

STATE OF MINNESOTA

Office of the State Auditor



Julie Blaha
State Auditor

LARGE PUBLIC PENSION PLAN INVESTMENT REPORT

For the Year Ended December 31, 2017

Description of the Office of the State Auditor

The mission of the Office of the State Auditor is to oversee local government finances for Minnesota taxpayers by helping to ensure financial integrity and accountability in local governmental financial activities.

Through financial, compliance, and special audits, the State Auditor oversees and ensures that local government funds are used for the purposes intended by law and that local governments hold themselves to the highest standards of financial accountability.

The State Auditor performs approximately 100 financial and compliance audits per year and has oversight responsibilities for over 3,300 local units of government throughout the state. The office currently maintains five divisions:

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Legal/Special Investigations - provides legal analysis and counsel to the Office and responds to outside inquiries about Minnesota local government law; as well as investigates allegations of misfeasance, malfeasance, and nonfeasance in local government;

Pension - monitors investment, financial, and actuarial reporting for approximately 600 public pension funds; and

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The State Auditor serves on the State Executive Council, State Board of Investment, Land Exchange Board, Public Employees Retirement Association Board, Minnesota Housing Finance Agency, and the Rural Finance Authority Board.

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Large Public Pension Plan Investment Report

For the Year Ended December 31, 2017



April 30, 2019

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Scope and Methodology

This report reviews the investment performance of Minnesota's large local public pension plans for the 2017 calendar year. The public pension plans included in this report are the Bloomington Fire Department Relief Association (Bloomington Fire), and the St. Paul Teachers' Retirement Fund Association (St. Paul Teachers'). The State Board of Investment (SBI), which is referenced frequently, is not a pension plan, but invests the assets of certain public employee pension plans administered by the Minnesota State Retirement System, the Public Employees Retirement Association, and the Teachers Retirement Association.

These pension plans and the SBI held over \$69.6 billion in assets as of December 31, 2017, which represents the future retirement benefits of hundreds of thousands of public employees.

Limited information for the University of Minnesota Supplemental Benefits Plan is also included in this report. This plan has a total market value of less than \$25 million, so its statutory reporting requirements are less than the reporting requirements for the other plans included in this report. Therefore, only a brief description of activities for the plan is provided, and the plan is not included in the report summaries.

The pension plans are required under Minnesota Statutes, section 356.219, to annually report investment information to the Office of the State Auditor (OSA), and the State Auditor is required to provide a report to the legislature on the investment performance of these plans. One way to measure investment performance is to calculate a rate of return which can then be used to compare a plan against a benchmark or against other plans. The methodologies used by the large plans to calculate rates of return may vary from one another and from the methodology used by the OSA. To obtain analogous comparisons of investment performance, the OSA calculates rates of return using a uniform calculation method.¹ Using a uniform calculation method allows for a fair comparison of performance among plans.

The purpose of this report is to inform lawmakers of the large plans' investment performance, educate fiduciaries and members of the plans, and provide transparency to the public.

¹ Minnesota Statutes, section 356.219, requires the OSA to compute and report total portfolio and asset class time-weighted rates of return, net of all costs and fees. The State Board of Investment is permitted by this statute to submit limited reporting information. Therefore, the rates of return included in this report for the State Board of Investment are provided by the State Board of Investment and are not re-calculated by the OSA.

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Executive Summary

Current Trends

- During 2017, rates of return for the large plans were 16.0 percent (Bloomington Fire Department Relief Association), and 15.6 percent (St. Paul Teachers' Retirement Fund Association). Bloomington Fire exceeded its benchmark rate of return while St. Paul Teachers' did not exceed its benchmark rate of return. The rate of return for the State Board of Investment's Combined Funds was 18.3 percent. (Pages 9 through 13)

Long-Term Trends

- Bloomington Fire and St. Paul Teachers' both failed to exceed their actuarial assumed rates of return over the ten-year period from January 2008 through December 2017. The State Board of Investment's Combined Funds returned 6.9 percent for the period. St. Paul Teachers' earned 5.9 percent over the ten-year period, while Bloomington Fire returned 5.8 percent. (Pages 15 and 16)

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Understanding Investment Performance Terms

Rate of Return

Rate of return is the gain or loss on an investment over a specified time period, usually expressed as a percentage increase over the fair market value at the beginning of the period.

Asset Allocation

Asset allocation describes the practice of distributing the assets of a portfolio among different types of investment classes, such as stocks, bonds, cash, and real estate. By diversifying assets, the goals are to minimize risk and to create a favorable risk/reward ratio for a portfolio. When one asset class declines, the expectation is another will increase and offset the loss.

Passive Investment Strategy

Passive investment strategy or passive management is more commonly called indexing. Indexing is an investment management approach based on investing in the same securities, and in the same proportions, as a specific index. The management style is considered passive because portfolio managers do not make decisions about which securities to buy and sell. Instead, managers simply copy the index by purchasing the same securities included in a particular stock or bond market index.

Active Investment Strategy

Active investment strategy or active management is an attempt to outperform the market as measured by a particular benchmark or index. The aim of active fund management is to outperform, after fees are paid, the index that a particular fund is benchmarked against. Prevailing market trends, the economy, political and other current events, and company-specific factors, such as earnings growth, all affect an active manager's decisions. Active investing often has higher costs than passive investing. These extra expenses may reduce any extra gains an active manager might earn.

