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# **MINNESOTA STATE BOARD OF INVESTMENT**

**MINNESOTA STATE BOARD  
OF INVESTMENT  
MEETING  
February 23, 2017**



**Governor Mark Dayton  
State Auditor Rebecca Otto  
Secretary of State Steve Simon  
Attorney General Lori Swanson**

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**STATE BOARD OF INVESTMENT**

**AGENDA AND MINUTES**

**February 23, 2017**

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**AGENDA**  
**STATE BOARD OF INVESTMENT MEETING**  
**Thursday, February 23, 2017**  
**10:00 A.M.**  
**G23 Senate Committee Room**  
**State Capitol**  
**75 Rev. Dr. Martin Luther King Jr. Boulevard**  
**St. Paul, MN**

**TAB**

- 1. Approval of Minutes of December 1, 2016**
- 2. Report from the Executive Director (Mansco Perry)**

A. Quarterly Investment Review **A**  
(October 1, 2016 – December 31, 2016)

B. Administrative Report **B**

Information Updates

1. Reports on Budget and Travel
2. FY16 Audit Report
3. FY16 Annual Report
4. Legislative Update
5. Sudan Update
6. Iran Update
7. Litigation Update

Action Items

1. Proxy Committee Reauthorization
2. Proxy Voting Guidelines

C. Asset Allocation Transition Update **C**

- 3. Investment Advisory Council Report (Jeff Bailey)**

A. Public Markets: Investment Manager Review, Assigned Risk Plan **D**

B. Public Markets: Fourth Quarter Performance **E**

C. Private Markets Report **F**

1. Review of current strategy

2. Consideration of investment commitments with four existing managers

- 4. Other items**

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**Minutes  
State Board of Investment  
December 1, 2016**

The State Board of Investment (SBI) met at 10:05 A.M. Thursday, December 1, 2016 in Room 106, Retirement Systems Building, St. Paul, Minnesota. Governor Mark Dayton, State Auditor Rebecca Otto, Secretary of State Steve Simon, and Attorney General Lori Swanson were present. The minutes of the September 8, 2016 meeting were approved.

**Executive Director's Report**

Executive Director Mansco Perry referred members to Tab A of the meeting materials, and he reported that the Combined Funds had outperformed its Composite Index over the ten-year period ending September 30, 2016 (Combined Funds 6.5% vs. Composite 6.3%) and had provided a real rate of return of 5.5% above inflation over the latest 20 year period (Combined Funds 7.6% vs. CPI 2.1%).

Mr. Perry stated that assets increased slightly over the quarter (Combined Funds ending value of \$59.5 versus a beginning value of \$57.8 billion). The Combined Funds return was 30 basis points (bps) above the benchmark for the quarter (Combined Funds 4.1% vs. Composite 3.8%) and 80 bps below for the year (Combined Funds 9.1% vs. Composite 9.9%). The underperformance extended into the three-year period but the Combined Funds outperformed its benchmark in all other time periods reported.

Mr. Perry reported that the domestic stock manager group outperformed its target for the quarter (Domestic Stocks 4.8% vs. Domestic Equity Asset Class Target 4.4%) and underperformed for the year (Domestic Stocks 13.3% vs. Domestic Equity Asset Class Target 15.0%). He stated that the international stock manager group underperformed its benchmark for the quarter (International Stocks 6.7% vs. International Equity Asset Class Target 6.9%) and for the year (International Stocks 8.4% vs. International Equity Asset Class Target 9.3%) but outperformed over longer time periods. Mr. Perry then stated that the bond segment outperformed its benchmark for the quarter (Bonds 0.9% vs. Fixed Income Asset Class Target 0.5%), and the year (Bonds 6.0% vs. Fixed Income Asset Class Target 5.2%) and in all other time periods reported. He stated that the alternative investments contributed to performance for the quarter and the year (total return of 5.2% and 2.5%, respectively). Mr. Perry concluded his report noting that, as of June 30, 2016, the SBI was responsible for managing over \$81.4 billion of assets.

Mr. Perry referred members to Tab B of the meeting materials for the administrative report. He reported that for the fiscal year to date the SBI is slightly ahead of budget. Mr. Perry stated that the Legislative Auditors are concluding their audit of the SBI, that no significant findings are expected, and that once they are done a draft copy of the SBI's Annual Report will be distributed to members and the IAC and hopefully be published by the end of January 2017. He informed members that Tab B contained calendar year 2017 meeting dates for the IAC and SBI as well as the updated information for Sudan and Iran. Mr. Perry noted that there is currently no litigation involving the SBI.

Mr. Perry turned members' attention to Tab C and an update on the transition to the new asset allocation targets which were approved at the June SBI meeting. He reminded members that there is now a 58% policy weight to public equities, a 20% weight to bonds, a 20% weight to private markets and a 2% weight to cash. Mr. Perry also stated that the change to the asset allocation policy wherein the un-invested portion of private markets is invested in public equities instead of in bonds, which resulted in the need to lower the bond allocation to 20% of the Combined Funds, is nearly complete. He then updated members on the progress in the change of allocation between domestic and international stocks from 75%/25% respectively to 67%/33% respectively, which he indicated should be complete by the end of the fiscal year. Finally, Mr. Perry drew members' attention to the increase in passive versus active management in the public equity portfolio. At the beginning of the fiscal year (July 1, 2016) the allocation to passive management in the domestic equity program was 33.3%, whereas as of November 1, 2016 it was 53.7%. Mr. Perry indicated that, while there is not a formal target passive weight in the domestic equity program, he expects it to end up somewhere between 60% and 70%. The tables referenced in Tab C also showed an increase in passive management over the same period in the international equity program (42.7% versus 48.6%).

Mr. Perry referred members to Tab D, an update on the Achieving a Better Life Experience program, which was signed into law last year. He reminded members that while the program will be administered by the MN Department of Human Services, the SBI was required to review and sign the contract for the investment options. Mr. Perry stated that the investment options consist of six risk-based portfolios ranging from very aggressive to very conservative, all using passive portfolios, and that staff reviewed them together with the consortium of eleven states led by Illinois. Following questions by members, Mr. Perry clarified that each state would be contracting with the investment vendor separately, but that the states had joined together in a consortium in order to achieve the demographics necessary to negotiate a cost effective program. He indicated that he expected the contract to be signed by January 2017.

State Auditor Otto moved approval of the recommendation in Tab D, which reads: **"SBI staff, in concurrence with the staff of the Department of Human Services, recommends that the SBI contract with the vendor selected by the ABLE Consortium that meets the requirements of the plan to provide the services for the Minnesota ABLE Plan."** The motion passed.

Jeff Bailey, Chair of the Investment Advisory Council (IAC), provided an overview of the agenda items covered at the November 15, 2016 meeting. He then referred members to Tabs E and F of the meeting materials, which contained respectively the recommendations to terminate Aberdeen Asset Management, a fixed income manager, and Capital International, Inc., an emerging markets equity manager.

Secretary of State Simon moved approval of the recommendation in Tab E, which reads: **"The Investment Advisory Council concurs with Staff's recommendation that the SBI terminate the relationship with Aberdeen Asset Management Inc. due to staff departures, organizational instability, and the sale of Aberdeen's Core fixed income business to a third party."** The motion passed.



State Auditor Otto moved approval of the recommendation in Tab F, which reads: **“The Investment Advisory Council concurs with Staff’s recommendation that the SBI terminate the relationship with Capital International, Inc. due to continued underperformance, asset loss, and team turnover.”** The motion passed.

Mr. Bailey moved on to Tab G and reviewed the six alternative investment proposals brought to the IAC. Four of the firms are existing private equity managers: Merced Capital Fund V, West Street Capital Partners Fund VII, Goldman Sachs Vintage Fund VII; and Lexington Partners LMMI IV; and two new managers: Dyal Capital Partners Fund III and Oak Hill Capital Partners Fund IV. State Auditor Otto moved approval of all six recommendations in Tab G of the meeting materials, which reads: **“The Investment Advisory Council concurs with Staff’s recommendation that the SBI authorize the Executive Director, with assistance from the SBI’s legal counsel, to negotiate and execute a commitment of up to \$100 million, or 20% of Merced Partners V, whichever is less. Approval by the SBI of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Merced Capital upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Merced Capital or reduction or termination of the commitment.**

**The Investment Advisory Council concurs with Staff’s recommendation that the SBI authorize the Executive Director, with assistance from the SBI’s legal counsel, to negotiate and execute a commitment of up to \$150 million, or 20% of West Street Capital Partners VII, whichever is less. Approval by the SBI of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Goldman, Sachs & Co. upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Goldman, Sachs & Co. or reduction or termination of the commitment.**

**The Investment Advisory Council concurs with Staff’s recommendation that the SBI authorize the Executive Director, with assistance from the SBI’s legal counsel, to negotiate and execute a commitment of up to \$100 million, or 20% of Vintage VII, whichever is less. Approval by the SBI of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Goldman, Sachs & Co. upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Goldman, Sachs & Co. reduction or termination of the commitment.**

**The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of up to \$100 million, or 20% of Lexington Middle Market Investors IV, L.P., whichever is less. Approval by the SBI of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Lexington Partners upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions Lexington Partners reduction or termination of the commitment.**

**The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute the acquisition of an interest for a commitment of up to \$175 million, or 20% of Dyal Capital Partners III, L.P., whichever is less. Approval by the SBI of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Dyal Capital Partners upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions Dyal Capital Partners reduction or termination of the commitment.**

**The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of up to \$150 million, or 20% of Oak Hill Capital Partners IV, L.P., whichever is less. Approval by the SBI of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Oak Hill Capital Partners upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions Oak Hill Capital Partners reduction or termination of the commitment." The motion passed.**

Mr. Bailey turned member's attention to Tab I, which contained the Emerging Markets Equity Manager Search recommendations. He provided a brief overview of the staff's review of the search process and of Callan's analysis. State Auditor Otto moved approval of the recommendation in Tab I, which reads: **"The Investment Advisory Council concurs with Staff's recommendation to retain up to six of the following emerging markets investment managers for the Emerging Markets portfolio**

- *Delaware Investments*
- *EARNEST Partners*
- *Martin Currie Investment Management, Ltd.*
- *Neuberger Berman*
- *Pzena Investment Management, LLC*
- *The Rock Creek Emerging Markets Group*

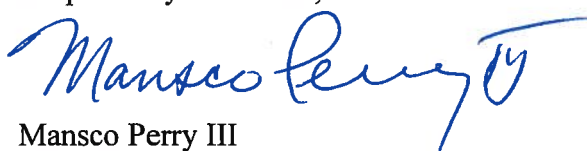
**and that the SBI authorize the Executive Director, with assistance from SBI's legal counsel, to negotiate fees and execute a contract with each firm."** The motion passed.

Finally, the Executive Director of Minnesota State Retirement System, Mr. Bergstrom, appeared before the members to present the recommendation from the SBI's Investment Consultant Review Committee. Governor Dayton took a moment to recognize Mr. Bergstrom's upcoming retirement and thanked Mr. Bergstrom for his outstanding service to the state. Mr. Bergstrom thanked the Governor for the recognition and then thanked the Board and SBI staff for their stewardship of the pension funds. Mr. Bergstrom went on to review the Investment Consultant Review Committee's process and the importance of the role of the consultant to both the Board members and to the prudent running of the funds.

State Auditor Otto moved approval of the SBI's Investment Consultant Review Committee's recommendation as stated in **Attachment A**, which reads: **"The Committee recommends that the SBI authorize the Executive Director, with assistance from SBI's legal counsel, to negotiate and execute contracts with Aon Hewitt Investment Consulting, Inc. for general consulting services and with Pension Consulting Alliance for special projects. The contracts should allow for adequate transitional time from the current consultants and cover a period of five years. The contract will also be subject to the standard termination provisions required by state statute."** Governor Dayton asked Board members if they wished to discuss the motion or had any questions. State Auditor Otto, Governor Dayton, and Attorney General Swanson took the opportunity to thank Ann Posey (O'Bradovich) of Callan, for her thirty years of service, for her extraordinary dedication to the Board, and for helping to build the SBI to what it is today. Ann Posey (O'Bradovich) thanked the Board. The motion passed.

The meeting adjourned at 10:30 a.m.

Respectfully submitted,



Mansco Perry III  
Executive Director and  
Chief Investment Officer

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**MINNESOTA  
STATE  
BOARD OF  
INVESTMENT**



**Board Members:**

Governor  
Mark Dayton

State Auditor  
Rebecca Otto

Secretary of State  
Steve Simon

Attorney General  
Lori Swanson

**Executive Director &  
Chief Investment  
Officer:**

Mansco Perry

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*An Equal Opportunity  
Employer*

DATE: November 29, 2016

TO: Members, State Board of Investment

FROM: SBI Investment Consultant Review Committee

**SUBJECT: Investment Consultant Review Committee Recommendation**

The SBI retains consultants to provide independent advice to Board members and technical assistance to SBI staff on a variety of issues related to management of the assets under the SBI's control. Consultants are selected through a periodic Request for Proposal (RFP) process with review and recommendation by a Consultant Review Committee.

The SBI's investment consulting contracts with Callan Associates Inc. and Pension Consulting Alliance expire on June 30, 2017. In accordance with SBI policy, Staff prepared and released the Investment Consultant RFP related to the SBI's investment consulting needs. Notice of the RFP was published in the State Register on August 15, 2016. Responses were received in the SBI office by September 9, 2016.

The SBI received responses from the following seven consulting firms:

Aon Hewitt Investment Consulting, Inc.  
Callan Associates Inc. (*current General Consultant*)  
Hamilton Lane (*Private Equity only*)  
Meketa Investment Group  
NEPC: New England Pension Consulting, LLC  
PCA: Pension Consulting Alliance (*current Special Projects Consultant*)  
Verus Advisory, Inc.

The SBI Consultant Review Committee was formed and was responsible for reviewing the responses, interviewing appropriate candidates, and making a recommendation to the Board as to which consultant(s) should be retained.

The Committee consists of the following members:

Kim Holmes	Governor's Representative
Ramona Advani	State Auditor's Representative
Bert Black	Secretary of State's Representative
Christie Eller	Attorney General's Representative
Dave Bergstrom	Executive Director, MSRS and IAC Representative
Laurie Hacking	Executive Director, TRA and IAC Representative
Susanna Gibbons	IAC Representative
Gary Martin	IAC Representative
Mansco Perry	SBI Executive Director

### **Review Process**

Staff developed the RFP and criteria for evaluating responses. The range of tasks included in the RFP was very broad and consultants were encouraged to respond to any area of the RFP in which they have special expertise. The RFP stated that more than one consultant may be required to fulfill all the proposed duties.

After reviewing the services that the SBI requires from an investment management consultant, the Committee determined that continuing to have the services of a general consultant and a consultant for special projects is desirable. Six of the seven respondents were invited to interview with the Committee on November 14 – 16 at the SBI office. Hamilton Lane, a private equity specialist, was not invited to interview. The Committee decided not to interview candidates for private equity services, at this time. The Committee concluded that the general consultant would provide a broad range of consulting and analytical services. The special projects consultant would address specific needs of particular concern to public retirement systems, as necessary.

### **Conclusions**

After reviewing the strengths of each responder in relation to the above needs, the Committee recommends the following:

- **Aon Hewitt Investment Consulting, Inc. (AHIC)** should be retained as the SBI's general consultant. AHIC can provide general consulting on all asset classes and offer access to in-depth research and a range of sophisticated analytical tools that will assist the SBI in the on-going development and evaluation of its investment programs.
- **Pension Consulting Alliance (PCA)** should be retained as the SBI's special projects consultant. PCA's practice focuses primarily on governmental plans similar to the SBI and Minnesota's three statewide pension plans. Through the expertise of its managing directors and its supplementary network of consulting specialists, PCA is well positioned to respond to a variety of tasks as specific needs arise.

**AON Hewitt Investment Consulting** is a division of the AON Company. The firm is headquartered in Chicago, IL. AHIC was formerly known as Hewitt Ennis Knupp and the firm's origin dates back to 1981. AHIC's sole line of business is investment consulting. They are a full service investment consulting firm that services a diverse client base, including public retirement system sponsors, corporate pension funds, defined contribution plans, endowments and foundations. The firm serves 493 clients in the U.S., representing \$1.8 trillion. AHIC consults to 43 public pension plan clients representing \$1.3 trillion. Their organization consists of a team of 208 investment consultants and has dedicated teams which focus on investment manager research, asset allocation, fiduciary services and trust services.

The AON project team assigned to the SBI's account would be:

- Steve Cummings, Senior Partner and President (lead)
- Kristen Doyle, Partner (lead)
- Chris Tucek, Partner (lead)
- Suzanne Bernard, Partner (backup)
- Katie Comstock, Senior Consultant (support)

**Pension Consulting Alliance** was founded in 1988. The firm is headquartered in Portland, OR and has an office in New York City. PCA is an independent boutique pension consulting firm with 34 employees and contracts with specialized firms in several disciplines to provide technical research and databases. PCA focuses on consulting for large public plans. The firm has more than 30 clients, who utilize PCA for work as a general consultant, asset class specialists, and on a variety of special assignments. PCA advises to over \$1.2 trillion in clients assets. PCA has worked with the SBI as both an international equity consultant and as a special projects consultant.

