2007

TCW Asset Management

Based in Los Angeles, CA, TCW is a large asset management firm that makes investments in public and private companies. TCW Direct Lending pursues a strategy of originating and investing in loans to middle-market companies primarily in the United States. The loans are generally structured as senior-secured, floating rate loans.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
TCW Direct Lending VI	41,618,975	25,329,409	2014
TCW Direct Lending VII	34,169,619	66,506,505	2018

Real Asset Managers

BlackRock

BlackRock Global Renewable Power strategy seeks to invest in a diversified portfolio of renewable power generation projects in countries within the Organization for Economic Cooperation and Development (OECD). The Global Renewable Power strategy has offices in New York, Dublin, London, Seattle and Stockholm.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
BlackRock Global Renewable Power Fund II	64,884,791	31,982,728	2016

Combined Funds

Investment Manager Summaries

EIG Global Energy Partners (formerly TCW Asset Management Company)

Energy Partners focuses on making mezzanine and equity investments in energy and energy-related infrastructure projects and companies on a global basis. The funds operate from offices in Washington D.C., Los Angeles, Houston, New York, and London. EIG was formally spun out of TCW in 2011.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
EIG Energy Fund XIV	10,736,680	2,761,129	2007
EIG Energy Fund XV	70,235,877	22,871,323	2010
EIG Energy Fund XVI	139,646,091	61,284,878	2013

EnCap Investments

EnCap Energy Capital Funds were formed for the purpose of making privately negotiated equity and equity-linked investments in the independent sector of the oil and gas industry. EnCap Investments is based in Houston, TX and has offices in Dallas, TX.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
EnCap Energy Capital Fund VII	7,240,831	0	2007
EnCap Energy Capital Fund VIII	32,694,422	4,802,299	2010
EnCap Energy Capital Fund IX	67,917,410	6,307,627	2012
EnCap Energy Capital Fund X	86,533,531	22,090,249	2015

Energy Capital Partners

Energy Capital Partners seeks to make value-added, primarily control investments in existing and new-build energy infrastructure projects, primarily in North America. Their focus is on power and renewable generation, midstream, and environmental infrastructure assets. Energy Capital is based in Short Hills, NJ.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Energy Capital Partners II	12,328,320	29,749,110	2010
Energy Capital Partners III	180,407,231	33,632,656	2013
Energy Capital Partners IV	46,858,875	112,929,806	2018

Energy & Minerals Group (formerly known as NGP Midstream & Resources)

Energy & Minerals Group seeks to make direct investments in selected areas of the energy infrastructure and natural resources sectors, primarily targeting the midstream energy sector and all facets of the mining, minerals and related power sectors. The firm is based in Houston, TX.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
NGP Midstream & Resources	15,002,556	17,857	2007
Energy & Minerals Group II	97,417,497	1,248,635	2011
Energy & Minerals Group III	152,403,918	9,428,480	2014
Energy & Minerals Group IV	167,568,920	38,187,834	2015

Combined Funds

Investment Manager Summaries

EnerVest Energy

EnerVest Energy focuses on acquiring and operating oil and gas properties, aggressively managing and developing the properties, reducing costs, and selling the assets. On occasion the firm may also invest in equity interests of companies in order to acquire their assets. EnerVest is headquartered in Houston, TX.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
EnerVest Energy Institutional Fund XIV	85,949,255	13,739,749	2015

First Reserve

The First Reserve funds investment strategy is to create diversified portfolios of oil and gas and other energy-related investments. The firm focuses on the resources, equipment and services, midstream, and downstream areas of the energy industry. First Reserve is headquartered in Greenwich, CT with another office in Houston, TX.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
First Reserve X	348,231	0	2003
First Reserve XI	7,348,721	0	2006
First Reserve XII	29,295,626	0	2008
First Reserve XIII	134,418,428	55,124,670	2013

Kohlberg, Kravis, Roberts & Co.

KKR Global Infrastructure Investors seeks to generate attractive risk-adjusted returns by focusing on critical infrastructure investments with low volatility and strong downside protection. KKR intends to make investments in existing assets and businesses located in OECD countries. KKR is headquartered in New York and has over twenty office locations around the world.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
KKR Global Infrastructure Investors III	17,290,554	130,960,094	2018

Merit Energy Company

Merit Energy Partners funds invest in producing oil and gas properties operated by the company. Merit's goal is to provide low-risk energy exposure and attractive long term returns by acquiring, developing, and operating high quality, mature producing oil and gas properties. The firm is based in Dallas, TX.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Merit Energy Partners B	3,140,663	0	1996
Merit Energy Partners C	6,154,869	0	1998
Merit Energy Partners D	13,240,840	0	2000
Merit Energy Partners E	2,971,472	0	2003
Merit Energy Partners F	10,370,141	0	2005
Merit Energy Partners H	69,773,960	0	2011
Merit Energy Partners I	212,409,071	0	2014
Merit Energy Partners K	0	150,000,000	2019

Combined Funds

Investment Manager Summaries

Natural Gas Partners

Natural Gas Partners (“NGP”) makes investments primarily in the sectors of the energy industry that are related to the production and development of crude oil and natural gas in North America. NGP focuses on companies that acquire and operate assets in “core” areas within oil and gas basins that NGP believes can generate attractive rates of return with a lower relative risk profile. The firm is based in Irving, TX.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Natural Gas Partners IX	3,594,649	750,911	2007
NGP Natural Resources X	58,192,419	5,951,029	2011
Natural Gas Capital Resources XI	143,751,819	20,159,854	2014
Natural Gas Capital Resources XII	42,646,581	105,980,905	2017

Sheridan Production Partners

Sheridan Production Partners funds pursue a strategy of acquiring a portfolio of currently producing oil and gas properties and optimizing the operations of those properties through production acceleration and recovery enhancement, appropriate use of capital reinvestment and aggressive cost control. The firm is headquartered in Houston, TX.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Sheridan Production Partners I	34,083,992	0	2007
Sheridan Production Partners II	8,392,003	3,500,000	2010
Sheridan Production Partners III	31,835,999	65,650,000	2014

Real Estate Managers

Angelo Gordon & Co.

Angelo Gordon & Co.’s real estate equity strategies focus on acquiring sub-performing commercial real estate across a range of geographies and product types. The flagship Realty funds invest in the U.S. and receive pro-rata shares of Asia and Europe transactions, subject to a cap. The Asia Realty and Europe Realty funds invest in their respective geographies. Headquartered in New York, Angelo Gordon has over 500 employees working across their four disciplines – corporate credit, real estate, direct lending, and securitized products.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
AG Realty Fund IX	94,383,445	18,650,000	2015
AG Asia Realty Fund III	43,297,351	6,196,250	2016
AG Europe Realty Fund II	38,998,500	37,500,000	2017
AG Realty Fund X	11,250,000	138,750,000	2018
AG Asia Realty Fund IV	12,500,000	87,500,000	2018

Combined Funds

Investment Manager Summaries

Blackstone Real Estate Partners

Blackstone Real Estate Partners makes a broad range of opportunistic real estate and real estate-related investments globally. They have a “buy it, fix it, sell it” strategy of targeting complicated assets and situations, creating value through hands-on ownership, and selling assets once asset management objectives are achieved. The flagship funds focus primarily on the U.S. and Canada and will also participate in 20% of the amount of each real estate investment to be made by the BREP Europe and BREP Asia strategies. BREP Europe and BREP Asia funds invest in their respective continents.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Blackstone Real Estate Partners V	7,740,330	4,174,052	2006
Blackstone Real Estate Partners VI	9,036,720	4,907,906	2007
Blackstone Real Estate Partners VII	59,516,202	13,995,597	2011
Blackstone Real Estate Partners VIII	126,892,520	50,756,838	2015
Blackstone Real Estate Partners Asia II	15,769,312	58,793,436	2017
Blackstone Real Estate Partners IX	0	300,000,000	2018

Blackstone Strategic Partners (formerly Credit Suisse)

Blackstone Strategic Partners funds focus on purchasing secondary interests of real estate funds. The funds follow a strategy similar to that of the Strategic Partners private equity funds, in which the SBI is also an investor. Credit Suisse sold the Strategic Partners funds platform to The Blackstone Group in 2013. Blackstone is based in New York.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Strategic Partners III RE	646,314	9,006	2005
Strategic Partners IV RE	4,623,963	1,119,776	2008

Carlyle Group

Carlyle Realty Partners focuses on making opportunistic real estate investments in the United States. The strategy predominantly focuses on demographic-driven sectors and property types that are less correlated with the economic cycle. Carlyle Realty Partners investment professionals are based in Washington, DC, New York, San Francisco, and Los Angeles.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Carlyle Realty Partners VIII	12,085,479	135,175,253	2017

Colony Advisors

Colony Advisors focuses on investing in undervalued equity and debt real estate-related assets. Colony pursues traditional and non-traditional property types such as housing developments, hotels, malls, and real estate-related companies. Colony’s investment professionals are located in Los Angeles.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Colony Investors III	2,996,500	0	1997

Combined Funds

Investment Manager Summaries

Landmark Partners

Landmark Partners makes secondary investments in various types of real estate and real estate-related entities. The strategy intends to be diversified across global geography, fund vintage, property sector, and financial sponsor. Landmark is headquartered in Simsbury, CT, with offices in Boston, New York, and London.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Landmark Real Estate Partners VIII	29,173,061	109,966,051	2017

Lubert Adler

Lubert-Adler seeks to invest in U.S. commercial real estate across the following property types: Multifamily, Retail, Hospitality, Office, and Industrial. Lubert-Adler's history of investing value-add real estate funds dates back to 1997. The firm has offices in Philadelphia and Atlanta.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Lubert-Adler Real Estate Fund VII	41,440,409	35,220,237	2017

Rockpoint

Rockpoint seeks to invest in high-quality commercial real estate properties located in U.S. gateway coastal markets typically with the opportunity to increase value through asset management, revenue enhancement, and expense reduction. Rockpoint is headquartered in Boston and has offices in Dallas and San Francisco.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Rockpoint Real Estate Fund V	84,880,438	26,125,220	2015
Rockpoint Real Estate Fund VI	0	100,000,000	2019

Rockwood

Rockwood focuses on making value-add investments in commercial real estate in the U.S. Rockwood targets Office and other workspace, Retail, Hotel, and Multifamily residential assets. The firm seeks to employ an active asset management strategy to reposition, re-lease, rehabilitate, and/or develop real estate assets. Rockwood has over 70 professionals located in Los Angeles, New York City, and San Francisco.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Rockwood Capital Real Estate Partners X	73,726,546	27,838,939	2016

SilverPeak

Silverpeak seeks to invest in properties, real estate companies, and service businesses ancillary to the real estate industry on a global basis. The funds' worldwide headquarters are in New York with regional headquarters in London and Tokyo. (In 2010, the funds were renamed Silverpeak Legacy Pension Partners II and III to reflect the General Partner ownership change after the Lehman Brothers bankruptcy in 2008.)

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Silverpeak Legacy Pension Partners II	1,616,723	7,599,582	2005
Silverpeak Legacy Pension Partners III	12,780,887	79,588,867	2007

Combined Funds

Investment Manager Summaries

TA Associates Realty

TA Realty funds invest in small to medium-sized properties in the U.S. diversified by property type, geography, industry exposure, and tenancy. TA Realty has been managing value-add real estate funds since its inception in 1982. The firm has offices in Boston, Newport Beach, Palm Beach Gardens, FL, and Dallas.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Realty Associates Fund VIII	256,967	0	2006
Realty Associates Fund X	47,050,666	0	2012
Realty Associates Fund XI	104,683,941	0	2015
Realty Associates Fund XII	-923,817	100,000,000	2018

Distressed/Opportunistic Managers

Avenue Capital Partners

Avenue Capital is mid-sized global investment firm based in New York, NY. Avenue Energy Opportunities was formed to make investments in debt, equity and other obligations of North American energy and utility companies that are experiencing financial distress.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Avenue Energy Opportunities	119,602,800	0	2015
Avenue Energy Opportunities II	99,992,700	0	2017

BlackRock

The BlackRock Tempus Fund was inherited from the Duluth Teachers Retirement Fund Administration in 2015. The Fund seeks to generate returns by making opportunistic investments in debt and equity. The firm is based in New York, NY.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
BlackRock Tempus Fund	349,820	0	2015

Carlyle Group

Carlyle Strategic Partners intends to invest in the debt and/or equity of proprietarily sourced companies affected by market- and company-specific dislocations. The firm expects the majority of companies will be based in the United States and Europe, with a small proportion of the fund invested in Asia. The strategy has employees in New York, London, and Hong Kong.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Carlyle Strategic Partners IV	28,414,595	77,060,244	2016

Combined Funds

Investment Manager Summaries

CarVal Investors

CarVal is based in Minneapolis, MN with offices in Beijing, Buenos Aires, London, Copenhagen, Delhi, Luxembourg, Paris, Singapore, Shanghai and Tokyo. The Funds will make investments in loan portfolios, corporate securities, international real estate and real estate loans and special opportunities.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
CVI Global Value Fund	9,060,293	10,000,000	2007
CVI Credit Value Fund I	5,876,550	5,000,000	2010
CVI Credit Value Fund II	24,419,433	7,500,000	2012
CVI Credit Value Fund A III	122,383,571	7,500,000	2015
CVI Credit Value Fund IV	78,376,950	75,000,000	2017

Merced Capital (formerly EBF & Associates)

Merced Partners expects to invest in securities with strong downside protection from identifiable asset value and compelling return potential from some combination of current income, asset value appreciation, secondary market instrument appreciation, and enterprise value creation or appreciation. Merced is based in Minnesota.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Merced Partners II	6,408	0	2006
Merced Partners III	13,400,883	0	2010
Merced Partners IV	76,575,197	0	2013
Merced Partners V	53,419,159	0	2017

MHR Institutional Partners

MHR is a medium-sized private equity investment firm based in New York, NY. The firm invests in distressed companies with the goal of gaining influence or control of the company and creating value through the restructuring process and revenue growth.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
MHR Institutional Partners IV	31,484,264	42,475,035	2015

Oaktree Capital Management

Oaktree Capital Management is a global private equity firm based in Los Angeles, CA. The Oaktree Principal Fund VI was formed to invest in the debt or equity of companies experiencing a significant element of distress or dislocation or that are otherwise out of favor. The Oaktree Opportunities Funds X and Xb were formed in 2015 to invest in the debt or equity of companies during periods of financial distress. Oaktree Opportunities Fund Xb will only be invested if the management determines that the investment opportunity exists. Oaktree Special Situations Fund II seeks to make control investments in middle-market companies through the purchase of distressed debt, structured equity investments, and direct equity investments.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Oaktree Principal Fund VI	80,117,197	28,293,967	2015
Oaktree Opportunities Fund X	47,283,408	8,500,000	2015
Oaktree Opportunities Fund Xb	12,382,250	87,500,000	2015
Oaktree Special Situations Fund II	0	100,000,000	2018

Combined Funds

Investment Manager Summaries

Pimco Bravo

The Pimco Bravo funds were inherited from the Duluth Teachers Retirement Fund Administration in 2015. Based in Newport Beach, CA, Pimco is a global investment management firm with a variety of public and private investment products. The Pimco Bravo Funds primarily invest in distressed commercial and residential mortgage credit.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Pimco Bravo OnShore Feeder I	111,761	2,348,173	2015
Pimco Bravo OnShore Feeder II	2,777,404	3,794,070	2015

TSSP

TSSP Adjacent Opportunities Partners seeks to make global credit and credit-related investments, generally in opportunities with significant downside protection and cash yield. Headquartered in San Francisco, the team also has offices in New York, NY, London, Boston, MA, Houston, TX, Dallas, TX, Melbourne and Luxembourg.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
TSSP Adjacent Opportunities Partners	24,300,129	26,489,064	2018
TSSP Adjacent Opportunities Contingent	70,318	99,929,682	2018
TSSP Adjacent Opportunities Partners IV	6,232,140	43,767,860	2018

Värde Partners

Värde will invest in credit and value-oriented opportunities across a broad range of markets, including corporate and traded credit, specialty finance, real estate and real assets and infrastructure. Värde is headquartered in Minnesota with regional headquarters in London and Singapore. Värde also maintains offices in Asia Pacific, Europe and North America.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Värde Fund IX	886,042	0	2008
Värde Fund X	46,699,690	0	2010
Värde Fund XI	200,984,288	0	2013
Värde Fund XIII	7,500,000	142,500,000	2018

Wayzata Investment Partners

Wayzata Investment Partners focuses on making investments in distressed securities where it can expect to exert significant influence on the restructuring process and potentially control the reorganized company. The Funds are based in Wayzata, MN.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
Wayzata Opportunities Fund II	2,351,905	30,000,000	2007
Wayzata Opportunities Fund III	28,846,621	15,000,000	2012

Combined Funds Investment Manager Summaries

Stock Distributions Manager

T. Rowe Price

T. Rowe Price manages stock distributions from the SBI's private markets limited partnerships. T. Rowe Price has extensive research capabilities in the small capitalization company area. In addition, the firm has a large trading staff with particular expertise in the trading of small capitalization and illiquid stocks. The firm is based in Baltimore.

Fund	Market Value (\$)	Unfunded Commitment (\$)	Vintage Year
T. Rowe Price	21,348,748	0	N/A

Combined Funds

Cash and Certificate of Deposit Program

Cash Portfolio

The Cash portfolio is used exclusively for the Combined Funds.

Management Structure

The Cash portfolio is actively managed in a separate account invested with State Street Global Advisors.

As of June 30, 2019, there was over \$2.0 billion invested in the Combined Funds Cash portfolio.

Investment Objectives

The goal of the cash portfolio is to meet the liquidity needs of the state retirement systems to pay benefits and to meet investment obligations.

Investment Management

This portfolio is invested in high quality, short-term securities generally less than 397 days. Principal protection and same-day liquidity are priorities. Holdings include U.S. Treasury and Agency issues, repurchase agreements, bankers acceptances, commercial paper, short-term corporates, and certificates of deposit.

At the end of the fiscal year, the Cash Portfolio had a current 7-day yield of 2.48% and a weighted average maturity of 16.62 days.

Investment Performance

The SBI measures the performance of the Cash portfolio against a 90 Day T-Bill benchmark.

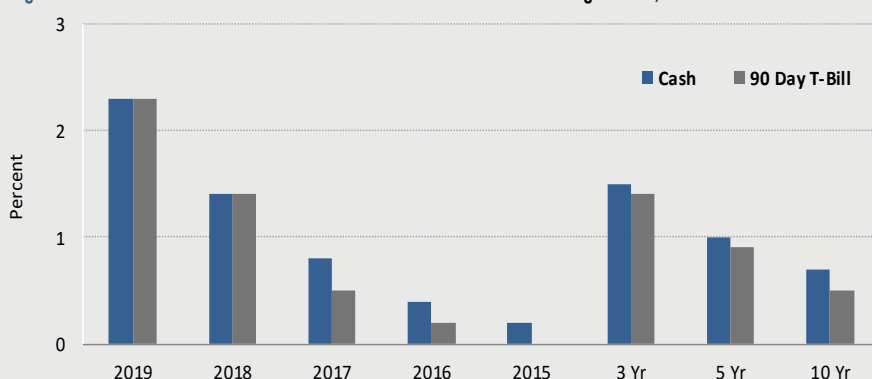
For fiscal year 2019, the Cash portfolio matched the return of its benchmark, and outperformed for the three, five, and ten year period.

Performance results are shown in Figure 20.

FY 2019 Transactions

On July 1, 2019, over \$1 billion in cash transitioned out of the Supplemental Investment Fund Platform into the Mutual Fund Investment Platform. As the result of this transition, the Combined Funds cash allocation was over its targeted 2% allocation on June 30, 2019.

Figure 20. Combined Funds Cash Portfolio Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
						3 Yr.	5 Yr.	10 Yr.
Cash	2.3%	1.4%	0.8%	0.4%	0.2%	1.5%	1.0%	0.7%
90 Day T-Bill	2.3	1.4	0.5	0.2	0.0	1.4	0.9	0.5

Combined Funds Cash and Certificate of Deposit Program

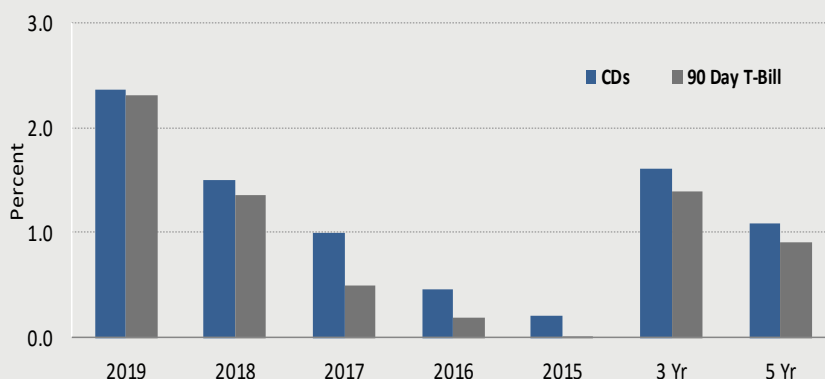
Certificate of Deposit Program

The SBI manages a Certificate of Deposit (CD) Program in which it purchases CDs from Minnesota financial institutions. The return the SBI receives is based on CD rates quoted in the national market. The SBI's CD program provides a reliable source of capital to Minnesota financial institutions, regardless of size, many of which do not have access to the national CD market. The Board designed the program so that no single institution is favored in the allocation of assets. Only the cash reserves of the retirement funds are used in the program.

During fiscal year 2019, the SBI purchased \$266.3 million of CDs from all Minnesota financial institutions.

Performance results are shown in Figure 21.

Figure 21. Combined Funds Certificate of Deposit Performance For Periods Ending June 30, 2019



	Annualized							
	2019	2018	2017	2016	2015	3 Yr.	5 Yr.	10 Yr.
CDs	2.4%	1.5%	1.0%	0.5%	0.2%	1.6%	1.1%	N/A
90 Day T-Bill	2.3	1.4	0.5	0.2	0.0	1.4	0.9	N/A

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PARTICIPANT DIRECTED INVESTMENT PROGRAM

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Participant Directed Investment Program Overview / Plans

The Participant Directed Investment Program (PDIP) is an investment program that offers a range of investment options to state and local public employees and other eligible entities and participants who participate in the Minnesota Deferred Compensation Plan, Health Care Savings Plan, Unclassified Retirement Plan, Hennepin County Supplemental Retirement Plan, Public Employees Retirement Association (PERA) Defined Contribution Plan, Volunteer Fire Relief Plans, other public funds, the Statewide Volunteer Firefighter Retirement Plan, the Minnesota College Savings Plan and the Minnesota ABLE Plan. On June 30, 2019, approximately \$11.5 billion was invested in the PDIP platform.

Background

PDIP provides investment options for a variety of retirement plans and tax advantaged savings plans. Investment goals among the PDIP's many participants will vary. In order to meet the variety of goals, participants may allocate their investments among one or more of the eligible investment options offered. Eligible options will depend on the statutory requirements, operational limitations, and other regulations and rules established for the participating organization.

Program Changes

Investment options within the PDIP platform are subject to change. On July 1, 2019 three of the plans: Health Care Savings Plan, Unclassified Retirement Plan, and the Hennepin County Supplemental Retirement Plan, transitioned from the Supplemental Investment Fund platform to the Mutual Fund platform offered to participants in the Minnesota Deferred Compensation Plan.

Investment Platforms

The investment vehicles offered include a Stable Value Fund, a Money Market Fund, mutual funds, commingled investment trusts, a target date fund, and

investment pools that invest in the various asset groups of the Combined Funds (also known as the Supplemental Investment Fund). The SBI also oversees the investment providers for two State Sponsored Savings Plans. Not all investment vehicles are available to the participating entities. Options are divided into three platforms.

- Mutual Funds
- Supplemental Investment Fund, and
- State Sponsored Savings Plans

A grid of the investment vehicles available to the respective plans is shown on page 82.

Mutual Fund Platform

Performance results for the Mutual Fund investment options for periods ending June 30, 2019 are found on figure 23. Fund summaries for the options are found on pages 86-91.

Supplemental Investment Fund Platform (SIF)

The SIF platform includes funds that invest in the same asset class pools as the Combined Funds. These funds are structured much like a family of mutual funds. The returns from these funds are based on the underlying investment manager portfolio from the Combined Funds. Summaries of the

investment options for the SIF and performance results for periods ending June 30, 2019 are found on pages 94-102.

State Sponsored Savings Plans

Performance results for the State Sponsored Savings Plans for periods ending June 30, 2019 are found in figure 37. Further details on the programs are found on pages 103-106.

Investment Objective

The SBI's objective is to provide quality investment options at a low cost to help participants meet their savings goals. With the exception of the Statewide Volunteer Firefighter Retirement Plan, participants and eligible entities are responsible for their own asset allocation and investment decisions.

Plans in PDIP

Legislative approval is required for the SBI to invest the assets of any plan. The SBI does not administer plan assets. A brief summary of the various plans invested in PDIP are as follows.

State Deferred Compensation Plan

The State Deferred Compensation Plan (MNDCCP) was established under

Participant Directed Investment Program Overview / Plans

Minnesota Statutes, § 352.965 and is classified under section 457(b) of the Internal Revenue Code. The Plan is optional for all public employees in the state of Minnesota and political subdivision employees.

Participants in this Plan invest in mutual funds, commingled investment trusts, a target date fund, a Stable Value Fund, and a Money Market Fund.

These vehicles are grouped into three sets of investment options. The first is a set of actively and passively managed mutual funds, a Stable Value Fund, and a Money Market Fund. The second is a set of target date funds called Minnesota Target Retirement Funds. The third is a self-directed brokerage account window, which offers thousands of mutual funds. The SBI has no direct management responsibilities for funds within the self-directed brokerage account window. Unless participants direct otherwise, the default option is the Minnesota Target Retirement Fund.

The Plan is administered by Minnesota State Retirement System (MSRS) who has contracted with Empower as the record keeper.

As of June 30, 2019 participants invested a total of \$7.5 billion in the State Deferred Compensation Plan.

Health Care Savings Plan*

The Health Care Savings Plan (HCSP) was established under *Minnesota Statutes*, § 352.98 and is set up as a section 115 Governmental Trust exempt from federal income tax through

Private Letter Ruling. The HCSP is available to all public employees in the state of Minnesota.

Participants in this Plan invest in the Supplemental Investment Fund (SIF) platform. The Plan also offers a Stable Value Fund and a Money Market Fund. Unless participants direct otherwise, the default investment option is the Money Market Fund.

The Plan is administered by Minnesota State Retirement System (MSRS) who has contracted with Empower as the record keeper.

As of June 30, 2019, approximately \$1.2 billion was invested in the Health Care Savings Plan.

Unclassified Retirement Plan*

The Unclassified Retirement Plan was established under *Minnesota Statutes*, Chapter 352D and satisfies the requirements of section 401(a) of the Internal Revenue Code. The Unclassified Retirement Plan is available to specified Minnesota employees in unclassified positions.

Participants in this Plan invest in the Supplemental Investment Fund (SIF) platform. This Plan also offers a set of target date funds called Minnesota Target Retirement Funds, a Stable Value Fund, and a Money Market Fund. Unless participants direct otherwise, the default investment option is the Minnesota Target Retirement Fund.

The Plan is administered by Minnesota State Retirement System (MSRS) who has contracted with Empower as the record keeper.

As of June 30, 2019 there was over \$323 million invested in the Unclassified Retirement Plan.

Hennepin County Supplemental Retirement Plan*

The Hennepin County Supplemental Retirement Plan is governed under *Minnesota Statutes*, §383B.48 and is a voluntary, non-qualified deferred compensation plan. This is an optional plan for qualified employees of Hennepin County, MN who were employed prior to April 14, 1982.

Participants in this Plan invest in the Supplemental Investment Fund (SIF) platform. A Money Market Fund is also offered in this Plan. Unless participants direct otherwise, the default investment option is the SIF Bond Fund.

The Plan is administered by Minnesota State Retirement System (MSRS) who has contracted with Empower as the record keeper.

As of June 30, 2019 just under \$161 million was invested in the Hennepin County Supplemental Retirement Plan.