Enhanced Indexing Investment Strategy

Enhanced indexing investment strategy, or enhanced indexing, is a hybrid strategy. Enhanced indexing combines both passive and active investment strategies, and attempts to generate rates of return that are slightly higher than that of an index fund or other passive management techniques.

Benchmark

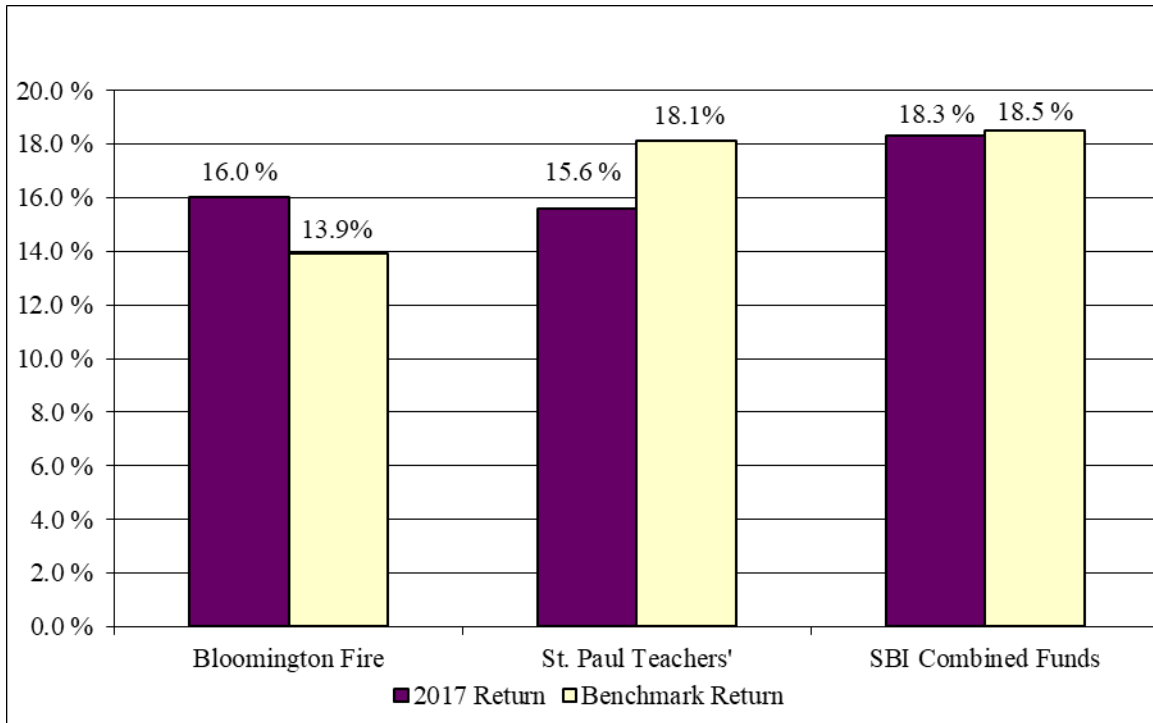
A benchmark is an index to which a plan compares its investments. Market benchmarks are used by individual investors, portfolio managers, and market researchers to determine how well a particular market or market sector performs. Investors look to broad indices as benchmarks to help them gauge not only how well the markets are performing, but also how well the investors are performing as investors.

Why Benchmarks are Important

Measuring investment returns against an appropriate benchmark encourages prudent investment decisions, and gives trustees another method of evaluating investment performance. The key to establishing the most accurate benchmark for a portfolio is determining which indices best track investments similar to the asset allocation of the investment policy. An ideal benchmark return would consist of a hypothetical portfolio of indices, invested in the same asset classes and in the same proportion as the actual holdings of the entire portfolio. Indices track different asset classes, such as domestic equity or bonds. An index may also track subsets of an asset class, such as small-capitalization growth domestic equity. Although benchmark indices are not directly available for investment purposes, mutual and collective index funds which hold the same securities as the index can be obtained. Known as “index funds,” these funds are managed with a passive style.

Figure 1, on the next page, compares the 2017 rates of return and benchmark returns for the large plans and the State Board of Investment.

Figure 1: 2017 Rates of Return and Benchmark Return



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2017 Performance Analysis

Investment returns varied by asset class in 2017. The S&P 500 Index, which is a gauge of the large-capitalization U.S. equities market, returned 21.8 percent in 2017. The Russell 3000 Index measures the performance of the largest 3,000 U.S. companies, representing nearly all of the U.S. equity market. The Russell 3000 Index returned 21.1 percent.

International equities returned 27.2 percent as measured by the Morgan Stanley Capital International (MSCI) All Country World Index excluding the United States (ACW Index ex. U.S.). This index measures the performance of both developed and emerging markets.

Domestic bonds returned 3.5 percent as measured by the Barclays Aggregate Index. The 2017 returns for bonds outperformed the 2.7 percent return for this asset class during 2016.

In 2017, economic indicators improved from 2016 as unemployment dropped to 4.1 percent and consumer spending increased by 2.4 percent. The Consumer Price Index, which measures inflation, remained unchanged at 2.1 percent.

Bloomington Fire Department Relief Association

The Bloomington Fire Department Relief Association (Bloomington Fire) consists of retired and active firefighters of the City of Bloomington. Bloomington Fire is the administrator of a single-employer defined-benefit pension plan available to firefighters, which was established April 1, 1947.² Bloomington Fire is governed by a Board of Trustees made up of six members elected by the members of the plan for three-year terms, one elected City official, one elected or appointed City official, and the Fire Chief, who serve as ex officio voting members of the Board.