The PCA project team assigned to the SBI's account would be:

- Allan Emkin, Founder and Managing Director
- Neil Rue, Managing Director
- John Burns, Managing Director

#### **RECOMMENDATION:**

**The Committee recommends that the SBI authorize the Executive Director, with assistance from SBI's legal counsel, to negotiate and execute contracts with Aon Hewitt Investment Consulting, Inc. for general consulting services and with Pension Consulting Alliance for special projects. The contracts should allow for adequate transitional time from the current consultants and cover a period of five years. The contract will also be subject to the standard termination provisions required by state statute.**

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TAB

A

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## LONG TERM OBJECTIVES

Period Ending 12/31/16

COMBINED FUNDS: \$59.9 Billion	Result	Compared to Objective (2)
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**Match or Exceed Composite Index (10 Yr.)**

6.1% (1)

0.2 percentage point above the target

Outperform a composite market index weighted in a manner that reflects the long-term asset allocation of the Combined Funds over the latest 10 year period.

**Provide Real Return (20 Yr.)**

7.4%

5.3 percentage points above CPI

Provide returns that are 3-5 percentage points greater than inflation over the latest 20 year period.

(1) Performance is calculated net of fees.

(2) Differential from composite may occur due to rounding.

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## EXECUTIVE SUMMARY

### Combined Funds (Net of Fees)

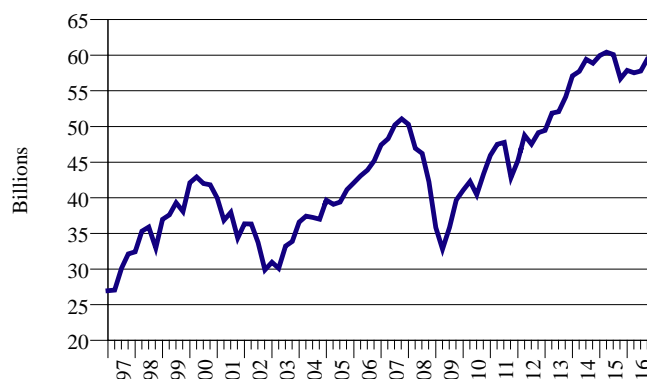
#### Asset Growth

The market value of the Combined Funds increased 0.7% during the fourth quarter of 2016. The negative net contributions were outweighed by positive investment returns during the quarter.

#### Asset Growth During Fourth Quarter 2016 (Millions)

Beginning Value	\$59,547
Net Contributions	-498
Investment Return	890
Ending Value	\$59,940

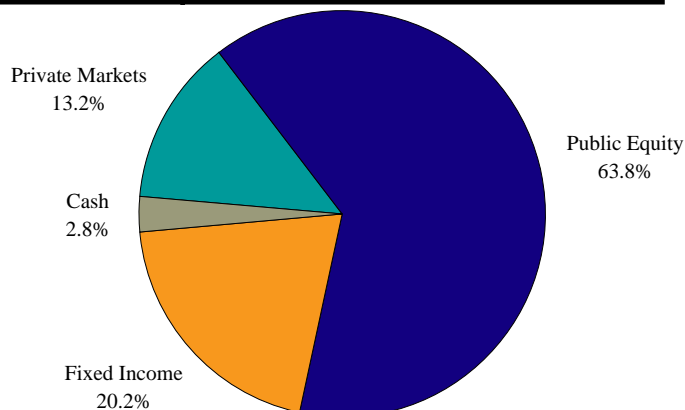
#### Combined Funds Market Value



#### Asset Mix

On July 1, 2016 the Combined Funds policy target changed as reflected below. Through December 31, 2016, assets were gradually transitioned from Bonds to Public Equity to reflect the new policy of holding uninvested Private Markets assets in the Public Equity portfolio.

	Policy Targets	Actual Mix 12/31/16	Actual Market Value (Millions)
Public Equity	58.0%	63.8%	\$38,214
Bonds	20.0%	20.2%	12,105
Private Markets*	20.0%	13.2%	7,932
Cash	2.0%	2.8%	1,688
	100.0%	100.0%	\$59,940

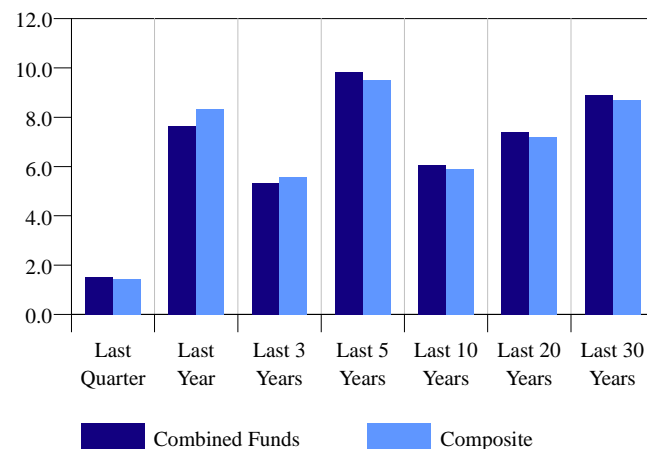


\* Any uninvested allocation is held in bonds and public equity.

#### Fund Performance (Net of Fees)

The Combined Funds matched its benchmark for the quarter and underperformed its benchmark for the year.

	Periods Ended 12/31/16						
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 20 Years	Last 30 Years
Combined Funds	1.5%	7.6%	5.3%	9.8%	6.1%	7.4%	8.9%
Composite	1.5%	8.3%	5.6%	9.5%	5.9%	7.2%	8.7%



Note: All periods over one year are annualized.

Column sums throughout this report may not add due to rounding.

## EXECUTIVE SUMMARY

### Stock and Bond Manager Performance (Net of Fees)

#### Public Equity

The public equity manager group (active, semi-passive and passive combined) underperformed its target for the quarter.

**Public Equity Target:** Effective 7/1/2016 the Public Equity Target is 75% Russell 3000/ 25% MSCI ACWI Ex-US. This target will transition over time to 67% Russell 3000/ 33% MSCI ACWI Ex-US.

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Public Equity</b>	2.7%	9.2%	5.5%	12.4%	5.7%
Public Equity Target	<b>2.8%</b>	--	--	--	--

#### Domestic Stocks

The domestic stock manager group (active, semi-passive and passive combined) outperformed its target for the quarter and underperformed for the year.

**Russell 3000:** The Russell 3000 measures the performance of the 3000 largest U.S. companies based on total market capitalization.

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Dom. Stocks</b>	<b>4.3%</b>	<b>11.5%</b>	<b>7.9%</b>	<b>14.6%</b>	<b>6.9%</b>
Asset Class Target*	4.2%	12.7%	8.4%	14.7%	7.1%

\* The Domestic Equity Asset Class Target is the Russell 3000 effective 10/1/03. From 7/1/99 to 9/30/03, it was the Wilshire 5000 Investable Index.

#### International Stocks

The international stock manager group (active, semi-passive and passive combined) underperformed its target for the quarter and the year.

**MSCI ACWI Free ex USA (net):** The Morgan Stanley Capital International All Country World Index is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global developed and emerging markets. There are 45 countries included in this index. It does not include the United States.

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Int'l Stocks</b>	<b>-1.7%</b>	<b>2.6%</b>	<b>-1.5%</b>	<b>5.8%</b>	<b>1.4%</b>
Asset Class Target*	-1.3%	4.5%	-1.8%	5.0%	1.0%

\* Since 6/1/08 the International Equity Asset Class Target is the Standard MSCI ACWI ex U.S. (net). From 10/1/07 to 5/31/08 the benchmark was the Provisional Standard MSCI ACWI ex USA (net). From 10/1/03 to 9/30/07 the target was MSCI ACWI ex USA (net).

#### Bonds

The bond manager group (active and semi-passive combined) outperformed its target for the quarter and the year.

**BB Barclays U.S. Agg.:** The Bloomberg Barclays U.S. Aggregate reflects the performance of the broad bond market for investment grade (Baa or higher) bonds, U.S. treasury and agency securities, and mortgage obligations with maturities greater than one year.

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Bonds</b>	<b>-2.6%</b>	<b>3.6%</b>	<b>3.4%</b>	<b>3.1%</b>	<b>4.7%</b>
Asset Class Target	-3.0%	2.6%	3.0%	2.2%	4.3%

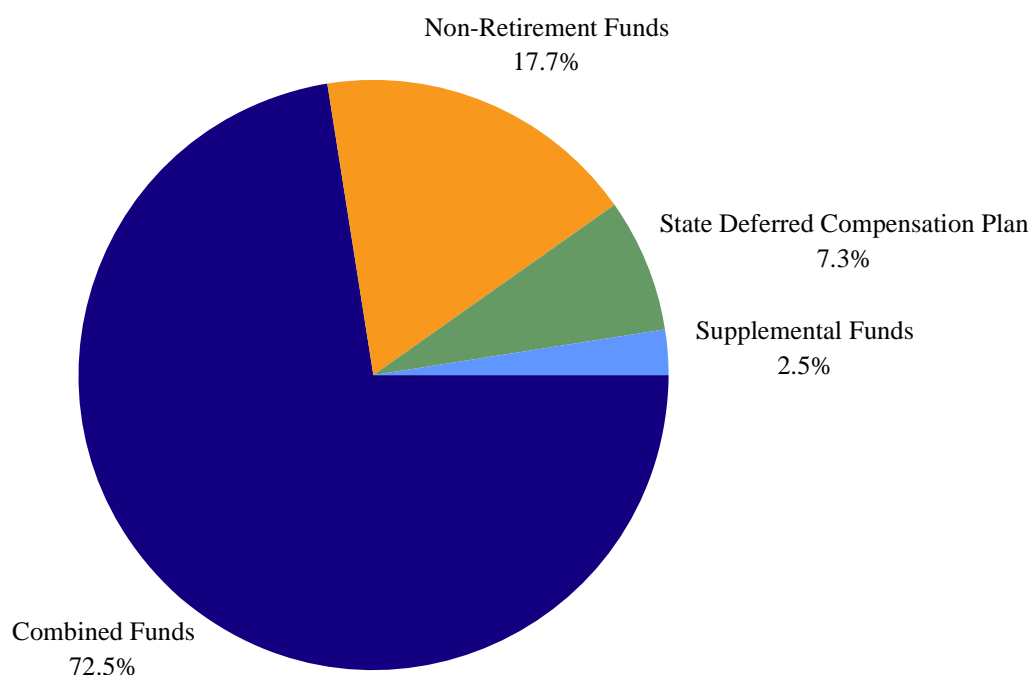
#### Private Markets

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Private Markets</b>	<b>3.0%</b>	<b>7.6%</b>	<b>8.8%</b>	<b>11.0%</b>	<b>9.8%</b>

Note: All periods over one year are annualized.

## EXECUTIVE SUMMARY

### Funds Under Management



### 12/31/16 Market Value (Billions)

#### Retirement Funds

Combined Funds	\$59.9
Supplemental Investment Fund	2.0
(Excluding Deferred Compensation Plan Assets)	
State Deferred Compensation Plan	6.0

#### Non-Retirement Funds

Assigned Risk Plan	0.3
Permanent School Fund	1.3
Environmental Trust Fund	1.0
Closed Landfill Investment Fund	0.1
Miscellaneous Trust Accounts	0.2
Other Post Employment Benefits Accounts	0.6
State Cash Accounts	10.1
<u>Minnesota College Savings Plan</u>	<u>1.2</u>

<b>Total</b>	<b>\$82.7</b>
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Note: Amounts and percentages may not add due to rounding.

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# MINNESOTA STATE BOARD OF INVESTMENT

## QUARTERLY INVESTMENT REPORT

Fourth Quarter 2016  
(October 1, 2016 - December 31, 2016)

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## VARIOUS CAPITAL MARKET INDICES

Periods Ended December 31, 2016

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 20 Years
<b>Domestic Equity</b>						
Russell 3000 (broad market)	4.2%	12.7%	8.4%	14.7%	7.1%	7.9%
Russell 1000 (large cap)	3.8	12.1	8.6	14.7	7.1	7.9
Russell 2000 (small cap)	8.8	21.3	6.7	14.5	7.1	8.2
Dow Jones Wilshire Composite	4.1	12.6	8.4	14.6	7.2	7.9
Dow Jones Industrials	8.7	16.5	8.7	12.9	7.5	8.2
S&P 500	3.8	12.0	8.9	14.7	6.9	7.7
<b>Domestic Fixed Income</b>						
BB Barclays U.S. Agg. (1)	-3.0	2.6	3.0	2.2	4.3	5.3
BB Barclays Gov't/Credit	-3.4	3.0	3.0	2.3	4.4	5.3
3 month U.S. Treasury Bills	0.1	0.3	0.1	0.1	0.8	2.3
<b>International</b>						
MSCI Emerging Markets Free Index (2)	-4.2	11.2	-2.6	1.3	1.8	5.5
MSCI ACWI ex USA (3)	-1.3	4.5	-1.8	5.0	1.0	--
MSCI EAFE (4)	-0.7	1.0	-1.6	6.5	0.7	4.2
MSCI World ex USA (5)	-0.4	2.7	-1.6	6.1	0.9	4.4
Salomon Non U.S. Gov't Bond	-10.8	1.8	-2.2	-1.9	2.5	3.6
<b>Inflation Measure</b>						
Consumer Price Index CPI-U (6)	0.0	2.1	1.2	1.4	1.8	2.1
Consumer Price Index CPI-W (7)	0.0	2.0	0.9	1.2	1.8	2.1

(1) Bloomberg Barclays U.S. Aggregate. Includes governments, corporates and mortgages.

(2) Morgan Stanley Capital International Emerging Markets Free Index (Net index).

(3) Morgan Stanley Capital International All Country World Index ex USA (Net index).

(4) Morgan Stanley Capital International Index of Europe, Australasia and the Far East (EAFE) (Net index).

(5) Morgan Stanley Capital International World ex USA Index (Developed Markets) (Net index).

(6) Consumer Price Index (CPI) for all urban consumers, also known as CPI-U.

(7) Consumer Price Index (CPI) for all wage earners, also known as CPI-W.

Note: All periods over one year are annualized.

## FINANCIAL MARKETS REVIEW

### DOMESTIC STOCKS

The U.S. stock market, as measured by the Russell 3000 index, posted a 4.2% return for the fourth quarter of 2016. This quarter was dominated by the run-up to, and outcome of, the U.S. Presidential election. While the initial reaction to Donald Trump's somewhat unexpected victory was negative, the market quickly recovered and extended its gains. Within the Russell 3000, Financial Services was the best performing sector with a 13.0% return while Health Care was the weakest sector with -4.2% return for the quarter. Value stocks outperformed growth stocks during the quarter.

Performance for the Russell Style Indices for the quarter is shown below:

Large Growth	Russell 1000 Growth	1.0%
Large Value	Russell 1000 Value	6.7%
Small Growth	Russell 2000 Growth	3.6%
Small Value	Russell 2000 Value	14.1%

The Russell 3000 index returned 12.7% for the year ending December 31, 2016.

### DOMESTIC BONDS

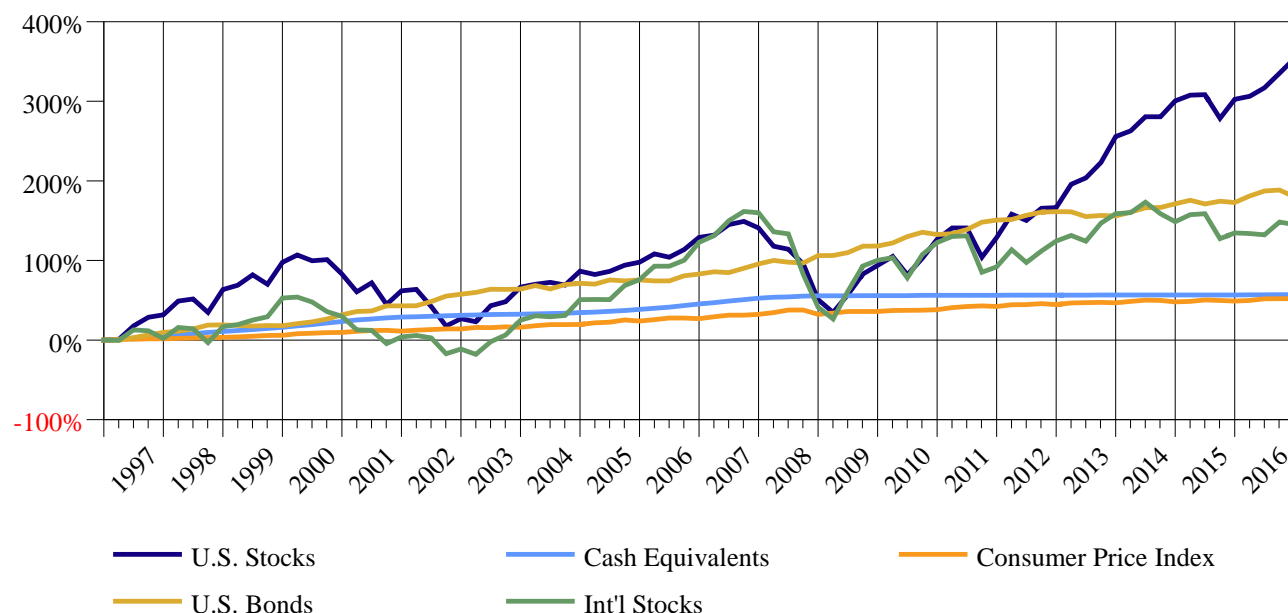
The U.S. bond market, as measured by the Bloomberg Barclays Capital U.S. Aggregate Bond Index, produced a total return of -2.98% for the quarter. The 2-year U.S. Treasury yield ended the quarter higher by 43 basis points at 1.19%, the 5-year increased by 78 basis points to 1.93%, the 10-year increased by 85 basis points to 2.45%, and the 30-year increased by 75 basis points to 3.07%. Relative to other sectors, asset backed securities delivered the strongest performance, followed by agency debentures and agency mortgage backed securities..