Public Employees Retirement Association Defined Contribution (PERA DC) Plan

The PERA DC Plan is governed under *Minnesota Statutes*,

*As of July 1, 2019 the assets in the respective plan was invested in the mutual fund platform.

Participant Directed Investment Program Overview / Plans

Chapter 353D and satisfies the requirements of section 401(a) of the Internal Revenue Code. The defined contribution plan is exclusively for physicians, elected local governmental officials, city managers, and governmental volunteer ambulance service personnel.

Participants in this Plan invest in the Supplemental Investment Fund (SIF) platform. A Stable Value Fund and a Money Market Fund are also offered in this Plan. Unless participants direct otherwise, the default investment option is the SIF Balanced Fund.

PERA is the administrator for the Plan and the SBI provides reports showing annual returns and market value of all SIF investment options.

As of June 30, 2019 participants invested over \$73 million in the PERA DC Plan.

Local Volunteer Fire Reliefs

Local Volunteer Fire Relief Plans that are not eligible to be consolidated by the Public Employees Retirement Association (PERA) or elect not to be administered by PERA in the Statewide Volunteer Firefighter Retirement Plan may invest their assets with the SBI. There are more than 635 local volunteer firefighter plans with investment authority to invest with the SBI, if they so choose.

Participating fire reliefs can choose from the funds in the Supplemental Investment Fund (SIF) platform that invest in the same asset class pools as the Combined Funds in addition to a Money Market Fund. The local fire reliefs are responsible for

the asset allocation decisions of their plan.

Local volunteer fire relief plans are governed under *Minnesota Statutes*, Chapter 424A. Per *Minnesota Statutes*, Chapter 356, the SBI provides the local fire relief plans with reports showing annual returns and market value of all SIF investment options. The local plans are responsible for providing their specific data to the Office of the State Auditor.

As of June 30, 2019, there were 168 plans invested with the SBI with approximately \$337 million in assets.

Other Public Retirement Plans and Funds

Per *Minnesota Statutes*, § 11A.17, any public retirement plan or fund is authorized to invest its assets in the Supplemental Investment Fund.

As of June 30, 2019 the St. Paul Teachers' Retirement Fund had over \$323 million invested in the SIF.

Statewide Volunteer Firefighter Retirement Plan

The Statewide Volunteer Firefighter Retirement Plan was established January 1, 2010 under *Minnesota Statutes*, Chapter 353G. Volunteer firefighters who provide service to a municipal fire department or an independent nonprofit firefighting corporation are eligible to join. Plan assets are invested in its own investment vehicle called the Volunteer Firefighter Account. An explanation of this investment option is found on page 101.

Participation in the Plan is effective on December 31 of a given year. Administration of the Statewide Volunteer Firefighter Plan is done by the Public Employees Retirement Association (PERA).

In fiscal year 2019, 15 local entities joined the plan transferring over \$11 million to the SBI for investment. At the close of fiscal year 2019, 175 local fire entities, representing over \$107 million in assets, were in the Statewide Volunteer Firefighter Retirement Plan.

Minnesota College Savings Plan

The Minnesota Legislature authorized establishment of the Minnesota College Savings Plan under *Minnesota Statutes*, § 136G.01 in 1997 and in 2001 the tax advantaged savings plan was launched. The SBI is responsible for the investments and the Minnesota Office of Higher Education (OHE) is responsible for the overall administration of the Plan. The SBI and OHE have contracted jointly with TIAA-CREF Tuition Financing, Inc. (TFI) to provide administrative, marketing, communication, record keeping and investment management services. A summary of the investment options in this Plan is found on page 103.

As of June 30, 2019, there was approximately \$1.5 billion in assets invested in the Minnesota College Savings Plan.

Minnesota ABLE (Achieving a Better Life Experience) Plan

The Minnesota ABLE Plan was established in 2015 under

Participant Directed Investment Program Overview / Plans

Minnesota Statutes, Chapter 256Q. The Plan is allowed under section 529A of the Internal Revenue Code to encourage and assist individuals to save for qualified disability related expenses in a tax-advantaged savings plan without jeopardizing eligibility for other benefits. The SBI is responsible for the investment oversight and the Commissioner of the Department of Human Services (DHS) is responsible to administer the Plan. The SBI and DHS have contracted jointly with Ascensus to provide record keeping, administrative and investment management services. In 2017, the State of Minnesota joined the National ABLE Alliance Program, which allowed states across the nation to enter an interstate consortium so that the Plan would have scale so that it would benefit from lower fees and operational efficiencies.

Information on the Minnesota ABLE Plan, including a list of states and territories that sponsor an ABLE Plan in the program can be found under www.savewithable.com.

A summary of the investment options in this Plan is found on page 106.

As of June 30, 2019, there was approximately \$6 million invested in the Minnesota ABLE Plan.

Figure 22. Investment Vehicles and list of Plans in the Participant Directed Investment Program Platform as of June 30, 2019

	MN Deferred Comp Plan	Health Care Savings Plan	Hennepin County Supplemental Plan	Unclassified Plan	PERA DC Plan	Volunteer Local Fire Plans	Other Public Funds	Statewide Volunteer Firefighter Plan	MN College Savings and ABLE Plans
Stable Value Fund	X	X		X	X				
Money Market Fund	X	X	X	X	X	X			
Mutual Funds, CIT	X								
Target Date Funds	X			X					
Supplemental Investment Fund		X	X	X	X	X	X		
Volunteer Firefighter Account								X	
State Sponsored Savings Plans									X

Participant Directed Investment Program

Mutual Fund Investment Platform

The Mutual Fund Investment platform allows public employees the option to invest in mutual funds, commingled investment trusts, a target date fund, a Stable Value Fund and a Money Market Fund.

Participating Plans

The Mutual Fund Investment platform is offered to participants in the Minnesota Deferred Compensation Plan, a tax sheltered retirement savings program, which is a supplemental plan to the participant's primary retirement plan.

As of June 30, 2019 there was just under \$7.5 billion invested in the Mutual Fund Investment Platform by participants in the Minnesota Deferred Compensation Plan.

Program Structure

Actively Managed Options

The platform offers a range of actively managed options that allows participants the flexibility to create an investment program to meet their needs.

Performance results for the options in the mutual fund platform for periods ending June 30, 2019 are shown in Figure 23.

- **Large-Cap Equity**

This option is a concentrated portfolio of high quality stocks that generally offer current dividends. The fund is expected to outperform the NASDAQ U.S. Dividend Achievers Select Index. The fund currently offered is the Vanguard Dividend Growth Fund.

- **Small-Cap Equity**

This option invests primarily in companies with small market capitalizations. The fund is expected to outperform the Russell 2000 over time. T. Rowe Price Small-Cap Stock Fund is the fund currently offered.

- **Bond Fund**

This option invests primarily in investment grade securities in the U.S. bond market. The fund is expected to outperform the Bloomberg Barclays U.S. Aggregate Bond Index over time. The fund currently offered is the Dodge & Cox Income Fund.

- **International Equity**

This option invests primarily in stocks of companies in developed countries located outside the United States. The fund is expected to outperform the Morgan Stanley Capital International (MSCI) Index of Europe, Australasia and the Far East (EAFE) over time. The fund currently offered is the Fidelity Diversified International Fund.

- **Money Market Fund**

This option invests in high quality short-term debt instruments and is expected to outperform the return on 3 month U.S. Treasury Bills. This option is the SIF Money Market Fund invested by State Street Global Advisors (see page 99).

- **Stable Value Fund**

The fund is invested in a well-diversified portfolio of high quality fixed income securities. The fund also holds insurance contracts issued by highly rated insurance companies and banks which are structured to provide principal protection for the fund's diversified bond portfolios, regardless of daily market changes, and maintain a relatively stable return profile for the portfolio.

The option is expected to outperform the return of the three year Constant Maturity Treasury plus 45 basis points (0.45%), over time. Currently, Galliard Capital Management, Inc. manages the option (see page 100).

Passively Managed Options

The plan offers a range of passively managed options that allows participants the flexibility to create a lower cost investment program to meet their needs.

- **Large-Cap Equity**

This option is a passive domestic stock portfolio that tracks the S&P 500. The fund currently offered is the Vanguard Institutional Index Plus Fund.

- **Mid-Cap Equity**

This option invests in companies with medium market capitalizations that track the CRSP U.S. Mid-Cap Index. The fund currently

Participant Directed Investment Program

Mutual Fund Investment Platform

offered is the Vanguard Mid-Capitalization Index Institutional Fund.

- **Balanced Fund**

This option is a mix of stocks and bonds. The fund is expected to track a weighted benchmark of 60% CRSP U.S. Total Market Index and 40% Bloomberg Barclays U.S. Aggregate Bond Index. The fund currently offered is the Vanguard Balanced Index Fund.

- **Bond Fund**

This option invests in a broad range of U.S. fixed income securities. The fund is expected to track the performance of the Bloomberg Barclays U.S. Aggregate Bond Index. The fund currently offered is the Vanguard Total Bond Market Index Fund.

- **International Equity**

This option invests in international equities and is expected to track the FTSE Global All Cap ex U.S. Index, an index designed to measure equity market performance in developed and emerging markets, excluding the United States. The fund currently offered is the Vanguard Total International Stock Index Fund.

Minnesota Target Retirement Funds

The plan offers a range of target date funds which are diversified options with allocations that change over time to reduce risk and become more conservative as the target retirement date approaches. The funds are currently offered by State Street Global Advisors (SSgA).

Performance results for the target date fund option for periods ending June 30, 2019 are shown in Figure 24.

Figure 23. Mutual Fund Platform for Periods Ending June 30, 2019

Fund/Benchmark	RETURNS ⁽¹⁾						Market Value ⁽²⁾ (\$ in millions)
	1 Year Actual %	Bmk %	3 Years Actual %	Bmk %	5 Years Actual %	Bmk %	
Actively Managed							
Vanguard Dividend Growth ⁽³⁾	19.0	15.7					714.8
T. Rowe Price Small-Cap (Russell 2000)	10.9	-3.3	16.7	12.3	10.6	7.1	788.6
Fidelity Diversified Int'l. (MSCI EAFE)	2.4	1.1	8.8	9.1	3.5	2.2	295.5
Dodge & Cox Income Fund (BB Barclays U.S. Aggregate)	7.6	7.9	3.7	2.3	3.3	2.9	254.6
Money Market (3 Month T-Bills)	2.5	2.3	1.6	1.4	1.0	0.9	89.0
Stable Value (3 year Constant Maturity Treas. +45 basis points)	2.6	3.0	2.3	2.4	2.2	2.0	1,365.0
Passively Managed							
Vanguard Institutional Index (S&P 500)	10.4	10.4	14.2	14.2	10.7	10.7	1,329.3
Vanguard Mid-Cap Index (CRSP US Mid-Cap)	7.9	7.8	12.3	12.4	8.8	8.9	572.4
Vanguard Total Int'l Stock Index (FTSE Global All Cap ex US)	0.6	0.3	9.0	9.0	2.4	2.2	205.5
Vanguard Balanced Index Inst. (60% CRSP US Total Market, 40% BB Barclays U.S. Aggregate)	8.9	9.0	9.4	9.4	7.4	7.4	823.2
Vanguard Tot. Bond Market Index (BB Barclays U.S. Aggregate)	7.8	7.9	2.2	2.3	2.9	2.9	235.2
Ameritrade Self Directed Fund							76.9

(1) Returns are reported net of fund operating expenses, but do not include the MSRS and SBI administrative fees.

(2) Market value of SBI participation in fund.

(3) Fund retained September 2016.

Participant Directed Investment Program Mutual Fund Investment Platform

Figure 24. State Deferred Compensation Plan (457b Plan) for Periods Ending June 30, 2019

	RETURNS ⁽¹⁾						Market Value ⁽³⁾ (\$ in millions)
	1 Year		3 Years		5 Years		
	Actual %	Bmk ⁽²⁾ %	Actual %	Bmk ⁽²⁾ %	Actual %	Bmk %	
MN Target Retirement Funds							
Income Fund	5.8	5.8	5.1	5.1	3.4	3.4	92.6
2020 Fund	5.9	5.8	5.8	5.8	3.8	3.8	128.5
2025 Fund	6.2	6.2	7.2	7.2	4.7	4.7	147.9
2030 Fund	6.3	6.2	8.4	8.5	5.5	5.5	109.0
2035 Fund	6.3	6.2	9.1	9.2	5.8	5.8	85.5
2040 Fund	6.0	6.0	9.7	9.8	6.0	6.0	65.8
2045 Fund	5.7	5.7	10.2	10.3	6.2	6.2	54.8
2050 Fund	5.4	5.4	10.5	10.6	6.3	6.3	41.1
2055 Fund	5.4	5.3	10.5	10.6	6.3	6.3	24.1
2060 Fund	5.4	5.3	10.5	10.6	6.3	6.3	19.3

(1) Returns are reported net of fund operating expenses, but do not include the MSRS administrative fee.

(2) Managed by SSgA, each Fund benchmark is the aggregate of the returns of the Fund's underlying index funds weighted by the Fund's asset allocation.

(3) Market value of SBI participation in fund.

Participant Directed Investment Program

Mutual Fund Investment Program: Fund Summaries

Dodge & Cox Income Fund

Mandate:	Fixed Income	Benchmark:	Bloomberg Barclays U.S. Aggregate Bond Index
Product Net Asset Value/Firm Assets (as of 6/30):	\$59.6 billion / \$313.0 billion	# of Holdings:	1,081
Style:	Core	Fund/Quant:	Fundamental
Manager Location:	San Francisco, CA	Date Funded:	July 1999

The objective of this fund is to seek a high and stable rate of current income, consistent with long term preservation of capital, with capital appreciation being a secondary consideration. This portfolio invests primarily in investment-grade quality corporate and mortgage bonds, government issues, and, to a lesser extent, fixed income securities rated below investment grade. While it invests primarily in the U.S. bond market, the fund may invest up to 25% of its total assets in U.S. dollar-denominated securities of non-U.S. issuers, including emerging market issuers.

Fidelity Diversified International Fund

Mandate:	International Equity	Benchmark:	MSCI EAFE Index
Product Assets/Firm Assets (as of 6/30):	\$5.3 billion / \$2.8 trillion	# of Holdings:	192
Style:	Large-Cap, Developed Countries	Fund/Quant:	Fundamental
Manager Location:	Boston, MA	Date Funded:	July 1999

The portfolio's investment objective is to seek capital growth over a market cycle relative to the MSCI EAFE Index, through the active management of primarily, non-U.S. common stock. The portfolio's investment philosophy is that selecting companies based on rigorous fundamental analysis, management quality and attractive valuations creates the best framework to outperform the market over the long-term. The portfolio leverages the work of Fidelity's global research professionals to seek to identify companies with superior growth prospects trading at attractive valuations. Generally, the portfolio's universe includes non-U.S. common stocks with market capitalization consistent with the MSCI EAFE Index, though the portfolio's investable universe extends beyond the EAFE Index to include emerging market, Canadian, U.S., and other international stocks.

The goal of this fund is capital appreciation by investing in securities of companies located outside the United States. The fund invests primarily in larger companies located in developed countries. The manager uses a bottom-up stock selection process based on the extensive fundamental research available from the company's many security analysts across the globe. The process seeks to invest in companies with durable earnings, strong competitive position, and improving profitability. Sector and country weightings are reviewed for risk control, preference is given to companies with strong balance sheets which tend to perform better in down markets. As part of the portfolio construction process and quarterly portfolio review, quantitative portfolio analysis is evaluated to examine risks exposures including style factors, sectors and geography. The fund does not employ currency hedging, to provide currency diversification to U.S. based investors. In November 2016 participants invested in the retail mutual fund transitioned into the Commingled Investment Trust (CIT), a lower-cost investment vehicle of the same fund.

Participant Directed Investment Program

Mutual Fund Investment Program: Fund Summaries

T. Rowe Price Institutional Small-Cap Stock Fund

Mandate:	Small-Cap Equity	Benchmark:	Russell 2000
Product Assets/Firm Assets (as of 6/30):	\$5.3 billion / \$1.1 trillion	# of Holdings:	292
Style:	Core	Fund/Quant:	Fundamental
Manager Location:	Baltimore, MD	Date Funded:	July 1999

The fund seeks to provide long-term capital growth by investing primarily in stocks of small companies. The fund will normally invest at least 80% of its net assets (including any borrowings for investment purposes) in stocks of small companies. The fund defines a small company as one whose market capitalization falls within or below the current range of companies in either the Russell 2000 Index or the S&P Small-Cap 600 Index. When choosing stocks, the fund manager generally looks for one or more of the following characteristics: capable management, attractive business niches, pricing flexibility, sound financial and accounting practices, a potential or demonstrated ability to grow earnings, revenues, and cash flow consistently, and the potential for a catalyst (such as increased investor attention, asset sales, strong business prospects, or a change in management) to cause the stock's price to rise. In September 2016 the T. Rowe Price Institutional Small-Cap Stock Fund replaced the retail mutual fund vehicle.

Vanguard Dividend Growth Fund

Mandate:	Domestic Equity	Benchmark:	NASDAQ U.S. Dividend Achievers Select Index
Product Assets/Firm Assets (as of 6/30):	\$37.2 billion / \$5.0 trillion	# of Holdings:	41
Style:	Large-Cap, High Dividend Yield	Fund/Quant:	Fundamental
Manager Location:	Boston, MA	Date Funded:	September 2016

The fund is an actively managed U.S. stock fund and uses the NASDAQ U.S. Dividend Achievers Select Index as its benchmark. The fund investment objective is to provide, primarily, a growing stream of income over time and, secondarily, long-term capital appreciation and current income. The fund invests primarily in stocks that tend to offer current dividends. The fund focuses on high-quality companies that have prospects for long-term total returns as a result of their ability to grow earnings and willingness to increase dividends over time. These stocks typically, but not always, will be undervalued relative to the market and will show potential for increasing dividends. The fund will be diversified across industry sectors.

Participant Directed Investment Program

Mutual Fund Investment Program: Fund Summaries

Vanguard Institutional Index Fund Institutional Plus

Mandate:	Large-Cap Domestic Equity	Benchmark:	S&P 500 Index
Product Assets/Firm Assets (as of 6/30):	\$231.4 billion / \$5.0 trillion	# of Holdings:	506
Style:	Core	Fund/Quant:	N.A.
Manager Location:	Malvern, PA	Date Funded:	July 1999

The passively managed fund tracks the S&P 500 index. The fund employs an indexing investment approach designed to track the performance of the Standard & Poor's 500 Index, which is dominated by the stocks of large U.S. companies. The fund attempts to replicate the target index by investing all, or substantially all, of its assets in the stocks that make up the index.

Vanguard Mid-Capitalization Index Institutional Fund Plus

Mandate:	Mid-Cap Domestic Equity	Benchmark:	CRSP U.S. Mid-Cap Index
Product assets/Firm Assets (as of 6/30):	\$107 billion / \$5.0 trillion	# of Holdings:	368
Style:	Core	Fund/Quant:	N.A.
Manager Location:	Malvern, PA	Date Funded:	January 2004

The fund is passively managed to track the performance of the CRSP U.S. Mid-Cap Index, a broadly diversified index of stocks of medium-size U.S. companies. The fund attempts to replicate the target index by investing all, or substantially all, of its assets in the stocks that make up the index, holding each stock in approximately the same proportion as its weighting in the index.

Vanguard Balanced Index Fund Institutional

Mandate:	Diversified Portfolio of 60% stocks and 40% bonds.	Benchmark:	Stock allocation: CRSP U.S. Total Market Index Bond allocation: Barclays U.S. Aggregate Bond Index
Product assets/Firm Assets (as of 6/30):	\$42.5 billion / \$5.0 trillion	# of Holdings:	3,449 stock holdings 7,508 bond holdings
Style:	Core	Fund/Quant:	N.A.
Manager Location:	Malvern, PA	Date Funded:	December 2003

The fund portfolio provides a diversified portfolio of stocks and bonds by investing in a mix of 60 percent stocks and 40 percent bonds. The manager does not change the asset mix. The fund is passively managed with the equity portfolio to track the returns of the CRSP U.S. Total Market Index, which covers all regularly traded U.S. stocks. The bond portfolio is invested to track the returns of the Bloomberg Barclays U.S. Aggregate Float Adjusted Bond Index, which covers virtually all taxable fixed income securities.

Participant Directed Investment Program

Mutual Fund Investment Program: Fund Summaries

Vanguard Total Bond Market Index Fund Institutional Plus

Mandate:	Fixed Income	Benchmark:	Bloomberg U.S. Aggregate Float Adjusted Bond Index
Product assets/Firm Assets (as of 6/30):	\$232.2 billion / \$5.0 trillion	# of Holdings:	8,603
Style:	Core	Fund/Quant:	N.A.
Manager Location:	Malvern, PA	Date Funded:	December 2003

The fund is passively managed to track the performance of the Bloomberg Barclays U.S. Aggregate Float Adjusted Bond index. The manager uses an index sampling technique to invest in investment-grade corporate, U.S. Treasury, international dollar denominated bonds, mortgage-backed and asset-backed securities of varying maturities in order to create a portfolio of intermediate duration like the Bloomberg Barclays U.S. Aggregate Float Adjusted Bond Index, which currently ranges between 5 and 10 years.

Vanguard Total International Stock Index Fund Plus

Mandate:	International Equity	Benchmark:	FTSE Global All Cap ex US Index
Product assets/Firm Assets (as of 6/30):	\$376.6 billion / \$5.0 trillion	# of Holdings:	7,062
Style:	Core	Fund/Quant:	N.A.
Manager Location:	Malvern, PA	Date Funded:	December 2003

The fund is passively managed to track the returns of the FTSE Global All Cap ex U.S. Index, a free-float-adjusted market-capitalization-weighted index designed to measure equity market performance in developed markets and emerging markets, excluding the U.S. The fund invests in small, mid and large cap stocks in the market index and includes more than 5,300 stocks of companies located in 46 countries. The fund invests substantially all of its assets in the common stocks included in its target index. Fund assets are allocated based on each regions weighting in the index.

Participant Directed Investment Program

Mutual Fund Investment Program: Fund Summaries

SIF Money Market Fund Manager

State Street Global Advisors

Mandate:	Cash	Benchmark:	90 Day T Bill
Product assets/Firm Assets (as of 6/30):	\$55.0 billion / \$2.9 trillion	# of Holdings:	208
Style:	Short-Term Cash	Fund/Quant:	Fundamental
Manager Location:	Boston, MA	Date Funded:	July 1999

The Money Market Fund seeks to provide safety of principal, daily liquidity and a competitive yield over the long term. The Fund is not a "money market fund" registered with the Securities and Exchange Commission, and is not subject to the various rules and limitations that apply to such funds. There can be no assurance that the Fund will maintain a stable net asset value.

The Fund invests in a diversified portfolio of U.S. dollar-denominated securities issued or guaranteed by the U.S. Government or its agencies or instrumentalities; debt securities of domestic or foreign corporations; mortgage-backed and other asset-backed securities; taxable and tax-exempt municipal bonds; obligations of international agencies or supranational entities; inflation-indexed bonds; structured notes; loan participations; delayed funding loans and revolving credit facilities; and short-term investments, such as repurchase agreements, bank certificates of deposit, fixed time deposits, and bankers' acceptances.

SIF Stable Value Fund Manager

Galliard Capital Management, Inc.

Mandate:	Stable Value	Benchmark:	3 Yr Constant Maturity Treasury Index +0.45%
Product assets/Firm Assets (as of 6/30):	\$77.7 billion / \$92.1 billion	# of Holdings:	1,118
Style:	Investment Grade Bond Portfolio and Insurance Wrappers	Fund/Quant:	Fundamental
Manager Location:	Minneapolis, MN	Date Funded:	November 1994

Galliard Capital Management manages the Stable Value Fund in the Supplemental Investment Fund. The Stable Value Fund is managed to provide preservation of principal, maintain adequate liquidity to meet potential withdrawals, and produce a level of steady, positive income. The manager invests the Fund in well diversified portfolios of U.S. dollar denominated, investment grade fixed income securities. The manager also invests in investment contracts issued by banks and insurance companies that assure that participants can transact at book value (principal plus accrued interest) as well as maintain a relatively stable return profile for the portfolio regardless of daily market changes. To maintain necessary liquidity, the manager invests a portion of the portfolio in a Short Term Investment Fund.

Participant Directed Investment Program

Mutual Fund Investment Program: Fund Summaries

Minnesota Target Retirement Funds

State Street Global Advisors

Mandate:	Diversified Portfolio that glides the allocation according to participants retirement age	Benchmark:	11 Asset Classes
Product assets/Firm Assets (as of 6/30):	\$59.2 billion / \$2.9 trillion	# of Holdings:	N.A.
Style:	Target Date Funds	Fund/Quant:	N.A.
Manager Location:	Boston, MA	Date Funded:	July 2011

The MN Target Retirement Funds managed by State Street Global Advisors, seek to offer complete, low cost investment strategies with asset allocations which become more conservative as employees near retirement. Each Fund seeks to achieve its objective by investing in a set of underlying SSgA collective trust funds representing various asset classes. Over time, the allocation to asset classes and funds change according to a predetermined "glide path". (The glide path represents the shifting of asset classes over time and does not apply to the Income Fund.) Each Fund's asset allocation will become more conservative as it approaches its target retirement date. This reflects the need for reduced investment risks as retirement approaches and the need for lower volatility of a portfolio, which may be a primary source of income after retiring.

Participant Directed Investment Program Supplemental Investment Fund (SIF) Platform

The Supplemental Investment Fund (SIF) platform is available to state and local public employees and offers a range of funds that invest in the underlying asset pools of the Combined Funds.

Participating Plans

The Supplemental Investment Fund (SIF) platform provides investment vehicles for a variety of plans. The SIF and the Combined Funds share many of the same stock and bond managers. This sharing is accomplished by grouping managers by asset class into several different investment pools. As of June 30, 2019, it provided some or all of the investment options for the Unclassified Employees Retirement Plan, Public Employees Retirement Fund (PERA) Defined Contribution Plan, Hennepin County Supplemental Retirement Plan, Health Care Savings Plan, Local Volunteer Fire Relief Plans, St. Paul Teachers' Retirement Fund Association, and the Statewide Volunteer Firefighter Plan.

As of June 30, 2019 there was \$2.5 billion invested in the SIF platform by participants in the plans identified above.

All Funds in the SIF program, except the Stable Value Fund, are available to Local Volunteer Fire Relief Associations who invest their assets with the SBI.

The Volunteer Firefighter Account is an investment option available only for those local firefighter entities that participate in the Statewide Volunteer Firefighter Retirement Plan administered by PERA. Local entities that participate in this Plan must have all their assets invested in

the Volunteer Firefighter Account.

On July 1, 2019, three plan sponsors transitioned out of the SIF investment platform into the mutual fund platform offered to participants in the Minnesota Deferred Compensation Plan. In aggregate, just over \$1 billion transferred out of the SIF investment platform. The investment options remain the same after the transition and as of July 1, 2019 represent \$840 million in assets.

offered and structured much like a family of mutual funds. This investment management structure allows the SBI to gain greater operating efficiency within asset classes and to keep management costs as low as possible for all participants.

In addition to the pooled asset groups, a liquid investment option is offered with the Money Market Fund, and for eligible participants a capital preservation strategy is offered in the Stable Value Fund.

Fund Structure

Investment goals among the participants are varied. In order to meet the variety of goals, a broad group of asset classes are

Fund Management

As of June 30, 2019 the Supplemental Investment Fund program offered eight investment options shown in

Figure 25. Accounts in the Supplemental Investment Fund

Balanced Fund	a balanced portfolio of U.S. common stocks, fixed income and cash.
U.S. Stock Actively Managed Fund	an actively and semi-passively managed portfolio of U.S. common stocks.
U.S. Stock Index Fund	a passively managed portfolio of U.S. common stocks.
Broad International Stock Fund	a portfolio of actively, semi-passively, and passively managed non-U.S. stocks.
Bond Fund	a portfolio of both actively and semi-passively managed fixed income securities.
Money Market Fund	a portfolio of short-term, liquid debt securities.
Stable Value Fund	a high quality fixed income portfolio including a portfolio of stable value instruments, security backed contracts, insurance company investment contracts and bank investment contracts.
Volunteer Firefighter Account	a balanced portfolio of U.S. and international common stocks, fixed income and cash.