Bloomington Fire returned 16.0 percent in 2017, as calculated by the Office of the State Auditor (OSA). The return exceeded the plan's benchmark return of 13.9 percent. The plan's market value increased \$20.6 million from 2016.

Bloomington Fire's investment policy allocates 35.0 percent to domestic equities, 10.0 percent to developed international equities, 5.0 percent to emerging market international equities, 38.0 percent to bonds, 5.0 percent to private equity, 5.0 percent to real estate, and 2.0 percent to cash. The plan's actual allocations for 2017 varied slightly

² See Bloomington Fire Department Relief Association December 31, 2017, Financial Statements and Management Letter, page nine.

from the investment policy allocations. Higher allocations were made to domestic equities and international equities while lower allocations were made to private equity, real estate, fixed income, and cash. In 2017, Bloomington Fire added exposure to private equities and real estate. From 2016 to 2017, Bloomington Fire increased its allocations to fixed income and international equities by 7.4 percent and 2.0 percent, respectively. In 2017, private equities and real estate accounted for 0.2 percent and 1.7 percent of the total investments, respectively. Bloomington Fire decreased its allocations to domestic equities and cash for the same period by 10.1 percent and 1.2 percent, respectively.

At the end of 2017, 94.0 percent of Bloomington Fire's total assets were held in the State Board of Investment's (SBI) Supplemental Investment Fund: 34.8 percent of the plan's assets with the SBI were invested in the U.S. Stock Index Fund; 40.2 percent in the Bond Fund; 10.2 percent in the U.S. Stock Actively Managed Fund; and 14.8 percent in the Broad International Fund.

The SBI's U.S. Stock Index Fund is a Russell 3000 Index fund that returned 21.1 percent for the year. The SBI's Actively Managed Fund is an actively-managed domestic equity fund that returned 22.7 percent for the year. The benchmark for both funds was the Russell 3000 Index, which returned 21.1 percent. The Broad International Stock Fund, consisting of active, semi-passive, and passive managers, returned 27.7 percent for the year. This account is compared to the MSCI ACWI ex. U.S. (net) Index which returned 27.2 percent. The Bond Fund, an actively-managed account, returned 4.2 percent and exceeded its benchmark Barclays Aggregate Index return of 3.5 percent.

In addition to the SBI's Broad International Stock Fund, Bloomington Fire also invested in the GQG Emerging Markets Equity Fund as part of the international equity portion of the portfolio. The GQG Emerging Markets Equity Fund returned 32.1 percent during 2017, failing to match the MSCI Emerging Markets (EM) Index benchmark return of 37.3 percent.

Bloomington Fire also held investments in an internally-managed account. The account held less than one-tenth of one percent of the plan's assets and was entirely invested in short-term cash investments. Assets held by the internally-managed account decreased by less than one-tenth of one percent from the 2016 holdings.

In June 2017, Bloomington Fire began investing in two private equity accounts. The accounts held two-tenths of one percent of the plan's assets. The private equity accounts returned negative 2.2 percent during 2017.

In December 2017, Bloomington Fire began investing in a real estate account. The account held 1.7 percent of the plan's assets. The real estate account did not have a rate of return for 2017 due to the fact that the initial investment in the fund was made at the end of December 2017.

St. Paul Teachers' Retirement Fund Association

The St. Paul Teachers' Retirement Fund Association (St. Paul Teachers') is a non-profit organization formed in 1909.³ At the direction and oversight of a ten-member Board of Trustees, the St. Paul Teachers' staff manage two tax-qualified, defined-benefit pension programs: a Basic Plan, and a Coordinated Plan. These plans cover licensed personnel of Independent School District (ISD) No. 625, which is the central administrative body for public schools within the City of St. Paul. Basic Plan members do not participate in Social Security through their employment with the ISD. In 1978, the Coordinated Plan commenced, and it provides retirement benefits for members who simultaneously participate in Social Security.

St. Paul Teachers' returned 15.6 percent in 2017, as calculated by the OSA, falling short of its benchmark return of 18.1 percent. The plan's market value increased \$91.4 million from 2016.

The domestic equity holdings of St. Paul Teachers' returned 19.7 percent, which missed its S&P 500 Index benchmark return of 21.8 percent. The SBI U.S. Stock Index Fund, which is St. Paul Teachers' largest large-capitalization fund, returned 21.1 percent and matched the Russell 3000 Index benchmark of 21.1 percent. The BlackRock S&P Fund returned 21.8 percent, matching its S&P 500 Index benchmark return of 21.8 percent. The Barrow & Hanley Fund's rate of return of 14.7 percent exceeded the Russell 1000 Value Index benchmark return of 13.7 percent. The lone mid-capitalization fund managed by Wellington Management returned 30.1 percent and exceeded its Russell Mid Cap Growth benchmark return of 25.3 percent. The small-capitalization fund managed by Boston Company returned 24.7 percent and also exceeded its Russell 2500 benchmark return of 16.8 percent. The Dimensional Fund Advisors 6-10 Value Fund returned 7.1 percent and missed its benchmark return of 7.8 percent.