The major sector returns for the Bloomberg Barclays U.S. Aggregate Bond Index for the quarter were:

U.S. Treasury	-3.8%
Agency	-2.1%
Corporates	-2.8%
Agency MBS	-2.0%
Commercial Mortgages	-3.0%
Asset-Backed	-0.7%

### PERFORMANCE OF CAPITAL MARKETS

#### Cumulative Returns



## FINANCIAL MARKETS REVIEW

### DEVELOPED INTERNATIONAL MARKETS

In aggregate, developed international stock markets (as measured by MSCI World ex USA index net) provided a return of -0.4% for the quarter. Developed markets had a positive quarter, in local currency terms boosted, in part, by investor optimism for an improving global economy. But, the sharp appreciation of the dollar erased nearly all of that return for U.S. dollar-based investors. The top performing sectors were Financials, Energy and Materials. The worst performing sectors were Consumer Staples, Health Care and Real Estate.

The quarterly performance of the six largest stock markets, which comprise about 73% of the MSCI World ex USA index, is shown below:

Japan	-0.2%
United Kingdom	-0.9%
France	2.9%
Canada	3.3%
Germany	1.5%
Switzerland	-3.9%

The MSCI World ex USA index returned -2.8% during the last year.

### EMERGING INTERNATIONAL MARKETS

Emerging markets (as measured by MSCI Emerging Market index net) provided a return of -4.2% for the quarter. Developing countries lost ground, hurt by a surge in the U.S. dollar and the hike in U.S. interest rates for the first time in a year. The top performing sectors were Energy, Materials and Financials. The worst performing sectors were Consumer Staples, Real Estate and Health Care.

The quarterly performance of the six largest stock markets, which comprise about 76% of the MSCI Emerging Markets index, is shown below:

China	-7.1%
Korea	-5.6%
Taiwan	-2.2%
India	-8.0%
Brazil	2.1%
South Africa	-4.1%

The Emerging Markets Free index returned 11.2% during the last year.

### REAL ESTATE

During the fourth quarter of 2016, private real estate achieved its 28th consecutive quarter of positive returns with the NCREIF Property Index posting a return of 1.7%. Real Estate markets have seen a healthy recovery since the 2008-2009 crash. An aggregate \$104bn in private real estate funds was raised in 2016, with approximately 61% of the total amount focused on North American properties. While the aggregate capital raised has decreased from 2014 and 2015 levels, 59% of closed-end private real estate funds closed in 2016 beat their targeted fundraise amount. (Sources: NCREIF; Preqin)

### PRIVATE EQUITY

During 2016, an aggregate \$345 billion in private equity funds was raised across 807 funds. Roughly half of the capital raised is targeting North American companies and nearly 32% is focused on European companies. Buyout funds topped the list of aggregate capital raised globally with \$208bn across 180 funds with Venture Capital a distant second raising \$55bn across 372 funds. Heading into 1Q17, there is \$820bn of dry powder, a 9% increase from the previous year. (Source: Preqin)

When surveyed by Preqin, institutional investors cited high valuations as being an area of concern heading into 2017. However, 94% of the same group of investors plan to either maintain or increase their Private Equity allocation heading into 2017. There will be no shortage of options as 1,835 funds are seeking to raise \$526bn heading into 2017. (Sources: Preqin)

### RESOURCE FUNDS

During the fourth quarter of 2016, crude oil traded between a range of \$43/bbl and \$54/bbl. The average price for the quarter was \$49/bbl, which was \$4 above the average price from the third quarter. Prices surged in December after OPEC members pledged to cut production by 1.2 million barrels per day. (Sources: Bloomberg, The Economist)

## COMBINED FUNDS

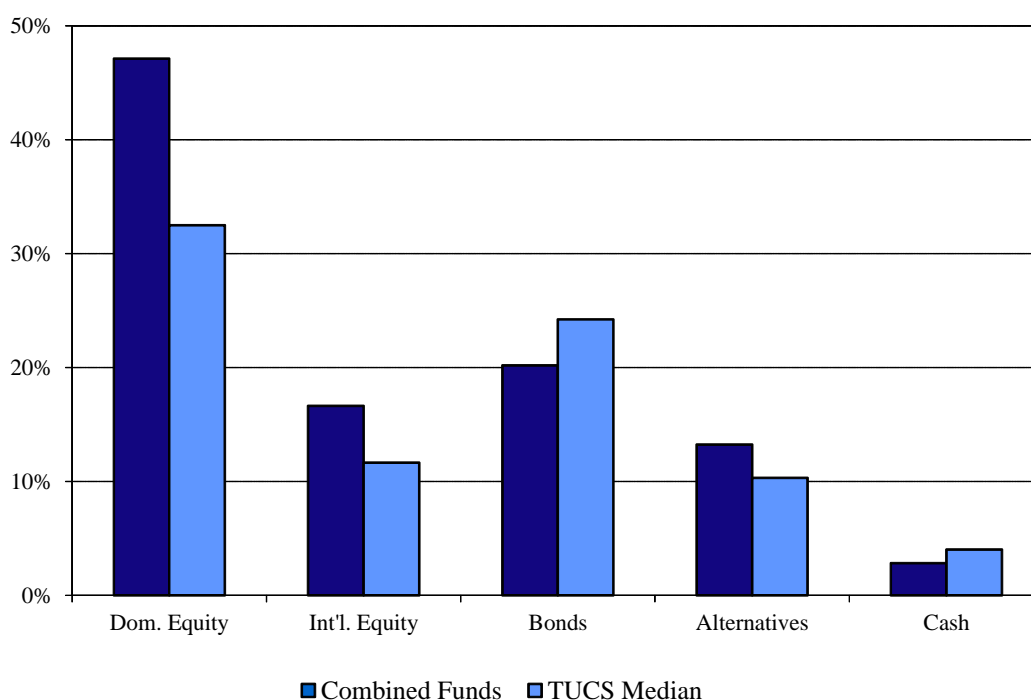
The comparison universe used by the SBI is the Trust Universe Comparison Service (TUCS). Only funds with assets over \$1 billion are included in the comparisons shown in this section.

### Asset Mix Compared to Other Pension Funds

On 12/31/16, the asset mix of the Combined Funds was:

	<b>\$ Million</b>	<b>%</b>
Public Equity	\$38,214	63.8%
Bonds	12,105	20.2%
Private Markets*	7,932	13.2%
Cash	1,688	2.8%
Total	59,940	100.0%

Comparisons of the Combined Funds' asset mix to the median allocation to stocks, bonds and other assets of the public and corporate funds in TUCS over \$1 billion are shown below:



	<b>Domestic Equity</b>	<b>Int'l Equity</b>	<b>Bonds</b>	<b>Alternatives</b>	<b>Cash</b>
<b>Combined Funds</b>	47.1%	16.6%	20.2%	13.2%	2.8%
Median Allocation in TUCS*	32.5%	11.6%	24.2%	10.3%**	4.0%

\* Public and corporate plans over \$1 billion.

\*\* May include assets other than alternatives.

## COMBINED FUNDS

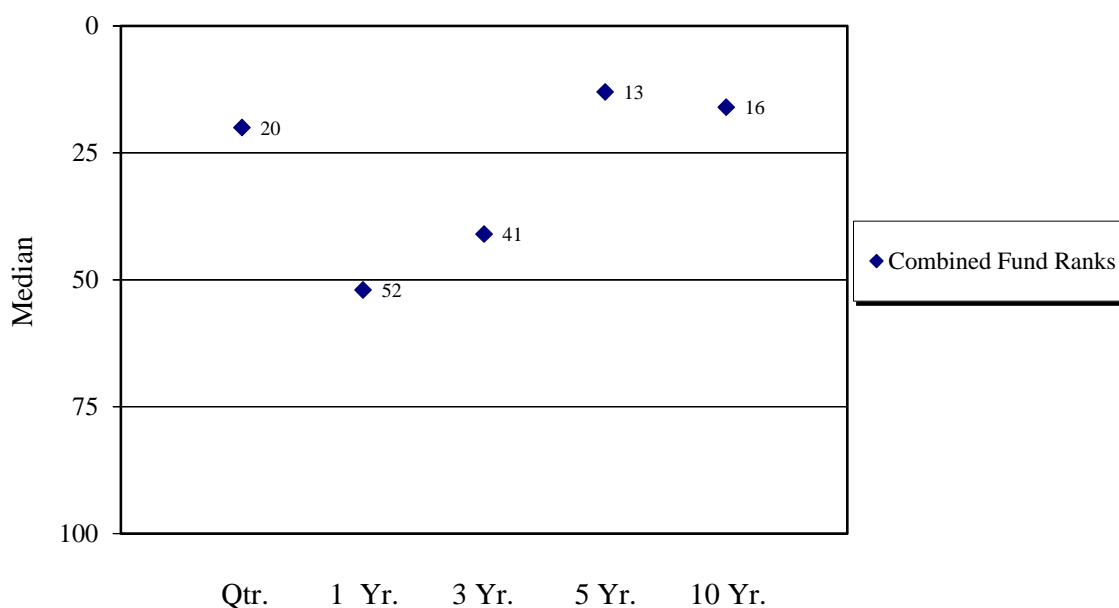
### Performance Compared to Other Pension Funds

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

- **Differing Allocations.** Asset allocation will have a dominant effect on return. The allocation to stocks among the funds in TUCS typically ranges from 20-90%, a very wide range for meaningful comparison. In addition, it appears that many funds do not include alternative asset 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. This will result in different asset mix choices. Since asset mix will largely determine investment results, a universe ranking is not 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 in Trust Universe Comparison Service (TUCS) are shown below.

The SBI's returns are ranked against public and corporate plans with over \$1 billion in assets. All funds in TUCS report their returns gross of fees.



	Periods Ended 12/31/16				
	Quarter	1 Year	3 Years	5 Years	10 Years
Combined Funds					
Percentile Rank in TUCS*	20th	52nd	41st	13th	16th

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

Note: All periods over one year are annualized.

## COMBINED FUNDS

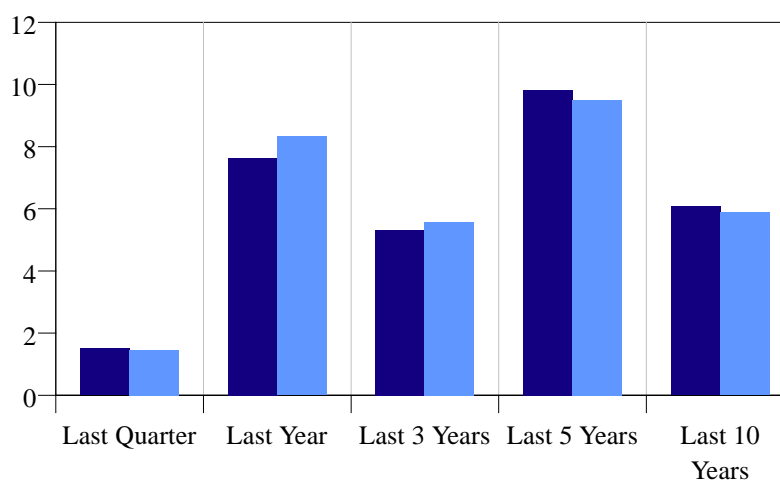
### Performance Compared to Composite Index

The Combined Funds' performance is evaluated relative to a composite of market indices. The composite is weighted in a manner that reflects the asset allocation of the Combined Funds. Beginning July 1, 2016, the Combined Funds Composite composition entered a transition period as unfunded commitments to private markets shift from Bonds to Public Equity:

	Market Index	Combined Funds Composite 4Q16
Public Equity	73% Russell 3000/27% MSCI ACWI ex US	61.7%*
Bonds	BB Barclays U.S. Aggregate	24.2%*
Private Markets	Private Markets	12.9%*
Unallocated Cash	3 Month T-Bills	1.2%*
		100.0%

\*During the transition period all asset class weights are reset in the composite at the start of each month. The above Combined Funds Composite weighting was as of the beginning of the quarter.

### Performance Comparison



#### Periods Ended 12/31/16

Combined Funds **		1.5%	7.6%	5.3%	9.8%	6.1%
Composite		1.5%	8.3%	5.6%	9.5%	5.9%

\*\* Actual returns are reported net of fees.

Note: All periods over one year are annualized.

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## STOCK AND BOND MANAGERS

### Performance of Asset Pools

(Net of Fees)

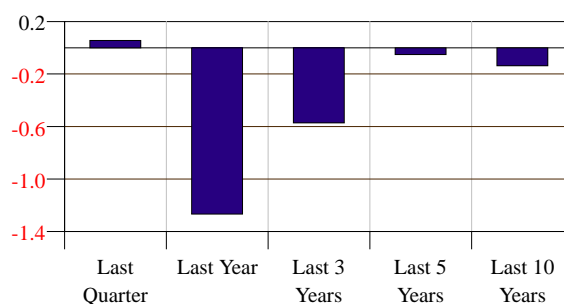
#### Domestic Stocks

Target: Russell 3000

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Domestic Stocks</b>	<b>4.3%</b>	<b>11.5%</b>	<b>7.9%</b>	<b>14.6%</b>	<b>6.9%</b>
Asset Class Target*	4.2%	12.7%	8.4%	14.7%	7.1%

\* The Domestic Equity Asset Class Target is the Russell 3000 effective 10/1/03.  
From 7/1/99 to 9/30/03, it was the Wilshire 5000 Investable Index.

Value Added to Domestic Equity Target (1)



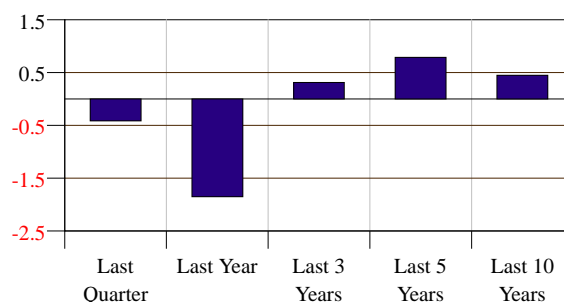
#### International Stocks

Target: Standard MSCI ACWI Free ex U.S. (net)

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Int'l Stocks</b>	<b>-1.7%</b>	<b>2.6%</b>	<b>-1.5%</b>	<b>5.8%</b>	<b>1.4%</b>
Asset Class Target*	-1.3%	4.5%	-1.8%	5.0%	1.0%

\* The Int'l Equity Asset Class Target is MSCI ACWI Free ex U.S. (net) effective 10/1/03.

Value Added to International Equity Target (1)

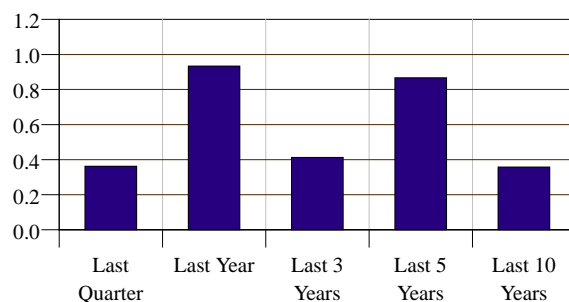


#### Bonds

Target: Bloomberg Barclays U.S. Aggregate

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Bonds</b>	<b>-2.6%</b>	<b>3.6%</b>	<b>3.4%</b>	<b>3.1%</b>	<b>4.7%</b>
Asset Class Target	-3.0%	2.6%	3.0%	2.2%	4.3%

Value Added to Fixed Income Target (1)



Note: All periods over one year are annualized.

(1) Graph data is based on actual return and may not match table due to rounding.

**Private Markets**  
**Performance of Asset Categories**  
**(Net of Fees)**

**Private Markets**

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Private Markets	3.0%	7.6%	8.8%	11.0%	9.8%
Inflation	0.0%	2.1%	1.2%	1.4%	1.8%

**Real Estate Investments (Equity emphasis)**

The SBI began its real estate program in the mid-1980's and periodically makes new investments. Some of the existing investments are relatively immature and returns may not be indicative of future results.

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Real Estate	2.5%	7.1%	13.0%	12.1%	5.8%

**Private Equity Investments (Equity emphasis)**

The SBI began its private equity program in the mid-1980's and periodically makes new investments. Some of the existing investments are relatively immature and returns may not be indicative of future results.

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Private Equity	3.4%	11.5%	13.0%	14.1%	11.8%

**Resource Investments (Equity emphasis)**

The SBI began its resource program in the mid-1980's and periodically makes new investments. Some of the existing investments are relatively immature and returns may not be indicative of future results.

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Resource	3.1%	-6.2%	-5.8%	0.9%	7.2%

**Yield Oriented Investments (Debt emphasis)**

The SBI began its yield oriented program in 1994. Some of the existing investments are relatively immature and returns may not be indicative of future results.

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Yield Oriented	1.1%	7.6%	6.4%	10.0%	10.6%

## SUPPLEMENTAL INVESTMENT FUND

The Minnesota Supplemental Investment Fund (SIF) is a multi-purpose investment program that offers a range of investment options to state and local public employees.