Participant Directed Investment Program Supplemental Investment Fund (SIF) Platform

Figure 25. The objectives, asset allocation, management and performance of each Fund are explained in the following sections.

Share Values

A share value is established daily for each account and participants buy or sell shares based on the most recent share value.

Shares in the Balanced Fund, U.S. Stock Actively Managed Fund, U.S. Stock Index Fund, Broad International Stock Fund, Bond Fund, and the Volunteer Firefighter Account are priced based on the market value of each Fund. Performance of these Funds is a function of the income and capital appreciation (or depreciation) generated by the securities in the Funds.

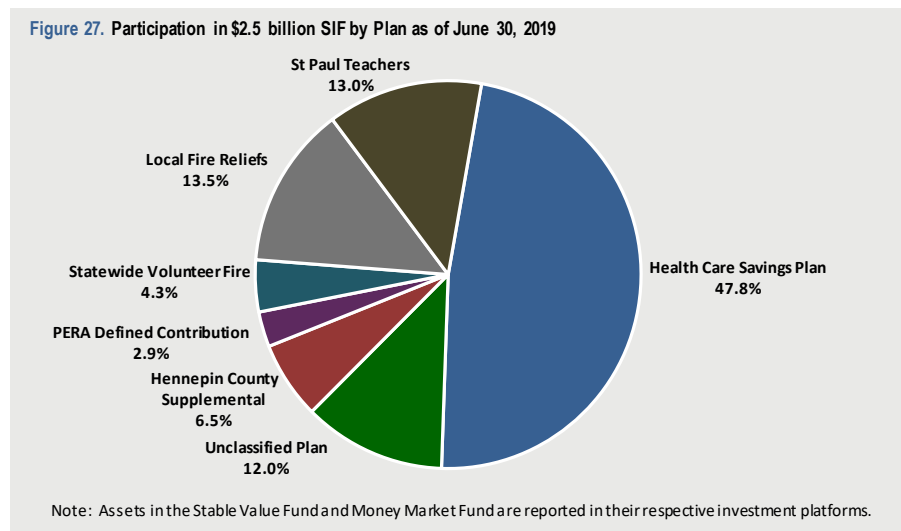
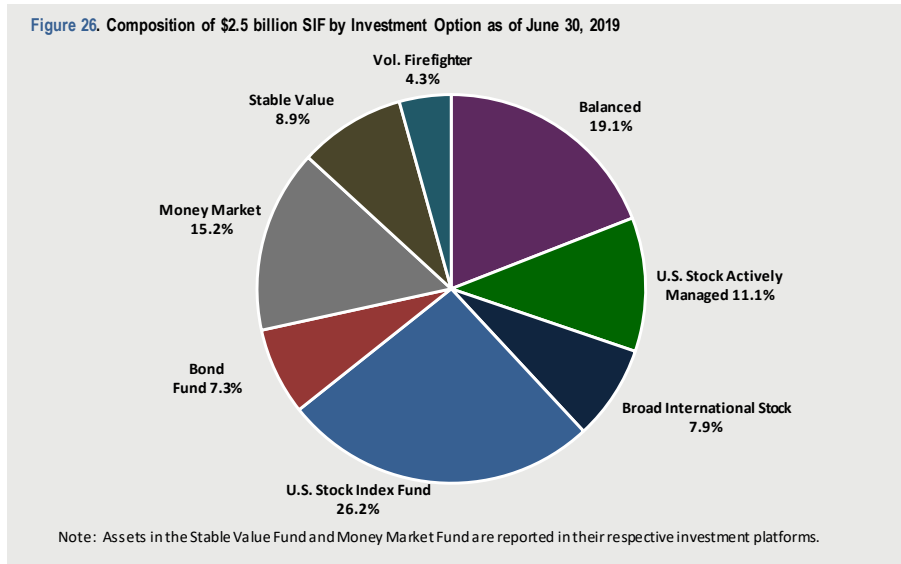
In the Stable Value Fund, shares are priced based on the blended crediting rates of the contracts and yields from any liquidity investments. Performance is calculated based on changes in these share values.

In the Money Market Fund, share values remain constant and the accrued interest income is credited to the Fund through the purchase of additional shares.

The investment returns shown in this report are calculated using a time-weighted rate of return formula. These returns are net of investment management fees and transaction costs, but do not reflect administrative expenses that may be deducted by the retirement systems to defray administrative costs.

The distribution of assets by market value in the Supplemental Investment Fund

as of June 30, 2019 is shown by Fund in Figure 26 and by Plan in Figure 27.



Participant Directed Investment Program

Supplemental Investment Fund (SIF): Balanced Fund

Balanced Fund

Objective

The investment objectives of the Balanced Fund are to earn a return both from capital appreciation (increases in market value) and current yield (dividends from stock and interest on bonds). The Balanced Fund pursues these objectives within the constraints of protecting against adverse financial environments and limiting short-run portfolio return volatility.

The SBI invests the Balanced Fund in a balanced portfolio of common stocks and fixed income securities (bonds) with the following long-term asset mix: 60% domestic common stocks, 35% bonds, 5% cash equivalents.

Domestic common stocks provide the potential for significant long-term capital appreciation, while bonds provide both a hedge against deflation and the diversification needed to limit excessive portfolio return volatility.

At the close of fiscal year 2019, the value of the Balanced Fund was \$474 million.

Management

The Balanced Fund assets are invested by external managers. The fixed income assets are invested in the Bond Fund, which includes active and semi-passive external investment managers retained by the SBI. The common stock segment is managed and invested in the U.S. Stock Index Fund and is designed to track the returns of the Russell 3000 Index. The passive manager for this portion of the Fund is BlackRock

Institutional Trust Company. The cash portion of the Fund is actively managed by State Street Global Advisors.

Performance

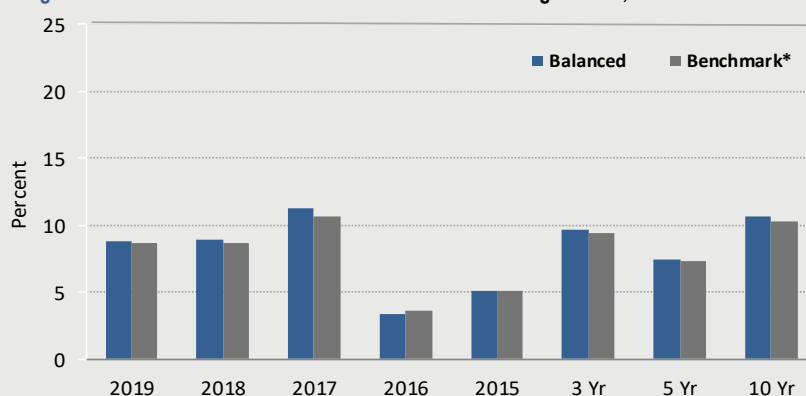
As with the other SBI funds which use a multi-manager investment structure, the Board evaluates the performance of the Balanced Fund on two levels:

- **Total Fund.** The Balanced Fund is expected to exceed the returns of a composite of market indices weighted in the same proportion as its long-term asset allocation.
- **Individual Manager.** The passive stock manager is expected to closely track the performance of the Russell 3000. The group of external bond managers for the Fund are expected to

exceed the performance of the Bloomberg Barclays U.S. Aggregate Bond Index. The cash manager for the Fund is expected to exceed the performance of 3 Month U.S. Treasury Bills.

The Balanced Fund provided a return of 8.8% for fiscal year 2019, slightly outperforming its benchmark. Over the most recent ten years, the Balanced Fund exceeded its benchmark by 0.3 percentage point. Figure 28 shows a history of performance results.

Figure 28. Balanced Fund Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
						3 Yr.	5 Yr.	10 Yr.
Balanced	8.8%	8.9%	11.3%	3.4%	5.1%	9.7 %	7.5%	10.6%
Benchmark*	8.7	8.7%	10.7	3.6	5.1	9.4	7.3	10.3

* 60% Russell 3000/35% Bloomberg Barclays U.S. Aggregate Bond Index/5% T-Bills Composite since 10/1/03.

Participant Directed Investment Program

Supplemental Investment Fund (SIF): U.S. Stock Actively Managed Fund

U.S. Stock Actively Managed Fund

Objective

The investment objective of the U.S. Stock Actively Managed Fund is to generate high returns from capital appreciation. To achieve this objective, the Fund is invested primarily in U.S. common stocks.

At the close of fiscal year 2019, the value of the Fund was \$277 million.

Management

The assets of the U.S. Stock Actively Managed Fund consists of the large-cap, small-cap, and semi-passive managers. These are actively managed asset groups within the Domestic Stock Program. This allocation reflects a more aggressive investment than is available through passive management. The Fund may hold a small amount of cash that represents new contributions received prior to investment in the market and cash that may be held by the individual managers in the Fund.

Performance

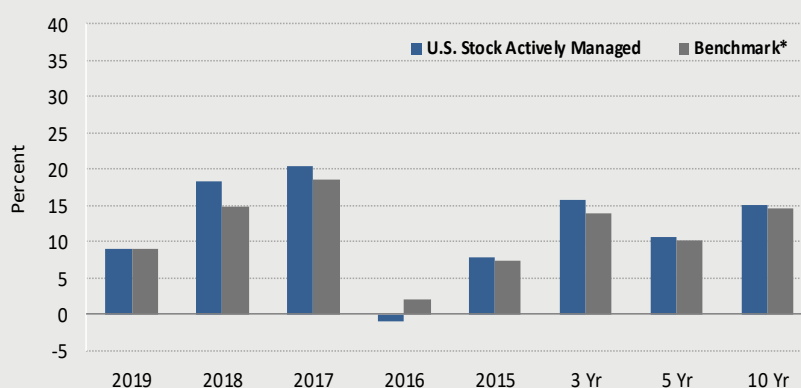
The Board evaluates the performance of the U.S. Stock Actively Managed Fund on two levels:

— **Total Fund.** The U.S. Stock Actively Managed Fund is expected to exceed the returns of the Russell 3000 Index.

— **Individual Manager.** Performance objectives for the individual managers are described beginning on page 20 of this report.

The U.S. Stock Actively Managed Fund provided a return of 8.9% for the fiscal year, slightly underperforming its benchmark. Over the last ten year period, the Fund outperformed its benchmark by 0.3 percentage point. See the investment discussion beginning on page 16 concerning the actively and semi-passively managed Domestic Stock Program for performance information on the managers used by this Fund. A history of performance results is shown in Figure 29.

Figure 29. U.S. Stock Actively Managed Fund Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
	2019	2018	2017	2016	2015	3 Yr.	5 Yr.	10 Yr.
U.S. Stock	8.9%	18.2%	20.5%	-1.1%	7.9%	15.7%	10.6%	15.0%
Benchmark*	9.0	14.8	18.5	2.1	7.3	14.0	10.2	14.7

* Russell 3000 since 10/1/03.

Participant Directed Investment Program

Supplemental Investment Fund (SIF): U.S. Stock Index Fund

U.S. Stock Index Fund

Objective

The investment objective of the U.S. Stock Index Fund is to generate returns that track the performance of the broad U.S. common stock market as represented by the Russell 3000 Index. To accomplish this objective, the SBI allocates all of the assets of the Fund to passively managed domestic stocks.

As of June 30, 2019, the value of the Fund was \$652.4 million.

Management

The U.S. Stock Index Fund invests in the passively managed segment of the Domestic Equity Program.

The assets of the U.S. Stock Index Fund is passively managed by BlackRock Institutional Trust Company.

The passively managed mandate of the Domestic Equity Program provides the equity allocation in the Balanced Fund and Volunteer Firefighter Account.

Performance

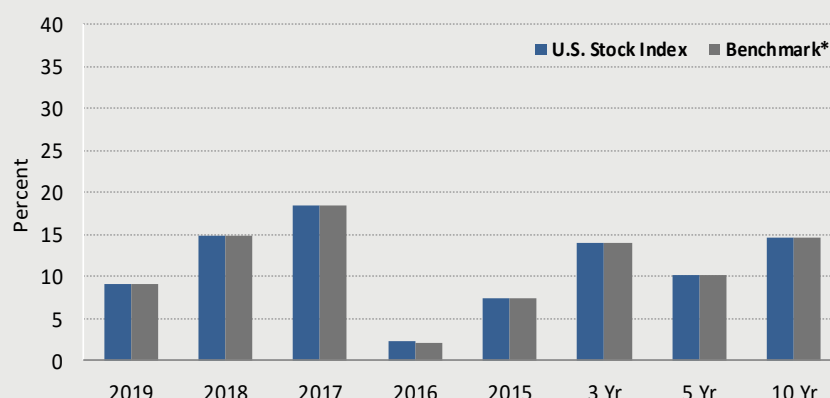
The performance objective of the U.S. Stock Index Fund is to track the performance of the Russell 3000. The SBI recognizes that the Fund's returns may deviate slightly from those of the Russell 3000 due to the effects of management fees, trading costs and cash flows.

Individual Manager.

Performance objectives for the Russell 3000 Index manager is described on page 26 of this report.

As expected, the U.S. Stock Index Fund tracked the Russell 3000 Index for the fiscal year and closely tracked over longer periods as shown in Figure 30.

Figure 30. U.S. Stock Index Fund Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
						3 Yr.	5 Yr.	10 Yr.
U.S. Stock Index	9.0%	14.8%	18.5%	2.2%	7.3%	14.0%	10.2%	14.7%
Benchmark*	9.0	14.8	18.5	2.1	7.3	14.0	10.2	14.7

* Russell 3000 since 10/1/03.

Participant Directed Investment Program

Supplemental Investment Fund (SIF): Broad International Stock Fund

Broad International Stock Fund

Objective

The investment objective of the Broad International Stock Fund is to earn a high rate of return by investing in the stock of companies outside the U.S.

Typically, a majority of the Fund is invested in the largest international stock markets (United Kingdom, Japan, Canada, France, Germany, and Switzerland) and is invested in other well established markets in Europe and the Pacific region. In addition, the fund invests in emerging markets around the world, including those in Latin America, Eastern Europe, the Middle East, China and ASEAN regions.

At the end of fiscal year 2019, the Fund had a market value of \$196 million.

Management

The Broad International Fund invests in the International Stock Program used by the Combined Funds. The International Stock Program retains active, semi-passive, and passive managers. These managers use a variety of investment styles and approaches to buy and sell stocks in an attempt to maximize market value. The passively managed portfolio's objective is to approximate the returns of the international markets in both the developed and emerging markets. The semi-passive mandates add incremental value over the index return by investing in broadly diversified portfolios of stocks in the developed and emerging markets. Overall, the Fund is designed to consistently track the return of the MSCI ACWI

ex USA Index (net), a developed and emerging markets index.

Performance

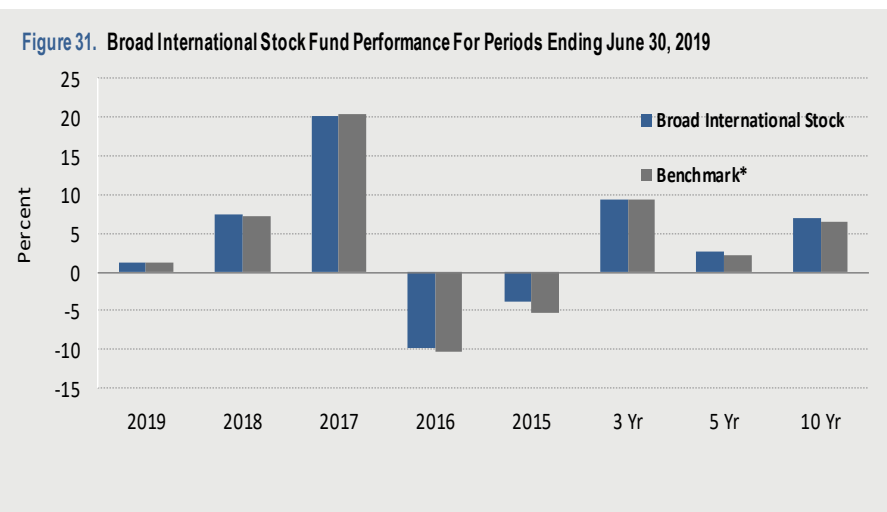
The Board evaluates the performance of the Broad International Stock Fund on two levels:

- **Total Fund.** The Broad International Stock Fund is expected to exceed the returns of the MSCI ACWI ex USA Index (net).
- **Individual Manager.** Performance objectives for the individual managers are described beginning on page 31 of this report.

During fiscal year 2019, the Broad International Stock Fund, with a return of 1.1%, underperformed the MSCI ACWI ex USA Index (net) by 0.2 percentage point. Over the

most recent ten year period, the Broad International Stock Fund exceeded its benchmark by 0.5 percentage point.

See the discussion on performance of the international managers beginning on page 31 of this report. A history of performance results is shown in Figure 31.



	2019	2018	2017	2016	2015	3 Yr.	5 Yr.	10 Yr.
Broad International	1.1%	7.5%	20.2%	-9.7%	-3.8%	9.3%	2.6%	7.0%
Benchmark*	1.3	7.3	20.5	-10.2	-5.3	9.4	2.2	6.5

* The International Equity Asset Class Target is MSCI ACWI ex USA Index (net) since 10/1/03.

Participant Directed Investment Program

Supplemental Investment Fund (SIF): Bond Fund

Bond Fund

Objective

The objective of the Bond Fund is to maximize total return with investments that provide current income and long-term growth while still focus on preservation of capital. The Fund is invested primarily in investment-grade government and corporate bonds and mortgage securities with intermediate to long maturities. A small portion of the Fund is invested in below investment grade and non-U.S. securities.

At the end of fiscal year 2019, the Fund had a market value of \$180.7 million.

The Fund earns investment returns through interest income and capital appreciation. Because bond prices move inversely with interest rates, the Fund entails some risk for investors. Historically, however, it represents a lower risk alternative than the investment options that include common stocks.

Management

The Bond Fund invests in the Fixed Income Program used by the Combined Funds. The Fixed Income Program retains both active and semi-passive managers.

The Fixed Income Program also provides the fixed income allocation in the Balanced Fund and the Volunteer Firefighter Account.

Performance

The Board evaluates the performance of the Bond Fund on two levels:

— **Total Fund.** The Fund is expected to exceed the

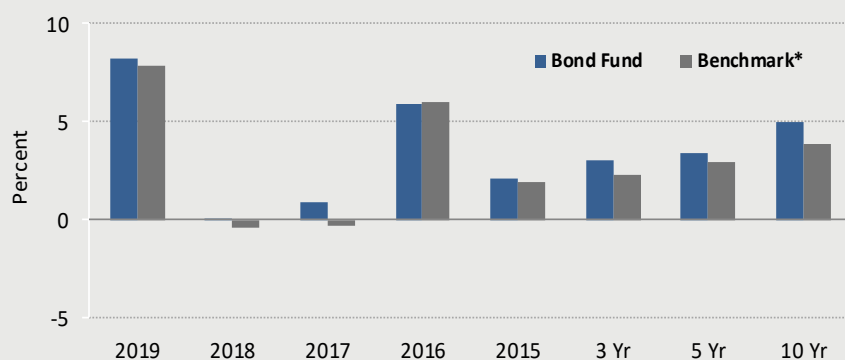
returns of the Bloomberg Barclays U.S. Aggregate Bond Index.

— **Individual Manager.**

Performance objectives for the individual managers are described beginning on page 39 of this report.

For fiscal year 2019, the Bond Fund produced a return of 8.2%, which was 0.3 percentage point above the Bloomberg Barclays U.S. Aggregate benchmark. For the most recent ten year period, the Fund exceeded its benchmark by 1.1 percentage points. Bond manager summaries are found starting on page 39 of this report. A history of performance results is shown in Figure 32.

Figure 32. Bond Fund Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
Bond Fund	8.2%	0.1%	0.9%	5.9%	2.1%	3.0%	3.4%	5.0%
Benchmark*	7.9	-0.4	-0.3	6.0	1.9	2.3	2.9	3.9

* Bloomberg Barclays U.S. Aggregate Bond Index.

Participant Directed Investment Program Supplemental Investment Fund (SIF): Money Market Fund

Money Market Fund

Objective

The Money Market Fund invests in high-quality, short-term debt instruments. The Fund's investment objectives are to preserve capital and offer competitive money market returns.

The Money Market Fund is offered in two different investment platforms within the Participant Directed Investment Program. At the end of June 30, 2019, the total market value of the Money Market Fund was approximately \$468 million, of which approximately \$379 million was invested in the SIF investment platform.

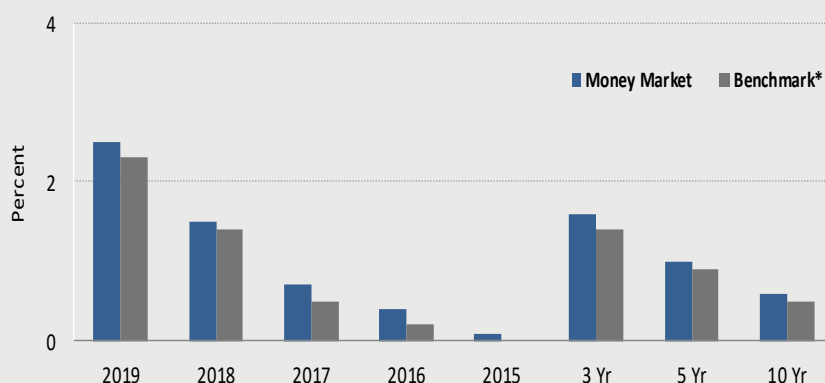
Management

The Fund uses the same cash manager as the Combined Funds, which is State Street Global Advisors.

Performance

The Fund is expected to produce returns competitive with those available from short-term debt securities. For fiscal year 2019, the Money Market Fund generated a return of 2.5%, which was 0.2 percentage point above the 3 month U.S. Treasury Bills. Over the most recent ten year period, the Fund slightly outperformed its target. A history of performance results is shown in Figure 33.

Figure 33. Money Market Fund Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
						3 Yr.	5 Yr.	10 Yr.
Money Market	2.5%	1.5%	0.7%	0.4%	0.1%	1.6%	1.0%	0.6%
90 Day T-Bill	2.3	1.4	0.5	0.2	0.0	1.4	0.9	0.5

Participant Directed Investment Program Supplemental Investment Fund (SIF): Stable Value Fund

Stable Value Fund

Objective

The investment objectives of the Stable Value Fund are to seek to provide preservation of principal, maintain adequate liquidity to meet potential withdrawals, and produce a level of income consistent with an underlying portfolio of short to intermediate duration, high quality fixed income securities.

The Stable Value Fund is offered in two different investment platforms within the Participant Directed Investment Program. At the end of June 30, 2019, the total market value of the Stable Value Fund was approximately \$1.6 billion, of which \$220 million was invested via the SIF platform.

Management

The Fund is invested in a well-diversified portfolio of high quality fixed income securities. The Fund also holds insurance contracts issued by highly rated insurance companies and banks which are structured to provide principal protection for the Fund's diversified bond portfolios, regardless of daily market changes, and maintain a relatively stable return profile for the portfolio. The portfolio may also hold cash or cash equivalents for liquidity purposes. Performance reflects the blended crediting rates from all investments in the fund.

The manager for the Fund is Galliard Capital Management, a subsidiary of Wells Fargo Asset Management.

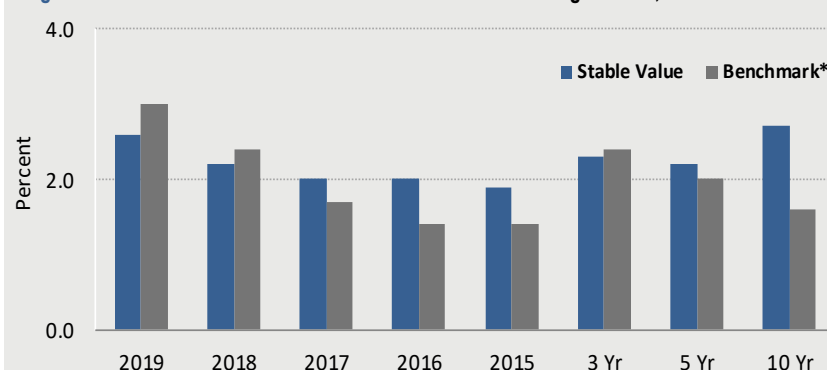
Figure 34 shows a history of the Fund's performance results.

Performance

The Stable Value Fund is expected to exceed the returns of its custom benchmark, the 3-year Constant Maturity Treasury plus 45 basis points (+0.45%).

During fiscal year 2019, the Stable Value Fund provided a return of 2.6%, which was 0.4 percentage point below its benchmark. Over the most recent ten year period, the Stable Value Fund exceeded its benchmark by 1.1 percentage points.

Figure 34. Stable Value Fund Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
Stable Value	2.6%	2.2%	2.0%	2.0%	1.9%	3 Yr.	5 Yr.	10 Yr.
Benchmark*	3.0	2.4	1.7	1.4	1.4	2.4	2.0	1.6

* 3-Year Constant Maturity Treasury plus 45 basis points.

Participant Directed Investment Program

Supplemental Investment Fund (SIF): Statewide Volunteer Plan

Statewide Volunteer Firefighter Retirement Plan

Minnesota Statutes, Chapter 353G creates a statewide, voluntary plan for local relief associations. The Plan was established January 1, 2010. Local entities may choose to join the statewide plan which is administered by PERA. Assets of the plan are invested in the Volunteer Firefighter Account. Participation in the plan is effective on December 31 of a given year. The SBI must evaluate the assets of each local entity that seeks to join the plan. In January of 2019, 15 local entities joined the plan, transferring just under \$11 million to the SBI for investment. At the close of fiscal year 2019, 175 local fire entities, representing over \$107 million in assets, were in the Statewide Volunteer Firefighter Retirement Plan.

Objective

The investment objective of the Volunteer Firefighter Account is to earn a high rate of return from both capital appreciation (increases in market value) and current yield (dividends from stocks and interest on bonds). The Plan pursues this objective within the constraints of protecting against adverse financial environments and limiting short-run portfolio return volatility.

The SBI invests the Account in a balanced portfolio of domestic and international stocks, fixed income and cash with the following long-term asset mix: 35% U.S. Equities, 15% International Equities, 45% Bonds, 5% Cash.

Domestic stocks provide the potential for significant long-term capital appreciation, international stocks provide similar potential along with a measure of diversification, and bonds provide both a hedge against deflation and the diversification needed to limit excessive portfolio return volatility.

Management

The Account's investment management structure combines active and passive management used by the Combined Funds. The domestic stock segment is managed as part of the passively managed segment of the Domestic Stock Program designed to track the returns of the Russell 3000 Index. The international stock segment invests in the International Stock Program which uses a combination of active, semi-

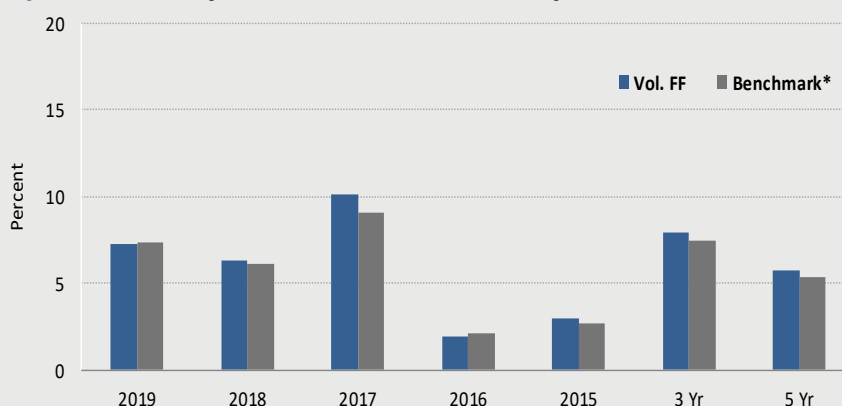
passive and passive management to invest across a broad range of developed and emerging markets. The bond segment invests in the Fixed Income Program used by the Combined Funds. The Fixed Income Program retains both active and semi-passive managers.