Fixed-income investments returned 9.0 percent, exceeding the Barclays Aggregate excluding Treasury Index benchmark return of 7.4 percent. The Guggenheim Fund, which is St. Paul Teachers' largest fixed-income fund, returned 6.0 percent, exceeding the custom benchmark return of 4.1 percent for the Barclays U.S. Aggregate plus 50 basis points. The Brandywine Fund returned 12.8 percent, exceeding its Citigroup World Government Bond benchmark rate of return of 7.5 percent. St. Paul Teachers' also held investments in the Allianz Cash Overlay Account which returned 5.2 percent for the year. Fixed-income investments made up 15.3 percent of the total portfolio after accounting for 16.9 percent of the portfolio in 2016.

St. Paul Teachers' international equity portfolio consisted of the SBI Broad International Stock Fund, which returned 27.7 percent, and fell short of its benchmark rate of return of 27.8 percent. In December 2017, St. Paul Teachers' invested in the BlackRock iShares Core MSCI EM Fund. International equity investments made up 7.5 percent of the total portfolio after accounting for 7.5 percent of the portfolio in 2016.

³ See St. Paul Teachers' Retirement Fund Association June 30, 2017, Financial Statements and Management Letter, page five.

Global equity investments for St. Paul Teachers' returned 26.2 percent. Morgan Stanley's Global Franchise Fund and JP Morgan's Focus Fund returned 25.9 percent and 22.6 percent, respectively. Both funds are compared to the MSCI World Index benchmark, which returned 23.1 percent in 2017.

Real estate holdings for St. Paul Teachers' returned 4.2 percent, and fell short of the NCREIF Fund Index (NFI) Open End Diversified Core Equity (ODCE) (net) Index benchmark return of 6.7 percent. The UBS Trumbull Fund returned 5.3 percent in 2017 and underperformed its NFI ODCE (net) Index benchmark return of 6.7 percent. The UBS Trumbull Growth and Income Fund returned 8.3 percent in 2017 and outperformed the NCREIF Property benchmark of 5.1 percent. The Tortoise MLP Fund returned negative 3.5 percent in 2017, exceeding the Alerian MLP benchmark return of negative 6.5 percent. The Advantus Fund returned 5.9 percent which outperformed the Wilshire Real Estate Securities Index benchmark return of 4.2 percent.

Private equity investments returned 11.8 percent in 2017. Private equity investments included funds managed by Franklin Park, Parametric Defense Equity Fund, RWI Group, and North Sky Capital. St. Paul Teachers' uses the Russell 3000 plus 3 percent as a benchmark for its private equity funds. The 2017 benchmark rate of return was 24.7 percent.

St. Paul Teachers' alternative investments portfolio returned 6.5 percent in 2017. TCW Asset Management - DL Fund and VIA Energy were the only alternative investments held by St. Paul Teachers during the 2017 calendar year.

Opportunistic investments returned 1.9 percent for 2017. The Corvex Master Fund LP and EnTrust Special Opportunities Fund III, Ltd., returned negative 3.4 percent and 5.4 percent, respectively.

St. Paul Teachers' cash portfolio returned 2.2 percent. The cash portfolio includes a cash overlay account managed by the Clifton Group and two accounts held with U.S. Bank. Cash accounted for 1.1 percent of the total portfolio.

St. Paul Teachers' U.S. Treasury Bills portfolio consisted of the Clifton Group Treasury Inflation Protected Securities (TIPS) Fund. The fund returned 3.1 percent and accounted for 1.0 percent of the total portfolio.

State Board of Investment

The State Board of Investment (SBI) was established by Article XI of the Minnesota Constitution to invest state funds. The SBI is responsible for the investment management of various retirement funds, trust funds, and cash accounts. Its membership, as specified in the Constitution, is comprised of the Governor (who is designated as chair of the

Board), the State Auditor, the Secretary of State, and the State 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.

The SBI's Combined Funds returned 18.3 percent in 2017, failing to meet its benchmark return of 18.5 percent.

The SBI's domestic equity portfolio returned 21.4 percent, which exceeded the benchmark Russell 3000 Index return of 21.1 percent. The portfolio is managed by fifteen active money managers, two semi-passive managers, and two passive managers. 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 by employing a strategy that more closely tracks the benchmark than that of the active managers. The passive managers consistently track the Russell 3000 Index.

The fixed-income portfolio of the SBI returned 4.2 percent for the year and exceeded the 3.5 percent benchmark return of the Barclays Aggregate Index. A 20.0 percent allocation to fixed income is provided for in the SBI's investment policy. At the end of the year, the fixed-income portfolio made up 18.4 percent of the SBI's total assets. The SBI targets no more than half of the fixed-income portfolio for active management while having at least half managed semi-passively. The objective of the four active managers is to outperform the Barclays Aggregate Index by focusing on high quality fixed-income securities across all sectors of the market. The three semi-passive managers have the goal of adding incremental value through superior bond selection and sector allocation rather than through interest rate exposure.

The SBI's international equity portfolio returned 27.7 percent, outperforming its benchmark MSCI ACW Index ex. U.S. (net) return of 27.2 percent. The SBI allocates 53.0 percent to public equities in its investment policy and at year-end, international and domestic equities accounted for 66.8 percent of the total assets. The SBI's international equity portfolio has thirteen active managers, three semi-passive managers, and one passive manager. Six of the thirteen active managers and the three semi-passive managers invest entirely in developed markets. The remaining seven active managers invest solely in emerging markets. The SBI's target is to have at least one-third of the portfolio managed actively, no more than one-third managed semi-passively, and at least one-half managed passively.