The SIF provides some or all of the investment options to the Unclassified Employees Retirement Plan, Minnesota Deferred Compensation Plan, Public Employees Defined Contribution Plan, Hennepin County Supplemental Retirement Plan, Health Care Savings Plan, local police and firefighter retirement plans and the Voluntary Statewide Volunteer Firefighter plan.

A wide diversity of investment goals exists among the Fund's participants. In order to meet those needs, the Fund has been structured much like a "family of mutual funds." Participants may allocate their investments among one or more accounts that are appropriate for their needs, within the statutory requirements and rules established by the participating organizations. Participation in the Fund is accomplished through the purchase or sale of shares in each account. All returns are net of investment management fees.

On December 31, 2016 the market value of the entire Fund was \$2.0 billion.

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### Investment Options

#### 12/31/16 Market Value (In Millions)

**Balanced Fund** - a balanced portfolio utilizing both common stocks and bonds.

\$389

**U.S. Stock Actively Managed Fund** - an actively managed, all common stock portfolio.

\$217

**U.S. Stock Index Fund** - a passively managed, all common stock portfolio designed to track the performance of the entire U.S. stock market.

\$520

**Broad International Stock Fund** - a portfolio of non U.S. stocks that incorporates both active and passive management.

\$168

**Bond Fund** - an actively managed, all bond portfolio.

\$148

**Money Market Fund** - a portfolio utilizing short-term, liquid debt securities.

\$308

**Stable Value Fund** - a portfolio of stable value instruments, including security backed contracts and insurance company and bank investment contracts.

\$220

**Volunteer Firefighter Account** - a balanced portfolio only used by the Voluntary Statewide Volunteer Firefighter Plan.

\$72

## SUPPLEMENTAL INVESTMENT FUND ACCOUNTS

### BALANCED FUND

#### Investment Objective

The primary investment objective of the Balanced Fund is similar to that of the Combined Funds. The Fund seeks to maximize long-term real rates of return, while limiting short-run portfolio return volatility.

#### Asset Mix

The Balanced Fund is invested in a balanced portfolio of common stocks and bonds. Common stocks provide the potential for significant capital appreciation, while bonds act as a deflation hedge and provide portfolio diversification.

	Target	Actual
Stocks	60.0%	60.0%
Bonds	35.0%	35.6%
Cash	5.0%	4.4%
	100.0%	100.0%

#### Periods Ended 12/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Account</b>	<b>1.7%</b>	<b>9.1%</b>	<b>6.3%</b>	<b>10.1%</b>	<b>6.4%</b>
Benchmark*	1.5%	8.7%	6.3%	9.6%	5.9%

\* 60% Russell 3000/35% Barclays Aggregate Bond Index/5% T-Bills Composite.

### U.S. STOCK ACTIVELY MANAGED FUND

#### Investment Objective

The U.S. Stock Actively Managed Fund's investment objective is to generate above-average returns from capital appreciation on common stocks.

#### Asset Mix

The U.S. Stock Actively Managed Fund is invested primarily in the common stocks of U.S. companies. The managers in the account also hold varying levels of cash.

#### Periods Ended 12/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Account</b>	<b>4.0%</b>	<b>10.5%</b>	<b>7.5%</b>	<b>14.5%</b>	<b>6.8%</b>
Benchmark*	4.2%	12.7%	8.4%	14.7%	7.1%

\* Russell 3000.

### U.S. STOCK INDEX FUND

#### Investment Objective and Asset Mix

The investment objective of the U.S. Stock Index Fund is to generate returns that track those of the U.S. stock market as a whole. The Fund is designed to track the performance of the Russell 3000, a broad-based equity market indicator.

The Fund is invested 100% in common stock.

#### Periods Ended 12/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Account</b>	<b>4.2%</b>	<b>12.7%</b>	<b>8.5%</b>	<b>14.7%</b>	<b>7.1%</b>
Benchmark*	4.2%	12.7%	8.4%	14.7%	7.1%

\* Russell 3000.

Note: All periods over one year are annualized.

## SUPPLEMENTAL INVESTMENT FUND ACCOUNTS

### BROAD INTERNATIONAL STOCK FUND

#### Investment Objective and Asset Mix

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. At least 25% of the Fund is "passively managed" and no more than 33% of the Fund is "semi-passively managed." These portions of the Fund are designed to track and modestly outperform, respectively, the return of 23 developed markets included in the MSCI World ex USA Index. The remainder of the Fund is "actively managed" by several international managers and emerging markets specialists who buy and sell stocks in an attempt to maximize market value.

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Account</b>	<b>-1.7%</b>	<b>2.6%</b>	<b>-1.5%</b>	<b>5.8%</b>	<b>1.5%</b>
Benchmark*	-1.3%	4.5%	-1.8%	5.0%	1.0%

\* The Int'l Equity Asset Class Target is MSCI ACWI ex USA (net).

### BOND FUND

#### Investment Objective

The investment objective of the Bond Fund is to exceed the return of the broad domestic bond market by investing in fixed income securities.

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Account</b>	<b>-2.6%</b>	<b>3.6%</b>	<b>3.4%</b>	<b>3.1%</b>	<b>4.7%</b>
BB Barc Agg	-3.0%	2.6%	3.0%	2.2%	4.3%

#### Asset Mix

The Bond Fund invests primarily in high-quality, government and corporate bonds that have intermediate to long-term maturities, usually 3 to 20 years.

### MONEY MARKET FUND

#### Investment Objective

The investment objective of the Money Market Fund is to protect principal by investing in short-term, liquid U.S. Government securities.

	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Account</b>	<b>0.2%</b>	<b>0.6%</b>	<b>0.3%</b>	<b>0.3%</b>	<b>1.0%</b>
3 month T-Bills	0.1%	0.3%	0.1%	0.1%	0.8%

#### Asset Mix

The Fund is invested entirely in high-quality, short-term U.S. Treasury and Agency securities. The average maturity of the portfolios is less than 90 days.

Note: All periods over one year are annualized.

## SUPPLEMENTAL INVESTMENT FUND ACCOUNTS

### STABLE VALUE FUND

#### Investment Objective

The investment objectives of the Stable Value Fund are to protect investors from loss of their original investment and to provide competitive interest rates using somewhat longer-term investments than typically found in a money market fund.

#### Asset Mix

The Fund is invested in a well-diversified portfolio of high-quality fixed income securities with strong credit ratings. The Fund also invests in 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.

#### Periods Ended 12/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Account</b>	<b>0.5%</b>	<b>2.1%</b>	<b>2.0%</b>	<b>2.2%</b>	<b>3.2%</b>
Benchmark*	0.4%	1.4%	1.4%	1.2%	1.8%

\* The Stable Value Fund Benchmark is the 3-year Constant Maturity Treasury Bill +45 basis points.

### VOLUNTEER FIREFIGHTER ACCOUNT

The investment objective of the Volunteer Firefighter Account is to maximize long-term returns while limiting short-term portfolio return volatility.

The Account is invested in a balanced portfolio:

	<b>Target</b>	<b>Actual</b>
Domestic Stocks	35.0%	35.1%
International Stocks	15.0%	15.2%
Bonds	45.0%	44.9%
Cash	5.0%	4.9%
	100.0%	100.0%

#### Periods Ended 12/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Account</b>	<b>0.4%</b>	<b>6.9%</b>	<b>4.4%</b>	<b>7.5%</b>	<b>--</b>
Benchmark*	0.0%	6.5%	4.2%	7.0%	--

\* The benchmark for this account is 35% Russell 3000, 15% MSCI ACWI ex USA (net), 45% Bloomberg Barclays U.S. Aggregate, 5% 3 Month T-Bills.

Note: All periods over one year are annualized.

## DEFERRED COMPENSATION PLAN ACCOUNTS

The Deferred Compensation Plan provides public employees with a tax-sheltered retirement savings plan that is supplemental to their primary retirement plan. (In most cases, the primary plan is a defined benefit plan administered by TRA, PERA, or MSRS.)

Participants choose from 4 actively managed stock and bond funds, 5 passively managed stock and bond funds and 10 target retirement fund options.

The SBI also offers a money market option and a stable value option. All provide for daily pricing needs of the plan administrator.

Participants may also choose from hundreds of funds in a mutual fund window. The current plan structure became effective July 1, 2011. The investment options and objectives are outlined below.

In the third quarter of 2016, the Janus Large-Cap Fund was replaced by the Vanguard Dividend Growth Large-Cap Fund.

On December 31, 2016, the market value of the entire Fund was \$6.0 billion.

### Investment Options

	<b>12/31/16 Market Value (In Millions)</b>
Vanguard Index Institutional Plus Shares (passive)	\$1,061.9
Vanguard Dividend Growth (active)	\$523.0
Vanguard Mid Cap Index Institutional Shares (passive)	\$458.3
T. Rowe Price Small-Cap Stock (active)	\$633.1
Fidelity Diversified International (active)	\$254.4
Vanguard Total International Stock Index Institutional Plus (passive)	\$150.3
Vanguard Balanced Index Institutional Shares (passive)	\$711.4
Dodge & Cox Income Fund (active)	\$215.9
Vanguard Total Bond Market Index Institutional Shares (passive)	\$208.5
SIF Money Market Fund	\$67.9
SIF Stable Value Fund	\$1,356.8
State Street Global Advisors MN Target Retirement Funds	\$405.6
Income Fund	\$71.4
2020 Fund	\$91.5
2025 Fund	\$76.8
2030 Fund	\$51.0
2035 Fund	\$38.9
2040 Fund	\$25.9
2045 Fund	\$21.2
2050 Fund	\$15.0
2055 Fund	\$7.5
2060 Fund	\$6.2

## DEFERRED COMPENSATION PLAN ACCOUNTS

### LARGE CAP EQUITY

**Vanguard Index Institutional Plus (passive)**

A passive domestic stock portfolio that tracks the S&P 500.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>3.8%</b>	<b>12.0%</b>	<b>8.9%</b>	<b>14.7%</b>
S&P 500	3.8%	12.0%	8.9%	14.7%

**Vanguard Dividend Growth (active)**

A fund of large cap stocks which is expected to outperform the Nasdaq US Dividend Achievers Select Index, over time.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>1.0%</b>	<b>7.5%</b>	<b>7.3%</b>	<b>12.4%</b>
Nasdaq US Div	2.1%	11.8%	6.5%	11.7%

### MID CAP EQUITY

**Vanguard Mid Cap Index (passive)**

A fund that passively invests in companies with medium market capitalizations that tracks the CRSP US Mid-Cap Index.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>2.1%</b>	<b>11.2%</b>	<b>7.7%</b>	<b>14.4%</b>
CRSP U.S. Mid Cap	2.1%	11.2%	7.7%	14.5%

### SMALL CAP EQUITY

**T Rowe Price Small Cap (active)**

A fund that invests primarily in companies with small market capitalizations and is expected to outperform the Russell 2000.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>7.6%</b>	<b>19.0%</b>	<b>7.4%</b>	<b>15.5%</b>
Russell 2000	8.8%	21.3%	6.7%	14.5%

### INTERNATIONAL EQUITY

**Fidelity Diversified International (active)**

A fund that invests primarily in stocks of companies located outside of the United States and is expected to outperform the MSCI index of Europe, Australasia and the Far East (EAFE), over time.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>-4.7%</b>	<b>-3.7%</b>	<b>-1.3%</b>	<b>7.5%</b>
MSCI EAFE	-0.7%	1.0%	-1.6%	6.5%

**Vanguard Total International Stock Index (passive)**

A fund that seeks to track the investment performance of the MSCI All Country World ex USA Investable Market Index, an index designed to measure equity market performance in developed and emerging markets, excluding the United States.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>-1.9%</b>	<b>4.7%</b>	<b>-1.3%</b>	<b>5.6%</b>
ACWI ex USA IMI	-1.2%	5.0%	-0.8%	5.8%

Note: All periods over one year are annualized.



## DEFERRED COMPENSATION PLAN ACCOUNTS

### BALANCED

#### Vanguard Balanced Index (passive)

A fund that passively invests in a mix of domestic stocks and bonds. The fund is expected to track a weighted benchmark of 60% CRSP US Total Market Index/40% BB Barclays U.S. Aggregate.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>1.2%</b>	<b>8.8%</b>	<b>6.4%</b>	<b>9.6%</b>
Benchmark	1.3%	8.8%	6.4%	9.7%

### FIXED INCOME

#### Dodge & Cox Income Fund (active)

A fund that invests primarily in investment grade securities in the U.S. bond market which is expected to outperform the BB Barclays U.S. Aggregate, over time.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>-1.2%</b>	<b>5.6%</b>	<b>3.5%</b>	<b>3.8%</b>
BB Barc Agg	-3.0%	2.6%	3.0%	2.2%

#### Vanguard Total Bond Market Index (passive)

A fund that passively invests in a broad, market weighted bond index that is expected to track the BB Barclays U.S. Aggregate.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>-3.2%</b>	<b>2.6%</b>	<b>2.9%</b>	<b>2.2%</b>
BB Barc Agg	-3.0%	2.6%	3.0%	2.2%

#### SIF Money Market Fund

A fund that invests in short-term debt instruments which is expected to outperform the return on 3-month U.S. Treasury Bills.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>0.2%</b>	<b>0.6%</b>	<b>0.3%</b>	<b>0.3%</b>
3-Mo. Treas.	0.1%	0.3%	0.1%	0.1%

### SIF STABLE VALUE FUND

A portfolio composed of stable value instruments which are primarily investment contracts and security backed contracts. The fund is expected to outperform the return of the 3 year Constant Maturity Treasury +45 basis points, over time.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>0.5%</b>	<b>2.1%</b>	<b>2.0%</b>	<b>2.2%</b>
Benchmark	0.4%	1.4%	1.4%	1.2%

### MN TARGET RETIREMENT ACCOUNTS

Target retirement funds offer a mix of investments that are adjusted over time to reduce risk and become more conservative as the target retirement date approaches.

See the "Performance Summaries" section of the Public Markets, Non-Retirement, and Defined Contribution Report.

Note: All periods over one year are annualized.

## MN COLLEGE SAVINGS PLAN ACCOUNTS

The Minnesota College Savings Plan is an education savings plan designed to help families set aside funds for future college costs. 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 contract jointly with TIAA to provide administrative, marketing, communication, recordkeeping and investment management services.

On December 31, 2016, the market value of the entire Fund was \$1.2 billion.

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### Investment Options

**12/31/16  
Market Value  
(In Millions)**

#### Age Based Managed Allocation

Age Band 0-4 Years	\$24.9
Age Band 5-8 Years	\$69.4
Age Band 9-10 Years	\$69.7
Age Band 11-12 Years	\$100.8
Age Band 13-14 Years	\$134.1
Age Band 15 Years	\$68.9
Age Band 16 Years	\$65.9
Age Band 17 Years	\$62.7
Age Band 18 Years and over	\$155.1

#### Risk Based Managed Allocations

Aggressive	\$11.2
Moderate	\$55.4
Conservative	\$5.0

#### Static Options:

U.S. Large Cap Equity	\$11.8
International Equity	\$2.5
U.S. and International Equity	\$272.7
Equity and Interest Accumulation	\$1.4
100% Fixed Income	\$12.3
Money Market	\$8.6
Principal Plus Interest	\$109.4

## MN COLLEGE SAVINGS PLAN ACCOUNTS

### AGE-BASED MANAGED ALLOCATIONS

The Age-Based Managed Allocation Option seeks to align the investment objective and level of risk, which will become more conservative as the beneficiary ages and moves closer to entering an eligible educational institution.

See the "Performance Summaries" section of the Public Markets, Non-Retirement, and Defined Contribution Report.

### RISK BASED ALLOCATIONS

The Risk Based Allocation Option offers three separate allocation investment options: Aggressive, Moderate and Conservative, which have a fixed risk level and does not change as the Beneficiary ages.

See the "Performance Summaries" section of the Public Markets, Non-Retirement, and Defined Contribution Report.

### U.S. LARGE CAP EQUITY INDEX

A passive domestic stock portfolio that tracks the S&P 500.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	3.8%	11.7%	--	--
<b>S&amp;P 500</b>	3.8%	12.0%	--	--

### INTERNATIONAL EQUITY INDEX

A fund that passively invests in a mix of developed and emerging market equities. The fund is expected to track a weighted benchmark of 80% MSCI ACWI World ex USA and 20% Emerging Markets Free Index.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	-2.2%	2.8%	-2.1%	--
<b>Benchmark</b>	-1.4%	3.1%	-1.8%	--

### U.S. AND INTERNATIONAL EQUITY INDEX

A fund that invests in a mix of equities, both U.S. and international, across all capitalization ranges and real estate-related securities. The fund is expected to track a weighted benchmark of 60% Russell 3000, 24% International, 6% Emerging Markets, and 10% Real Estate Securities Fund.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	1.4%	8.9%	5.5%	11.5%
<b>Benchmark</b>	1.8%	9.5%	5.8%	11.8%

Note: All periods over one year are annualized.