Performance

As with other SBI funds which utilize a multi-manager investment structure, the Board evaluates the performance of the Volunteer Firefighter Account on two levels:

- **Total Account.** The Volunteer Firefighter Account is expected to exceed the returns of a composite of market indices weighted in the same proportion as its long-term asset allocation.

Figure 35. Volunteer Firefighter Account Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized 3 Yr.	5 Yr.
Volunteer Firefighter (FF)	7.3%	6.3%	10.1%	1.9%	3.0%	7.9%	5.7%
Benchmark*	7.4	6.1	9.1	2.1	2.7	7.5	5.4

* 35% Russell 3000, 15% MSCI ACWI ex USA (net), 45% Bloomberg Barclays U.S. Aggregate Bond Index, 5% 3 Month T-Bills.

Participant Directed Investment Program Supplemental Investment Fund (SIF): Statewide Volunteer Plan

- ***Individual Manager.*** The passive domestic stock and passive international stock managers are expected to closely track the performance of their respective benchmarks. The performance objectives of the active international equity and bond managers are described in their respective sections of this report.

The Account provided a return of 7.3% for the year ending June 30, 2019 which slightly underperformed its composite benchmark by 0.1 percentage point. Over the most recent five year period, the Plan exceeded its benchmark by 0.3 percentage point.

Figure 35 on the previous page shows a history of the Account's performance results.

Participant Directed Investment Program

State Sponsored Savings Program: Minnesota College Savings Plan

The Minnesota College Savings Plan is an education savings plan designed to help families set aside funds for future college costs. It is established under the provisions of the Internal Revenue Code Section 529, which authorized these types of savings plans to help families meet the costs of qualified colleges nationwide. On June 30, 2019, the market value of the Plan was just over \$1.5 billion.

Program Structure

The Minnesota Legislature authorized establishment of the Minnesota College Savings Plan (the Plan) in 1997 and in 2001 the Plan was launched. The State Board of Investment (SBI) is responsible for the investments and the Minnesota Office of Higher Education (OHE) is responsible for the overall administration of the Plan. The SBI and OHE have contracted jointly with TIAA-CREF Tuition Financing, Inc. (TFI) to provide administrative, marketing, communication, recordkeeping and investment management services.

Objective

The objective of the Plan is to be competitive in the market place by providing quality investment options with low fees to its participants. The Plan is a direct-sold plan (i.e. may be purchased directly without an investment advisor) and offers nine Age-Based Managed Allocation Options, three Risk-Based Allocation Options and seven Static Investment Options. The Plan has both active and passive management through TIAA's mutual funds. While all options are priced daily, participants may re-allocate their investment twice per calendar year.

Age Based Managed Allocation Option

This investment option seeks to align the investment objective and level of risk to the

investment horizon by taking into account the beneficiary's age and the number of years before the beneficiary turns 18 and is expected to enter college. Depending on the beneficiary's age, the assets contributed to this option are placed in one of nine age bands. As the beneficiary ages, assets are moved from one age band to the next. The age bands for younger beneficiaries seek a favorable long-term return by investing at a higher level of risk but greater potential for higher returns than more conservative investments. As a beneficiary nears college age, the age bands allocate less to equity and real estate and more to fixed-income and money market securities to preserve capital.

Risk Based Allocation Option

These Investment Options provide a fixed risk level and do not change as the beneficiary ages. There are three separate Risk Based Allocation Options: Aggressive, Moderate and Conservative.

The **aggressive option** seeks to generate a favorable long-term return by investing in mutual funds that invest primarily in equity securities and, to a lesser extent, invest in debt securities. Approximately 48% of the fund is allocated to U.S. equity securities; 19% to developed international equities; 5% to emerging markets equities; 8% real estate securities; 14% to public, investment-grade,

taxable debt securities denominated in U.S. dollars; 4% to inflation-linked bonds and 2% to high yielding debt securities.

The **moderate option** seeks to provide moderate growth by investing in a balanced mix of domestic and foreign equity securities, fixed income and real estate-related securities.

Approximately 36% of the fund is allocated to U.S. equity securities; 14% to developed international equities; 4% to emerging markets equities; 6% real estate securities; 28% to public, investment-grade, taxable debt securities denominated in U.S. dollars; 8% to inflation-linked bonds and 4% to high yielding debt securities.

The **conservative allocation option** seeks to provide a conservative to moderate total return by investing in mutual funds that invest primarily in debt securities and, to a lesser extent, invests in equity securities. This option also invests in a funding agreement. Approximately 18% of the fund is allocated to U.S. equity securities; 7% to developed international equities; 2% to emerging markets equities; 3% real estate securities; 32% to public, investment-grade, taxable debt securities denominated in U.S. dollars; 9% to inflation-linked bonds; 4% to high yielding debt securities and

Participant Directed Investment Program

State Sponsored Savings Program: Minnesota College Savings Plan

25% in a funding agreement issued by TIAA-CREF Life (see the Principal Plus Interest Option below for further detail on the funding agreement).

Static Options

- **International Equity Index Option**

This investment option seeks to provide a favorable long-term total return, mainly through capital appreciation. Approximately 80% of the fund is allocated to equity securities of issuers located in developed markets and 20% is allocated to equity securities of issuers located in emerging markets.

- **U.S. and International Equity Option**

This investment option seeks to provide a favorable long-term total return, mainly from capital appreciation, by allocating primarily to a blend of equity and real estate-related securities.

Approximately 60% of the fund is allocated to U.S. equity securities, 24% to equity issuers located in developed markets, 6% to equity securities of issuers located in emerging markets and 10% to real estate-related securities.

- **U.S. Large Cap Equity Option**

This investment option seeks to provide a favorable long-term total return mainly from capital appreciation. All assets of the fund are invested in an S&P 500 index fund.

- **Equity and Interest Accumulation Option**

This investment seeks to provide a moderate long-term total return. Approximately

half of its assets are invested in an equity index fund and the other half in a funding agreement.

- **100% Fixed-Income Option**

This investment option seeks to provide preservation of capital along with a moderate rate of return through a diversified mix of fixed income investments.

Approximately 70% of the fund is allocated to public, investment-grade, taxable bonds denominated in U.S. dollars, 20% to inflation-linked bonds and 10% to a high yield fund.

- **Money Market Option**

This investment option seeks to provide current income consistent with preserving capital.

The money market option converted to a “governmental money market fund” in October 2016. As a result, the Fund is limited to U.S. Government securities and

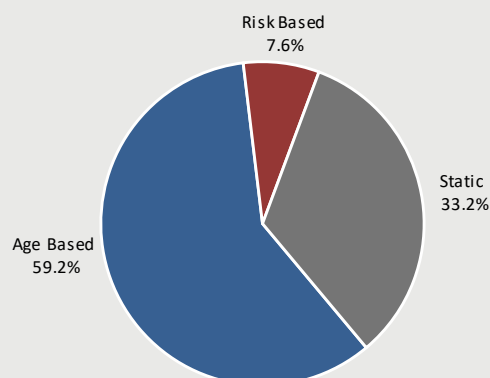
will invest at least 99.5% of its total assets in cash, short-term U.S. Government securities and/or repurchase agreements collateralized fully by cash or U.S. Government securities.

- **Principal Plus Interest Option**

This investment option seeks to preserve capital and provide a stable return. The contributions into this investment option are invested in a Funding Agreement issued by TIAA-CREF Life. The Funding Agreement provides for a return of principal plus a guaranteed rate of interest and allows for the possibility that additional interest may be credited as declared periodically by TIAA-CREF Life.

As of June 30, 2019, the Minnesota College Savings Plan distribution of assets is shown in Figure 36 and performance is shown in Figure 37.

Figure 36. MN College Savings Plan Assets by Investment Option as of June 30, 2019



Participant Directed Investment Program

State Sponsored Savings Program: Minnesota College Savings Plan

Figure 37. Minnesota State College Savings Plan (529 Plan) for Periods Ending June 30, 2019

	RETURNS ⁽¹⁾				Market Value ⁽³⁾ (\$ in millions)
	1 Year		3 Year		
	Actual	Bmk ⁽²⁾	Actual	Bmk ⁽²⁾	
	%	%	%	%	
Age Based Managed Allocation Option					
Age Band 0-4 Years	7.1	7.4	10.1	10.1	\$37.9
Age Band 5-8 Years	7.3	7.4	9.1	9.2	70.3
Age Band 9-10 Years	7.2	7.5	8.2	8.3	64.0
Age Band 11-12 Years	6.7	7.3	7.2	7.3	93.7
Age Band 13-14 Years	6.7	7.1	6.3	6.3	133.0
Age Band 15 Years	5.8	6.3	5.2	5.2	80.7
Age Band 16 Years	5.2	5.7	4.5	4.6	90.4
Age Band 17 Years	4.7	5.2	4.0	4.0	87.0
Ages 18 Years and Over	4.3	4.7	3.5	3.4	232.9
Risk Based Allocation Option					
Aggressive Allocation	7.1	7.4	10.0	10.1	30.2
Moderate Allocation	7.1	7.5	8.2	8.2	72.9
Conservative Allocation	5.7	6.3	5.1	5.2	11.1
Static Options					
International Equity Index	1.2	1.1	9.2	9.4	5.1
U.S. and International Equity	7.2	7.1	11.8	11.9	299.3
U.S. Large-Cap Equity	10.2	10.4	14.0	14.2	33.6
Equity and Interest Accumulation	5.4	6.1	7.7	7.7	5.0
100% Fixed-Income	7.1	7.3	2.4	2.7	17.6
Money Market	2.0	1.8	1.1	1.0	13.2
Principal Plus Interest ⁽⁴⁾	1.9	2.3	1.7	1.4	123.0

1) Returns are reported net of investment management fees, Program Management Fees and State Administrative Fees.

(2) Each Fund benchmark is the aggregate of the returns of the Fund's underlying index funds weighted by the Fund's asset allocation.

(3) Market value of SBI participation in fund.

(4) The credit rating of 1.70% for the underlying Funding Agreement was guaranteed through 8/31/18. Effective 9/1/18, the rate increased to 1.95% and was guaranteed through 8/31/19.

Participant Directed Investment Program

State Sponsored Savings Program: Minnesota ABLE Plan

The Minnesota ABLE Plan (Achieving a Better Life Experience) is a tax advantaged savings plan designed to help families set aside funds for eligible disability expenses under Section 529A of the Internal Revenue Code. On June 30, 2019, the market value of the Plan was just over \$6.4 million.

Program Structure

The Minnesota ABLE Plan was established to encourage and assist individuals and families to save for the purpose of supporting individuals with disabilities to maintain health, independence, and quality of life. The SBI is responsible for the investment oversight and the Commissioner of the Minnesota Department of Human Services (DHS) is responsible for the overall administration of the Plan. The SBI and DHS have contracted jointly with Ascensus to provide administrative, recordkeeping and investment management services.

Minnesota is one of 17 states in the National ABLE Alliance Program, which is a coalition of States that has partnered to share a Program and Program Manager, while maintaining Member State independence.

Objective

The objective of the Plan is to provide multiple financial options at a low cost. There are seven investment options available, six are Target Risk-Based Options and one is a Checking Account Option. Each of the six Target Risk-Based Options seek to meet a specific investment goal and risk tolerance by investing in multiple underlying investment funds.

Aggressive Option

The aggressive option seeks to provide long-term capital appreciation with very low income potential. This option

has a mixed allocation of 90% stocks and 10% bonds.

Moderately Aggressive Option

The moderately aggressive option seeks to provide long-term capital appreciation with low income potential. The investments are allocated 75% in stocks and 25% in bonds.

Growth Option

The growth option seeks to provide capital appreciation and low current income. The investments are allocated 60% stocks and 40% bonds.

Moderate Option

The moderate option seeks to provide capital appreciation and secondarily provide moderate current income. The investments are allocated 45% stocks and 55% in bonds.

Moderately Conservative Option

The moderately conservative option seeks to provide moderate current income and low capital appreciation. The investments are allocated 30% stocks, 45% bonds, and 25% cash.

Conservative Option

The conservative option seeks to provide substantial capital preservation, limited current income and very low capital appreciation. The investments are allocated 10% stocks, 30% bonds and 60% cash.

Checking Account Option

The Checking Account Option seeks to provide preservation of principal. It invests 100% of its assets in an FDIC-insured checking account.

Figure 38. Minnesota ABLE Plan for Period Ending June 30, 2019

	RETURNS ⁽¹⁾		Market Value ⁽³⁾ (\$ in thousands)
	1 Year		
	Actual %	Bmk ⁽²⁾ %	
Risk Based Allocation Option			
Aggressive Allocation	5.4	5.7	\$590.0
Moderately Aggressive Allocation	5.5	6.0	634.2
Growth Allocation	5.6	6.1	934.5
Moderate Allocation	5.5	6.1	777.1
Moderately Conservative Allocation	4.6	5.2	711.4
Conservative Allocation	3.3	3.8	963.8
Static Option			
Checking Option	N/A	N/A	1,852.7
Total Market Value			\$6,463.5

(1) Returns are reported net of investment management fees, Program Management Fees and State Administrative Fees.

(2) Each Fund benchmark is the aggregate of the returns of the Fund's underlying index funds weighted by the Fund's asset allocation.

(3) Market value of Minnesota participant's investment in fund.

NON-RETIREMENT PROGRAM

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Non-Retirement Program

Overview / Management of Program

Non-Retirement Funds

The State Board of Investment established the various Non-Retirement Funds to provide certain Minnesota public sector entities the opportunity to invest in a U.S. equity fund, a U.S. bond fund, or a money market fund to facilitate the achievement of its investment objectives. The funds are available to those non-retirement entities that are authorized to invest in these asset classes with the SBI. Currently, all or some of these options are available to designated trust funds, local Other Postemployment Benefit (OPEB) trusts, Qualifying Governmental Entities, and other state and public sector entities. Participants may allocate their investments among one or more funds that are appropriate for their needs and are within the rules and eligibility established for the participating entities (Figure 40).

Investment Options

There are a total of three investment options and each one offers different advantages and risks. As of June 30, 2019, participating plans invested a total of \$4.0 billion with the Funds (Figure 39).

Figure 39. Non-Retirement Fund Options

Fund Options	Assets as of 6/30/19
Non-Retirement Equity Fund	\$2,379,145,340
Non-Retirement Bond Fund	\$1,267,469,862
Non-Retirement Money Market Fund	\$89,828,906
Assigned Risk Bonds	\$230,343,876
Total Assets Invested*	\$3,966,787,984

* Investments exclude \$66 million of Met Council OPEB assets managed in a separate investment strategy.

Investment Management

Equity Fund

The equity segment is passively managed by Mellon Investments Corporation and tracks the performance of the S&P 500 Index (see page 111).

Bond Fund

The Non-Retirement Bond Fund is actively managed by Prudential Global Investment Management to add incremental value through sector, security and yield curve decisions (see page 112).

The Assigned Risk Bond Fund is actively managed by RBC Global Asset Management to provide cash for the payment of worker compensation claims (see pages 120-121).

Money Market Fund

The Money Market Fund provides safety of principal by investing in high-quality short-term money market securities. It is managed by State Street Global Advisors (see page 113).

Non-Retirement Program

Overview / Management of Program

Figure 40. Non-Retirement Funds Participants

Participants

Trusts	Assets
Permanent School Fund	\$1,512,574,251
Environmental Trust Fund	1,215,371,302
Assigned Risk Plan ⁽¹⁾	287,321,163
Closed Landfill Investment Fund	96,788,958
IRRRB (Iron Range Resources and Rehabilitation Board)	156,937,374
Other Trusts*	97,828,598
Total	\$3,366,821,645

(1) The Assigned Risk Plan includes \$230,343,876 invested with an external fixed income manager.

* Duluth Community Investment Trust, Emergency Medical Services, Ethel Currey, Lifetime Fish and Wildlife, Metropolitan Landfill Contingency Action Trust, Mitigation Easement Stewardship, Natural Resources Conservation, Saint Louis County Environmental, Water and Soil Conservation Easement, and Winona State.

OPEBs	Assets
Anoka County (Irrevocable)	\$ 71,716,682
Duluth	64,999,488
Metropolitan Council	274,671,085
Ramsey County (Irrevocable)	80,992,456
Washington County	63,608,077
Other OPEBs**	106,479,180
Total	\$662,466,968

** Carver County, City of Eagan, City of Virginia, Crosby-Ironton ISD #182, Fillmore Central Schools #2198, Foley Public Schools ISD #51, Hastings ISD #200, Kingsland ISD #2137, Mendota Heights Eg WSP #197, Metro Mosquito Control District, Mounds View ISD #621, Mt. Iron-Buhl District #712, Ogilvie ISD #333, Port Authority of the City of St. Paul, Roseville District #623, Scott County, Staples Motley #2170, Washington County, and Yellow Medicine ISD #2190.

Qualifying Governmental Entities	Assets
City of Woodbury	\$3,435,107

Non-Retirement Program Equity Fund Manager Summary

Mellon Investments Corporation manages the Non-Retirement Equity Fund that is used by various state trust funds such as the Permanent School Fund, Environmental Trust Fund, Assigned Risk Plan, and Closed Landfill Investment Fund. On June 30, 2019, the total market value of the Non-Retirement Equity Fund was \$2.4 billion.

The Non-Retirement Equity Fund is an investment vehicle that provides domestic equity exposure to entities that have received authority to use this vehicle. The types of entities that invest in the Non-Retirement Equity Fund include State and other Trust funds, OPEB funds, and Qualifying Governmental Entities.

Investment Objectives

The investment objective of the Non-Retirement Equity Fund is to track the S&P 500 index. The portfolio is expected to have a realized active risk level relative to the benchmark of 0.2 or less, where active risk is the annualized standard deviation of the Manager's excess returns relative to the benchmark. Over time, the annual return shortfall relative to the benchmark, due to fees and trading expenses, should be no more than 0.1%.

Asset Allocation

This fund provides 100% domestic equity exposure.

Investment Management

In 2017, Mellon Investments Corporation was hired to manage the fund. Prior to Mellon, the fund was managed internally by SBI staff. The strategy replicates the S&P 500 by owning all of the names in the index at the weightings assigned by the index. To maintain appropriate liquidity for daily cash flows, some cash is held in the

portfolio and is equitized by using S&P 500 futures contracts.

Investment Performance

The SBI measures the Non-Retirement Equity Fund against the S&P 500 Index.

For fiscal year 2019, the Non-Retirement Equity Fund matched its benchmark, the S&P 500 Index. Performance results are shown in Figure 41.

Figure 41. Non-Retirement Equity Fund Performance for Periods Ending June 30, 2019

	1 Yr.	3 Yr.	Annualized 5 Yr.	10 Yr.
Non-Retirement Equity Fund*	10.4%	14.2%	10.7%	14.7%
S&P 500 Index	10.4	14.2	10.7	14.7

* Actual returns are calculated net of fees.

Non-Retirement Program Bond Fund Manager Summary

Prudential Global Investment Management manages the Non-Retirement Bond Fund that is used by various state trust funds such as the Permanent School Fund, Environmental Trust Fund, and Closed Landfill Investment Fund. On June 30, 2019, the total market value of the Non-Retirement Bond Fund was \$1.3 billion.

Investment Objectives

The investment objectives for the Non-Retirement Bond Fund are to deliver cumulative returns in excess of the Bloomberg Barclays U.S. Aggregate Bond Index, and to manage the level and composition of active risk in the portfolio relative to this benchmark.

Asset Allocation

The composition of the Fund as of June 30, 2019 is shown in Figure 42. At the end of fiscal year 2019, the Non-Retirement Bond Fund had an effective duration of 5.6 years vs. the benchmark duration of 5.7 years and a yield to maturity of 2.7% vs. the benchmark yield to maturity of 2.5%.

Investment Management

In 2017, Prudential Global Investment Management (PGIM) was hired to manage the fund. Prior to PGIM, the fund was managed internally by SBI staff. PGIM is required to adhere to investment guidelines in managing the account. These guidelines give PGIM the flexibility to actively manage the portfolio through duration, yield curve, sector and security selection decisions, while maintaining a maximum five year active risk level of 1.5. PGIM is required to maintain the duration of the portfolio within +/- one year of the index duration. The Fund primarily invests in U.S. government,

corporate, mortgage and structured securities.

Current Positioning

Characteristics of the portfolio as of June 30, 2019 are shown in Figure 43. PGIM has the portfolio duration positioned slightly shorter to the benchmark, and has modestly increased exposure to ABS/CMBS as the relative value outlook in the asset classes improves.

Investment Performance

The benchmark for the Non-Retirement Bond Fund is the Bloomberg Barclays U.S. Aggregate Bond Index, a broad-based index of investment grade, U.S. dollar denominated, fixed rate taxable bonds. For fiscal year 2019 and all other periods, the Non-Retirement Bond Fund outperformed its benchmark. Historical performance results are presented in Figure 44.

Figure 42. Non-Retirement Bond Fund Distribution as of June 30, 2019

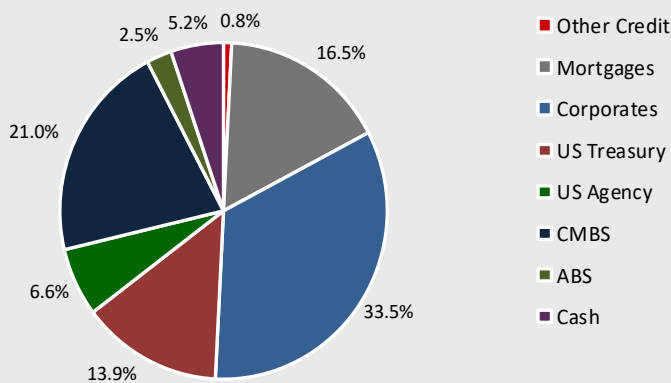


Figure 43. Fixed Income Characteristics for Period Ending June 30, 2019

	Bond Fund	Benchmark
Effective Duration (yrs)	5.6	5.7
Convexity	0.8	0.8
Coupon Rate (%)	3.5	3.3
Yield to Maturity (%)	2.7	2.5
Option Adjusted Spread (bps)	71	46
Rating – Moody's	A1	Aa2

Figure 44. Non-Retirement Bond Fund Performance for Periods Ending June 30, 2019

	1 Yr.	3 Yr.	5 Yr.	10 Yr.
Non-Retirement Bond Fund	8.4%	2.9%	3.4%	4.3%
Bloomberg Barclays U.S. Agg.	7.9%	2.3%	2.9%	3.9%

Non-Retirement Program

Money Market Fund Manager Summary

State Street Global Advisors manages the Non-Retirement Money Market Fund that is used by various state trust funds such as the Permanent School Fund and Environmental Trust Fund. On June 30, 2019, the total market value of the Non-Retirement Money Market Fund was \$136 million.

The Non-Retirement Money Market Fund is an investment vehicle that provides high quality short-term cash exposure to entities that have received authority to use this fund. The types of entities that invest in the Fund include State and other Trust funds and OPEB funds.

Investment Objectives

The objective of the Non-Retirement Money Market Fund is to provide safety of principal by investing in high quality, short-term securities. The return of the fund is based on the interest income generated by the fund's investments.

Asset Allocation

The fund invests in high quality short-term money market securities.

Investment Management

The Non-Retirement Money Market Fund is managed by State Street Global Advisors, the organization that provides short-term investment management for a substantial portion of the Board's cash reserves.

Investment Performance

The SBI measures the Non-Retirement Money Market Fund against the iMoneyNet All Taxable Money Fund Average.

For fiscal year 2019, the Non-Retirement Money Market outperformed its benchmark, the

iMoney Net All Taxable Money Fund Average. Performance is shown in Figure 45 below.

Figure 45. Non-Retirement Money Market Fund Performance for Periods Ending June 30, 2019

	Annualized			
	1 Yr.	3 Yr.	5 Yr.	10 Yr.
Non-Retirement Money Market Fund*	2.4%	1.5%	0.9%	0.6%
iMoney Net All Taxable Money Fund Average	1.9	1.0	0.6	0.3

* Actual returns are calculated net of fees.

Non-Retirement Program Permanent School Fund

The Permanent School Fund is a trust fund created by the Minnesota State Constitution and is designated as a long-term source of revenue for public schools. Proceeds from land sales, mining royalties, timber sales, lake shore and other leases are invested in the Fund. Income generated by the Fund's assets is appropriated directly to school districts. On June 30, 2019, the market value of the Fund was \$1.5 billion.

Investment Objective

The State Board of Investment invests the Permanent School Fund to produce a growing level of spendable income for school districts within the constraints of maintaining adequate portfolio quality and liquidity.

Investment Constraints

The Fund's investment objectives are influenced by the legal provisions under which its investments must be managed. These provisions require that the Fund's principal remain inviolate. Any net realized capital gains from stock or bond investments must be added to the principal. Moreover, if the Fund realizes net capital losses, these losses must be offset against interest and dividend income before such income can be distributed. Finally, all interest and dividend income must be distributed in the year in which it is earned.

Asset Allocation

In order to produce a growing level of spendable income, the Fund has exposure to equities. The current asset allocation is 50% stocks/48% bonds/2% cash.

Prior to fiscal year 1998, the Permanent School Fund had been invested entirely in fixed income securities for more than a decade. While this asset allocation maximized current income, it limited the long-term growth of the Fund and caused

the income stream to lose value in inflation adjusted terms, over time.

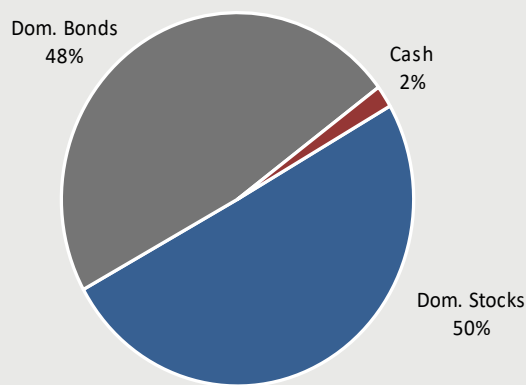
To solve both issues, a proposal to introduce equities to the Fund's asset mix was presented during fiscal year 1997. Since this modification would reduce short-term income and have budgetary implications for the state, the consent of the executive and legislative branches was necessary. It was favorably received by the Legislature and incorporated into the K-12 education finance bill. As a result, the Fund allocation was shifted to a 50% stocks/48% bonds/2% cash allocation during July 1997.

Figure 46 presents the actual asset mix of the Permanent School Fund at the end of fiscal year 2019.

Investment Management

Assets of the Permanent School Fund are invested in the Non-Retirement Equity, Bond and Money Market Funds (see pages 111-113).

Figure 46. Permanent School Fund Asset Mix as of June 30, 2019



Non-Retirement Program Permanent School Fund

Investment Performance

During the fiscal year, the **stock** segment of the Permanent School Fund matched its benchmark, the S&P 500.

The **bond** segment outperformed its benchmark by 0.5 percentage point during the current fiscal year.

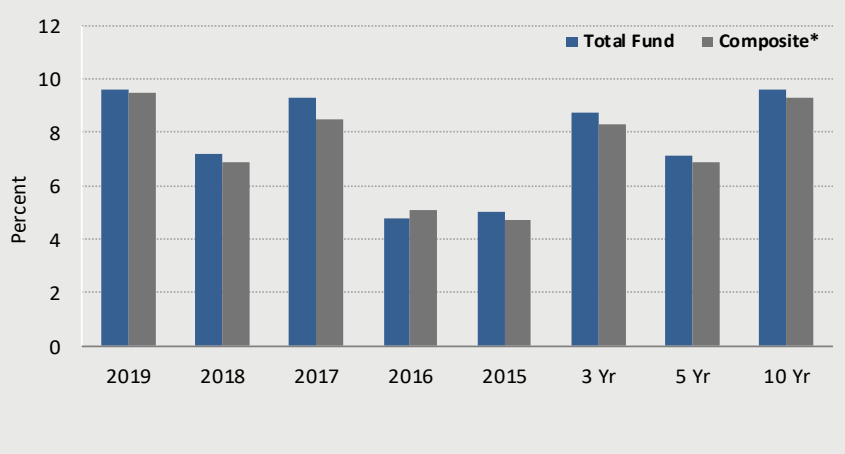
Overall, the Permanent School Fund provided a return of 9.6% for fiscal year 2019, outperforming its composite index by 0.1 percentage point. The Fund outperformed its composite index over the ten year period by 0.3 percentage point.