The alternative investments held by the SBI returned 18.5 percent in 2017. The actual rate of return is used as the benchmark for this asset class. A target allocation of 25.0 percent is established in the investment policy and 13.0 percent was actually allocated to alternative investments at the end of 2017. The majority of the portfolio is allocated to private equity with assets also being held in yield-oriented investments, resource investments, and real estate.

University of Minnesota Supplemental Benefits Plan

The University of Minnesota Supplemental Benefits Plan is a University-funded defined-benefit plan designed to provide additional retirement benefits for certain groups of individuals.⁴ As of July 1, 2017, the plan had three active members and 90 retirees and survivors who were receiving or were entitled to receive benefits. No additional participants in the plan are expected, as the eligible population is a closed group.

The Supplemental Benefits Plan is invested in the University of Minnesota Group Income Pool (GIP). The GIP is invested in a diversified bond fund which is measured against the Barclays Aggregate Index (after taxes and un-hedged). The Barclays Aggregate Index returned 3.5 percent during 2017. The GIP returned 4.9 percent during the same period. The Supplemental Benefits Plan had a rate of return of 4.5 percent for 2017, as calculated by the OSA. The rate of return calculated by the OSA was for the Supplemental Benefits Plan only, and not for the entire GIP.

Beginning Market Value	\$1,111,287
Net Cash Flows	\$(189,188)
Investment Returns	\$46,461
Ending Market Value	\$968,560
OSA One-Year Rate of Return	4.5%
OSA Three-Year Rate of Return	2.2%
OSA Five-Year Rate of Return	2.1%
Group Income Pool One-Year Rate of Return	4.9%
Benchmark Rate of Return	3.5%

⁴ Plan and membership information was obtained from the University of Minnesota Supplemental Benefits Plan July 1, 2017, Actuarial Valuation, and from the Supplemental Benefits Plan Administrative Policy.

Ten-Year Performance Analysis

The rates of return over the last ten years have remained fairly consistent despite three years of limited or negative growth in 2008, 2011, and 2015. The investment returns of Minnesota's large plans over the ten-year period ending December 31, 2017, can be assessed by using market indices as benchmarks. The U.S. stock market, as measured by the Russell 3000 Index, posted positive returns during seven of the ten years. The Russell 3000 Index returned 8.6 percent over the ten-year period. Domestic equity represented the largest asset allocation for each of the large plans.

International equity, as measured by the MSCI EAFE Index, averaged 1.8 percent annually over the ten-year period.

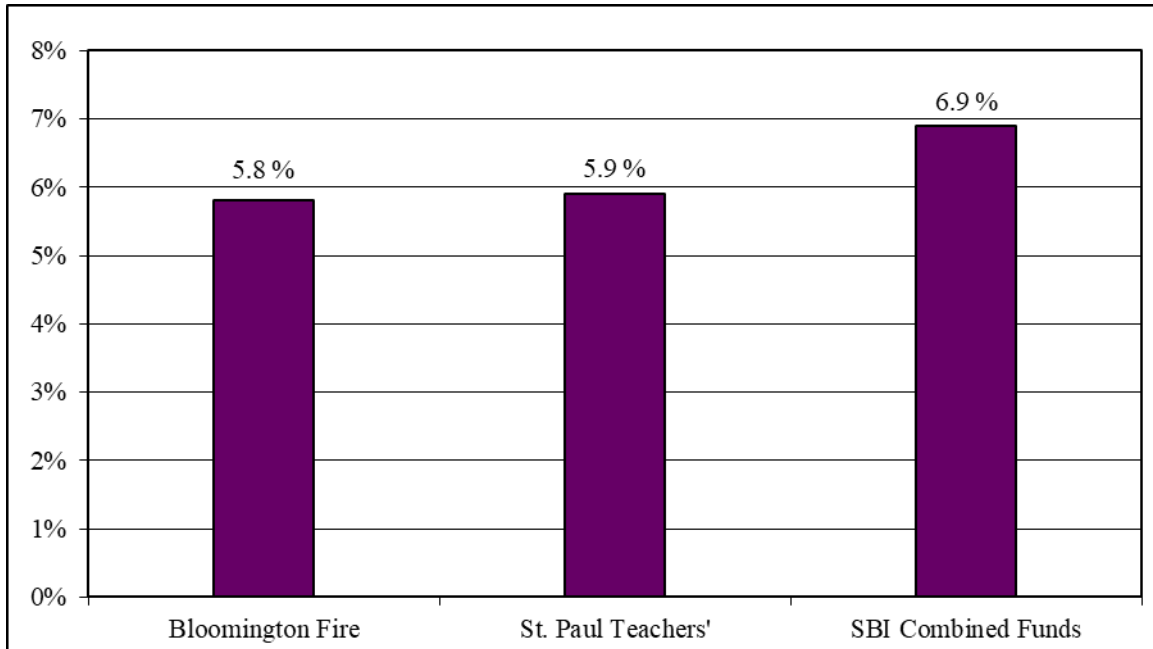
The average bond market return over the ten-year period was 4.0 percent as measured by the Barclays Aggregate Index.