## MN COLLEGE SAVINGS PLAN ACCOUNTS

### EQUITY AND INTEREST ACCUMULATION

A fund that passively invests half of the portfolio in equities across all capitalization ranges and the other half in a funding agreement. The fund is expected to track a weighted benchmark of 50% Russell 3000 and 50% 3-month T-Bill.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>2.2%</b>	<b>6.9%</b>	<b>--</b>	<b>--</b>
<b>Benchmark</b>	<b>2.2%</b>	<b>6.5%</b>	<b>--</b>	<b>--</b>

### 100% FIXED INCOME

A fund that passively invests in fixed income holdings that tracks the Bloomberg Barclays U.S. Aggregate and two active funds that invest in inflation-linked bonds and high yield securities. The fund is expected to track a weighted benchmark of 70% BB Barclays Aggregate, 20% inflation-linked bond, and 10% high yield.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>-2.4%</b>	<b>3.8%</b>	<b>2.7%</b>	<b>1.5%</b>
<b>Benchmark</b>	<b>-2.3%</b>	<b>4.1%</b>	<b>3.0%</b>	<b>2.0%</b>

### MONEY MARKET

An active fund that invests in high-quality, short-term money market instruments of both domestic and foreign issuers that tracks the iMoneyNet Average All Taxable benchmark.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>0.0%</b>	<b>0.1%</b>	<b>0.0%</b>	<b>0.0%</b>
<b>iMoney Net Average All Taxable</b>	<b>0.0%</b>	<b>0.1%</b>	<b>0.0%</b>	<b>0.0%</b>

### PRINCIPAL PLUS INTEREST OPTION

A passive fund where contributions 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 which is made by the insurance company to the policyholder, not the account owners. The account is expected to outperform the return of the 3-month T-Bill.

	Periods Ended 12/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>0.4%</b>	<b>1.4%</b>	<b>1.3%</b>	<b>1.4%</b>
<b>3-Month T-Bill</b>	<b>0.1%</b>	<b>0.3%</b>	<b>0.1%</b>	<b>0.1%</b>

Note: All periods over one year are annualized.

## ASSIGNED RISK PLAN

### Investment Objectives

The Assigned Risk plan has two investment objectives: to minimize the mismatch between assets and liabilities and to provide sufficient liquidity for the payment of ongoing claims and operating expenses.

### Asset Mix

The Assigned Risk Plan is invested in a portfolio of common stocks and bonds. The actual asset mix will fluctuate in response to changes in the Plan's liability stream.

	12/31/16 Target	12/31/16 Actual
Stocks	20.0%	20.5%
Bonds	80.0%	79.5%
Total	100.0%	100.0%

### Investment Management

RBC Global Asset Management (US) manages the bond segment of the Fund. SSgA manages the equity segment.

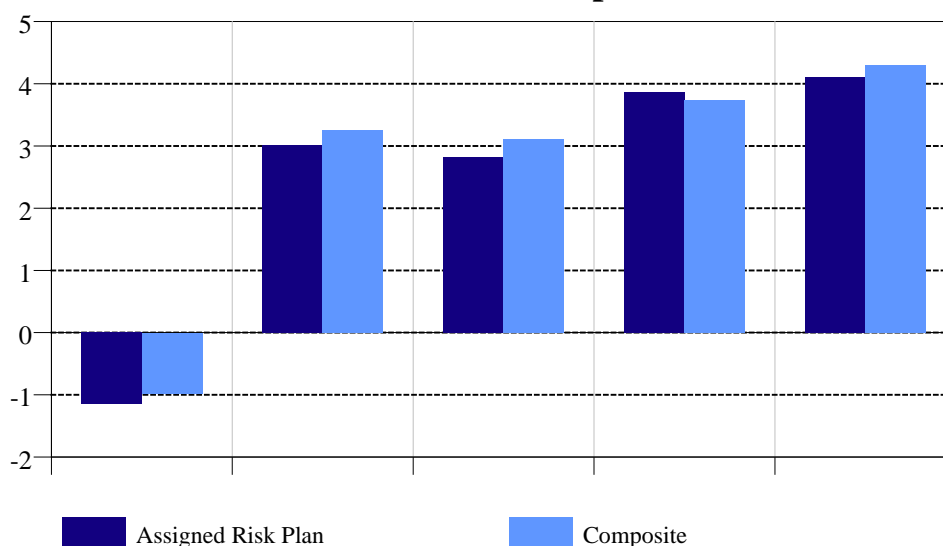
### Performance Benchmarks

Since July 1, 2011, the fixed income benchmark has been the Bloomberg Barclays U.S. Aggregate. Since July 1, 1994, the equity benchmark has been the S&P 500 index. The total fund benchmark is a combination of the fixed income and equity benchmarks, weighted according to the total fund asset allocation targets.

### Market Value

On December 31, 2016 the market value of the Assigned Risk Plan was \$313 million.

## Performance Comparison



### Periods Ended 12/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Fund*</b>	<b>-1.1%</b>	<b>3.0%</b>	<b>2.8%</b>	<b>3.9%</b>	<b>4.1%</b>
Composite	-1.0%	3.3%	3.1%	3.7%	4.3%
<b>Equity Segment*</b>	<b>2.8%</b>	<b>10.2%</b>	<b>7.2%</b>	<b>14.1%</b>	<b>6.8%</b>
S&P 500	3.8%	12.0%	8.9%	14.7%	6.9%
<b>Bond Segment*</b>	<b>-2.1%</b>	<b>1.1%</b>	<b>1.6%</b>	<b>1.1%</b>	<b>3.2%</b>
BB Barclays Int Gov	-2.2%	1.1%	1.6%	1.0%	3.4%

\* Actual returns are calculated net of fees.

Note: All periods over one year are annualized.

## PERMANENT SCHOOL FUND

### Investment Objectives

The investment objective of the Permanent School Fund is to produce a growing level of spendable income, within the constraints of maintaining adequate portfolio quality and liquidity. The income from the portfolio is transferred to the school endowment fund and distributed to Minnesota's public schools.

### Asset Mix

Effective with FY98, the Permanent School Fund is invested in a balanced portfolio of common stocks and bonds. Common stocks provide the potential for significant capital appreciation, while bonds provide portfolio diversification and a more stable stream of current income.

	12/31/16 Target	12/31/16 Actual
Stocks	50.0%	49.6%
Bonds	48.0%	48.4%
Cash	2.0%	2.0%
Total	100.0%	100.0%

Prior to FY98, the Fund was invested entirely in fixed income securities in order to maximize current income. It was understood that the change in asset mix would reduce portfolio income in the short term, but enhance the value of the fund, over time.

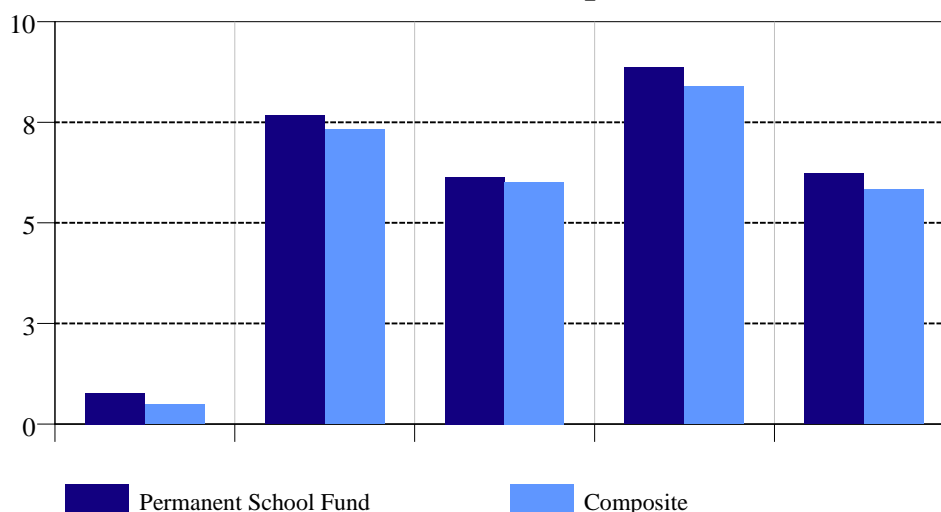
### Investment Management

SBI staff manages all assets of the Permanent School Fund. The stock segment is passively managed to track the performance of the S&P 500. The bond segment is actively managed to add incremental value through sector, security and yield curve decisions.

### Market Value

On December 31, 2016 the market value of the Permanent School Fund was \$1.3 billion.

## Performance Comparison



### Periods Ended 12/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Fund*</b>	<b>0.8%</b>	<b>7.7%</b>	<b>6.1%</b>	<b>8.9%</b>	<b>6.2%</b>
Composite	0.5%	7.3%	6.0%	8.4%	5.8%
<b>Equity Segment*</b>	<b>3.7%</b>	<b>11.8%</b>	<b>8.9%</b>	<b>14.6%</b>	<b>7.0%</b>
S&P 500	3.8%	12.0%	8.9%	14.7%	6.9%
<b>Bond Segment*</b>	<b>-2.6%</b>	<b>3.3%</b>	<b>3.4%</b>	<b>3.2%</b>	<b>4.9%</b>
BB Barclays Agg	-3.0%	2.6%	3.0%	2.2%	4.3%

\* Actual returns are calculated net of fees.

Note: All periods over one year are annualized.

## ENVIRONMENTAL TRUST FUND

### Investment Objectives

The objective of the Environmental Trust Fund is to increase the market value of the Fund over time in order to increase the annual amount made available for spending within the constraints of maintaining adequate portfolio quality and liquidity.

### Asset Mix

The Environmental Trust Fund is invested in a balanced portfolio of common stocks and bonds. Common stocks provide the potential for significant capital appreciation, while bonds act as a deflation hedge and provide portfolio diversification. As of July 1, 1999, the asset allocation changed from 50% stocks/50% fixed income to 70% stocks/30% fixed income.

	12/31/16 Target	12/31/16 Actual
Stocks	70.0%	71.1%
Bonds	28.0%	27.0%
Cash	2.0%	1.9%
Total	100.0%	100.0%

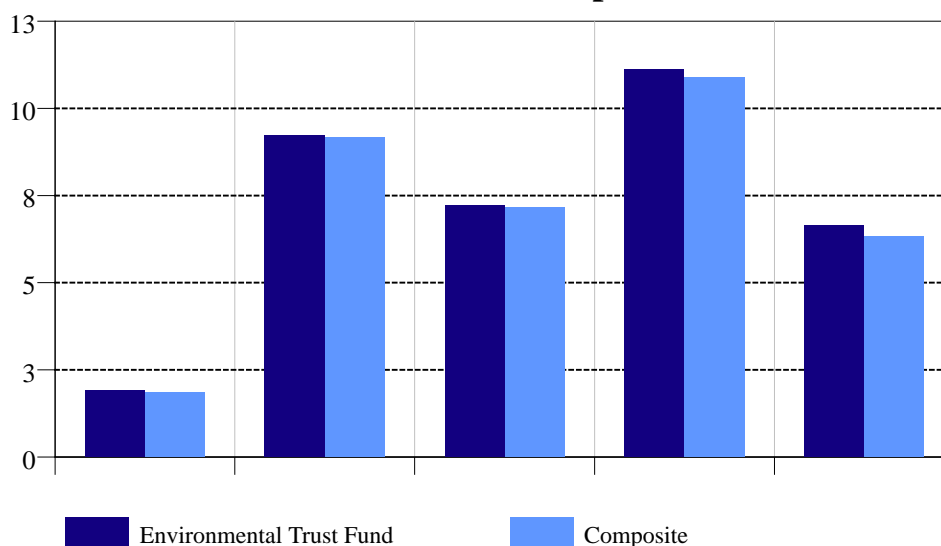
### Investment Management

SBI staff manages all assets of the Environmental Trust Fund. The bond segment is actively managed to add incremental value through sector, security and yield curve decisions. The stock segment is passively managed to track the performance of the S&P 500.

### Market Value

On December 31, 2016 the market value of the Environmental Trust Fund was \$963 million.

### Performance Comparison



	Periods Ended 12/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Fund*</b>	<b>1.9%</b>	<b>9.2%</b>	<b>7.2%</b>	<b>11.1%</b>	<b>6.7%</b>
Composite	1.8%	9.2%	7.2%	10.9%	6.3%
<b>Equity Segment*</b>	<b>3.7%</b>	<b>11.8%</b>	<b>8.9%</b>	<b>14.6%</b>	<b>7.0%</b>
S&P 500	3.8%	12.0%	8.9%	14.7%	6.9%
<b>Bond Segment*</b>	<b>-2.6%</b>	<b>3.3%</b>	<b>3.4%</b>	<b>3.2%</b>	<b>4.9%</b>
BB Barclays Agg	-3.0%	2.6%	3.0%	2.2%	4.3%

\* Actual returns are calculated net of fees.

Note: All periods over one year are annualized.

## CLOSED LANDFILL INVESTMENT FUND

### Investment Objectives

The investment objective of the Closed Landfill Investment Fund is to increase the market value of the Fund and to reduce volatility to meet future expenditures. By statute, the assets of the Fund are unavailable for expenditure until after the fiscal year 2020 to pay for long-term costs of maintaining the integrity of landfills in Minnesota once they are closed.

### Asset Mix

From July 1999 to September 2014 the Fund's target allocation was 100% domestic equities. The SBI changed the Fund allocation in 2014 to a more balanced allocation of 70% domestic equities and 30% bonds.

	12/31/16 Target	12/31/16 Actual
Stocks	70.0%	71.4%
Bonds	30.0%	28.6%
Total	100.0%	100.0%

### Investment Management

SBI staff manage all assets of the Closed Landfill Investment Fund. The bond segment is actively managed to add incremental value through sector, security and yield curve decisions. The stock segment is managed to passively track the performance of the S&P 500.

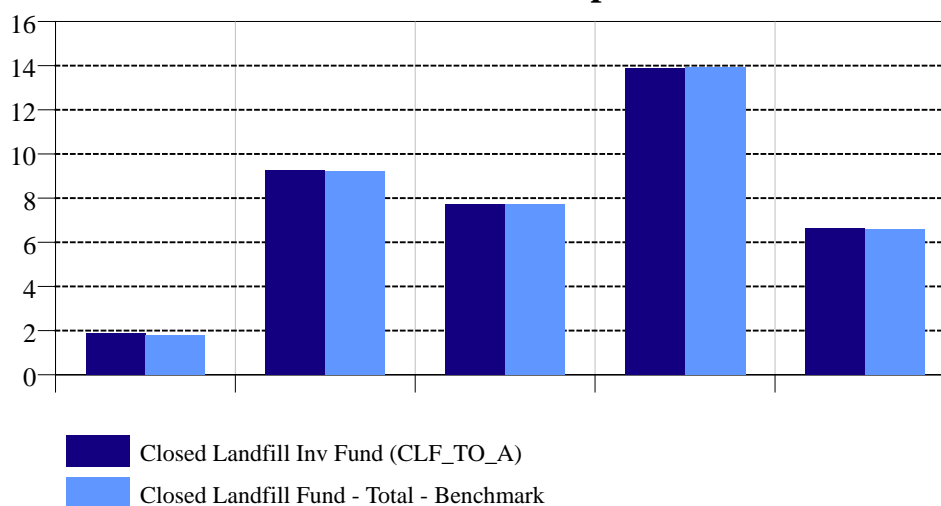
### Legislation

In FY 2011 \$48 million was transferred out of the general fund, leaving a balance of \$1 million in the account. Legislation was enacted in 2013 to replenish the principal and earnings back into the fund and in FY 2014 a repayment was made in the amount of \$64.2 million. In 2015 legislation was passed which repealed any further repayments..

### Market Value

On December 31, 2016, the market value of the Closed Landfill Investment Fund was \$76 million.

### Performance Comparison



### Periods Ended 12/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Fund (1)</b>	<b>1.9%</b>	<b>9.3%</b>	<b>7.7%</b>	<b>13.9%</b>	<b>6.7%</b>
Composite (3)	1.8%	9.2%	7.7%	13.9%	6.6%
<b>Equity Segment (1)</b>	<b>3.7%</b>	<b>11.8%</b>	<b>8.9%</b>	<b>14.6%</b>	<b>7.0%</b>
S&P 500	3.8%	12.0%	8.9%	14.7%	6.9%
<b>Bond Segment (1,2)</b>	<b>-2.6%</b>	<b>3.3%</b>	<b>--</b>	<b>--</b>	<b>--</b>
BB Barclays Agg	-3.0%	2.6%	--	--	--

(1) Actual returns are calculated net of fees.

(2) Bond Segment admission date 9/10/14. Returns to be reported upon first full quarter of history (12/31/2014)

(3) The benchmark of the fund is the S&P 500 from mid July 1999 to 9/9/14. As of 9/10/14 the benchmark consist of S&P 500 (70%) and Bloomberg Barclays U.S. Aggregate (30%).

Note: All periods over one year are annualized.



## STATE CASH ACCOUNTS

### Description

State Cash Accounts represent the balances in more than 400 separate accounts that flow through the Minnesota State Treasury. These accounts vary greatly in size.

Most accounts are invested by SBI staff through a short-term pooled fund referred to as the 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.

In addition, each State of Minnesota bond sale requires two additional pools, one for bond proceeds and one for debt reserve transfer.

Because of special legal restrictions, a small number of cash accounts cannot be commingled. These accounts are invested separately.

### Investment Objectives

**Safety of Principal.** To preserve capital.

**Liquidity.** To meet cash needs without the forced sale of securities at a loss.

**Competitive Rate of Return.** To provide a level of current income consistent with the goal of preserving capital.

### Asset Mix

The SBI seeks to provide safety of principal 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, and certificates of deposit.

### Investment Management

All state cash accounts are managed by SBI investment staff. As noted above, most of the assets of the cash accounts are invested through the large commingled investment pool.