Total account performance results for the last three, five and ten years are shown in Figure 47.

Spendable income generated by the portfolio over the last five fiscal years is shown below:

Fiscal Year	Millions
2015	\$26
2016	\$28
2017	\$30
2018	\$33
2019	\$36

Figure 47. Permanent School Fund Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
						3 Yr.	5 Yr.	10 Yr.
Total Fund	9.6%	7.2%	9.3%	4.8%	5.0%	8.7%	7.1%	9.6%
Composite*	9.5	6.9	8.5	5.1	4.7	8.3	6.9	9.3
Stock Segment	10.4	14.3	17.9	4.0	7.5	14.2	10.7	14.7
S&P 500	10.4	14.4	17.9	4.0	7.4	14.2	10.7	14.7
Bond Segment	8.4	-0.3	0.8	5.7	2.5	2.9	3.4	4.3
BB Barclays Agg.	7.9	-0.4	-0.3	6.0	1.9	2.3	2.9	3.9

* 50% S&P 500/ 48% Bloomberg Barclays U.S. Aggregate/ 2% 3 Month T-Bills.

Non-Retirement Program Environmental Trust Fund

The Environmental Trust Fund was established in 1988 by the Minnesota Legislature to provide a long-term, consistent and stable source of funding for activities that protect and enhance the environment. On June 30, 2019, the market value of the Fund was \$1.2 billion.

By statute, the State Board of Investment invests the assets of the Environmental Trust Fund. The Minnesota Legislature funds environmental projects from a portion of the market value of the Fund.

Investment Objective

The Environmental Trust Fund's investment objective is long-term growth in order to produce a growing level of funding within the constraints of maintaining adequate portfolio liquidity.

A constitutional amendment passed in November 1998 continues the mandate that 40% of the net proceeds from the state lottery be credited to the Fund through 2025.

The amendment provides for spending 5.5% of the Fund's market value annually. The amendment eliminated certain accounting restrictions on capital gains and losses as well as the provision that the principal must remain inviolate.

Asset Allocation

After the constitutional amendment was adopted in November 1998, SBI staff worked with the Legislative Citizen Commission on Minnesota Resources to establish an asset allocation policy that is consistent with the Commission's goals for spending and growth of the Fund. The allocation positions the Fund for an appropriate long-term growth potential to

meet the Fund's objective to produce a growing level of funding.

The current long-term asset allocation targets for the Fund are:

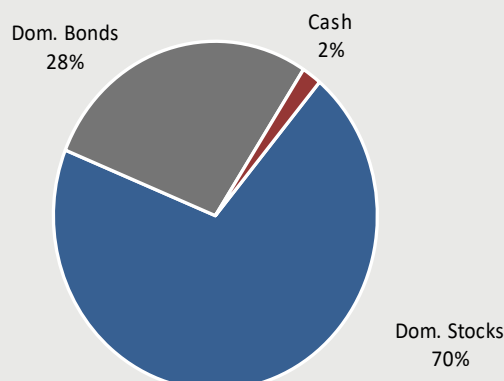
Domestic Stocks	70%
Domestic Bonds	28%
Cash	2%

Figure 48 presents the actual asset mix of the Fund at the end of fiscal year 2019.

Investment Management

The Environmental Trust Fund is invested in the Non-Retirement Equity, Bond and Money Market Funds (see pages 111-113).

Figure 48. Environmental Trust Fund Asset Mix as of June 30, 2019



Non-Retirement Program Environmental Trust Fund

Investment Performance

During the fiscal year, the **stock** segment matched its benchmark for the fiscal year.

The **bond** segment outperformed its benchmark by 0.5 percentage point during the fiscal year.

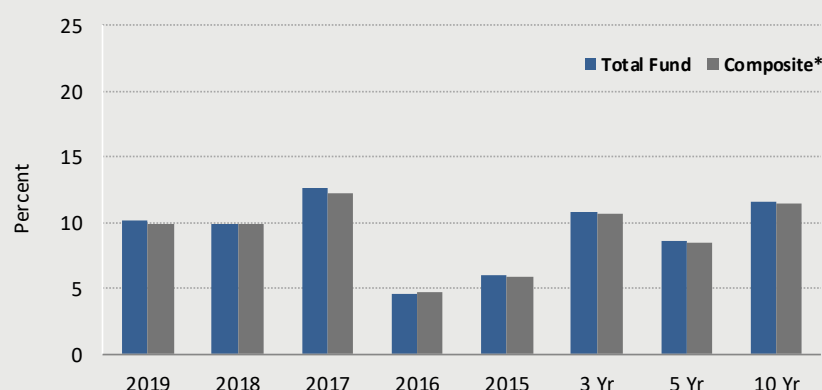
Overall, the Environmental Trust Fund provided a return of 10.1% for fiscal year 2019 and outperformed its composite index by 0.2 percentage point during the fiscal year. The Fund outperformed its composite index over the ten year time period by 0.1 percentage point.

Performance results are presented in Figure 49.

Spendable income generated by the Fund over the last five fiscal years is shown below:

Fiscal Year	Millions
2015	\$34
2016	\$46
2017	\$46
2018	\$51
2019	\$51

Figure 49. Environmental Trust Fund Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
						3 Yr.	5 Yr.	10 Yr.
Total Fund	10.1%	9.9%	12.6%	4.5%	6.0%	10.8%	8.6%	11.6%
Composite*	9.9	9.9	12.2	4.7	5.8	10.7	8.5	11.5
Stock Segment	10.4	14.3	17.9	4.0	7.5	14.2	10.7	14.7
S&P 500	10.4	14.4	17.9	4.0	7.4	14.2	10.7	14.7
Bond Segment	8.4	-0.3	0.8	5.7	2.5	2.9	3.4	4.3
BB Barclays Agg.	7.9	-0.4	-0.3	6.0	1.9	2.3	2.9	3.9

* Weighted 70% S&P 500/ 28% Bloomberg Barclays U.S. Aggregate/ and 2% 3 month T-Bill.

Non-Retirement Program

Closed Landfill Investment Fund

The Closed Landfill Investment Fund is a trust fund created by the Minnesota Legislature to invest money to pay for the long-term costs of maintaining the integrity of landfills in Minnesota once they are closed. On June 30, 2019 the market value of the Fund was \$97 million.

Investment Objective

The investment objective of the Closed Landfill Investment Fund is to increase the market value of the Fund and to reduce volatility in order to meet future expenditure needs.

Asset Allocation

Prior to September of 2014, the Closed Landfill Fund had been invested entirely in domestic stocks. While this asset class maximized long-term growth opportunities, it did not allocate any assets for capital protection. The Fund is currently invested in a balanced portfolio of domestic stocks (70%) and bonds (30%). Stocks provide the potential for significant capital appreciation, while bonds act as a deflation hedge and provide portfolio diversification. Figure 50 presents the actual asset mix of the Closed Landfill Investment Fund at the end of fiscal year 2019.

Investment Management

Assets of these accounts are invested by the SBI in the Non-Retirement Equity and Bond Funds (see pages 111-113).

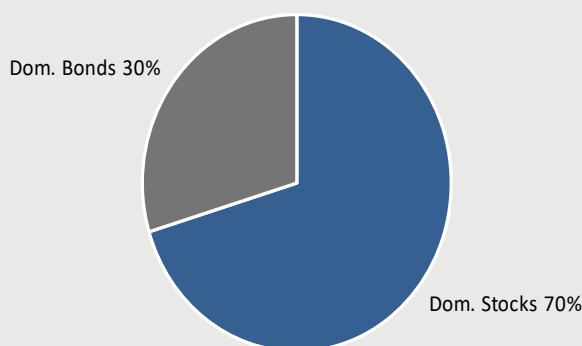
Investment Performance

During the fiscal year, the *stock* segment of the Closed Landfill Investment Fund matched the return of its benchmark, the S&P 500.

The *bond* segment outperformed its benchmark by 0.5 percentage point during the current fiscal year.

For fiscal year 2019, the Fund and for the ten year period, matched its composite benchmark. Performance results are shown in Figure 51.

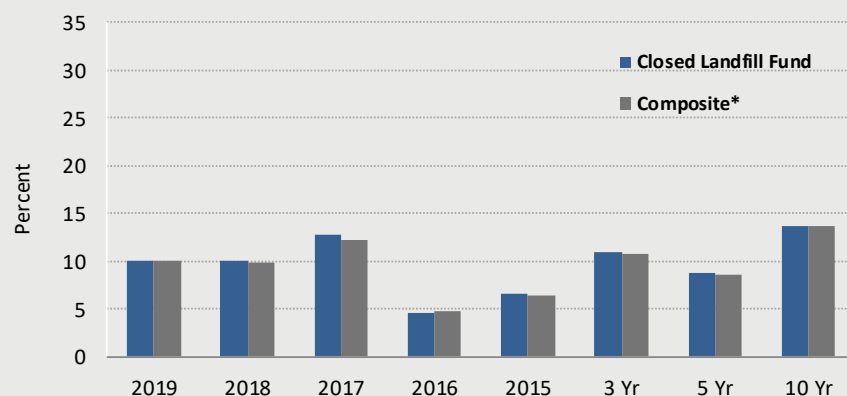
Figure 50. Closed Landfill Investment Fund Asset Mix as of June 30, 2019



Non-Retirement Program

Closed Landfill Investment Fund

Figure 51. Closed Landfill Investment Fund Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
	2019	2018	2017	2016	2015	3 Yr.	5 Yr.	10 Yr.
Total Fund	10.1%	10.0%	12.7%	4.5%	6.6%	10.9%	8.7%	13.6%
Composite Index*	10.1	9.8	12.2	4.8	6.4	10.7	8.6	13.6
Stock Segment	10.4	14.3	17.9	4.0	7.5	14.2	10.7	14.7
S&P 500	10.4	14.4	17.9	4.0	7.4	14.2	10.7	14.7
Bond Segment	8.4	-0.3	0.8	5.7	--	2.9	--	--
BB Barclays Agg.	7.9	-0.4	-0.3	6.0	--	2.3	2.9	3.9

* 70% S&P 500/30% Bloomberg Barclays U.S. Aggregate. Prior to 9/20/14 the fund allocation was 100% domestic equities.

Non-Retirement Program Assigned Risk Plan

The Minnesota Workers Compensation Assigned Risk Plan was established in 1983 to provide workers' compensation coverage to Minnesota employers rejected by a private insurance carrier. On June 30, 2019, the market value of the Plan's portfolio was \$287 million.

The Assigned Risk Plan operates as a non-profit, tax-exempt entity and is administered by the Department of Commerce. The Plan provides disability income, medical expenses, retraining expenses and death benefits with payments being made either periodically or in lump sum.

Investment Objectives

The SBI recognizes that the Assigned Risk Plan has limited tolerance for risk due to erratic cash flows, no allowance for surplus, and generally short duration liabilities.

Therefore, the SBI has established two investment objectives for the Plan:

- To minimize mismatch between assets and liabilities.
- To provide sufficient liquidity (cash) for payment of on-going claims and operating expenses.

Performance relative to these objectives is measured against a composite index that reflects the asset allocation of the portfolio.

Asset Allocation

The SBI believes that due to the uncertainty of premium and liability cash flows, the Plan should be invested very conservatively.

The **bond** segment is invested to fund the shorter-term liabilities

(less than 10 years) and the common stock segment is invested to fund the longer-term liabilities. The result is a high fixed income allocation which minimizes the possibility of a future fund deficit. The smaller **stock** exposure provides higher expected returns and hedges some of the inflation risk associated with the future liability stream.

The current long-term asset allocation targets for the Plan are as follows:

Domestic Stocks	20%
Domestic Bonds	80%

The asset allocation may fluctuate in response to changes in the liability stream projected by the Plan's actuary and further analysis by the SBI staff. Figure 52 presents the actual asset mix of the Assigned Risk Plan at the end of fiscal year 2019.

Investment Management

RBC Global Asset Management (U.S.) Inc. (RBC GAM-US) manages the bond segment of the Assigned Risk Plan, and the stock portfolio is currently managed in the Non-Retirement Equity Fund.

Bond Segment

RBC GAM-US uses a fundamental approach in managing the portfolio, with a focus primarily on security selection and secondarily on sector analysis. RBC GAM-US has managed the bond portfolio since July 1991.

Stock Segment

The stock segment is structured to fund the longer-term liabilities of the Plan and is managed by BNY Mellon Asset Management North America Corporation in the Non-Retirement Equity Fund.

Investment Performance

Due to the focus on liability matching, the Assigned Risk Plan's investment portfolio is conservatively structured. While active management is utilized, return enhancement plays a secondary role.

The Assigned Risk Plan is measured against a composite index which is weighted to reflect the asset allocation of the Plan:

- The target for the fixed income component is a custom benchmark which reflects the duration target established for the bond segment (approximately three years).
- The target for the equity component is the S&P 500.

During fiscal year 2019, the **bond** segment outperformed its benchmark by 0.1%. The **stock** segment underperformed its benchmark by 0.1 percentage point.

Non-Retirement Program Assigned Risk Plan

Overall, the Assigned Risk Plan provided a return of 7.4% for fiscal year 2019, which was 0.1 percentage point above the composite index. For the ten year period, the portfolio outperformed by 0.6 percentage point.

Historical performance results are presented in Figure 53.

Fixed Income Manager

RBC Global Asset Management (U.S.) Inc.

RBC GAM-US manages the fixed income portfolio for the Assigned Risk Plan. The main objective for the portfolio is to provide cash for the payment of workers compensation claims on the required dates. Because of the uncertainty of premium and liability cash flows, the fund is invested conservatively and is benchmarked to the Bloomberg Barclays Intermediate Government Index.

Equity Manager

Mellon Investments Corporation.

See page 111 for more detail.

Figure 52. Assigned Risk Plan Asset Mix as of June 30, 2019

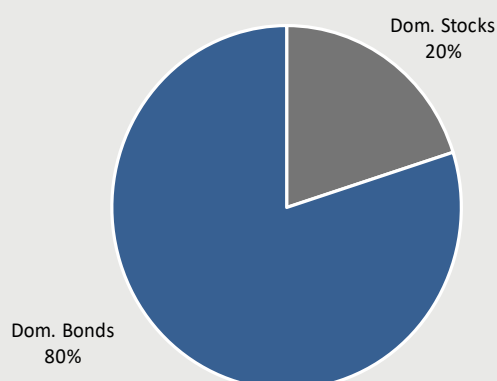
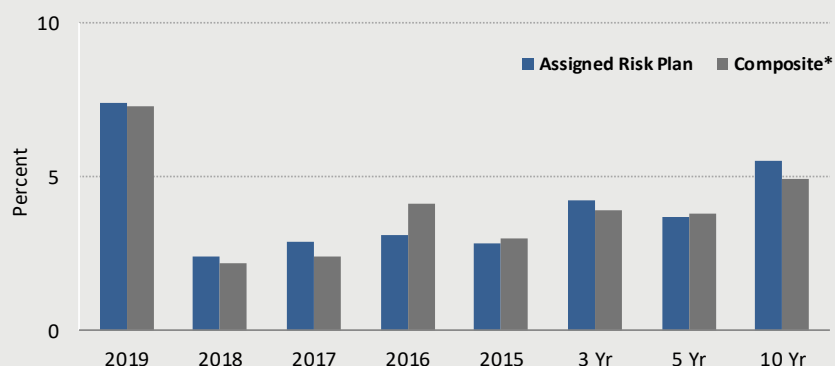


Figure 53. Assigned Risk Plan Performance For Periods Ending June 30, 2019



	2019	2018	2017	2016	2015	Annualized		
	2019	2018	2017	2016	2015	3 Yr.	5 Yr.	10 Yr.
Total Fund	7.4%	2.4%	2.9%	3.1%	2.8%	4.2%	3.7%	5.5%
Composite Index*	7.3	2.2	2.4	4.1	3.0	3.9	3.8	4.9
Stock Segment	10.4	14.3	19.6	-1.1	6.7	14.7	9.8	13.3
S&P 500	10.4	14.4	17.9	4.0	7.4	14.2	10.7	14.7
Bond Segment	6.1	-0.5	-0.9	4.1	1.9	1.5	2.1	3.5
BB U.S. Gov't Intermediate	6.2	-0.7	-1.2	3.9	1.8	1.3	1.9	2.4

* Weighted 20% stocks, 80% bonds.

Non-Retirement Program

Other Postemployment Benefits (OPEB)

Other Postemployment Benefits (OPEB) are the assets set aside by local units of government for the payment of retiree benefits administered by the Public Employees Retirement Association. On June 30, 2019, the total market value of the OPEB accounts was \$662 million.

Under the provisions of *Minnesota Statutes*, § 471.6175, local units of government, including school districts, may choose Public Employees Retirement Association (PERA) to administer their postemployment health benefits. If PERA is chosen by the local unit, assets of that unit's account are invested by the State Board of Investment (SBI).

Duluth is responsible for the asset allocation decisions in this account and as of June 30, 2019, the asset allocation was the following:

	Actual Asset Mix
Dom. Equity	73.6%
Fixed Income	<u>26.4</u>
Total	100.0%

There are three Non-Retirement investment options available to local OPEB trusts: an Equity, Bond, and a Money Market Fund (see pages 111-113). The SBI does not determine the asset allocation policy for these assets.

As of June 30, 2019, there were 23 entities with OPEB investment accounts invested by the SBI. In total, these accounts represented \$662 million. Staff anticipates that the number of these accounts will increase in the future.

Duluth OPEB

The SBI is required to report the returns provided on assets invested by the City of Duluth for this purpose. Duluth made its first investment with the SBI in July 2007. As of June 30, 2019 the market value of the Duluth OPEB Fund was \$65 million and the returns were as follows:

	1 Yr.	3 Yr.	5 Yr.
Dom. Equity	10.4%	14.2%	10.7%
Fixed Income	<u>8.4</u>	<u>2.9</u>	<u>3.4</u>
Total	9.9%	10.9%	8.6%

***CASH MANAGEMENT
AND RELATED PROGRAMS***

Cash Management and Related Programs 125

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Cash Management and Related Programs

The State Board of Investment manages the cash balances of more than 400 state agency accounts with the objectives of preserving capital, meeting state agency liquidity needs, and providing competitive money market returns. On June 30, 2019, the total market value of these accounts was \$14.6 billion.

Invested Treasurer's Cash (ITC)

Most of the cash accounts are invested in a short-term pooled fund referred to as the Invested Treasurer's Cash Pool. It contains the cash balances of special or dedicated accounts necessary for the operation of certain State agencies and non-dedicated cash in the State Treasury.

Approximately \$272.6 million of assets are in separately managed dedicated accounts because of special legal restrictions. The vast majority of these assets are related to state or state agency debt issuance including debt service reserves and proceeds.

Investment Objectives

The investment objectives for investing the state cash accounts are to preserve capital, to meet the state's cash needs without the forced sale of securities at a loss, and to provide a level of current income consistent with the goal of preserving capital.

Asset Allocation

The SBI generates current income while preserving capital by investing all cash accounts in high quality, liquid, short-term investments. These include U.S. Treasury and Agency issues, repurchase agreements, bankers acceptances, commercial paper, short-term corporates, and certificates of deposit. The

composition of the Pool as of June 30, 2019 is shown in Figure 54. At the end of the fiscal year, the Pool had a current 7-day yield of 2.48% and a weighted average maturity of 156 days.

Investment Management

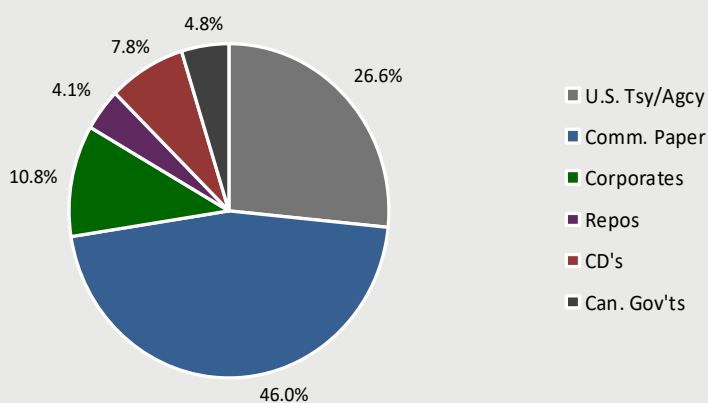
All state cash accounts are managed by SBI investment staff, and most of the assets of the cash accounts are invested in the Invested Treasurer's Cash Pool.

Investment Performance

The SBI measures the performance of the Invested Treasurer's Cash Pool against a benchmark which reflects the maturity structure of the pool.

For fiscal year 2019, the Treasurer's Cash Pool outperformed its benchmark, the iMoneyNet's All Taxable Money Fund Index, by 0.8 percentage point and matched the 3 month T-Bill return. Performance results are shown in Figure 55.

Figure 54. Invested Treasurer's Cash Fund Distribution as of June 30, 2019*



* Totals may not add due to rounding.

Figure 55. Invested Treasurer's Cash Pool Performance for Periods Ending June 30, 2019

	1 Yr.	Annualized		
		3 Yr.	5 Yr.	10 Yr.
Invested Treasurer's Cash Pool*	2.7%	1.6%	1.2%	0.9%
Custom Benchmark**	1.9	1.0	0.6	0.3
3 month T-Bills	2.3	1.4	0.9	0.5

* Actual returns are calculated net of fees.

** The Treasurer's Cash Pool is measured against the iMoneyNet, All Taxable Money Fund Report Average.

Cash Management and Related Programs

Securities Lending Program

The SBI participates in a Securities Lending Program in which securities held by the SBI on behalf of the retirement systems are loaned to banks and security dealers for a daily fee. These loans are fully collateralized. Currently, the SBI's securities lending activity is undertaken by the SBI's master custodian bank, State Street Corporation. State Street generated additional income for the retirement systems of approximately \$33.8 million during fiscal year 2019.

Securities Repurchase Program

The SBI created the Securities Repurchase Program to help meet the increased needs of some banks throughout the state.

Under the program, the SBI temporarily buys securities such as Treasuries and Agencies from banks under a repurchase agreement (repo). At the end of the agreement period, the securities are returned to the selling banks ("repurchased") and the bank pays the SBI principal and interest.

The transactions are fully collateralized and range in size from \$100,000 to \$2 million per institution. For ease of administration, the program uses the same rates, offering dates and maturity dates as the SBI's CD program, and uses only the cash reserves of the retirement funds.

During fiscal year 2019, the SBI did not enter into any repo

transactions with Minnesota financial institutions.

Excess Debt Reserve

The SBI manages excess debt reserve accounts separate from the ITC Pool in order to align with requirements related to the issuance of general obligation bonds.

When the full faith and credit of the state has been pledged for the payment of the state's bonds, the Minnesota Constitution and statutes require the state to have on hand by December 1 of each year an amount sufficient to pay principal and interest on the state's general obligation debt for the next nineteen months. The Internal Revenue Code establishes rules surrounding debt issuance, debt service, and yield management.

The SBI complies with these rules by splitting the nineteen months of funds set aside for debt service into two accounts: a "bona fide debt service account" to comply with federal regulations and an "excess reserve account," to comply with the Minnesota Constitution and statutes.

The primary investments used for the reserve accounts are U.S. Treasuries and municipal bonds.

As of fiscal year end 2019, the SBI had \$100.2 million invested in the Excess Debt Service Reserve.

***LEGISLATIVE UPDATE AND
INVESTMENT RESTRICTIONS***

Legislative Update and Investment Restrictions 129

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2019 Legislative Update

The State Board of Investment (SBI) proposed an amendment to the SBI's Compensation Plan, which includes position categories and compensation ranges for unclassified investment staff. The SBI previously updated the compensation plan in 2010. The proposed amendment was based on salary ranges presented in a study conducted by McLagan (a subsidiary of the SBI's investment consultant, AON). The updated ranges correspond closely to the median salaries of similarly situated public institutional investors. In addition to updated salary ranges, the SBI proposed several new categories of investment positions to better accommodate current and future needs of the organization. The Minnesota Legislature approved the proposed compensation plan and the plan was signed into law.

The 2019 omnibus pension bill contained mostly administrative provisions related to the Minnesota State Retirement System, Public Employees Retirement System, and Teachers Retirement Association. In addition to pension provisions, the bill contained a provision exempting the pension systems and the SBI from Minnesota Statutes, Chapter 16E, which contains, among other things, requirements to utilize the State of Minnesota IT Services for technology needs. The legislature approved the omnibus pension bill and the bill was signed into law.

Sudan Issues

Minnesota Statutes, § 11A.243 concerns the SBI's investment in companies with operations in Sudan. The law requires the SBI to make its best efforts to identify all "scrutinized companies" in which the SBI has direct or indirect stock holdings or could possibly have holdings in the future.

The statute also requires that the SBI communicate with those companies, and divest stocks over a specified period of time if the companies continue their business activities in Sudan.

The SBI receives a list of scrutinized companies from Vigeo Eiris. Staff sends a list of restricted Sudan companies to investment managers quarterly and has required divestment of holdings in compliance with the law. Staff reports to the Board each quarter on its actions to implement the law.

Iran Issues

Minnesota Statutes, § 11A.244, requires the SBI to take a series of steps to identify companies that do business in Iran, communicate with those companies, and divest stock and bonds over a specified period of time if the companies continue their business activities in Iran.

The SBI retains the firm Institutional Shareholder Services, Inc. (ISS) to provide a list of scrutinized companies to implement the law. Staff sends a list of restricted Iran companies to investment managers quarterly and has required divestment of holdings in compliance with the law. Staff reports to the Board each

quarter on its actions to implement the law.

Tobacco Issues

At its September 1998 meeting, the Board adopted a resolution that required each active and semi-passive equity manager to divest by September 2001 shares of any company which obtained more than 15% of its revenues from the manufacture of consumer tobacco products. Staff notified each active and semi-passive equity manager of the policy.

Since 2001, the SBI has continued to regularly update the list of restricted tobacco companies and communicate this restricted stock listing to the active and semi-passive equity managers according to this divestment resolution.

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***PROXY AND
SHAREHOLDER INITIATIVES***

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Proxies

Shareholder Resolutions

In previous years, the SBI co-sponsored a number of shareholder resolutions. The SBI did not co-sponsor any resolutions during the 2019 proxy season.

As a stockholder the State Board of Investment (SBI) is entitled to participate in corporate annual meetings through direct attendance or by casting its votes by proxy. Through proxy voting, the Board directs company representatives to vote its shares in a particular way on resolutions under consideration at annual meetings. These resolutions range from issues involving the election of corporate directors and ratification of auditors to matters such as merger proposals and corporate social responsibility issues. In effect, as a shareholder the SBI can participate in shaping corporate policies and practices.

The Board recognizes its fiduciary responsibility to cast votes on proxy issues. Except for the shares held by the international managers, the SBI does not delegate the duty to its external investment managers. Rather, the SBI actively votes all shares according to guidelines established by its Proxy Committee. The Board delegates proxy voting responsibilities to its Proxy Committee which is comprised of a designee of each Board member. The four member Committee meets only if it has a quorum and casts votes on proxy issues based on a majority vote of those present. In the event that it reaches a tie vote or a quorum is not present,

the Committee will cast a vote to abstain.

Proxy Voting Guidelines

The Proxy Committee has formulated guidelines by which it votes on a wide range of corporate governance, social responsibility and environmental issues. Each year the Proxy Committee reviews existing guidelines and determines which issues it will review on a case-by-case basis.

Corporate Governance Issues

The voting guidelines for major corporate governance issues are summarized below:

Routine Matters

In general, the SBI supports management on routine matters such as uncontested election of directors, selection of auditors, and limits on director and officer liability or increases in director and officer indemnification permitted under the laws of the state of incorporation.

Shareholder Rights

In general, the SBI opposes proposals that would restrict shareholder ability to effect change. Such proposals include instituting super-majority requirements to ratify certain actions or events, creating classified boards, barring shareholders from participating in the determination of the rules governing the board's actions (e.g. quorum requirements and the duties of directors), prohibiting or limiting shareholder action by written consent, and granting certain stockholders superior voting rights over other stockholders.