St. Paul Teachers' returned 5.9 percent over the ten-year period and had an investment return assumption of 8.0 percent for the ten-year period.⁵ Bloomington Fire had a ten-year return of 5.8 percent, slightly less than its actuarial assumed rate of return of 6.0 percent. For comparison purposes, the SBI had a ten-year return of 6.9 percent.

⁵ Legislation enacted in 2018 changed the investment return assumption for Saint Paul Teachers' to 7.5 percent.

Figure 2 below shows the ten-year rates of return for the large plans and for the SBI.

Figure 2: Ten-Year Average Annual Rates of Return (2008-2017)



Funding Ratios

Funding ratios show the relationship between a plan's assets and its liabilities. Over 100 percent means the plan had more assets than liabilities, while less than 100 percent means the plan had more projected liabilities than assets. A plan's liabilities are calculated by an actuary using statutory assumptions based on historical data. Examining the ratio between assets and liabilities can help determine how well funded the plan is, whether additional contributions to the plan will be needed, and whether future benefit increases would be sustainable. Investment returns, contributions, actuarial assumptions, plan provisions, changes in benefit levels, and historical funding issues are all factors that affect the financial health of the plan.

The funding ratios provided in this report are calculated based on each plan's fiscal year and use the plan's actuarial value of assets instead of the market value of their assets. Bloomington Fire has a December 31 fiscal year-end, while St. Paul Teachers' has a June 30 fiscal year-end.

In 2017, the funding ratio for Bloomington Fire was 120.6 percent. Saint Paul Teachers' had a funding ratio of 64.5 percent for 2017. Over the last ten years, the funding ratio for Bloomington Fire has increased 29.3 percent. St. Paul Teachers' funding ratio decreased over the last ten-year period by 10.6 percent.

Figures 3 and 4 illustrate the funding ratios for the large plans over the ten year period from 2008 to 2017.

Figure 3: Funding Ratios for Bloomington Fire – 2008 to 2017

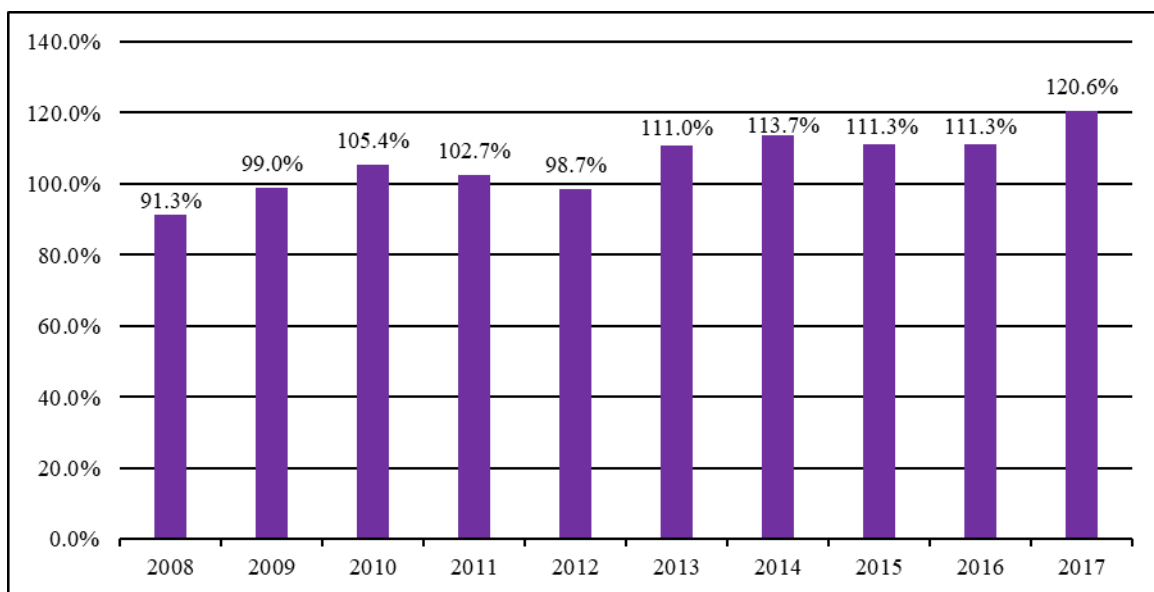
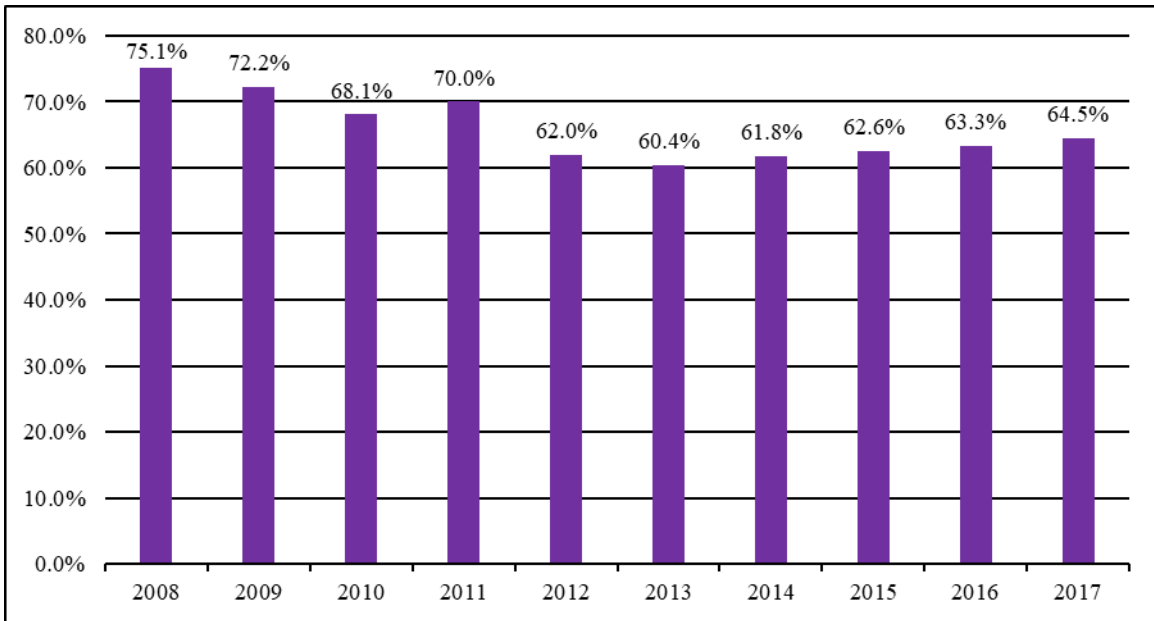