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Period Ending 12/31/16						
	Market Value (Millions)	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Treasurer's Cash Pool*	\$9,927	0.1%	0.8%	0.6%	0.6%	1.5%
Custom Benchmark**		0.0%	0.1%	0.1%	0.0%	0.7%
3 month T-Bills		0.1%	0.3%	0.1%	0.1%	0.8%

\* Actual returns are calculated net of fees.

\*\* Beginning in January 2003, the Treasurer's Cash Pool is measured against the iMoneyNet, All Taxable Money Fund Report Average.

**MINNESOTA STATE BOARD OF INVESTMENT**  
**Composition of State Investment Portfolios By Type of Investment**  
**Market Value December 31, 2016 (in Thousands)**

	Cash & ST	Bonds Int	Bonds Ext	Stock Int	Stock Ext	Ext Intl	Alternative	Total
<b>COMBINED RETIREMENT FUNDS</b>								
Teachers Retirement Fund	636,578 3.19%	0	4,015,340 20.12%	0	9,369,779 46.95%	3,305,930 16.56%	2,630,992 13.18%	19,958,619 100%
Public Employees Retirement Fund	479,503 2.68%	0	3,625,228 20.23%	0	8,459,454 47.20%	2,984,741 16.65%	2,375,377 13.25%	17,924,303 100%
State Employees Retirement Fund	285,890 2.46%	0	2,351,202 20.26%	0	5,486,519 47.30%	1,935,803 16.69%	1,540,590 13.28%	11,600,004 100%
Public Employees Police & Fire	192,666 2.62%	0	1,493,411 20.24%	0	3,484,868 47.23%	1,229,563 16.66%	978,535 13.26%	7,379,043 100%
Highway Patrol Retirement Fund	16,302 2.51%	0	131,403 20.26%	0	306,632 47.27%	108,189 16.68%	86,101 13.27%	648,627 100%
Judges Retirement Fund	4,616 2.67%	0	35,028 20.23%	0	81,739 47.20%	28,840 16.65%	22,952 13.26%	173,175 100%
Correctional Employees Retirement	24,146 2.56%	0	190,809 20.25%	0	445,252 47.25%	157,098 16.67%	125,024 13.27%	942,329 100%
Public Employees Correctional	15,039 2.76%	0	110,082 20.21%	0	256,876 47.15%	90,633 16.64%	72,130 13.24%	544,760 100%
PERA Minneapolis Retirement	33,269 4.33%	0	152,830 19.88%	0	356,628 46.39%	125,828 16.37%	100,139 13.03%	768,694 100%
<b>TOTAL COMBINED FUNDS</b>	1,688,009 2.82%	0	12,105,333 20.20%	0	28,247,747 47.13%	9,966,625 16.62%	7,931,840 13.23%	59,939,554 100%

	Cash & ST	Bonds Int	Bonds Ext	Stock Int	Stock Ext	Ext Intl	Alternative	Total
<b>MINNESOTA SUPPLEMENTAL FUNDS</b>								
Balanced Fund	16,951 4.36%	138,315 35.60%	0	0	233,262 60.04%	0	0	388,528 100%
U.S. Stock Actively Managed Fund	0	0	0	0	217,327 100.00%	0	0	217,327 100%
Money Market Fund	308,210 100.00%	0	0	0	0	0	0	308,210 100%
U.S. Stock Index Fund	0	0	0	0	519,900 100.00%	0	0	519,900 100%
Bond Fund	0	0	148,375 100.00%	0	0	0	0	148,375 100%
Broad International Stock Fund	0	0	0	0	0	168,080 100.00%	0	168,080 100%
Stable Value Fund	0	0	220,387 100.00%	0	0	0	0	220,387 100%
Volunteer Firefighters Account	3,513 4.89%	0	32,273 44.85%	0	25,242 35.08%	10,937 15.20%	0	71,965 100%
<b>TOTAL SUPPLEMENTAL FUNDS</b>	328,674 16.09%	138,315 6.77%	401,035 19.63%	0	995,731 48.75%	179,017 8.76%	0	2,042,772 100%
<b>MN DEFERRED COMP PLAN</b>								
	74,352 1.23%	0	2,231,425 36.90%	0	3,254,477 53.82%	487,012 8.05%	0	6,047,266 100%
<b>TOTAL RETIREMENT FUNDS</b>	2,091,035 3.07%	138,315 0.20%	14,737,793 21.66%	0	32,497,955 47.77%	10,632,654 15.63%	7,931,840 11.66%	68,029,592 100%

	Cash & ST	Bonds Int	Bonds Ext	Stock Int	Stock Ext	Ext Intl	Alternative	Total
ASSIGNED RISK PLAN	2,599 0.83%	0	246,642 78.70%	0	64,162 20.47%	0	0	313,403 100%
ENVIRONMENTAL FUND	17,826 1.85%	260,365 27.03%	0	684,956 71.12%	0	0	0	963,147 100%
PERMANENT SCHOOL FUND	25,167 2.02%	605,573 48.44%	0	619,369 49.55%	0	0	0	1,250,109 100%
CLOSED LANDFILL FUND	0	21,604 28.59%	0	53,954 71.41%	0	0	0	75,558 100%
Metropolitan Landfill Contingency Action Trust	0	2,347 28.09%	0	6,008 71.91%	0	0	0	8,355 100%
MISCELLANEOUS TRUST FUND	490 0.28%	69,070 40.16%	0	102,420 59.55%	0	0	0	171,980 100%
Other Post Employment Funds (OPEB's)	16,099 2.91%	99,995 18.06%	0	437,729 79.04%	0	0	0	553,823 100%
TREASURERS CASH	9,927,001 100.00%	0	0	0	0	0	0	9,927,001 100%
MISCELLANEOUS STATE ACCOUNTS	0	160,622 100.00%	0	0	0	0	0	160,622 100%
MN COLLEGE SAVINGS PLAN	8,649 0.70%	0	602,106 48.49%	0	452,700 36.46%	178,269 14.36%	0	1,241,724 100%
TOTAL CASH AND NON-RETIREMENT	9,997,831 68.17%	1,219,576 8.32%	848,748 5.79%	1,904,436 12.99%	516,862 3.52%	178,269 1.22%	0	14,665,722 100%
GRAND TOTAL	12,088,866 14.62%	1,357,891 1.64%	15,586,541 18.85%	1,904,436 2.30%	33,014,817 39.92%	10,810,923 13.07%	7,931,840 9.59%	82,695,314 100%

TAB

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## **EXECUTIVE DIRECTOR'S ADMINISTRATIVE REPORT**

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DATE: February 16, 2017

TO: Members, State Board of Investment

FROM: **Mansco Perry III**

### **INFORMATION UPDATES:**

#### **1. Reports on Budget and Travel**

A report on the SBI's administrative budget for the fiscal year to date through December 31, 2016 is included as **Attachment A** on **Page 5**.

A report on travel for the period from October 1, 2016 – December 31, 2016 is included as **Attachment B** on **Page 7**.

#### **2. FY16 Audit Report**

The Legislative Auditor letter related to the financial audit of the State Board of Investment financial operations for Fiscal Year 2016 is included as **Attachment C** on **Page 11**. The Office of the Legislative Auditor (OLA) issued an unqualified (clean) opinion.

#### **3. FY16 Annual Report**

A draft copy of the Fiscal Year 2016 Annual Report was distributed to the Board members/designees and Investment Advisory Council members in December and the final report was distributed January 2017.

#### **4. Legislative Update**

I will present an update on legislative matters. A summary is included in **Attachment D** on **Page 13**.

#### **5. Sudan Update**

Each quarter, staff provides a report to the Board on steps taken to implement *Minnesota Statutes*, section 11A.243 that requires SBI actions concerning companies with operations in Sudan. Staff receives periodic reports from the Empowering Responsible Investment EIRIS Conflict Risk Network (CRN) about the status of companies with operations in Sudan.

The SBI is restricted from purchasing stock in the companies designated as highest offenders by the CRN. Accordingly, staff updates the list of restricted stocks and notifies investment managers that they may not purchase shares in companies on the restricted list. Staff receives monthly reports from the SBI's custodian bank concerning SBI holdings of companies on the CRN list and writes letters as required by law.

According to the law, if after 90 days following the SBI's communication, a company continues to have active business operations in Sudan, the SBI must divest holdings of the company according to the following schedule:

- at least 50% shall be sold within nine months after the company appeared on the Task Force list; and
- 100% shall be sold within fifteen months after the company appeared on the list.

In the fourth quarter, an SBI manager sold a total of 5,955 shares of a company on the divestment list.

**Attachment E on Page 15** is a copy of the December 20, 2016 letter sent to each international equity manager and domestic equity manager containing the most recent restricted list and the list of stocks to be divested.

## **6. Iran Update**

Each quarter, staff provides a report to the Board on steps taken to implement *Minnesota Statutes*, section 11A.244 that requires SBI actions concerning companies with operations in Iran.

SBI receives information on companies with Iran operations from IW Financial, through Glass Lewis. Staff receives monthly reports from the SBI's custodian bank concerning SBI holdings of companies on the restricted list and writes letters as required by the law.

According to the law, if after 90 days following the SBI's communication a company continues to have scrutinized business operations, the SBI must divest all publicly traded securities of the company according to the following schedule:

- at least 50% shall be sold within nine months after the company appeared on the scrutinized list; and
- 100% within fifteen months after the company appeared on the scrutinized list.

In the fourth quarter, SBI managers sold 1,834 shares in two companies on the divestment list.



**Attachment F** on **Page 29** is a copy of the December 20, 2016 letter sent to each international equity manager and domestic equity manager and fixed income manager containing the end of quarter restricted list and the list of companies to be divested.

## **7. Litigation Update**

SBI legal counsel will give a verbal update on the status of any litigation at the meeting.

## **ACTION ITEMS**

### **1. Proxy Committee Reauthorization**

In March 1982, the Board established the Proxy Committee to carry out the SBI's voting responsibilities. Each Board member has one designee on the Committee. The current membership is:

Kimberly Slay Holmes	Governor's designee
Ramona Advani	State Auditor's designee
Bert Black	Secretary of State's designee
Christie Eller	Attorney General's designee

According to statute, committees of this nature must be re-authorized every two years. The last authorization was in March 2015. A resolution to accomplish this is in **Attachment G** on **Page 39**.

#### **RECOMMENDATION:**

**The Executive Director recommends that the SBI adopt the resolution which reauthorizes the Proxy Committee and delegates proxy voting responsibilities according to established guidelines.**

### **2. Proxy Voting Guidelines**

The Proxy Committee votes the Board's proxies according to Guidelines approved by the Board. The Committee recommends that the Board review and reaffirm the Proxy Voting Guidelines as shown in **Attachment H** on **Page 41**.

#### **RECOMMENDATION:**

**The Proxy Committee recommends that the Board reaffirm the Proxy Voting Guidelines.**

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# ATTACHMENT A

## STATE BOARD OF INVESTMENT FISCAL YEAR 2017 ADMINISTRATIVE BUDGET REPORT FISCAL YEAR TO DATE THROUGH DECEMBER 31, 2016

ITEM	FISCAL YEAR 2017 BUDGET	FISCAL YEAR 2017 12/31/2016
<b>PERSONNEL SERVICES</b>		
FULL TIME EMPLOYEES	\$ 4,838,700	\$ 1,849,103
PART TIME EMPLOYEES	\$ 0	0
MISCELLANEOUS PAYROLL	100,000	0
<b>SUBTOTAL</b>	<b>\$ 4,938,700</b>	<b>\$ 1,849,103</b>
<b>STATE OPERATIONS</b>		
RENTS & LEASES	300,000	139,926
REPAIRS/ALTERATIONS/MAINTENANCE	15,000	6,526
PRINTING & BINDING	8,000	3,247
PROFESSIONAL/TECHNICAL SERVICES	150,000	5,215
COMPUTER SYSTEMS SERVICES	20,000	8,399
COMMUNICATIONS	36,000	13,227
TRAVEL, IN-STATE	1,000	117
TRAVEL, OUT-STATE	119,000	31,553
SUPPLIES	27,000	15,253
EQUIPMENT	25,000	2,451
EMPLOYEE DEVELOPMENT	35,000	16,356
OTHER OPERATING COSTS	140,000	53,978
INDIRECT COSTS	250,000	55,098
ATTORNEY GENERAL COSTS		9,749
<b>SUBTOTAL</b>	<b>\$ 1,126,000</b>	<b>\$ 361,096</b>
<b>TOTAL ADMINISTRATIVE BUDGET</b>	<b>\$ 6,064,700</b>	<b>\$ 2,210,199</b>

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## ATTACHMENT B

### STATE BOARD OF INVESTMENT

#### Travel Summary by Date SBI Travel October 1, 2016 - December 31, 2016

<b>Purpose</b>	<b>Name</b>	<b>Destination and Date</b>	<b>Total Cost</b>
<b>Conference:</b> National Association of State Investment Officers (NASIO)	M. Perry	Milwaukee, WI 10/2-10/5	\$ 2,629.96
<b>Conference:</b> Institutional Investor Services (IIS) Client Advisory Council Meeting sponsored by State Street	L. Stagg	Boston, MA 10/4-10/5	983.76
<b>Manager Monitoring Alternative Investment Managers:</b> EnCap; TPG	N. Blumenshine	Scottsdale, AZ 10/17-10/20	791.87
<b>Conference:</b> Public Pension Financial Forum (P2F2)	S. Baribeau	Charleston, SC 10/22-10/27	2,103.46
<b>Conference:</b> Public Pension Financial Forum (P2F2)	P. Anderson	Charleston, SC 10/22-10/26	1,978.92
<b>Manager Monitoring Alternative Investment Managers:</b> Avenue Energy Fund; Brookfield Capital Partners; Vestar Capital Partners	A. Krech	New York, NY 10/25-10/27	1,091.61

# STATE BOARD OF INVESTMENT

## Travel Summary by Date SBI Travel October 1, 2016 - December 31, 2016

Purpose	Name	Destination and Date	Total Cost
<b>Manager Monitoring Alternative Investment Managers:</b> Avenue Capital Partners; Goldman Sachs; MHR; <b>Manager Search Alternative Investment Manager:</b> Oak Hill Capital Partners	J. Stacy	New York, NY 10/25-10/27	\$ 1,649.81
<b>Manager Monitoring Alternative Investment Managers:</b> Brookfield Capital Partners; Vestar Capital Partners; <b>Manager Search Alternative Investment Manager:</b> Oak Hill Capital Partners	P. Ammann	New York, NY 10/25-10/27	1,641.43
<b>Manager Monitoring Domestic Equity/Fixed Income Manager:</b> BlackRock	M. Perry	New York, NY 11/1-11/2	959.21
<b>Conference:</b> Institutional Limited Partners Association (ILPA) General Partner Summit	P. Ammann	New York, NY 11/1-11/4	1,461.45
<b>Conference:</b> Institutional Limited Partners Association (ILPA) General Partner Summit	C. Boll	New York, NY 11/2-11/4	1,534.24

## STATE BOARD OF INVESTMENT

### Travel Summary by Date SBI Travel October 1, 2016 - December 31, 2016

Purpose	Name	Destination and Date	Total Cost
<b>Manager Monitoring Alternative Investment Managers:</b> KKR Lending Partners; Goldmans Sachs Mezzanine Partners <b>Conference:</b> 2016 Middle Market Opportunities Forum sponsored by Wells Fargo	C. Boll	New York, NY 12/6-12/9	\$ 2,367.46

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OFFICE OF THE LEGISLATIVE AUDITOR

STATE OF MINNESOTA • James Nobles, Legislative Auditor

January 13, 2017

Mr. Mansco Perry III, Executive Director and Chief Investment Officer  
Minnesota State Board of Investment  
60 Empire Drive, Suite 355  
Saint Paul, MN 55103

Dear Mr. Perry:

The financial activity of the State Board of Investment, including the assets under investment, is included as part of the primary government in the State of Minnesota's annual *Comprehensive Annual Financial Report* (CAFR). The Office of the Legislative Auditor (OLA) audits this report and provides an independent auditor's report (audit opinion) on the accuracy and fairness of the presentation of various financial statements, footnote disclosures, and other information in the CAFR to the Department of Management and Budget. We issued an unqualified (clean) opinion on the CAFR for the fiscal year ended June 30, 2016. Your financial activity is included in the scope of that audit opinion.

In the state's CAFR, you will find the investments included in the Fiduciary Fund financial statements (pages 45-47), which summarizes the detailed financial activity presented in the Pension Trust Fund and the Investment Trust Fund financial statements (pages 220-233). There are also two footnote disclosures in the CAFR, which relate specifically to investments and pensions: Footnote 2 – Cash, Investments, and Derivative Instruments; and Footnote 8 – Pension and Investment Trust Funds. Any financial activity of the State Board of Investment recorded in the General Fund would be indistinguishable from the state's other General Fund financial activity.

In addition, OLA audits the three statewide pension plans administered by the state of Minnesota: Minnesota State Retirement System (MSRS), Public Employees Retirement Association (PERA), and Teachers Retirement Association (TRA). Each retirement plan prepares and issues its own individual comprehensive annual financial report for its respective pension funds. Those reports include the same investment information that rolls into the state's CAFR. The OLA provides an independent auditor's report (audit opinion) on each pension plan's financial report. The scope of those unqualified (clean) opinions includes the investment assets administered by the State Board of Investment.

We also provide the state and each retirement plan with a report on the Internal Controls over Financial Reporting. For the fiscal year ending June 30, 2016, we had no written findings for any of the pension plans and no written findings or recommendations directed toward the State Board of Investment in the report to the Department of Management and Budget. When those reports are issued by OLA, they will be published on our website.