In general, the SBI supports proposals that preserve or enhance shareholder rights to effect change. Such proposals

include requiring shareholder approval of poison pill plans, repealing classified boards, adopting confidential balloting of proxy votes, and adopting anti-greenmail provisions.

Executive Compensation

In general, the SBI supports efforts to have executive compensation linked to a company's long-term performance and to encourage full disclosure of compensation packages for principal executives. Accordingly, the SBI evaluates compensation packages on a case-by-case basis, including compensation agreements that are contingent upon corporate change in control.

Mergers

In general, the SBI supports friendly takeovers and management buyouts. The SBI evaluates hostile takeovers, contested elections of directors, and re-capitalization plans on a case-by-case basis.

Social Responsibility Issues

The voting guidelines for major social responsibility issues are shown below:

Tobacco and Opioid

In general, the SBI supports a variety of tobacco and opioid related resolutions including those that call for corporations to limit their promotion of those products and to report on the risks faced by the company due to those products.

Human Capital Management

In general, the SBI supports proposals that require a company to report or disclose to shareholders company efforts concerning diversity, sexual harassment and human rights.

Proxy and Shareholder Initiatives

Environmental Protection, Awareness, and Climate Change

The voting guidelines for major environmental issues are shown below:

In general, the SBI supports proposals that require a corporation to report or disclose to shareholders company efforts in the environmental arena, seek to improve a company's environmental practices to protect the world's natural resources, or address climate change. Proposals that request the adoption of various environmental policies are evaluated on a case-by-case basis.

Summary of FY 2019 Proxy Proposals

During fiscal year 2019 the SBI voted proxies for approximately 2,000 U.S. corporations.

In 2019, the Proxy Committee continued its focus on environmental, social, and governance (ESG) related shareholder proposals submitted by other shareholders and voted on by the SBI. The average support for environmental and social issues increased from 24% in 2018 to 27% in 2019. While most shareholder proposals fail, several social proposals in 2019 related to opioids, lobbying, and diversity, received majority support. In terms of governance, the 2019 proxy season was notable for the increase in board directors who failed to receive majority support from shareholders. Company boards continue to be majority male. In 2019, 20% of directors and 5% of board chairs for Russell 3000 companies were women.

On the topic of executive compensation, the overall number of advisory votes that did not receive majority shareholder support decreased slightly from 2018 to 2019. However, the number of advisory votes that had low levels of support (50-75%) increased and a major driver of opposition to re-electing directors was shareholder concern regarding executive compensation. The SBI voted against 70% of proposed executive compensation plans.

In keeping with the trend of the past several years, there was a decline in total number of shareholder proposals submitted to U.S. companies. Part of the decline is attributed to increased investor dialogue with issuers as a means to effect change rather than through a proxy ballot. For example, due to the increase in companies producing climate change related reporting, only one climate proposal asking for a 2-degree scenario analysis went to vote in 2019, down from 21 proposals on the same topic in 2017. In addition, some of the decline could be due to changes in SEC guidance on approving no-action requests that grant a company the ability to exclude a shareholder proposal from its proxy ballot. While the number of environmental and climate related proposals declined, there was a sustained focus on companies to address risks related to sexual harassment and opioids.

Mandate on Northern Ireland

Requirements

The SBI is responsible for implementing certain statutory provisions concerning its

investments in U.S. companies with operations in Northern Ireland. The statute requires the State Board of Investment (SBI) to:

- Annually compile a list of U.S. corporations with operations in Northern Ireland in which the SBI invests.
- Annually determine whether those corporations have taken affirmative action to eliminate religious or ethnic discrimination. The statute lists nine goals modeled after the MacBride Principles.
- Sponsor, co-sponsor and support resolutions that encourage U.S. companies to pursue affirmative action in Northern Ireland, where feasible.

The statute does not require the SBI to divest existing holdings in any companies and does not restrict future investments by the SBI.

Implementation

The SBI uses the services of Institutional Shareholder Services, Inc. (ISS) to monitor corporate activity in Northern Ireland. In June 2019, the SBI held stocks or bonds in 118 of 178 corporations identified by ISS as having operations in Northern Ireland.

Shareholder Resolutions

The SBI did not file any shareholder resolutions for the 2019 proxy season regarding the MacBride Principles. Shareholder activity has been greatly reduced over the last several years as many companies have signed the Principles.

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NOTES TO THE FINANCIAL SCHEDULES

JUNE 30, 2019

Financial Report Background:

The State Board of Investment (SBI) is the investment management vehicle for numerous retirement and non-retirement funds. The funds are separated by legal requirements and grouped into four major investment types: the Retirement Funds, the Non-Retirement Funds, the Assigned Risk Plan, and Other Funds Under Management. The SBI's goal is to maximize returns for each investment type given the appropriate level of risk. For each investment type, the funds are further broken down and reported by the entity responsible for the financial accounting and presentation of the funds. The information provided by the SBI is audited in conjunction with the audit of the reporting entities.

Retirement Funds: The Retirement Funds consist of funds administered by Teachers Retirement Association (TRA), Public Employees Retirement Association (PERA), Minnesota State Retirement System (MSRS), and Local Volunteer Fire Relief Associations. A list of plan participants is provided in a schedule beginning on page 142. Comprehensive Financial Reports are prepared by the respective agencies. These reports can be obtained by contacting TRA at (800) 657-3669, PERA at (800) 652-9026, MSRS at (800) 657-5757.

The Supplemental Investment Fund (SIF) is an investment option within the retirement funds that is available to various groups of participants according to state statute. SBI provides a financial schedule on the SIF as required by statute.

Non-Retirement Funds: The Non-Retirement Funds represent investment vehicles for Trusts and OPEBs. A listing of the Trusts and OPEBs is provided in the participation schedule on page 158. The Comprehensive Financial Reports for the OPEBs are prepared by PERA and are available by calling (800) 652-9026. The Comprehensive Financial Reports for the Trusts are prepared by Minnesota Management and Budget and are available by calling (800) 627-3529.

Assigned Risk Plan: The Assigned Risk Plan is a dedicated governmental fund for which the SBI is the investment vehicle for the assets made available for investment. The Comprehensive Financial Reports can be obtained from Minnesota Management and Budget by calling (800) 627-3529.

Other Funds Under Management: The Other Funds Under Management are the assets the State has made available for investment with SBI. The financial statement presented for the Other Funds represent the investment information at the State Board of Investment. The SBI grouped the financial information for the Other Funds into four major categories: Invested Treasurer's Cash, Debt Service, Housing Finance, and Public Facilities. The detailed financial statements, supporting schedules, and further breakdown of Debt Service, Housing Finance, and Public Facilities can be found in the State's Comprehensive Annual Financial Report available from Minnesota Management and Budget at (800) 627-3529.

SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES:

Financial Reporting: The SBI reporting requirements changed under the legislation passed during the 2012 legislative session. References in *Minnesota Statutes*, Section 11A.07, subdivision 4 and 11A.14, subdivision 14 to fund and participant annual statements prepared in accordance with generally accepted accounting principles were deleted. These requirements were deemed redundant to statements prepared for the State of Minnesota's Comprehensive Financial Statements and those of PERA, MSRS, and TRA retirement systems.

As required by state statute the SBI has prepared schedules for the SIF, a schedule of participation for all pooled investments, and a schedule of external manager fees.

Authorized Investments: *Minnesota Statutes*, Section 11A.24 authorizes investments to obligations and stocks of the U.S. and Canadian governments, their agencies and their registered corporations; short-term obligations of specified high quality; international securities; participation as a limited partner in venture capital, real estate or resource equity investments; and participation in registered mutual funds.

Security Valuation: All securities are valued at fair value except for U.S. Government short-term securities and commercial paper, which are valued at fair value less accrued interest. Accrued short-term interest is recognized as income as part of "Short-Term Gain". For long-term fixed income securities, SBI uses the Financial Times Interactive Data Services valuation system. This service provides prices for both actively traded and privately placed bonds. For equity securities, SBI uses a valuation service provided by Reuters. The basis for determining the fair value of investments that are not based on market quotations may include audited financial statements, analysis of future cash flows, and independent appraisals.

Recognition of Security Transactions: Security transactions are accounted for as of the date the securities are purchased or sold.

Income Recognition: Pool dividend income is recorded on the ex-dividend date. Pool interest and dividend income are accrued monthly. Short-term interest is accrued monthly and is presented as "Accrued Short-Term Gain."

Amortization of Fixed Income Securities: Premiums and discounts on fixed income purchases are amortized over the remaining life of the security using the "Effective Interest Method."

Retirement Fund - Supplemental Investment Accounts
Schedule of Net Positions
As of June 30, 2019
Amounts in (000)'s

	Stable Value Fund	Money Market Fund	Bond Fund	Balanced Fund	U.S. Stock Index Fund
Assets					
Short-Term Investments					
Stable Value Fixed Interest	\$ 1,585,640				
Money Fund		\$ 468,430		\$ 23,037	
Fixed Income Investments					
Bond Pool			\$ 180,736	163,936	
Equity Investments					
Domestic Stock Pool				287,261	\$ 652,531
International Stock Pool					
Net Supplemental Position Assets Held in Trust	\$ 1,585,640	\$ 468,430	\$ 180,736	\$ 474,234	\$ 652,531

Unaudited

Retirement Fund - Supplemental Investment Accounts
Schedule of Net Positions
As of June 30, 2019
Amounts in (000)'s

	U.S. Stock Actively Managed Fund	Broad International Stock Fund	Volunteer Fire Fighter Account	Total Supplemental Investment Fund
Assets				
Short-Term Investments				
Stable Value Fixed Interest				\$ 1,585,640
Money Fund			\$ 5,270	496,737
Fixed Income Investments				
Bond Pool			48,037	392,709
Equity Investments				
Domestic Stock Pool	\$ 277,105		37,767	1,254,664
International Stock Pool		\$ 195,549	16,377	211,926
Net Supplemental Position Assets Held in Trust	\$ 277,105	\$ 195,549	\$ 107,451	\$ 3,941,676

Unaudited

Retirement Fund - Supplemental Investment Accounts
Schedule of Changes in Net Assets
As of June 30, 2019
Amounts in (000)'s

	Stable Value Fund	Money Market Fund	Bond Fund	Balanced Fund	U.S. Stock Index Fund
Investment Income					
Interest, Dividends and Other	\$ 4,569	\$ 12,429	\$ (172)	\$ 85	\$ (764)
Net Increase in Fair Value of Investments	39,974		13,640	37,670	53,964
Total Investment Income (Loss)	\$ 44,543	\$ 12,429	\$ 13,468	\$ 37,755	\$ 53,200
Expenses					
Administrative Expenses	\$ (89)	\$ (25)	\$ (10)	\$ (25)	\$ (36)
Investment Expenses	(3,565)		(171)	(168)	(29)
Total Expenses	\$ (3,654)	\$ (25)	\$ (181)	\$ (193)	\$ (65)
Net Income - Supplemental Investments	\$ 40,889	\$ 12,404	\$ 13,287	\$ 37,562	\$ 53,135
Participant Transactions					
Additions	\$ 70,606	\$ 91,370	\$ 11,859	\$ 28,559	\$ 17,402
Withdrawals	(78,672)	(39,367)	(15,437)	(35,777)	(32,525)
Net Participant Transactions	\$ (8,066)	\$ 52,003	\$ (3,578)	\$ (7,218)	\$ (15,123)
Total Change in Assets	\$ 32,823	\$ 64,407	\$ 9,709	\$ 30,344	\$ 38,012
Net Supplemental Investment Assets Held in Trust					
Beginning of Fiscal Year	1,552,817	404,023	171,027	443,890	614,519
End of Fiscal Year	\$1,585,640	\$ 468,430	\$ 180,736	\$ 474,234	\$ 652,531

Unaudited

Retirement Fund - Supplemental Investment Accounts
Schedule of Changes in Net Assets
As of June 30, 2019
Amounts in (000)'s

	U.S. Stock Actively Managed Fund	Broad International Stock Fund	Volunteer Firefighter Account	Total Supplemental Investment Fund
Investment Income				
Interest, Dividends and Other	\$ 362	\$ 620	\$ 94	\$ 17,223
Net Increase in Fair Value of Investments	22,585	2,004	7,814	177,651
Total Investment Income (Loss)	\$ 22,947	\$ 2,624	\$ 7,908	\$ 194,874
Expenses				
Administrative Expenses	\$ (15)	\$ (11)	\$ (127)	\$ (338)
Investment Expenses	(557)	(389)	(78)	(4,957)
Total Expenses	\$ (572)	\$ (400)	\$ (205)	\$ (5,295)
Net Income - Supplemental Investments	\$ 22,375	\$ 2,224	\$ 7,703	\$ 189,579
Participant Transactions				
Additions	\$ 15,329	\$ 5,405	\$ 16,276	\$ 256,806
Withdrawals	(20,390)	(7,943)	(4,843)	(234,954)
Net Participant Transactions	\$ (5,061)	\$ (2,538)	\$ 11,433	\$ 21,852
Total Change in Assets	\$ 17,314	\$ (314)	\$ 19,136	\$ 211,431
Net Supplemental Investment Assets Held in Trust				
Beginning of Fiscal Year	259,791	195,863	88,315	3,730,245
End of Fiscal Year	\$ 277,105	\$ 195,549	\$ 107,451	\$ 3,941,676

Unaudited

Retirement Plans Participation

As of June 30, 2019

	Stable Value Fund	Money Market Fund	Bond Fund	Alternative Investment Pool
Combined Retirement Funds				
Correctional Employees Retirement Fund		\$ 32,998,485	\$ 240,247,944	\$ 171,818,550
Highway Patrolmen's Retirement Fund		20,574,699	152,626,987	109,154,841
Judges Retirement Fund		6,013,901	43,040,838	30,781,725
Public Employee Corrections		367,165,473	2,797,954,612	2,001,022,790
Public Employee Police & Fire Fund		620,905,208	4,561,066,587	3,261,948,688
Public Employees Retirement Fund		20,469,489	151,523,774	108,364,984
State Employees Retirement Fund		243,774,191	1,798,788,581	1,286,444,239
Teacher's Retirement Fund		735,735,162	4,630,885,626	3,311,887,519
		\$ 2,047,636,608	\$ 14,376,134,949	\$ 10,281,423,336
Fire Relief Funds & Other Plans				
Almelund		\$ 135,832	\$ 74,731	
Amboy			12,074	
Argyle		4,617	32,855	
Arrowhead		1,730	33,893	
Askov		2,913	20,732	
Audubon		21,949	289,157	
Austin		28,592	203,467	
Avon				
Backus				
Bagley		8,328	95,792	
Balsam		12,919	88,788	
Battle Lake		31,132	221,538	
Beardsley		233	55,524	
Beaver Creek			24,148	
Bemidji		179,668	1,473,949	
Bertha		6,781	48,258	
Bigfork		1,250	8,895	
Bird Island		5,272	37,513	
Blackduck				
Blooming Prairie		41,002	91,162	
Bloomington			67,305,993	
Boyd		1,429	10,171	
Brimson		5,935	44,266	
Brooklyn Park		256,099	1,822,431	
Brooten				
Buffalo Fire		17,913	15,364	
Buffalo Lake		9,215	65,571	
Carlton		2,444	60,691	
Ceylon		6,541	46,549	
Chatfield		77,732	87,471	
Cherry		6,109	43,473	
Chisago City		22,671	162,003	
Chokio		12,699	90,367	
Clarissa			42,533	
Clarkfield		10,453	122,698	
Clear Lake		479,660	58,314	
Cloquet (Perch Lake)		3,487	222,024	

Retirement Plans Participation

As of June 30, 2019

	Broad International		
	U.S. Stock	Stock Fund	Total
Combined Retirement Funds			
Correctional Employees Retirement Fund	\$ 491,823,872	\$ 242,701,685	\$ 1,179,590,536
Highway Patrolmen's Retirement Fund	312,450,553	154,185,838	748,992,918
Judges Retirement Fund	88,111,116	43,480,436	211,428,016
Public Employee Corrections	5,727,836,638	2,826,531,384	13,720,510,897
Public Employee Police & Fire Fund	9,337,193,289	4,607,650,585	22,388,764,357
Public Employees Retirement Fund	310,192,029	153,071,316	743,621,592
State Employees Retirement Fund	3,682,392,377	1,817,160,347	8,828,559,735
Teacher's Retirement Fund	9,480,123,996	4,678,183,010	22,836,815,313
	\$ 29,430,123,870	\$ 14,522,964,601	\$ 70,658,283,364
Fire Relief Funds & Other Plans			
Almelund	\$ 388,009		\$ 598,572
Amboy	106,974		119,048
Argyle	173,812		211,284
Arrowhead	112,310		147,933
Askov	99,875		123,520
Audubon	315,712		626,818
Austin	999,222		1,231,281
Avon	105,053		105,053
Backus	29,910		29,910
Bagley	179,769		283,889
Balsam	427,712		529,419
Battle Lake	388,194		640,864
Beardsley	176,577	\$ 42,466	274,800
Beaver Creek	48,392		72,540
Bemidji	1,498,998	553,953	3,706,568
Bertha	223,925		278,964
Bigfork	313,518	21,488	345,151
Bird Island	182,297		225,082
Blackduck	20,198	36,709	56,907
Blooming Prairie	176,229		308,393
Bloomington	71,316,203	23,875,686	162,497,882
Boyd	47,592		59,192
Brimson	79,319	2,363	131,883
Brooklyn Park	10,728,194	318,363	13,125,087
Brooten	405,585		405,585
Buffalo Fire	208,415		241,692
Buffalo Lake	438,046		512,832
Carlton	220,786	27,858	311,779
Ceylon	328,672		381,762
Chatfield	217,961	32,115	415,279
Cherry	305,123		354,705
Chisago City	687,877	232,346	1,104,897
Chokio	158,347	38,099	299,512
Clarissa	88,580		131,113
Clarkfield	178,352		311,503
Clear Lake	286,400		824,374
Cloquet (Perch Lake)	352,991	37,503	616,005

Retirement Plans Participation

As of June 30, 2019

	Stable Value Fund	Money Market Fund	Bond Fund	Alternative Investment Pool
Columbia Heights			\$ 384,267	
Coon Rapids		\$ 111,914	1,977,665	
Courtland		45,907	29,120	
Cyrus			34,270	
Dakota		5,661	93,373	
Dawson		16,733	119,077	
Dayton Fire		59,137	36,390	
Deer Creek		5,521	62,896	
Dover		32,530	97,829	
East Grand Forks		58,242	414,457	
Edgerton		18,984	135,094	
Edina		27,091	2,120,690	
Elbow Lake		11,742	83,555	
Excelsior			1,885,132	
Eyota		112,976	134,335	
Fairmont		72,018	512,490	
Fergus Falls		40,308	1,148,313	
Forest Lake		16,901	120,270	
Franklin				
Ghent			8,800	
Glencoe				
Glenville		3,180	79,059	
Glenwood		12,813	221,498	
Golden Valley		62,398	900,273	
Gonvick		4,160	29,602	
Good Thunder		9,621	68,461	
Goodland		866	6,163	
Grand Meadow		7,448	77,340	
Grey Eagle		13,088	93,135	
Hackensack		18,202	231,762	
Hanover Regular		31,226	484,466	
Hanska		11,293	22,526	
Harmony		3,126	22,248	
Hawley		161		
Hayward		313,316	39,166	
Hector		44,253	314,911	
Herman			38,750	
Hokah		26,470	26,380	
Holdingford		1,086	7,725	
Holland		2,467	67,473	
Jacobson		10,176	21,653	
Kandiyohi		7,261	122,363	
Kelsey			27,837	
Kerkhoven		3,614	79,879	
Kilkenny		8,586	61,097	
La Crescent		12,161	109,415	
La Salle		1,173	8,346	
Lafayette		12,807	96,565	

Minnesota State Board of Investment

Retirement Plans Participation

As of June 30, 2019

	U.S. Stock	Broad International Stock Fund	Total
Columbia Heights	\$ 1,693,609	\$	2,077,876
Coon Rapids	1,395,492		3,485,071
Courtland	51,027		126,054
Cyrus	84,296	\$ 16,487	135,053
Dakota	149,023		248,057
Dawson	284,139		419,949
Dayton Fire	218,336		313,863
Deer Creek	262,935	30,272	361,624
Dover	241,032	50,655	422,046
East Grand Forks	726,239		1,198,938
Edgerton	501,419		655,497
Edina	6,297,586		8,445,367
Elbow Lake	339,557	35,227	470,081
Excelsior	2,971,967	1,566,205	6,423,304
Eyota	121,613		368,924
Fairmont	898,018		1,482,526
Fergus Falls	1,274,481	99,535	2,562,637
Forest Lake	254,823		391,994
Franklin	318,447		318,447
Ghent	45,117	7,201	61,118
Glencoe	377,311		377,311
Glenville	162,631	61,763	306,633
Glenwood	581,591		815,902
Golden Valley	2,561,796	477,083	4,001,550
Gonvick	150,304		184,066
Good Thunder	373,646		451,728
Goodland	55,310		62,339
Grand Meadow	369,552		454,340
Grey Eagle	163,197	45,370	314,790
Hackensack	226,970	155,899	632,833
Hanover Regular	389,363		905,055
Hanska	225,698		259,517
Harmony	145,427	45,373	216,174
Hawley	161,865		162,026
Hayward	218,621	31,326	602,429
Hector	551,808		910,972
Herman	143,820	28,129	210,699
Hokah	53,029		105,879
Holdingford	64,090		72,901
Holland	137,741	95,526	303,207
Jacobson	128,539	40,882	201,250
Kandiyohi	410,106		539,730
Kelsey	47,611	28,545	103,993
Kerkhoven	209,129		292,622
Kilkenny	502,774		572,457
La Crescent	877,842		999,418
La Salle	78,092		87,611
Lafayette	374,706	24,543	508,621

Retirement Plans Participation

As of June 30, 2019

	Stable Value Fund	Money Market Fund	Bond Fund	Alternative Investment Pool
Lake City		\$ 44,419	\$ 327,803	
Lakeville				
Lakewood		350,864		
Leroy		6,238	69,398	
Lewiston		8,774	62,437	
Littlefork		8,519	60,620	
Long Lake		105,852	753,253	
Lonsdale		5,894	41,944	
Lowry				
Lyle		4,051	28,827	
Mable		28,015	29,304	
Madison		6,045	43,005	
Madison Lake		1,577	11,225	
Maple Hill		14,605	151,753	
Mapleton		2,429	38,686	
Mapleview		5,104	89,065	
Marietta		4,851	34,522	
Marine St. Croix		113,864	182,427	
Maynard		7,858	55,916	
McDavitt		4,744	44,015	
McGrath		1,373	22,817	
McIntosh		22,557	17,442	
Medford		2,455	119,944	
Medicine Lake			252,633	
Menahga		10,604	240,912	
Mendota Heights		21,113	755,567	
Milan		4,067	54,959	
Minneota		3,584	55,237	
MSRS - Empower	\$ 1,581,567,952	479,892,196	216,884,595	
Minnetonka		469,301	4,023,291	
Morristown		26,391	187,804	
Morse-Fall Lake		30,278	84,113	
Murdock		1,916	13,632	
Myrtle		62,971	74,194	
Nassau		1,876	69,399	
New Brighton			1,455,367	
New Germany		14,090	100,265	
New Ulm				
New York Mills		8,428	59,975	
Nicollet		19,833	112,379	
Nodine		71,020	37,815	
North Branch		3,378	24,040	
Northfield		1,490,625	841,034	
Northrop		5,426	38,613	
Oronoco		5,857	41,681	
Owatonna		155,894	265,618	
Pequot Lakes		23,033	406,680	
Pine Island		22,165	196,661	

Minnesota State Board of Investment

Retirement Plans Participation

As of June 30, 2019

	U.S. Stock	Broad International Stock Fund	Total
Lake City	\$ 580,661	\$	952,883
Lakeville	6,555,666	\$ 498,462	7,054,128
Lakewood			350,864
Leroy	77,783		153,419
Lewiston	324,093		395,304
Littlefork	397,184		466,323
Long Lake	1,319,899		2,179,004
Lonsdale	445,890	115,965	609,693
Lowry	151,867		151,867
Lyle	158,506	9,841	201,225
Mable	61,620	20,149	139,088
Madison	316,588		365,638
Madison Lake	49,566	17,444	79,812
Maple Hill	182,120		348,478
Mapleton	126,181		167,296
Mapleview	204,860	36,020	335,049
Marietta	233,871		273,244
Marine St. Croix	319,660		615,951
Maynard	97,980		161,754
McDavitt	171,415	14,014	234,188
McGrath	35,541		59,731
McIntosh	189,005		229,004
Medford	445,497	44,019	611,915
Medicine Lake	739,409	308,360	1,300,402
Menahga	132,222		383,738
Mendota Heights	2,009,456	353,491	3,139,627
Milan	198,176		257,202
Minneota	120,502	15,298	194,621
MSRS - Empower	737,939,119	84,572,629	3,100,856,491
Minnetonka	5,851,858	958,322	11,302,772
Morristown	1,093,059		1,307,254
Morse-Fall Lake	363,054		477,445
Murdock	111,889	19,128	146,565
Myrtle	130,008		267,173
Nassau	239,702	50,674	361,651
New Brighton	2,460,059		3,915,426
New Germany	175,691		290,046
New Ulm	577,446		577,446
New York Mills	105,092		173,495
Nicollet	528,816	162,734	823,762
Nodine	188,155	23,243	320,233
North Branch	218,621	31,167	277,206
Northfield	4,052,900	429,141	6,813,700
Northrop	207,132		251,171
Oronoco	268,265		315,803
Owatonna	500,021	224,291	1,145,824
Pequot Lakes	851,876		1,281,589
Pine Island	526,980		745,806

Retirement Plans Participation

As of June 30, 2019

	Stable Value Fund	Money Market Fund	Bond Fund	Alternative Investment Pool
Pipestone		\$ 9,520	\$ 67,742	
Plymouth			3,121,841	
Pera DCP	\$ 4,072,389	3,596,428	15,928,467	
Randolph		22,379	159,251	
Red Lake Falls Regular		6,463	45,994	
Red Lake Falls Special				
Redwood Falls			57,745	
Renville		4,827	80,868	
Robbinsdale		406,042	187,096	
Rose Creek		1,024	7,284	
Roseau				
Rosemount		718,485	371,876	
Roseville			2,862,385	
Ruthton		26,087	18,045	
Saint Clair		13,940	114,162	
Saint Peter		2,688	19,910	
Sandstone		670	4,765	
Savage		126,915	903,139	
Sherburn		23,085	164,274	
Silver Bay		13,934	99,157	
SPTRFA				
Starbuck		5,052	35,951	
Stewart		7,942	56,515	
Sturgeon Lake			9,803	
Tofte		6,438	45,814	
Truman		2,322	61,960	
Two Harbors		10,301	220,953	
Tyler		13,839	98,476	
Verndale				
Viking Fire		3,346	13,831	
Warroad Area		33,743	240,117	
Watkins Fire		17,920	80,712	
Williams		85,521	56,531	
Willow River			8,928	
Woodbury		511,462	4,949,947	
Woodstock		3,281	25,009	
Wykoff		6,787	48,296	
Wyoming		19,800	285,500	
Zumbro Falls		21,425	90,702	
	\$ 1,585,640,341	\$ 491,467,022	\$ 344,672,424	
PERA Voluntary Share				
Aitkin Fire		\$ 60,197	\$ 548,728	
Alaska		8,360	76,201	
Albert Lea		18,477	168,425	
Alborn		9,604	87,543	
Alden		12,378	112,830	
Ashby		25,782	235,017	
Aurora		13,780	125,613	