Figure 4: Funding Ratios for Saint Paul Teachers' – 2008 to 2017



2017 Plan Summaries

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How to Read the Plan Summaries

The plan summaries on pages 23 through 25 of this report contain various acronyms and investment terms that are defined below.

Rates of Return (ROR)

- **OSA One-Year ROR** - The pension plan's total return on its assets, as calculated by the OSA. *Note: Under State law, the SBI submits only limited reporting information. The rates of return for the SBI are provided by the SBI and are not re-calculated by the OSA.*
- **Plan One-Year ROR** - The pension plan's return on its assets as calculated by the plan or its consultant.
- **Benchmark ROR** - The rate of return of a hypothetical portfolio invested in the plan's chosen benchmark components in the percentages dictated by the plan's investment policy. Although not perfect, it is a good measure of what return the plan could have achieved during the year.
- **Actuarial Assumed ROR** - The rate of return required for the plan to meet its actuarial assumptions.
- **Three-, Five-, and Ten-Year ROR** - The average annual returns earned by the plan over the specified time period, either calculated by the OSA or reported by the plan. *Note: Under State law, the SBI submits only limited reporting information. The rates of return for the SBI are provided by the SBI and are not re-calculated by the OSA.*

Asset Class

Asset class is a group of similar investments, such as domestic equity, bonds, cash, or alternative investments. Pension plans invest in different asset classes for diversification purposes. When returns for one asset class decline, another may increase, offsetting the loss. In this report, any account or fund that holds investments from more than one asset class is reported as its own asset class.

Benchmark Components and Rates of Return

Benchmark components are the different indices to which the plan compares its investments. Indices track different asset classes, such as domestic equity or bonds. They may also track subsets of an asset class. To evaluate investment performance, it is important to use appropriate indices. The rates of return for each benchmark component are also provided.

Policy Asset Allocation

Policy asset allocation is the percentage allocated to each asset class in the investment policy.

Actual Asset Allocation

Actual asset allocation is the percentage actually invested in each asset class. In the plan summaries that follow, the actual asset allocation is measured at year-end.

Beginning Market Value/Ending Market Value

The market value is the price as determined by buyers and sellers in an open market. The dollar amount in the asset class or investment as of the beginning/end of 2017 is the beginning market value/ending market value.

Net Cash Flows

Net cash flows are the net amount of cash (or securities) deposited or withdrawn from the asset class or investment during the year.

Investment Return

Investment return is the net amount of interest, dividends, and appreciation or depreciation the asset class or investment gained or lost during the year.

Rate of Return

Rate of return is the net (after fees) return of the asset class or investment during the year.

Bloomington Fire Department Relief Association

For the Year Ended December 31, 2017

(Dollars in Thousands)

Rates of Return (ROR)	
OSA One-Year ROR	16.0 %
Plan One-Year ROR	16.1 %
Benchmark ROR	13.9 %
Actuarial Assumed ROR	6.0 %
OSA Three-Year ROR	7.5 %
OSA Five-Year ROR	9.6 %
OSA Ten-Year ROR	5.8 %

Benchmark Components and Rates of Return		Policy Asset Allocation		Actual Asset Allocation	
Russell 3000	21.1 %	U.S. Equity	35.0 %	Domestic Equities	42.2 %
MSCI EAFE	25.0 %	Intl. Developed Equity	10.0 %	Intl. Developed Equity	10.4 %
MSCI Emerging Markets	37.3 %	Intl. Emerging Equity	5.0 %	Intl. Emerging Equity	7.0 %
Cambridge Associates PE	10.0 %	Private Equity	5.0 %	Private Equity	0.2 %
NCREIF Property Index	5.1 %	Real Estate	5.0 %	Real Estate	1.7 %
Barclays U.S. Aggregate	3.5 %	Investment Grade Bonds	38.0 %	Fixed Income	37.8 %
90-Day U.S. Treasury Bill	0.9 %	Cash	2.0 %	Cash	0.7 %