Mr. Mansco Perry III, Executive Director and Chief Investment Officer

January 13, 2017

Page 2

Due to the significance and material nature of the financial activity administered by the State Board of Investment to the pension plans and the state as a whole, we devote significant audit resources to specifically test, verify, and confirm investment balances and other investment-related financial activity.

The OLA audit opinions for the year ended June 30, 2016, for the state's CAFR and the three statewide pension plans are available at the following links:

State of MN: [2016 State of MN CAFR](#)

MSRS: [2016 MSRS CAFR](#)

PERA: [2016 PERA CAFR](#)

TRA: [2016 TRA CAFR](#)

We appreciate the cooperation and assistance provided by the staff and administration of the State Board of Investment throughout our audit process.

Sincerely,

A handwritten signature in black ink, appearing to read "Tracy Gebhard". The signature is fluid and cursive, with the first name "Tracy" and last name "Gebhard" clearly distinguishable.

Tracy Gebhard, CPA  
Audit Director

Cc: Paul Anderson, Chief Financial Officer  
LeaAnn Stagg, Chief Operating Officer

# BILLS OF INTEREST TO THE MINNESOTA STATE BOARD OF INVESTMENT

Bill No.	Author	Name of Bill	Current Status	Notes
SF480 HF409	Senjem Albright	Additional Long-Term Equity Investment Authority	1/31: HF409 heard by Government Operations and Elections Policy Committee; adopted as amended and re-referred to State Government Finance  02/07: SF480 heard by Committee on Local Government; adopted as amended and re-referred to Committee on State Government Finance and Policy and Elections	The bill grants qualifying cities and counties, along with certain self-insurance pools, the authority to invest a portion of assets in equity markets. To qualify, a city or county must have a population over 100,000, or have achieved the highest bond rating for its most GO bond issuance. The money may be invested through SBI or through certain indexed mutual funds. For cities and counties, the amount that may be invested is capped at 15% of the sum of the qualifying government's unassigned cash, cash equivalents, deposits, and investments. For insurance pools, the cap is 15% of the sum of the items above or 25% of the pool's net position.
HF400 SF247	Kresha Limmer	Relating to state contracts; requiring that the vendor not engage in discrimination against Israel	1/7: HF400 heard by Government Operations and Elections Policy Committee; adopted as amended and referred to State Government Finance (hearing scheduled 02/15)  1/23: SF247 referred to Committee on State Government Finance and Policy and Elections (hearing scheduled 02/14)	The bill prohibits state agencies from contracting with vendors that engage in discrimination against the State of Israel. Contractors must certify compliance with the bill. Discrimination includes (but is not limited to) refusals to deal, terminating business activities, or other actions intended to limit commercial relations with Israel, or other persons or entities doing business in Israel, if the actions are taken in compliance with calls for discrimination or boycotts against Israel, or in a manner that discriminates on the basis of nationality or national origin. The bill contains an exception to the requirement if the Commissioner of Administration determines that compliance is not practicable or in the best interest of the state.
HF586	Drazkowski	Relating to state lands; establishing funds to make annual payments for certain state-purchased land using dedicated revenues; modifying payment in lieu of taxes requirements; appropriating money; etc.	1/26: HF586 referred to Environment and Natural Resources Policy and Finance Committee	The bill establishes an outdoor heritage trust account to be invested through the SBI. The trust is funded by one-time payment of 30 times the property taxes payable in the year prior to the year the state acquires land using funds from the environment and natural resources trust fund and the outdoor heritage fund. The Commissioner of the Department of Revenue acts as agent for the counties in depositing funds into the account. The funds are used to compensate for lost tax revenue into perpetuity. The bill provides for annual withdrawals at a maximum of 5.5% of the value of the fund for distribution to the counties.

HF722 SF930	Murphy, M. Rosen	Teachers Retirement Association financial solvency measures	2/1: HF722 referred to Government Operations and Elections Committee  2/13: SF930 referred to Committee on State Government Finance and Policy and Elections	<p>The bill contains various provisions to address TRA's unfunded liabilities:</p> <ul style="list-style-type: none"> <li>• Reduce retiree COLA from 2% to 1% for five years; thereafter 1.5%;</li> <li>• Reduce active COLA from 2% to 1.5%;</li> <li>• Eliminate automatic trigger that would increase COLA's to 2.5% if TRA attains 90% funded status for two consecutive years; and</li> <li>• Increase Employer contribution rate from 7.5% to 9.5% over four years (.5% per year);</li> <li>• Extend amortization period from 2037 to 2047 (20 to 30 years);</li> <li>• Temporarily reduce the investment return assumption to 7.5% for five years, reverting to 8% thereafter; and</li> <li>• TRA would conduct an investment return study as part of its next experience study in two years</li> </ul>
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NOTE: The Minnesota State Retirement System and Public Employees Retirement System will also have sustainability legislation. As of this update, the bills have not been introduced in the house or senate. The pension plans have also proposed administrative bills. The individual pension system administrative changes are combined in HF565 (O'Driscoll) and SF545 (Rosen). These bills contain mostly technical provisions and the SBI staff are monitoring their progress.

## ATTACHMENT E

### Letter to SBI International and Domestic Equity Managers

December 20, 2016

#### Regarding: Sudan Companies

Dear Manager:

The Minnesota State Board of Investment (SBI) sent you prior communication concerning holdings in companies doing business in Sudan. **This new communication applies to all SBI equity portfolios managed by your organization and replaces all prior communications. This communication also applies to all depository receipts or ADR's of any of the listed companies.**

*Minnesota Statutes*, section 11A.243 requires the SBI to implement a Sudan restriction.

**Attachment 1** is the List of Restricted Sudan Stocks. These securities **may not be purchased** for the SBI portfolio that your organization manages. If you own securities of companies on the Restricted List **and** the companies are **not** on the divestment list, then you do not need to sell your holdings. Please note that the attached list makes changes to the List of Restricted Sudan Companies that was attached to the September 29, 2016 letter you received. **This new list is effective December 31, 2016.**

#### Changes to Attachment 1:

The following company was **added** to the Restricted List:

- **Atlas Copco AB** **Sweden**

The following companies have been **removed** from the Restricted List:

- **GDF SUEZ** **France**
- **AKM Industrial Company Ltd.** **China**

The following companies had name changes:

- **GAZ OJSC** changed its name to **GAZ PJSC**
- **Pavlovo Bus JSC** changed its name to **Pavlovo Bus PJSC**

**Attachment 2** is the List of Sudan Stocks Requiring Divestment. If you own securities of companies on this list then you must **divest** those holdings according to the schedule provided in the attachment:

- At least 50 percent of a company's holdings must be sold by the date indicated, and
- At least 100 percent of a company's holdings must be sold by the date indicated.

There are no changes to **Attachment 2**.

**Attachment 3** is a list of security identifiers for the companies on the List of Restricted Sudan Stocks (Attachment 1) that your organization may use. The SBI does not represent that this is a complete list of identifiers. The manager is responsible for identifying all listings. Please note that the list of security identifiers may have information on companies not on the restricted list.

If you have any questions about this matter, please contact your assigned SBI Investment Officer.

Sincerely,

Mansco Perry III  
Executive Director and Chief Investment Officer

Enclosures

cc: Michael J. Menssen, Director, Debt Management  
Tammy Brusehaver, Investment Officer, Public Equity  
Inma Conde Goldman, Investment Officer, Public Equity  
Stephanie Gleeson, Investment Officer, Public Equity  
Patricia Ammann, Investment Officer, Private Markets

## ATTACHMENT 1

Restricted Sudan Stocks	
Company Name	Country of Origin
Andritz AG	Austria
Orca Gold Inc.	Canada
China Gezhouba Group Company Limited	China
China North Industries Group Corporation AKA CNGC/NORINCO	China
China Petroleum and Chemical Corporation AKA Sinopec Corp.	China
China Poly Group Corporation	China
Daqing Huake Group Company Limited	China
Dongfeng Motor Group Company Limited	China
Harbin Electric Company Ltd.	China
Jiangxi Hongdu Aviation	China
NORINCO International Cooperation Ltd	China
North Huajin Chemical Industries Co.	China
North Navigation Control Technology Co. Ltd	China
Petrochina Co. Ltd AKA China National Petroleum Corporation (CNPC)	China
Poly Property Group Co. Ltd.	China
Power Construction Corporation of China Ltd.	China
Power Construction Corporation of China (PowerChina)	China
Shanghai Electric Group Co. Ltd.	China
Sinopec Engineering Group Co. Ltd.	China
Sinopec Shanghai Petrochemicals Ltd	China
Sinopec Oilfield Service Corp	China
ASEC Company for Mining (ASCOM)	Egypt
Egypt Kuwait Holding Company	Egypt
ENGIE	France
Parisienne Chauffage Urbain	France
MAN SE	Germany
Renk AG	Germany
Volkswagen AG	Germany
Kunlun Energy Co. Ltd	Hong Kong
Sinopec Kanton Holdings Limited	Hong Kong
Bharat Electronics Limited	India
Bharat Heavy Electricals Limited	India
Chennai Petroleum Corporation Ltd. AKA CPCL	India
Indian Oil Corporation Ltd.	India
Lanka IOC Limited	India
Mangalore Refinery and Petrochemicals Limited	India
Oil & Natural Gas Corp. Ltd.	India
Oil India Limited	India
Energy House Holding Co KSCC, The	Kuwait
Kuwait Finance House	Kuwait
Engen Botswana Ltd. AKA Engen	Malaysia
KLCCP Stapled Group AKA KLCC Property Holdings	Malaysia

## **ATTACHMENT 1**

<b>Restricted Sudan Stocks</b>	
<b>Company Name</b>	<b>Country of Origin</b>
Malaysia International Shipping Company AKA MISC Berhad	Malaysia
Malaysia Marine and Heavy Engineering Holdings Bhd	Malaysia
Petroliam Nasional Berhad AKA Petronas	Malaysia
Petronas Chemicals Group Berhad	Malaysia
Petronas Dagangan Berhad	Malaysia
Petronas Gas Berhad	Malaysia
Managem	Morocco
Societe Metallurgique D'imiter	Morocco
GAZ Group	Russia
GAZ PJSC	Russia
Kamaz PJSC	Russia
Neftekamsky Avtozavod (aka NEFAZ)	Russia
Pavlovo Bus PJSC	Russia
LS Industrial Systems	South Korea
Atlas Copco AB	Sweden

Note: List contains parent companies and subsidiaries publicly traded.  
AKA means "Also Known As"

Source: EIRIS Conflict Risk Network

Effective Date: December 31, 2016



## **ATTACHMENT 2**

### **SUDAN STOCKS REQUIRING DIVESTMENT**

<b>Company Name</b>	<b>Country of Origin</b>	<b>Divest 50 Percent By this Date</b>	<b>Divest 100 Percent By this date</b>
ENGIE	France	June 30, 2017	December 31, 2017

Effective Date: December 31, 2016

### **COMPLETED/HISTORICAL DIVESTMENT**

<b>Company Name</b>	<b>Country of Origin</b>	<b>Divest 50 Percent By this Date</b>	<b>Divest 100 Percent By this date</b>
Shanghai Electric Group Co. Ltd.	China	March 31, 2016	September 30, 2016
Volkswagen AG	Germany	June 30, 2015	December 31, 2015
Poly Property Group	China	March 31, 2015	September 30, 2015
MAN SE	Germany	December 31, 2014	June 30, 2015
Bharat Heavy Electricals	India	September 30, 2014	March 31, 2015
Bharat Electronics Limited	India	September 30, 2014	March 31, 2015
Andritz AG	Austria	September 30, 2014	March 31, 2015
Dongfeng Motor Group Company Limited	China	March 31, 2011	September 30, 2011
China Petroleum and Chemical Corporation AKA Sinopec Corp	China	April 30, 2008	October 31, 2008
PetroChina Company	China	April 30, 2008	October 31, 2008
Oil and Natural Gas Corp AKA ONGC	India	April 30, 2008	October 31, 2008
Malaysia International Shipping Company AKA MISC Berhad	Malaysia	April 30, 2008	October 31, 2008

## Security Identifiers for "Scrutinized" Stocks

ALL DATA IS FROM BLOOMBERG LP UNLESS OTHERWISE NOTED.

**STOCKS ADDED SINCE LAST REPORT ARE HIGHLIGHTED**

Company	Primary Company (Affiliate/Parent)	Exchange	Security Type	Security Name	Ticker	WPK Number	SEDL	CUSIP	Secnam	ISIN	COMMON	CINS	Fontcode
ANDRITZ GROUP	ANDRITZ AG	Vieana (WBAG)	Common Stock	ANDRITZ AG	ANDR.V	632305	B1VWF6 AT			AT0000730007	13042748		
		BATS Europe (BATE)	Common Stock	ANDRITZ AG	ANDR.EB	632305	B1VWF6B AT			AT0000730007	13042748		
		Chi-X Europe (CHIX)	Common Stock	ANDRITZ AG	ANDR.X	632305	B1VWF6E AT			AT0000730007	13042748		
		Turquoise (TRQX)	Common Stock	ANDRITZ AG	ANDR.TQ	632305	B1VWF6F AT			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GB	632305	B1X9FH2 DE			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GD	632305	B1X9FH2 DE			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GF	632305	B1X9FH2 DE			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GH	632305	B1X9FH2 DE			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GI	632305	B1X9FH2 DE			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GJ	632305	B1X9FH2 DE			AT0000730007	13042748		
ANDRITZ GROUP	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GK	632305	B1X9FH2 DE			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GL	632305	B1X9FH2 DE			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GM	632305	B1X9FH2 DE			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GN	632305	B1X9FH2 DE			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GO	632305	B1X9FH2 DE			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GP	632305	B1X9FH2 DE			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GQ	632305	B1X9FH2 DE			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GR	632305	B1X9FH2 DE			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GS	632305	B1X9FH2 DE			AT0000730007	13042748		
		Xetra (XETR)	Common Stock	ANDRITZ AG	AZZ.GT	632305	B1X9FH2 DE			AT0000730007	13042748		
ANDRITZ GROUP	ANDRITZ AG	Tradegate (XGAT)	Common Stock	ANDRITZ AG	AZZ.TH	632305	B1X9FH2 DE			AT0000730007	13042748		
		OTC US (OOTO)	Common Stock	ANDRITZ AG	ADRFZ.US	632305	B1X9FH2 DE			AT0000730007	13042748		
		OTC US (OOTO)	Common Stock	ANDRITZ AG	ADRFZ.US	632305	B1X9FH2 DE			AT0000730007	13042748		
		OTC US (OOTO)	Common Stock	ANDRITZ AG	ADRFZ.US	632305	B1X9FH2 DE			AT0000730007	13042748		
		OTC US (OOTO)	Common Stock	ANDRITZ AG	ADRFZ.US	632305	B1X9FH2 DE			AT0000730007	13042748		
		OTC US (OOTO)	Common Stock	ANDRITZ AG	ADRFZ.US	632305	B1X9FH2 DE			AT0000730007	13042748		
		OTC US (OOTO)	Common Stock	ANDRITZ AG	ADRFZ.US	632305	B1X9FH2 DE			AT0000730007	13042748		
		OTC US (OOTO)	Common Stock	ANDRITZ AG	ADRFZ.US	632305	B1X9FH2 DE			AT0000730007	13042748		
		OTC US (OOTO)	Common Stock	ANDRITZ AG	ADRFZ.US	632305	B1X9FH2 DE			AT0000730007	13042748		
		OTC US (OOTO)	Common Stock	ANDRITZ AG	ADRFZ.US	632305	B1X9FH2 DE			AT0000730007	13042748		
ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM)	ASEK CO FOR MINING	EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM)	ASEK CO FOR MINING	EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM)	ASEK CO FOR MINING	EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM)	ASEK CO FOR MINING	EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM)	ASEK CO FOR MINING	EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM)	ASEK CO FOR MINING	EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM)	ASEK CO FOR MINING	EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM)	ASEK CO FOR MINING	EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM) aka ASEK COMPANY FOR MINING (ASCOM)	ASEK CO FOR MINING	EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			
		EGX (XCA)	Common Stock	ASEK CO FOR MINING	ASCM.EC	A0Q78K	B04CCH2.EG			EGS100010013			