Minnesota State Board of Investment

Retirement Plans Participation

As of June 30, 2019

	Broad International		
	U.S. Stock	Stock Fund	Total
Pipestone	\$ 360,330		\$ 437,592
Plymouth			3,121,841
Pera DCP	46,063,734	\$ 3,357,201	73,018,219
Randolph	754,956	78,680	1,015,266
Red Lake Falls Regular	91,797		144,254
Red Lake Falls Special		9,237	9,237
Redwood Falls			57,745
Renville	226,305		312,000
Robbinsdale	1,395,995	127,934	2,117,067
Rose Creek	60,555	5,192	74,055
Roseau	2,861		2,861
Rosemount	1,726,863		2,817,224
Roseville	8,774,386	623,220	12,259,991
Ruthton	152,541		196,673
Saint Clair	972,018		1,100,120
Saint Peter	549,192	132,046	703,836
Sandstone	8,350		13,785
Savage	1,582,538		2,612,592
Sherburn	366,732		554,091
Silver Bay	586,036	29,122	728,249
SPTRFA	250,955,475	72,870,932	323,826,407
Starbuck	293,767	11,175	345,945
Stewart	196,634		261,091
Sturgeon Lake	102,661		112,464
Tofte	251,809		304,061
Truman	262,512		326,794
Two Harbors	390,409	89,882	711,545
Tyler	172,557		284,872
Verndale	49,542		49,542
Viking Fire	54,999	6,394	78,570
Warroad Area	420,749		694,609
Watkins Fire	420,303	84,569	603,504
Williams	190,707		332,759
Willow River	173,539		182,467
Woodbury	6,491,228	2,129,258	14,081,895
Woodstock	187,390		215,680
Wykoff	84,627		139,710
Wyoming	274,661		579,961
Zumbro Falls	326,326	30,807	469,260
	\$ 1,216,896,899	\$ 195,549,011	\$ 3,834,225,697
PERA Voluntary Share			
Aitkin Fire	\$ 431,412	\$ 187,073	\$ 1,227,410
Alaska	59,910	25,979	170,450
Albert Lea	132,416	57,419	376,737
Alborn	68,826	29,845	195,818
Alden	88,707	38,466	252,381
Ashby	184,771	80,122	525,692
Aurora	98,758	42,824	280,975

Minnesota State Board of Investment

Retirement Plans Participation
As of June 30, 2019

	Stable Value Fund	Money Market Fund	Bond Fund	Alternative Investment Pool
Barnum	\$	19,971	\$	182,046
Barrett		9,910		90,331
Belview		12,773		116,429
Benson		24,583		224,086
Biwabik Fire		15,165		138,232
Biwabik Township		12,642		115,235
Blomkest		12,326		112,353
Brandon		17,827		162,504
Breitung		18,969		172,909
Brevator		11,250		102,550
Bricelyn		23,044		210,052
Brook Park		13,527		123,307
Browerville		16,544		150,803
Brownsville		13,850		126,250
Buyck		6,328		57,679
Cambridge Fire		47,731		435,089
Canby		32,907		299,961
Canton		3,550		32,359
Carsonville		13,404		122,182
Center City		22,286		203,145
Central Lakes		3,288		29,976
Clarks Grove		9,888		90,138
Clifton		27,169		247,656
Colvill		8,099		73,830
Colvin		5,148		46,923
Cosmos		17,483		159,365
Cottage Grove		152,399		1,389,184
Cotton		16,001		145,853
Cottonwood		25,739		234,627
Crane Lake		9,495		86,555
Crookston		42,966		391,654
Culver		5,808		52,942
Dalbo Fire Department		22,633		206,312
De Graff		3,487		31,786
Delavan		11,317		103,162
Dent		17,908		163,243
Eagle's Nest		2,137		19,479
Echo Fire		15,839		144,377
Elbow Tulaby		7,657		69,796
Ellsburg		6,763		61,644
Elmore		15,652		142,676
Ely		27,458		250,297
Embarrass		14,377		131,050
Emmons		23,283		212,238
Evergreen		2,419		22,052
Fairfax		22,195		202,315
Federal Dam		8,170		74,476
Forada		30,228		275,543

Minnesota State Board of Investment

Retirement Plans Participation

As of June 30, 2019

	Broad International		
	U.S. Stock	Stock Fund	Total
Barnum	\$ 143,125	\$ 62,063	\$ 407,205
Barrett	71,019	30,796	202,056
Belview	91,537	39,693	260,432
Benson	176,177	76,396	501,242
Biwabik Fire	108,678	47,126	309,201
Biwabik Township	90,598	39,286	257,761
Blomkest	88,333	38,303	251,315
Brandon	127,762	55,401	363,494
Breitung	135,942	58,948	386,768
Brevator	80,625	34,961	229,386
Bricelyn	165,144	71,611	469,851
Brook Park	96,945	42,038	275,817
Browerville	118,562	51,412	337,321
Brownsville	99,258	43,041	282,399
Buyck	45,347	19,664	129,018
Cambridge Fire	342,069	148,331	973,220
Canby	235,831	102,263	670,962
Canton	25,440	11,032	72,381
Carsonville	96,060	41,654	273,300
Center City	159,713	69,256	454,400
Central Lakes	23,567	10,219	67,050
Clarks Grove	70,867	30,730	201,623
Clifton	194,708	84,431	553,964
Colvill	58,045	25,170	165,144
Colvin	36,891	15,997	104,959
Cosmos	125,293	54,331	356,472
Cottage Grove	1,092,182	473,601	3,107,366
Cotton	114,670	49,724	326,248
Cottonwood	184,465	79,989	524,820
Crane Lake	68,050	29,508	193,608
Crookston	307,920	133,523	876,063
Culver	41,623	18,049	118,422
Dalbo Fire Department	162,204	70,336	461,485
De Graff	24,990	10,837	71,100
Delavan	81,106	35,170	230,755
Dent	128,342	55,653	365,146
Eagle's Nest	15,315	6,641	43,572
Echo Fire	113,510	49,221	322,947
Elbow Tulaby	54,874	23,795	156,122
Ellsburg	48,465	21,016	137,888
Elmore	112,173	48,641	319,142
Ely	196,784	85,331	559,870
Embarrass	103,032	44,678	293,137
Emmons	166,862	72,356	474,739
Evergreen	17,337	7,518	49,326
Fairfax	159,061	68,973	452,544
Federal Dam	58,553	25,390	166,589
Forada	216,633	93,938	616,342

Minnesota State Board of Investment

Retirement Plans Participation
As of June 30, 2019

	Stable Value Fund	Money Market Fund	Bond Fund	Alternative Investment Pool
Fredenberg		\$ 14,884	\$ 135,676	
French		8,386	76,443	
Frost		11,449	104,363	
Geneva		13,300	121,238	
Gilbert		12,842	117,058	
Gnesen		16,816	153,287	
Goodview Fire		23,257	211,999	
Grand Lake		26,373	240,399	
Grand Marais		24,466	223,022	
Granite Falls		30,554	278,516	
Greenwood		34,626	315,634	
Hamburg		20,441	186,327	
Hardwick		10,078	91,868	
Hayfield		29,932	272,847	
Henning		22,069	201,172	
Hermantown		85,157	776,249	
Hewitt		8,187	74,627	
Hill City		13,373	121,900	
Hills		12,963	118,164	
Hitterdal		14,143	128,922	
Hollandale		6,871	62,632	
Houston		27,927	254,564	
Hovland Fire Department		10,887	99,240	
Hoyt Lakes		17,161	156,428	
Industrial Township		21,307	194,221	
International Falls		42,208	384,747	
Isanti		131,278	1,196,659	
Kabetogama		12,998	118,485	
Kelliher		12,449	113,478	
Kettle River		6,922	63,096	
Kiester		10,231	93,263	
Lake Bronson		11,632	106,034	
Lakeland		20,834	189,910	
Lancaster		8,632	78,687	
Leaf Valley		15,296	139,430	
Lester Prairie		23,841	217,320	
LeSueur		64,913	591,712	
Lexington		33,708	307,259	
Lino Lakes Fire		21,291	194,077	
Linwood		46,617	424,939	
Lutsen		14,489	132,077	
Lynd		5,492	50,062	
Mahtomedi		89,406	814,981	
Mahtowa		13,925	126,933	
Manchester		11,131	101,467	
Mayer		40,236	366,769	
McGregor		45,294	412,874	
McKinley		6,746	61,491	

Minnesota State Board of Investment

Retirement Plans Participation

As of June 30, 2019

	U.S. Stock		Broad International		Total
	\$		\$		
Fredenberg		106,669		46,255	303,484
French		60,099		26,061	170,989
Frost		82,051		35,579	233,442
Geneva		95,318		41,333	271,189
Gilbert		92,031		39,907	261,838
Gnesen		120,515		52,259	342,877
Goodview Fire		166,675		72,275	474,206
Grand Lake		189,003		81,957	537,732
Grand Marais		175,341		76,033	498,862
Granite Falls		218,971		94,952	622,993
Greenwood		248,153		107,606	706,019
Hamburg		146,491		63,523	416,782
Hardwick		72,227		31,320	205,493
Hayfield		214,513		93,019	610,311
Henning		158,162		68,584	449,987
Hermantown		610,290		264,639	1,736,335
Hewitt		58,672		25,442	166,928
Hill City		95,838		41,558	272,669
Hills		92,901		40,285	264,313
Hitterdal		101,359		43,952	288,376
Hollandale		49,242		21,353	140,098
Houston		200,139		86,786	569,416
Hovland Fire Department		78,023		33,833	221,983
Hoyt Lakes		122,984		53,330	349,903
Industrial Township		152,697		66,214	434,439
International Falls		302,489		131,168	860,612
Isanti		940,819		407,966	2,676,722
Kabetogama		93,153		40,394	265,030
Kelliher		89,217		38,687	253,831
Kettle River		49,606		21,511	141,135
Kiester		73,323		31,795	208,612
Lake Bronson		83,364		36,149	237,179
Lakeland		149,308		64,744	424,796
Lancaster		61,864		26,826	176,009
Leaf Valley		109,621		47,535	311,882
Lester Prairie		170,858		74,089	486,108
LeSueur		465,207		201,727	1,323,559
Lexington		241,569		104,751	687,287
Lino Lakes Fire		152,584		66,165	434,117
Linwood		334,089		144,870	950,515
Lutsen		103,839		45,028	295,433
Lynd		39,359		17,067	111,980
Mahtomedi		640,741		277,843	1,822,971
Mahtowa		99,795		43,274	283,927
Manchester		79,774		34,592	226,964
Mayer		288,355		125,039	820,399
McGregor		324,603		140,757	923,528
McKinley		48,344		20,963	137,544

Retirement Plans Participation

As of June 30, 2019

	Stable Value Fund	Money Market Fund	Bond Fund	Alternative Investment Pool
Melrose		\$ 30,663	\$ 279,510	
Middle River		10,086	91,934	
Milaca		35,468	323,306	
Miltona		13,374	121,911	
Minnesota City		401	3,653	
Montrose		51,895	473,042	
Mountain Iron		19,567	178,361	
NE Sherburne		32,636	297,491	
Newfolden		9,979	90,959	
Normanna		4,992	45,506	
North Star		5,633	51,352	
Northhome		5,962	54,344	
Northland Fire		4,888	44,555	
Norwood-Young America		34,195	311,705	
Oak Grove		85,679	781,006	
Oakdale		166,581	1,518,462	
Ogilvie		16,282	148,422	
Omega		297	2,711	
Osakis		48,413	441,309	
Ottertail		29,763	271,299	
Palisade		13,446	122,563	
Palo		18,279	166,621	
Parkers Prairie		22,749	207,369	
Pennock		21,128	192,593	
Pequaywan Lake		6,019	54,867	
Pickwick Fire		1,283	11,698	
Pike Sandy Britt		19,658	179,192	
Plato Fire		19,380	176,658	
Porter		32,532	296,546	
Princeton		75,067	684,273	
Raymond		20,161	183,779	
Rice Lake		24,519	223,506	
Russell		10,757	98,053	
Sabin Elmwood Fire		19,548	178,185	
Sacred Heart		8,880	80,947	
Saint Francis		40,755	371,498	
Saint Leo Fire		11,594	105,688	
Saint Paul Park		41,967	382,548	
Scandia		33,144	302,120	
Scandia Valley		21,528	196,237	
Schroeder		10,820	98,626	
Shafer		14,624	133,306	
Shevlin		17,526	159,760	
Silver Lake		16,873	153,808	
Solway (Main)		7,913	72,128	
Solway(Cloquet)		15,155	138,146	
Spring Grove		12,519	114,118	
Spring Lake Park		858,869	7,828,984	

Minnesota State Board of Investment

Retirement Plans Participation

As of June 30, 2019

	Broad International		
	U.S. Stock	Stock Fund	Total
Melrose	\$ 219,752	\$ 95,291	\$ 625,216
Middle River	72,279	31,342	205,641
Milaca	254,185	110,222	723,181
Miltona	95,847	41,562	272,694
Minnesota City	2,872	1,246	8,172
Montrose	371,908	161,270	1,058,115
Mountain Iron	140,228	60,807	398,963
NE Sherburne	233,889	101,421	665,437
Newfolden	71,513	31,010	203,461
Normanna	35,777	15,514	101,789
North Star	40,373	17,507	114,865
Northhome	42,726	18,527	121,559
Northland Fire	35,029	15,190	99,662
Norwood-Young America	245,064	106,267	697,231
Oak Grove	614,030	266,261	1,746,976
Oakdale	1,193,821	517,675	3,396,539
Ogilvie	116,690	50,600	331,994
Omega	2,131	924	6,063
Osakis	346,959	150,451	987,132
Ottertail	213,297	92,491	606,850
Palisade	96,360	41,784	274,153
Palo	130,998	56,805	372,703
Parkers Prairie	163,034	70,696	463,848
Pennock	151,417	65,659	430,797
Pequaywan Lake	43,137	18,705	122,728
Pickwick Fire	9,197	3,988	26,166
Pike Sandy Britt	140,881	61,090	400,821
Plato Fire	138,890	60,226	395,154
Porter	233,146	101,099	663,323
Princeton	537,978	233,283	1,530,601
Raymond	144,488	62,654	411,082
Rice Lake	175,721	76,198	499,944
Russell	77,089	33,428	219,327
Sabin Elmwood Fire	140,090	60,747	398,570
Sacred Heart	63,641	27,596	181,064
Saint Francis	292,073	126,651	830,977
Saint Leo Fire	83,093	36,031	236,406
Saint Paul Park	300,761	130,418	855,694
Scandia	237,528	102,999	675,791
Scandia Valley	154,282	66,901	438,948
Schroeder	77,540	33,624	220,610
Shafer	104,806	45,447	298,183
Shevlin	125,604	54,465	357,355
Silver Lake	120,924	52,436	344,041
Solway (Main)	56,708	24,590	161,339
Solway(Cloquet)	108,611	47,097	309,009
Spring Grove	89,720	38,905	255,262
Spring Lake Park	6,155,180	2,669,060	17,512,093

Minnesota State Board of Investment

Retirement Plans Participation
As of June 30, 2019

	Stable Value Fund	Money Market Fund	Bond Fund	Alternative Investment Pool
Stephen		\$ 17,710	\$ 161,438	
Sunburg		12,835	116,996	
Tower		12,044	109,789	
Twin Valley		16,282	148,418	
Ulen		15,215	138,696	
Vadnais Heights		76,678	698,958	
Vermilion Lake		13,403	122,173	
Vesta		8,241	75,119	
Victoria		63,749	581,100	
Vining		7,028	64,061	
Waconia		71,640	653,029	
Waite Park		42,998	391,943	
Warba - Feeley - Sago		12,670	115,491	
Watertown		64,269	585,843	
Wells		26,940	245,572	
White Bear Lake		338,471	3,085,317	
Willmar		76,105	693,728	
Winnebago		28,865	263,117	
Winthrop		31,337	285,648	
Wolf Lake		13,429	122,414	
Wood Lake		10,731	97,815	
Wrenshall		15,422	140,578	
Wright		11,153	101,661	
	\$	5,269,851	\$ 48,037,113	\$ -
Total Plan Participation	\$ 1,585,640,341	\$ 2,544,373,481	\$ 14,768,844,486	\$ 10,281,423,336

Retirement Plans Participation

As of June 30, 2019

	Broad International		
	U.S. Stock	Stock Fund	Total
Stephen	\$ 126,923	\$ 55,037	\$ 361,108
Sunburg	91,982	39,886	261,699
Tower	86,317	37,429	245,579
Twin Valley	116,687	50,599	331,986
Ulen	109,043	47,284	310,238
Vadnais Heights	549,524	238,289	1,563,449
Vermilion Lake	96,053	41,651	273,280
Vesta	59,059	25,610	168,029
Victoria	456,863	198,109	1,299,821
Vining	50,365	21,840	143,294
Waconia	513,414	222,631	1,460,714
Waite Park	308,148	133,621	876,710
Warba - Feeley - Sago	90,800	39,373	258,334
Watertown	460,593	199,726	1,310,431
Wells	193,070	83,721	549,303
White Bear Lake	2,425,690	1,051,848	6,901,326
Willmar	545,412	236,506	1,551,751
Winnebago	206,864	89,702	588,548
Winthrop	224,578	97,383	638,946
Wolf Lake	96,242	41,733	273,818
Wood Lake	76,903	33,347	218,796
Wrenshall	110,523	47,926	314,449
Wright	79,926	34,658	227,398
	\$ 37,766,978	\$ 16,376,833	\$ 107,450,775
Total Plan Participation	\$ 30,684,787,747	\$ 14,734,890,445	\$ 74,599,959,836

Non Retirement Funds Participation Schedule
As of June 30, 2019
Amounts In (000)'s

	Non Retirement Cash Pool	Non Retirement Bond Pool	Non Retirement Equity Pool	Total Non- Retirement
Permanent School	\$ 28,820	\$ 722,801	\$ 760,953	\$ 1,512,574
Environmental Trust	\$ 23,754	\$ 340,608	\$ 851,009	\$ 1,215,371
Other Trusts:				
Assigned Risk (1)			\$ 56,977	\$56,977
City of Woodbury			3,435	\$3,435
Closed Landfill		\$ 28,730	68,059	\$96,789
Duluth Community Investment Trust		6,344	18,873	\$25,217
Emergency Med SVC	\$ 81	583	1,015	\$1,679
Ethel Currey		621	1,023	\$1,644
Iron Range Resources		57,905	99,033	\$156,938
Life Time Fish & Wild Life	584	8,636	21,849	\$31,069
Metro Landfill Contingency Action		3,249	7,692	\$10,941
Mittigation Easement Stewardship		27	63	\$90
Natural Resources Conservation		450	1,066	\$1,516
Saint Louis County Environmental		8,621	12,090	\$20,711
Water & Soil Conservation Easement		121	286	\$407
Winona State		1,793	2,762	\$4,555
	\$665	\$117,080	\$294,223	\$411,968
PERA OPEB:				
Anoka County (Irrevocable)			\$ 71,717	\$ 71,717
Carver County		\$ 1,757	6,708	8,465
City of Eagan			18,043	18,043
City of Virginia			1,782	1,782
Crosby-Ironton ISD#182	\$ 85	2	3,491	3,578
Duluth		17,177	47,822	64,999
Fillmore Central Schools #2198	359			359
Foley ISD#51		1,032	1,411	2,443
Hastings ISD#200	3,144			3,144
Kingsland ISD#2137			272	272
Mendota Hgts Eg WSP#197	70	7,050		7,120
Metro Mosquito Control District		173	3,408	3,581
Metropolitan Council	20,964	65,936	187,771	274,671
Mounds View ISD#621	4,115	7,248	12,562	23,925
Mt. Iron-Buhl District #712		2,183		2,183
Ogilvie ISD#333	161			161
Ramsey County	7,051	16,680	57,262	80,993
Roseville District#623		9,453		9,453
Saint Paul Port Authority	\$152	\$424	58	\$634
Scott County		11,313	8,796	20,109
Staples Motley #2170	27	540	197	764
Washington County		11,949	51,660	63,609
Yellow Medicine ISD#2190	462			462
	\$ 36,590	\$ 152,917	\$ 472,960	\$ 662,467
Total Pool Participation	\$ 89,829	\$ 1,333,406	\$ 2,379,145	\$ 3,802,380

(1)The Assigned Risk Plan excludes \$254,870 invested with an external fixed income manager.

Unaudited

Manager Fees

Total Payments for Fiscal Year 2019

Domestic Equity Active Managers	
ArrowMark Colorado Holdings, LLC	\$ 1,937,852
Barrow, Hanley, Mewhinney & Strauss, LLC	728,004
Earnest Partners, LLC	516,565
Goldman Sachs Asset Management, L.P.	2,234,292
Hood River Capital Management, LLC	1,892,381
Hotchkis and Wiley Capital Management, LLC	1,960,847
LSV Asset Management	1,008,287
Martingale Asset Management, L.P.	1,639,851
Peregrine Capital Management	1,990,194
Rice Hall James & Associates, LLC	1,597,900
Sands Capital Management, LLC	1,292,899
Wellington Management Company LLP	1,502,683
Winslow Capital Management, LLC	811,050
Zevenbergen Capital Investments LLC	1,451,172
Domestic Equity Semi-Passive Managers	
BlackRock Institutional Trust Company, N.A.	1,073,367
J.P. Morgan Investment Management Inc.	1,490,933
Domestic Equity Passive Managers	
BlackRock Institutional Trust Company, N.A. (Passive R3000)	170,558
BlackRock Institutional Trust Company, N.A. (Passive R2000)	18,516
BlackRock Institutional Trust Company, N.A. (Passive R1000)	897,982
Fixed Income Active Managers	
Columbia Threadneedle Investments	1,112,962
Dodge & Cox	1,494,303
Pacific Investment Management Company LLC (PIMCO)	2,340,224
Western Asset Management Company	1,365,872
Fixed Income Semi-Passive Managers	
BlackRock Financial Management, Inc.	854,637
Goldman Sachs Asset Management	1,121,516
Neuberger Berman Investment Advisers LLC	522,960
Treasury Managers	
BlackRock Financial Management, Inc.	961,728
Goldman Sachs Asset Management	1,006,498
Neuberger Berman Investment Advisers LLC	910,479

Manager Fees

Total Payments for Fiscal Year 2019

International Active Developed Markets Managers		
Acadian Asset Management LLC	\$	1,552,576
Columbia Threadneedle Investments		1,091,481
Fidelity Institutional Asset Management LLC		1,298,959
J.P. Morgan Investment Management Inc.		1,000,930
Marathon Asset Management LLP		1,761,527
McKinley Capital Management, LLC		1,078,761
International Semi Passive Developed Markets Manager		
AQR Capital Management, LLC		1,615,219
International Passive Developed Markets Manager		
State Street Global Advisors		696,794
International Active Emerging Markets Managers		
Earnest Partners LLC		1,895,688
Macquarie Investment Management Advisers		1,673,683
Martin Currie Inc.		1,738,531
Morgan Stanley Investment Management Inc.		4,017,555
Neuberger Berman Investment Advisers LLC		2,287,292
Pzena Investment Management, LLC		2,195,091
The Rock Creek Group, LP		2,036,343
International Passive Emerging Markets Manager		
State Street Global Advisors		495,696
Stable Value Manager		
Galliard Capital Management, Inc. ⁽¹⁾		3,564,753
Assigned Risk Plan Manager		
RBC Global Asset Management (U.S.) Inc.		224,206
Non-Retirement Managers		
BNY Mellon Asset Management North America Corporation		94,075
Prudential Global Investment Management, Inc. (PGIM)		1,176,049
State Street Global Advisors		25,100

⁽¹⁾ Includes Investment Contract fees of \$2,720,065 charged by wrap providers.

Trading Data
Commissions and Trading Volume
By Broker for Fiscal Year 2019

	Stock \$ Volume	Stock \$ Commission	Bond \$ Volume	Bond \$ Commission	Short Term \$ Volume
ABEL NOSER CORP	\$ 7,765,908	\$ 2,468	\$ -	\$ -	\$ -
ALLEN & CO	\$ 14,456,196	\$ 3,145	\$ -	\$ -	\$ -
BANK OF NEW YORK	\$ 21,847,385	\$ -	\$ 59,282,530	\$ -	\$ -
BANK OF NOVA SCOTIA - SCUSA	\$ 4,475,779	\$ 5,511	\$ -	\$ -	\$ -
BARCLAYS BANK	\$ 862,248	\$ 248	\$ 7,712,475	\$ -	\$ -
BARCLAYS BANK OF NEW YORK	\$ -	\$ -	\$ -	\$ -	\$ 16,834,418,000
BARCLAYS CAPITAL	\$ 423,356,383	\$ 417,743	\$ 2,730,723,227	\$ -	\$ 1,024,697,143
BB&T SECURITIES	\$ -	\$ -	\$ 6,603,936	\$ -	\$ -
BMO CAPITAL MARKETS	\$ 119,396,085	\$ 31,837	\$ 323,016,785	\$ -	\$ -
BNP PARIBAS	\$ 68,078,610	\$ 56,142	\$ 1,070,705,079	\$ -	\$ 22,652,733,875
BNY	\$ 4,997,559	\$ 2,864	\$ 22,460,918	\$ -	\$ 362,500,000
BOFA SECURITIES	\$ 1,965,811,944	\$ 271,713	\$ 9,078,116,267	\$ 128,503	\$ 20,053,597,208
BONY	\$ -	\$ -	\$ 525,414,647	\$ -	\$ 239,603,152
BOSC INC	\$ -	\$ -	\$ 760,478	\$ -	\$ -
BTG PACTUAL	\$ 2,753,659	\$ 3,833	\$ -	\$ -	\$ -
BTIG	\$ 26,755,919	\$ 25,491	\$ -	\$ -	\$ -
BUCKINGHAM RESEARCH	\$ 4,653,119	\$ 3,241	\$ -	\$ -	\$ -
CANACCORD	\$ 14,331,458	\$ 7,470	\$ -	\$ -	\$ -
CANTOR FITZGERALD	\$ 58,286,669	\$ 34,628	\$ 80,335,541	\$ -	\$ -
CIMB SECURITIES	\$ 6,519,087	\$ 9,033	\$ -	\$ -	\$ -
CITADEL	\$ -	\$ -	\$ 710,785,406	\$ -	\$ -
CITIBANK	\$ 856,937,786	\$ 246,470	\$ 646,550	\$ -	\$ 123,473,164
CITIGROUP	\$ 1,452,868,408	\$ 308,449	\$ 7,145,095,979	\$ 1,703	\$ 25,443,538,195
CLSA	\$ 88,980,579	\$ 46,922	\$ -	\$ -	\$ -
COWEN	\$ 606,866,981	\$ 337,311	\$ -	\$ -	\$ -
CREDIT LYONNAIS	\$ 81,710,407	\$ 55,762	\$ -	\$ -	\$ -
CREDIT SUISSE	\$ 691,842,342	\$ 202,843	\$ 10,095,954,894	\$ -	\$ 37,292,410
CSFB	\$ 4,912,763	\$ 7,164	\$ -	\$ -	\$ -
DAIWA	\$ 17,763,431	\$ 11,173	\$ 92,934,744	\$ -	\$ 46,391,114
DEUTSCHE BANK	\$ 569,783,454	\$ 129,430	\$ 1,570,627,537	\$ -	\$ 38,434,939
DEUTSCHE MORGAN GRENFELL	\$ 1,688,514	\$ 1,931	\$ -	\$ -	\$ 10,767,619,000
DEUTSCHE SECURITIES	\$ 12,209,644	\$ 12,898	\$ -	\$ -	\$ -
FIDELITY	\$ 202,904,847	\$ 26,164	\$ -	\$ -	\$ -
GOLDMAN SACHS	\$ 681,746,438	\$ 521,605	\$ 3,586,932,317	\$ 557,037	\$ 388,839,321
GUGGENHEIM CAPITAL	\$ 2,791,352	\$ 2,909	\$ -	\$ -	\$ -
HILLTOP SECURITIES	\$ 4,424,256	\$ 8,256	\$ 15,228,039	\$ -	\$ -
HSBC	\$ 112,547,601	\$ 96,153	\$ 919,021,208	\$ -	\$ 31,390,866,000
INSTINET	\$ 665,074,599	\$ 206,108	\$ -	\$ -	\$ -
INVESTEC	\$ 449,804	\$ 465	\$ -	\$ -	\$ -
INVESTMENT TECHNOLOGY GROUP	\$ 91,185,241	\$ 43,323	\$ -	\$ -	\$ -
ITG	\$ 100,399,882	\$ 27,282	\$ -	\$ -	\$ -