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<u>Asset Class</u>	<u>Investment Type</u>	<u>Beginning Market Value</u>	<u>Net Cash Flow (Net of Fees)</u>	<u>Investment Return</u>	<u>Ending Market Value</u>	<u>Rate of Return</u>
Domestic Equities	Domestic Equities	\$ 81,493	\$ (22,650)	\$ 15,623	\$ 74,466	21.6 %
International Equities	International Equities	23,881	0	6,733	30,614	27.8 %
Private Equities	Private Equities	0	313	(6)	307	(2.2)%
Real Estate	Real Estate	0	3,000	0	3,000	0.0 %
Fixed Income	Fixed Income	47,398	17,000	2,238	66,636	4.2 %
Cash	Cash	1,705	(1,657)	0	48	0.0 %
Internally Managed	Balanced	1,241	10	(21)	1,230	(0.3)%
	Total	\$ 155,718	\$ (3,984)	\$ 24,567	\$ 176,301	

St. Paul Teachers' Retirement Fund Association

Year Ending December 31, 2017

(Dollars in Thousands)

Rates of Return (ROR)	
OSA One-Year ROR	15.6 %
Plan One-Year ROR	15.7 %
Benchmark ROR	18.1 %
Actuarial Assumed ROR	8.0 %
OSA Three-Year ROR	7.8 %
OSA Five-Year ROR	9.7 %
OSA Ten-Year ROR	5.9 %

Benchmark Components and Rates of Return		Policy Asset Allocation		Actual Asset Allocation	
MSCI All Country World	24.6 %	Global/Domestic Equity	55.0 %	Domestic Equities	41.8 %
Barclay Global Aggregate	7.4 %	Global/Domestic Fixed Income	20.0 %	Domestic Fixed Income	15.3 %
NFI ODCE (net)	6.7 %	Inflation Hedged/Real Assets	11.0 %	Real Estate	9.9 %
Russell 3000 +3%	24.7 %	Private Equity/Alternatives	9.0 %	International Equities	7.5 %
HFRI FOF Composite Index	7.8 %	Opportunistic	5.0 %	Global Equities	12.2 %
				Alternative Assets	1.1 %
				Private Equity	6.7 %
				Cash	1.1 %
				Treasury Bills	1.0 %
				Opportunistic	3.4 %

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Asset Class	Investment Type	Beginning Market Value	Net Cash Flow (Net of Fees)	Investment Return	Ending Market Value	Rate of Return
Domestic Equities	Domestic Equities	\$ 406,965	\$ (32,500)	\$ 76,941	\$ 451,406	19.7 %
Domestic Fixed Income	Domestic Fixed Income	166,965	(17,000)	14,699	164,664	9.0 %
Real Estate	Real Estate	113,532	(11,179)	4,472	106,825	4.2 %
International Equities	International Equities	74,199	(10,971)	15,972	79,200	24.5 %
Global Equities	Global Equities	106,229	0	27,804	134,033	26.2 %
Alternatives	Alternative Assets	9,376	1,846	771	11,993	6.5 %
Private Equities	Private Equities	58,951	5,848	7,207	72,006	11.8 %
Cash	Cash	13,522	(1,930)	76	11,668	2.2 %
Treasury Bills	Treasury Bills	11,133	(500)	337	10,970	3.1 %
Opportunistic	Opportunistic	26,968	9,109	440	36,517	1.9 %
	Total	\$ 987,840	\$ (57,277)	\$ 148,719	\$ 1,079,282	

State Board of Investment

For the Year Ended December 31, 2017

(Dollars in Thousands)

Rates of Return (ROR)	
Plan One-Year ROR	18.3 %
Benchmark ROR	18.5 %
Actuarial Assumed ROR*	8.0 %
Plan Three-Year ROR	8.4 %
Plan Five-Year ROR	10.7 %
Plan Ten-Year ROR	6.9 %

Benchmark Components and Rates of Return		Policy Asset Allocation		Actual Asset Allocation	
Russell 3000	21.1 %	Public Equity	53.0 %	Public Equity	66.8 %
Barclays Aggregate Index	3.5 %	Fixed Income	20.0 %	Fixed-Income	18.4 %
MSCI ACWI ex. U.S. (net)	27.2 %	Alternative Assets	25.0 %	Alternative Assets	13.0 %
90-Day U.S. Treasury Bill	0.9 %	Cash	2.0 %	Cash	1.8 %

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Asset Class	Investment Type	Beginning Market Value	Net Cash Flow (Net of Fees)	Investment Return	Ending Market Value	Rate of Return
Domestic Equities	Domestic Equities	\$ 28,247,745	\$ (3,658,893)	\$ 5,611,654	\$ 30,200,506	21.4 %
Fixed Income	Fixed-Income	12,105,334	(32,738)	508,285	12,580,881	4.2 %
International Equities	International Equities	9,966,626	2,285,906	3,218,701	15,471,233	27.7 %
Alternatives	Alternative Assets	7,931,841	(418,077)	1,408,375	8,922,139	18.5 %
Cash & Disbursement Account	Cash	1,567,127	(484,698)	10,385	1,092,814	1.0 %
Cash - CD Repo	Cash	120,881	(12,458)	1,404	109,827	1.3 %
	Total	\$ 59,939,554	\$ (2,320,958)	\$ 10,758,804	\$ 68,377,400	

* The actuarial assumed rate of return for TRA at the end of December 2017 was calculated using Select and Ultimate rates of return (8.0% for five years beginning July 1, 2012, and 8.5% thereafter). The actuarial assumed rates of return for the other plans for which the SBI invests were 8.0%.