Minnesota State Board of Investment

Trading Data
Commissions and Trading Volume
By Broker for Fiscal Year 2019

	Stock \$ Volume	Stock \$ Commission	Bond \$ Volume	Bond \$ Commission	Short Term \$ Volume
J.P. MORGAN CHASE BANK	\$ 3,974,202	\$ -	\$ 365,119,899	\$ 1,326	\$ 698,426,858
J.P.MORGAN	\$ 802,338,477	\$ 450,472	\$ 7,853,740,217	\$ 67,406	\$ 39,241,865,952
JEFFERIES	\$ 382,570,475	\$ 185,360	\$ 545,148,735	\$ -	\$ 202,576,347
JMP SECURI	\$ 23,967,394	\$ 20,580	\$ -	\$ -	\$ -
JONESTRADING INSTITUTIONAL SERVICES LLC	\$ 43,275,170	\$ 28,761	\$ -	\$ -	\$ -
LIQUIDNET	\$ 235,606,332	\$ 141,262	\$ -	\$ -	\$ -
LOOP CAPITAL MARKETS	\$ 94,432,597	\$ 15,735	\$ 149,149,748	\$ -	\$ -
LUMINEX	\$ 10,861,168	\$ 2,967	\$ -	\$ -	\$ -
MACQUARIE	\$ 217,172,349	\$ 173,539	\$ -	\$ -	\$ -
MERRILL LYNCH	\$ 557,153,908	\$ 337,830	\$ 2,409,666	\$ 47	\$ 289,859,000
MIRAE ASSET	\$ 22,007,779	\$ 38,225	\$ -	\$ -	\$ -
MITSUBISHI UFJ SECURITIES	\$ 3,229,932	\$ 1,300	\$ 96,347,635	\$ -	\$ -
MIZUHO	\$ 24,793,785	\$ 22,831	\$ 466,293,222	\$ 240	\$ 50,500,000
MORGAN STANLEY	\$ 698,038,137	\$ 193,476	\$ 6,896,891,000	\$ -	\$ 4,554,702,524
NATIONAL FINANCIAL SERVICES	\$ 146,419,249	\$ 54,476	\$ 200,648,837	\$ -	\$ 90,000,000
NOMURA	\$ 8,077,493	\$ 3,513	\$ 2,269,050,736	\$ -	\$ 161,545,066
NUMIS SECURITIES	\$ 4,615,193	\$ 5,672	\$ -	\$ -	\$ -
PENSERRA S	\$ 38,209,135	\$ 19,974	\$ -	\$ -	\$ -
PERSHING	\$ 192,669,967	\$ 65,788	\$ 2,217,353,583	\$ 224,734	\$ 381,193,305
PIPER JAFFRAY	\$ 65,735,175	\$ 45,833	\$ 979,045	\$ -	\$ -
RAYMOND JAMES	\$ 36,264,997	\$ 45,210	\$ 17,024,325	\$ -	\$ -
RBC CAPITAL MARKETS	\$ 242,968,259	\$ 85,056	\$ 515,931,915	\$ -	\$ 212,481,226
RBC DOMINION SECURITIES	\$ 32,562,775	\$ 19,032	\$ 24,425,158	\$ -	\$ -
RBS SECURITIES	\$ -	\$ -	\$ 212,542,542	\$ -	\$ 900,000,000
REDBURN	\$ 11,844,241	\$ 10,845	\$ -	\$ -	\$ -
ROYAL BANK OF CANADA	\$ 3,103,510	\$ 1,941	\$ -	\$ -	\$ -
SANDLER ONEILL	\$ 2,283,628	\$ 7,226	\$ 9,261,948	\$ -	\$ -
SCOTIA CAPITAL	\$ 19,611,991	\$ 5,224	\$ 70,896,540	\$ -	\$ 27,796,057
SG	\$ 329,383,411	\$ 5,500	\$ 98,627,910	\$ -	\$ 39,755,294
SMBC NIKKO	\$ 13,054,642	\$ 5,841	\$ -	\$ -	\$ -
SOCIETE GENERALE	\$ 61,458,210	\$ 35,726	\$ -	\$ -	\$ 21,500,000
STATE STREET	\$ 399,971,146	\$ 45,184	\$ 394,274,049	\$ 116,619	\$ 27,079,095,681
STIFEL NICOLAUS	\$ 47,759,119	\$ 40,471	\$ 24,230,862	\$ -	\$ -
UBS	\$ 1,069,934,491	\$ 359,658	\$ 270,001,300	\$ -	\$ 154,600,694
UBS WARBURG	\$ 7,114,068	\$ 8,692	\$ 4,870,441	\$ -	\$ 88,061,094
WELLS FARGO	\$ 198,096,353	\$ 45,616	\$ 1,921,912,653	\$ 437	\$ 1,398,265,545
ABG SECURITIES AS (STOCKHOLM)	\$ 3,242,289	\$ 2,430	\$ -	\$ -	\$ -
ACADEMY SECURITIES INC	\$ 715,397	\$ 114	\$ -	\$ -	\$ -
AMBIT CAPITAL PRIVATE LIMITED	\$ 225,941	\$ 272	\$ -	\$ -	\$ -
AMHERST PIERPONT SECURITIES LLC	\$ -	\$ -	\$ 39,457,158	\$ -	\$ 26,834,494
APEX CLEARING CORPORATION/SANTANDER	\$ -	\$ -	\$ 4,606,519	\$ -	\$ -

Trading Data
Commissions and Trading Volume
By Broker for Fiscal Year 2019

	Stock \$ Volume	Stock \$ Commission	Bond \$ Volume	Bond \$ Commission	Short Term \$ Volume
AQUA SECURITIES	\$ 621,553	\$ 384	\$ -	\$ -	\$ -
ARQAAM CAPITAL SOUTH AFRICA (PTY)	\$ 260,233	\$ 208	\$ -	\$ -	\$ -
AXIS CAPITAL LIMITED	\$ 151,350	\$ 181	\$ -	\$ -	\$ -
B RILEY AND CO INC.	\$ 34,153,236	\$ 69,824	\$ -	\$ -	\$ -
BANCO ITAU SA	\$ 2,804,414	\$ 2,750	\$ -	\$ -	\$ -
BANCO NACIONAL DE MEXICO S.A.	\$ 4,334	\$ 9	\$ -	\$ -	\$ -
BANCO PACTUAL S.A.	\$ 9,010,746	\$ 9,304	\$ -	\$ -	\$ -
BANCO SANTANDER CENTRAL HISPANO	\$ 7,838,011	\$ 11,302	\$ -	\$ -	\$ -
BANK J.VONTOBEL UND CO. AG	\$ 2,831,517	\$ 4,170	\$ -	\$ -	\$ -
BANK OF AMERICA CORPORATION	\$ 67,738,106	\$ 101,668	\$ -	\$ -	\$ -
BANK OF AMERICA MERRILL LYNCH SECUR INC	\$ 28,094,553	\$ 32,251	\$ -	\$ -	\$ -
BANK OF MONTREAL, CHICAGO BRANCH	\$ -	\$ -	\$ -	\$ -	\$ 23,500,000
BARRINGTON RESEARCH ASSOCIATES	\$ 3,522,558	\$ 4,713	\$ -	\$ -	\$ -
BATLIVALA+KARANI SECS INDIA PVT. LTD	\$ 845,137	\$ 1,012	\$ -	\$ -	\$ -
BBVA/SECURITIES NY	\$ -	\$ -	\$ 3,136,147	\$ -	\$ -
BETZOLD BERG & NUSSBAUM INC.	\$ -	\$ -	\$ 3,518,465	\$ -	\$ -
BLAYLOCK ROBERT VAN LLC	\$ 695,707	\$ 131	\$ -	\$ -	\$ -
BRADESCO S.A. CTVM	\$ 3,308,166	\$ 6,770	\$ -	\$ -	\$ -
BRADESCO SECURITIES INC.	\$ 2,692	\$ 2	\$ -	\$ -	\$ -
BREAN CAPITAL LLC	\$ -	\$ -	\$ 16,428,988	\$ -	\$ -
BROADCAST CAPITAL CORP	\$ 8,560	\$ 2	\$ -	\$ -	\$ -
BTG CAPITAL CORP	\$ 215,025	\$ 238	\$ -	\$ -	\$ -
CALYON SECURITIES (USA) INC.	\$ -	\$ -	\$ 11,031,789	\$ -	\$ -
CAP GUARDIAN BROKER	\$ 346,293	\$ 400	\$ -	\$ -	\$ -
CAPITAL INSTITUTIONAL SVCS INC EQUITIES	\$ 80,619,668	\$ 50,083	\$ -	\$ -	\$ -
CAPITAL REORGANIZATION NON CASH	\$ -	\$ -	\$ 180,403	\$ -	\$ -
CARNEGIE A S	\$ 3,459,948	\$ 5,187	\$ -	\$ -	\$ -
CARNEGIE INVESTMENT BANK AB	\$ 819,427	\$ 1,227	\$ -	\$ -	\$ -
CARNEGIE SECURITIES FINLAND	\$ 928,442	\$ 1,393	\$ -	\$ -	\$ -
CHINA INTERNATIONAL CAPITAL CO	\$ 990,202	\$ 1,052	\$ -	\$ -	\$ -
CIBC WORLD MARKETS CORP	\$ 27,008,926	\$ 3,456	\$ 6,514,821	\$ -	\$ -
CITATION GROUP	\$ 13,382,271	\$ 3,012	\$ -	\$ -	\$ -
CL SECURITIES TAIWAN COMPANY LIMITED	\$ 13,341,990	\$ 12,942	\$ -	\$ -	\$ -
COMMERCE INTL MERCHANT BANKERS	\$ 314,241	\$ 220	\$ -	\$ -	\$ -
CORMARK SECURITIES INC	\$ 408,687	\$ 378	\$ -	\$ -	\$ -
CORPCAPITAL CORREDORES DE BOLSA SA	\$ 1,271,305	\$ 3,040	\$ -	\$ -	\$ -
CPR PARIS	\$ 364,795	\$ 1,459	\$ -	\$ -	\$ -
CRAIG - HALLUM	\$ 23,739,676	\$ 34,583	\$ -	\$ -	\$ -
CREDIT AGRICOLE SECURITIES (USA) INC	\$ -	\$ -	\$ 59,719,625	\$ -	\$ -
CS FIRST BOSTON (HONG KONG) LIMITED	\$ 28,986,137	\$ 22,278	\$ -	\$ -	\$ -
CUTTONE & CO. INC.	\$ 108,457	\$ 37	\$ -	\$ -	\$ -

Trading Data
Commissions and Trading Volume
By Broker for Fiscal Year 2019

	Stock \$ Volume	Stock \$ Commission	Bond \$ Volume	Bond \$ Commission	Short Term \$ Volume
D.A. DAVIDSON AND CO	\$ 2,324,977	\$ 1,964	\$ -	\$ -	\$ -
DANSKE BANK A.S.	\$ 1,289,170	\$ 1,290	\$ 10,364,426	\$ -	\$ -
DAVIDSON D.A. + COMPANY INC.	\$ 20,576,719	\$ 19,326	\$ -	\$ -	\$ -
DAVY STOCKBROKERS	\$ 9,140,276	\$ 6,669	\$ -	\$ -	\$ -
DBTC AMERICA/PNC BANK, N.A.-SECS.CO	\$ -	\$ -	\$ 9,503,903	\$ -	\$ -
DEUTSCHE EQ IN PRVT LIM DB	\$ 26,197,765	\$ 26,013	\$ -	\$ -	\$ -
DOLAT CAPITAL MARKETS LTD	\$ 18,366	\$ 22	\$ -	\$ -	\$ -
DOUGHERTY & COMPANY LLC	\$ 7,538,199	\$ 9,980	\$ -	\$ -	\$ -
DSP MERRILL LYNCH LTD	\$ 16,099,015	\$ 13,447	\$ -	\$ -	\$ -
DUNCAN WILLIAMS INC	\$ -	\$ -	\$ 10,291,350	\$ -	\$ -
EMKAY GLOBAL FINANCIAL SVCS LT	\$ 619,004	\$ 546	\$ -	\$ -	\$ -
EUROCLEAR BANK S.A N.V.	\$ 16,113,218	\$ 9,667	\$ -	\$ -	\$ -
EVERCORE GROUP L.L.C.	\$ 1,277,607	\$ 2,376	\$ -	\$ -	\$ -
EXANE S.A.	\$ 17,960,591	\$ 12,797	\$ -	\$ -	\$ -
FEDERAL RESERVE BANK OF BOSTON	\$ -	\$ -	\$ 57,672,586	\$ -	\$ -
FIFTH THIRD SECURITIES, INC	\$ -	\$ -	\$ 6,352,767	\$ -	\$ -
FIRST ANALYSIS SECURITIES CORP	\$ 6,078,676	\$ 5,488	\$ -	\$ -	\$ -
FIRST TENNESSEE BANK N A BOND DIVISION	\$ -	\$ -	\$ 2,569,509	\$ -	\$ -
FIRST TENNESSEE SECURITIES CORP	\$ -	\$ -	\$ 210,098	\$ -	\$ -
FIS BROKERAGE & SECURITIES SERVICES LLC	\$ 11,801,295	\$ 1,721	\$ -	\$ -	\$ -
FLOW CORRETORA DE MERCADORIAS LTDA.	\$ 2,059,413	\$ 2,533	\$ -	\$ -	\$ -
FRANK RUSSELL SEC/BROADCORT CAP CLEARING	\$ 17,136,028	\$ 39,556	\$ -	\$ -	\$ -
FTN FINANCIAL SECURITIES	\$ -	\$ -	\$ 41,436,251	\$ -	\$ -
GMP SECURITIES LTD.	\$ 133,145	\$ 161	\$ -	\$ -	\$ -
GOODBODY STOCKBROKERS	\$ 1,282,211	\$ 1,275	\$ -	\$ -	\$ -
GORDON HASKETT CAPITAL CORP	\$ 2,949,854	\$ 6,271	\$ -	\$ -	\$ -
HANWHA SECURITIES SEOUL	\$ 1,628,697	\$ 488	\$ -	\$ -	\$ -
HARRIS TRUST + SAVINGS BANK CHICAGO	\$ -	\$ -	\$ 4,668	\$ 1,901	\$ -
HAUCK UND AUFHAUSER PRIVATBANKIERS AG	\$ 41,345	\$ 41	\$ -	\$ -	\$ -
HEIGHT SECURITIES, LLC	\$ 372,259	\$ 97	\$ -	\$ -	\$ -
HIBERNIA SOUTHCOAST CAPITAL INC	\$ 8,635,242	\$ 32,487	\$ -	\$ -	\$ -
HONGKONG AND SHANGHAI BANKING CORPORATIO	\$ 1,839,294	\$ 1,500	\$ -	\$ -	\$ -
ICAP CORPORATES LLC	\$ -	\$ -	\$ -	\$ -	\$ 16,800,000
ICBC STANDARD BANK PLC	\$ 1,667,545	\$ 1,668	\$ -	\$ -	\$ -
ICBCFS LLC	\$ 349,923	\$ 618	\$ 87,368,617	\$ -	\$ -
ICICI BROKERAGE SERVICES	\$ 3,631,900	\$ 725	\$ -	\$ -	\$ -
IM TRUST S.A. CORREDORES DE BOLSA	\$ 4,399,443	\$ 3,517	\$ -	\$ -	\$ -
IMPERIAL CAPITAL LLC	\$ 9,307,115	\$ 6,444	\$ 7,780	\$ -	\$ -
INDIA INFOLINE LTD	\$ 530,582	\$ 340	\$ -	\$ -	\$ -
INDUSTRIAL AND COMMERCIAL BANK	\$ 774,122	\$ 260	\$ -	\$ -	\$ -
INFLATION INDEX ADJUSTMENT	\$ -	\$ -	\$ 9,257,062	\$ -	\$ -

Trading Data
Commissions and Trading Volume
By Broker for Fiscal Year 2019

	Stock \$ Volume	Stock \$ Commission	Bond \$ Volume	Bond \$ Commission	Short Term \$ Volume
ING BANK N V	\$ 1,109,010	\$ 1,110	\$ -	\$ -	\$ -
ING BARINGS CORP	\$ -	\$ -	\$ 3,920,796	\$ -	\$ -
INTERMONTE SIM S.P.A	\$ 298,715	\$ 449	\$ -	\$ -	\$ -
INTERNATIONAL BILLS FINANCE CORP	\$ 572,735	\$ 492	\$ -	\$ -	\$ -
IPOPEMA SECURITIES S.A.	\$ 294,314	\$ 608	\$ -	\$ -	\$ -
ISI GROUP INC	\$ 43,966,326	\$ 26,867	\$ -	\$ -	\$ -
JANE STREET EXECUTION SERVICES, LLC	\$ -	\$ -	\$ 10,766,052	\$ -	\$ -
JANNEY MONTGOMERY, SCOTT INC	\$ 1,906,462	\$ 1,677	\$ 2,738,436	\$ -	\$ -
JOH. BERENBERG, GOSSLER & CO. KG	\$ 6,374,140	\$ 8,263	\$ -	\$ -	\$ -
JPMCB/HSBC BANK PLC IB MAIN FL ACCOUNT	\$ -	\$ -	\$ 1,034,550	\$ -	\$ -
KEEFE BRUYETTE + WOODS INC	\$ 24,060,148	\$ 38,359	\$ -	\$ -	\$ -
KEPLER CAPITAL MARKETS, INC.	\$ 1,800,187	\$ 888	\$ -	\$ -	\$ -
KEPLER EQUITIES PARIS	\$ 1,097,296	\$ 1,276	\$ -	\$ -	\$ -
KEYBANC CAPITAL MARKETS INC	\$ 65,098,675	\$ 60,884	\$ 58,865,122	\$ -	\$ -
KIM ENG SECURITIES (HK) LTD.	\$ 234,822	\$ 263	\$ -	\$ -	\$ -
KING, CL, & ASSOCIATES, INC	\$ 6,212,429	\$ 4,809	\$ 402,019	\$ -	\$ -
KNIGHT CAPITAL AMERICAS, L.P.	\$ 11,347,021	\$ 8,981	\$ -	\$ -	\$ -
KOREA INVESTMENT AND SECURITIES CO., LTD	\$ 3,602,948	\$ 2,165	\$ -	\$ -	\$ -
KOTAK SECURITIES LTD	\$ 9,067,856	\$ 10,671	\$ -	\$ -	\$ -
LADENBURG THALMAN + CO	\$ 1,631,373	\$ 1,604	\$ -	\$ -	\$ -
LEERINK PARTNERS LLC	\$ 4,916,075	\$ 4,376	\$ -	\$ -	\$ -
Longbow Securities LLC	\$ 2,978,552	\$ 2,923	\$ -	\$ -	\$ -
MAINFIRST BANK DE	\$ 329,819	\$ 495	\$ -	\$ -	\$ -
MARKETAXESS CORP	\$ -	\$ -	\$ 30,116,697	\$ -	\$ -
MAXIM GROUP	\$ 2,217,863	\$ 2,802	\$ -	\$ -	\$ -
MELLON BANK CAPITAL MARKETS INVEST ACCT	\$ -	\$ -	\$ 3,429,475	\$ -	\$ 4,938,221
MILLA E. CO. SIM SPA	\$ 3,409,766	\$ 594	\$ -	\$ -	\$ -
MILLENNIUM ADVISORS LLC	\$ -	\$ -	\$ 5,398,784	\$ -	\$ -
MIRABAUD SECURITIES LLP	\$ 11,623,134	\$ 4,070	\$ -	\$ -	\$ -
MISCHLER FINANCIAL GROUP, INC-EQUITIES	\$ -	\$ -	\$ 129,997	\$ -	\$ -
MKM PARTNERS LLC	\$ 4,909,250	\$ 4,009	\$ -	\$ -	\$ -
MND PARTNERS	\$ 34,980	\$ 8	\$ -	\$ -	\$ -
MORGAN STAN INTERNATIONAL LTD	\$ 1,423,359	\$ 393	\$ -	\$ -	\$ -
MOTILAL OSWAL SECURITIES LIMITED	\$ 3,644,616	\$ 4,380	\$ -	\$ -	\$ -
MUFG UNION BANK, N.A./MML/PIMS/IPA	\$ -	\$ -	\$ -	\$ -	\$ 27,000,000
NBC CLEARING SERVICES INCORPORATED	\$ 1,450,859	\$ 859	\$ -	\$ -	\$ -
NBCN CLEARING INC.	\$ -	\$ -	\$ 619,209	\$ -	\$ -
NEEDHAM AND COMPANY LLC	\$ 6,495,025	\$ 8,047	\$ -	\$ -	\$ -
NESBITT BURNS	\$ 13,900,936	\$ 14,619	\$ -	\$ -	\$ -
NOBLE INTERNATIONAL INVESTMENTS INC.	\$ 718,391	\$ 450	\$ -	\$ -	\$ -
NORDEA BANK AB (PUBL), FINNISH BRANCH	\$ 1,070,946	\$ 1,072	\$ -	\$ -	\$ -

Trading Data
Commissions and Trading Volume
By Broker for Fiscal Year 2019

	Stock \$ Volume	Stock \$ Commission	Bond \$ Volume	Bond \$ Commission	Short Term \$ Volume
NORTHCOAST RESEARCH PARTNERS LLC	\$ 2,012,474	\$ 1,149	\$ -	\$ -	\$ -
NORTHLAND SECURITIES INC.	\$ 10,595,556	\$ 6,544	\$ -	\$ -	\$ -
NYKREDIT BANK A.S	\$ -	\$ -	\$ 11,292,584	\$ -	\$ -
O NEIL, WILLIAM AND CO. INC/BCC CLRG	\$ 2,730,125	\$ 1,542	\$ -	\$ -	\$ -
ODDO ET CIE	\$ 2,623,405	\$ 1,969	\$ -	\$ -	\$ -
OPPENHEIMER + CO. INC.	\$ 28,722,392	\$ 27,838	\$ 3,205,168	\$ -	\$ -
PAREL	\$ 9,470,460	\$ 7,136	\$ -	\$ -	\$ -
PAVILION GLOBAL MARKETS LTD	\$ 3,143,983	\$ 786	\$ -	\$ -	\$ -
PETERS AND CO LIMITED	\$ 75,347	\$ 358	\$ -	\$ -	\$ -
PICKERING ENERGY PARTNERS, INC	\$ 3,702	\$ 8	\$ -	\$ -	\$ -
PREBON (AMEX)	\$ -	\$ -	\$ -	\$ -	\$ 18,000,000
R W PRESSPRICH + CO INC	\$ -	\$ -	\$ 2,026,695	\$ -	\$ -
RABOBANK HUNGARIA RT	\$ 5,065	\$ 1	\$ -	\$ -	\$ -
RENCAP SECURITIES INC	\$ 2,588,216	\$ 2,464	\$ -	\$ -	\$ -
ROBERT W. BAIRD CO.INCORPORATED	\$ 113,754,895	\$ 106,755	\$ 21,252,169	\$ -	\$ -
ROSENBLATT SECURITIES INC.	\$ 1,308,851	\$ 2,145	\$ -	\$ -	\$ -
ROTH CAPITAL PARTNERS LLC	\$ 3,326,851	\$ 2,039	\$ -	\$ -	\$ -
ROYAL BANK OF SCOTLAND PLC	\$ -	\$ -	\$ -	\$ -	\$ 34,858,025,000
SAMSUNG SECURITIES CO LTD	\$ 879,309	\$ 684	\$ -	\$ -	\$ -
SANFORD C BERNSTEIN CO LLC	\$ 360,077,015	\$ 108,083	\$ -	\$ -	\$ -
SANTANDER INVESTMENT SECURITIES	\$ -	\$ -	\$ 4,173,349	\$ -	\$ -
SCOTIA CORREDORA DE BOLSA	\$ 1,124,836	\$ 1,575	\$ -	\$ -	\$ -
SCOTIA MCLEOD INC	\$ 5,577,156	\$ 3,638	\$ -	\$ -	\$ -
SEAPORT GROUP SECURITIES LLC	\$ 19,584,139	\$ 36,062	\$ 6,208,202	\$ -	\$ -
SIDOTI + COMPANY LLC	\$ 9,491,709	\$ 15,198	\$ -	\$ -	\$ -
SKANDINAVISKA ENSKILDA BANKEN	\$ 1,092,114	\$ 1,143	\$ -	\$ -	\$ -
SPARK CAPITAL ADVISORS (INDIA) PRIV LTD	\$ 239,879	\$ 289	\$ -	\$ -	\$ -
STEPHENS, INC.	\$ 35,292,198	\$ 37,533	\$ 7,075,987	\$ -	\$ -
STRATEGAS SECURITIES LLC	\$ 2,017,197	\$ 1,050	\$ -	\$ -	\$ -
STUART FRANKEL + CO INC	\$ 3,296,488	\$ 1,646	\$ -	\$ -	\$ -
SUMRIDGE PARTNERS LLC	\$ -	\$ -	\$ 3,075,634	\$ -	\$ -
SUNTRUST CAPITAL MARKETS, INC.	\$ 25,155,263	\$ 22,090	\$ -	\$ -	\$ -
SUNTRUST ROBINSON HUMPHREY, INC.	\$ -	\$ -	\$ 9,450,840	\$ -	\$ -
SVENSKA HANDELSBANKEN	\$ 606,179	\$ 529	\$ -	\$ -	\$ -
TD SECURITIES (USA) LLC	\$ -	\$ -	\$ 154,477,458	\$ -	\$ -
TELSEY ADVISORY GROUP LLC	\$ 4,992,349	\$ 5,121	\$ -	\$ -	\$ -
THE BANK OF NOVA SCOTIA, NEW YORK AGENCY	\$ -	\$ -	\$ 6,951,637	\$ -	\$ -
THE BANK OF NY/DBAG LONDON GLOBAL	\$ -	\$ -	\$ 2,809,787	\$ -	\$ -
THE HONGKONG AND SHANGHAI BANK	\$ 3,319,497	\$ 5,894	\$ -	\$ -	\$ -
THE VERTICAL TRADING GROUP	\$ 605,304	\$ 639	\$ -	\$ -	\$ -
TOKYO MITSUBISHI INTERNATIONAL	\$ 831,489	\$ 387	\$ -	\$ -	\$ -

Trading Data
Commissions and Trading Volume
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	Stock \$ Volume	Stock \$ Commission	Bond \$ Volume	Bond \$ Commission	Short Term \$ Volume
TORONTO DOMINION BANK	\$ 7,203,534	\$ 4,657	\$ 53,008,637	\$ -	\$ -
TRADEWEB DIRECT LLC	\$ -	\$ -	\$ 100,279	\$ -	\$ -
U.S. BANK N.A./CP	\$ -	\$ -	\$ -	\$ -	\$ 11,000,000
US BANCORP INVESTMENTS INC	\$ -	\$ -	\$ 82,960,402	\$ -	\$ -
VALEURS MOBILIERES DESJARDINS	\$ 1,030,493	\$ 395	\$ -	\$ -	\$ -
VIRTU AMERICAS LLC	\$ 158,090,208	\$ 40,227	\$ -	\$ -	\$ -
WALL STREET ACCESS	\$ 2,518,354	\$ 421	\$ -	\$ -	\$ -
WEDBUSH MORGAN SECURITIES INC	\$ 12,269,740	\$ 12,590	\$ -	\$ -	\$ -
WEEDEN + CO.	\$ 169,469,753	\$ 74,488	\$ -	\$ -	\$ -
WILLIAM BLAIR & COMPANY L.L.C	\$ 27,750,108	\$ 27,716	\$ 241,698	\$ -	\$ -
WILLIAMS CAPITAL GROUP LP (THE)	\$ 7,883,194	\$ 2,001	\$ -	\$ -	\$ -
WOLFE TRAHAN SECURITIES	\$ 6,183,408	\$ 4,018	\$ -	\$ -	\$ -
WOOD AND COMPANY	\$ 41,292	\$ 62	\$ -	\$ -	\$ -
XP INVESTIMENTOS CCTVM SA	\$ 8,904,542	\$ 6,696	\$ -	\$ -	\$ -
YUANTA SECURITIES CO., LTD.	\$ 438,716	\$ 1,076	\$ -	\$ -	\$ -
Grand Total	\$ 16,892,272,892	\$ 7,089,668	\$ 63,534,855,118	\$ 1,099,954	\$ 239,982,325,879

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