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PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC (CNSCNRINCO)	ADR	PC&TH	936983	7464E100	US71646E1001	11511449
NORINCO INTERNATIONAL COOPERATION LTD.	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNSCNRINCO)	Common Stock	000065 CH	000065 CH	6112125 CN	CNE000000V29	
NORINCO INTERNATIONAL COOPERATION LTD.	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNSCNRINCO)	Common Stock	000065 CS	000065 CS	6112125 CN	CNE000000V29	
NORINCO INTERNATIONAL COOPERATION LTD.	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNSCNRINCO)	Common Stock	000065 C2	000065 C2	BDSL7R8 CN	CNE000000V29	
NORTH HUAJIN CHEMICAL INDUSTRIES CO LTD	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNSCNRINCO)	Common Stock	000059 CH	000059 CH	6796143 CN	CNE000000NY9	Y7742G105
NORTH HUAJIN CHEMICAL INDUSTRIES CO LTD	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNSCNRINCO)	Common Stock	000059 CS	000059 CS	6796143 CN	CNE000000NY9	
NORTH HUAJIN CHEMICAL INDUSTRIES CO LTD	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNSCNRINCO)	Common Stock	000059 C2	000059 C2	BD9M1 S6	CNE000000NY9	
NORTH NAVIGATION CONTROL TECHNOLOGY CO LTD	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNSCNRINCO)	Common Stock	600435 CG	600435 CG	6049946 CN	CNE000001F88	
TECHNOLOGY CO LTD	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNSCNRINCO)	Common Stock	600435 CH	600435 CH	6049946 CN	CNE000001F88	
NORTH NAVIGATION CONTROL TECHNOLOGY CO LTD	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNSCNRINCO)	Common Stock	600435 C1	600435 C1	BP3F854 CN	CNE000001F88	
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Shanghai (XSHG)	Common Stock	600028 CH	600028 CH	6373728 CN	CNE00000018G1	
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Hong Kong (XHKG)	Common Stock	386 HK	386 HK	6291819 HK	CNE1000002Q2	12150504
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Frankfurt (XFRA)	Common Stock	CHU GB	CHU GB	7027756 DE	CNE1000002Q2	12150504
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Frankfurt (XFRA)	Common Stock	CHU GD	CHU GD	7027756 DE	CNE1000002Q2	12150504
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Frankfurt (XFRA)	Common Stock	CHU GF	CHU GF	7027756 DE	CNE1000002Q2	12150504
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Frankfurt (XFRA)	Common Stock	CHU GH	CHU GH	7027756 DE	CNE1000002Q2	12150504
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Frankfurt (XFRA)	Common Stock	CHU GM	CHU GM	7027756 DE	CNE1000002Q2	12150504
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Frankfurt (XFRA)	Common Stock	CHU GR	CHU GR	7027756 DE	CNE1000002Q2	12150504
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Frankfurt (XFRA)	Common Stock	CHU GS	CHU GS	7027756 DE	CNE1000002Q2	12150504
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Qatari Exch (XQTX)	Common Stock	CHU QT	CHU QT	7027756 DE	CNE1000002Q2	12150504
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP OTC US (IOOTC)	Common Stock	SNPMF PQ	SNPMF PQ	B01XKR4 US	CNE1000002Q2	12150504
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP OTC US (IOOTC)	Common Stock	SNPMF US	SNPMF US	B01XKR4 US	CNE1000002Q2	12150504
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP OTC US (IOOTC)	Common Stock	SNPMF UV	SNPMF UV	B01XKR4 US	CNE1000002Q2	12150504
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP SRI SSE-SSEHK (SHSC)	Common Stock	386 H1	386 H1	BP3F8540 HK	CNE1000002Q2	12150504
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Shanghai (XSHG)	Common Stock	600028 CG	600028 CG	6373728 CN	CNE10000018G1	
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Nth SSE-SSEHK (XSSE)	Common Stock	600028 C1	600028 C1	BP3F8240 CN	CNE10000018G1	
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP New York (XNYS)	ADR	SNP UB	2639189 US	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP New York (XNYS)	ADR	SNP UD	2639189 US	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP New York (XNYS)	ADR	SNP UF	2639189 US	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP New York (XNYS)	ADR	SNP UN	2639189 US	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP New York (XNYS)	ADR	SNP UP	2639189 US	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP New York (XNYS)	ADR	SNP US	2639189 US	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP New York (XNYS)	ADR	SNP UT	2639189 US	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP New York (XNYS)	ADR	SNP UX	2639189 US	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP New York (XNYS)	ADR	SNP VJ	2639189 US	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP New York (XNYS)	ADR	SNP VK	2639189 US	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP New York (XNYS)	ADR	SNP YY	2639189 US	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP London Intl (XLON)	ADR	SNP LJ	2654375 GB	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Munich (XMUN)	ADR	CHUA GB	BORSW00 DE	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Munich (XMUN)	ADR	CHUA GF	BORSW00 DE	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Munich (XMUN)	ADR	CHUA GM	BORSW00 DE	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Munich (XMUN)	ADR	CHUA GR	BORSW00 DE	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Munich (XMUN)	ADR	CHUA GS	BORSW00 DE	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Mexico (XME)	ADR	SNPN MM	BQOSP22 MX	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Tradegate (XGAT)	ADR	CHUA TH	16941R108	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP New York (XNYS)	ADR	SNP UM	2639189 US	16941R108	US16941R1086	11899374
CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP New York (XNYS)	ADR	SNP VF	2639189 US	16941R108	US16941R1086	11899374
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP SRI SSE-SSEHK (SHSC)	Common Stock	2386 H1	A1197T	B92NYC9	CNE100001NV2	93502256
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Hong Kong (XHKG)	Common Stock	2386 HK	A1197T	B92NYC9	CNE100001NV2	93502256
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP Munich (XMUN)	Common Stock	1NS GF	A1197T	B96WKB3	CNE100001NV2	

SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Munch (XMUN)	Common Stock	SINOPEC ENGINEERING GROUP-H	1NS GM	A1T9TT	B96WKB3	CNE100001NV2	
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Munch (XMUN)	Common Stock	SINOPEC ENGINEERING GROUP-H	1NS GR	A1T9TT	B96WKB3	CNE100001NV2	
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Munch (XMUN)	Common Stock	SINOPEC ENGINEERING GROUP-H	1NS GS	A1T9TT	B96WKB3	CNE100001NV2	
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Quetix Exch (XQTX)	Common Stock	SINOPEC ENGINEERING GROUP-H	1NS QT	A1T9TT	B96WKB3 DE	CNE100001NV2	93502256 Y80359105
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Euro Comp (XLON)	Common Stock	SINOPEC ENGINEERING GROUP-H	238EUR EU	A1T9TT		CNE100001NV2	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	SINOPEC KANTONS HOLDINGS	SAK GB	923923	4601197 DE	BMG38165U1009	11563384
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	SINOPEC KANTONS HOLDINGS	SAK GF	923923	4601197 DE	BMG38165U1009	11563384
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	SINOPEC KANTONS HOLDINGS	SAK GR	923923	4601197 DE	BMG38165U1009	11563384
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	SINOPEC KANTONS HOLDINGS	SAK GS	923923	4601197 DE	BMG38165U1009	11563384
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Hong Kong (XHKG)	Common Stock	SINOPEC KANTONS HOLDINGS	934 HK	923923	6162692 HK	BMG38165U1009	11563384
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Hong Kong (XHKG)	Common Stock	SINOPEC KANTONS HOLDINGS	934 HI	923923	BP3RXC99 HK	BMG38165U1009	11563384
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OOTC)	ADR	SINOPEC KANTONS-UNSPON ADR	SPKOY PQ		BKRT60 US	US829354W2070	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OOTC)	ADR	SINOPEC KANTONS-UNSPON ADR	SPKOY US		BKRT60 US	US829354W2070	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OOTC)	ADR	SINOPEC KANTONS-UNSPON ADR	SPKOY UV		BKRT60 US	US829354W2070	
SINOPEC OIL FIELD EQUIPMENT	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shenzhen (XSHE)	Common Stock	SINOPEC OIL FIELD EQUIPMENT-A	000852 CH	A0M37A	6136385	CNE1000000XK7	Y4446M108
SINOPEC OIL FIELD EQUIPMENT	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shenzhen (XSHE)	Common Stock	SINOPEC OIL FIELD EQUIPMENT-A	000852 CS	A0M37A	6136385	CNE1000000XK7	Y4446M108
SINOPEC OIL FIELD EQUIPMENT	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	NH SSE-SHK (XSSE)	Common Stock	SINOPEC OIL FIELD EQUIPMENT-A	000852 C2	A0M37A	BD5LXZ4	CNE1000000XK7	
SINOPEC OIL FIELD SERVICE CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shanghai (XSHG)	Common Stock	SINOPEC OIL FIELD SERVICE C-A	600871 CG	A0M3V6	6986740 CN	CNE0000000HS3	
SINOPEC OIL FIELD SERVICE CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shanghai (XSHG)	Common Stock	SINOPEC OIL FIELD SERVICE C-A	600871 CH	A0M3V6	6986740 CN	CNE0000000HS3	
SINOPEC OIL FIELD SERVICE CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	NH SSE-SHK (XSSE)	Common Stock	SINOPEC OIL FIELD SERVICE C-A	600871 C1	A0M3V6	BW7STJ11 CN	CNE0000000HS3	
SINOPEC OIL FIELD SERVICE CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Hong Kong (XHKG)	Common Stock	SINOPEC OIL FIELD SERVICE -H	1033 HK	A0M4Y6	6984669 HK	CNE1000004D6	8069662
SINOPEC OIL FIELD SERVICE CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OOTC)	Common Stock	SINOPEC OIL FIELD SERVICE -H	YZOFF US	A0M4Y6	BO1XYL5 US	CNE1000004D6	8069662
SINOPEC OIL FIELD SERVICE CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OOTC)	Common Stock	SINOPEC OIL FIELD SERVICE -H	YZOFF UV	A0M4Y6	BO1XYL5 US	CNE1000004D6	8069662 Y80387103
SINOPEC OIL FIELD SERVICE CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	NH SSE-SHK (SHSC)	Common Stock	SINOPEC OIL FIELD SERVICE -H	1033 H1	A0M4Y6	BP3RXS1 HK	CNE1000004D6	8069662
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shanghai (XSHG)	Common Stock	SINOPEC SHANGHAI PETROCHE-A	600688 CG	A0M3RA	6802794	CNE0000000BB2	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shanghai (XSHG)	Common Stock	SINOPEC SHANGHAI PETROCHE-A	600688 CH	A0M3RA	6802794	CNE0000000BB2	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	NH SSE-SHK (XSSE)	Common Stock	SINOPEC SHANGHAI PETROCHE-A	600688 C1	A0M3RA	BP3R596 CN	CNE0000000BB2	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GB	A0M4Y5	5888632 DE	CNE1000004C8	5096162
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GD	A0M4Y5	5888632 DE	CNE1000004C8	5096162
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GF	A0M4Y5	5888632 DE	CNE1000004C8	5096162
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GH	A0M4Y5	5888632 DE	CNE1000004C8	5096162
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GM	A0M4Y5	5888632 DE	CNE1000004C8	5096162
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GR	A0M4Y5	5888632 DE	CNE1000004C8	5096162
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GS	A0M4Y5	5888632 DE	CNE1000004C8	5096162
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Quetix Exch (XQTX)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH QT	A0M4Y5	5888632 DE	CNE1000004C8	5096162
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Hong Kong (XHKG)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	338 HK	A0M4Y5	679459 HK	CNE1000004C8	5096162
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OOTC)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SP7JP US Equity		BO1XYG6 US	CNE1000004C8	5096162 Y80373106
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OOTC)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SP7JP UV Equity		BO1XYG6 US	CNE1000004C8	5096162 Y80373106
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	NH SSE-SHK (SHSC)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	338 H1	A0M4Y5	BP3RXR0 HK	CNE1000004C8	5096162
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SH1 UB	887169	2900059 US	US829355M1099	12248750
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SH1 UD	887169	2900059 US	US829355M1099	12248750
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SH1 UF	887169	2900059 US	US829355M1099	12248750
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SH1 UN	887169	2900059 US	US829355M1099	12248750
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SH1 UP	887169	2900059 US	US829355M1099	12248750
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SH1 UT	887169	2900059 US	US829355M1099	12248750
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SH1 VF Equity	887169	2900059 US	US829355M1099	12248750
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SH1 VJ	887169	2900059 US	US829355M1099	12248750
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SH1 VK	887169	2900059 US	US829355M1099	12248750
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SH1 VY	887169	2900059 US	US829355M1099	12248750



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## ATTACHMENT F

### Letter to SBI International and Domestic Equity Managers

December 20, 2016

#### Regarding: Iran Companies

Dear Manager:

The Minnesota State Board of Investment (SBI) sent you prior communication concerning holdings in companies doing business in Iran. **This new communication applies to all SBI equity portfolios managed by your organization and replaces all prior communications. This communication also applies to all depository receipts or ADR's of any of the listed companies.**

*Minnesota Statutes*, section 11A.244, requires the Minnesota State Board of Investment (SBI) to implement an Iran restriction.

**Attachment 1** is the List of Restricted Iran Companies. **These securities may not be purchased for the SBI portfolio that your organization manages.** If you own securities of companies on the Restricted List **and** the companies are **not** on the divestment list, then you do not need to sell your holdings. Please note that the attached list makes changes to the List of Restricted Iran Companies that was attached to the September 29, 2016 letter you received. **This new list is effective December 31, 2016.**

#### Changes to Attachment 1:

The following company was **removed** from the Restricted List:

- **Gail Ltd.** **India**

**Attachment 2** is the List of Iran Companies Requiring Divestment. If you own securities of companies on this list then you must **divest** those holdings according to the schedule provided in the attachment:

- At least 50 percent of a company's holdings must be sold by the date indicated, and
- At least 100 percent of a company's holdings must be sold by the date indicated.

Changes to **Attachment 2**:

The following company was **added** to the Divestment List:

- **Eni Spa** **Italy**

**Attachment 3** is a list of security identifiers for the companies on the List of Restricted Iran Companies (Attachment 1) that your organization may use. The SBI does not represent that this is a complete list of identifiers. Please note that the SBI does not represent that this is a complete list of identifiers. The manager is responsible for identifying all listings.

If you have any questions about this matter, please contact your assigned SBI Investment Officer.

Sincerely,

Mansco Perry III  
Executive Director and Chief Investment Officer

Enclosures

cc: Michael J. Menssen, Director, Debt Management  
Patricia Ammann, Investment Officer, Private Markets  
Tammy Brusehaver, Investment Officer, Public Equity  
Inma Conde Goldman, Investment Officer, Public Equity  
Stephanie Gleeson, Investment Officer, Public Equity  
LeaAnn M. Stagg, Chief Operating Officer

**ATTACHMENT 1**  
**RESTRICTED IRAN COMPANIES**  
**SECURITIES OF COMPANIES MAY NOT BE PURCHASED FOR PORTFOLIO**

<b>COMPANY NAME</b>	<b>COUNTRY</b>
Bharat Petroleum Corporation Ltd.	India
China Petroleum & Chemical Corp	China
Daelim Industrial	South Korea
Eni Spa	Italy
Gazprom OAO	Russia
GS Engineering & Construction Corp	South Korea
Gubre Fabrikalari T.A.S.	Turkey
Indian Oil Corporation Ltd.	India
L G International	South Korea
Linde AG	Germany
Lukoil Oil Co.	Russia
Maire Tecnimont S.p.A	Italy
Mitsui & Co. Ltd	Japan
Oil & Natural Gas Corporation Ltd.	India
PetroChina Co. Ltd.	China
Toyo Engineering Corporation	Japan
Toyota Tsusho Corporation	Japan

Effective Date: December 31, 2016

## ATTACHMENT 2

### LIST OF IRAN COMPANIES REQUIRING DIVESTMENT

Company Name	Country of Origin	Divest 50 Percent By this Date	Divest 100 Percent By this Date
Daelim Industrial	South Korea	December 31, 2016	June 30, 2017
Linde AG	Germany	March 31, 2017	September 30, 2017
Eni Spa	Italy	June 30, 2017	December 31, 2017

Effective Date: December 31, 2016

### COMPLETED/HISTORICAL DIVESTMENTS

Company Name	Country of Origin	Divest 50 Percent By this Date	Divest 100 Percent By this Date
GS Engineering & Construction Corp	South Korea	June 30, 2016	December 31, 2016
Lukoil Oil Co.	Russia	March 31, 2016	September 30, 2016
Gazprom OAO	Russia	December 31, 2015	June 30, 2016
Mitsui & Company, Ltd.	Japan	September 30, 2012	March 31, 2013
Toyota Tsusho	Japan	September 30, 2012	March 31, 2013

**ATTACHMENT 3**  
**IRAN RESTRICTED COMPANIES**  
**Security Identifiers**

ISIN	Company	SYMBOL	CUSIP	COUNTRY
INE029A01011	Bharat Petroleum Corporation Ltd.	500547		India
US16941R1086	China Petroleum & Chemical Corp	386	16941R108	China
CNE1000002Q2	China Petroleum & Chemical Corp	386	16941R108	China
CNE0000018G1	China Petroleum & Chemical Corp	386	16941R108	China
ARDEUT114071	China Petroleum & Chemical Corp	386	16941R108	China
KR7000211003	Daelim Industrial	210		Korea South
KR7000210005	Daelim Industrial	210		Korea South
US26874R1086	Eni Spa	ENI	26874R108	Italy
IT0003132476	Eni Spa	ENI	26874R108	Italy
ARDEUT112612	Eni Spa	ENI	26874R108	Italy
US3682872078	Gazprom OAO	GAZP	368287207	Russia
US3682871088	Gazprom OAO	GAZP	368287207	Russia
RU0007661625	Gazprom OAO	GAZP	368287207	Russia
ARDEUT114261	Gazprom OAO	GAZP	368287207	Russia
KR7006360002	GS Engineering & Construction Corp	6360		Korea South
TRAGUBRF91E2	Gubre Fabrikalari T.A.S.	GUBRF		Turkey
INE242A01010	Indian Oil Corporation Ltd.	530965		India
KR7001120005	L G International	1120		Korea South
US5352232004	Linde AG	LIN	535223200	Germany
DE0006483001	Linde AG	LIN	535223200	Germany
US69343P2048	Lukoil Oil Co.	LKOH	69343P105	Russia
US69343P1057	Lukoil Oil Co.	LKOH	69343P105	Russia
US5498741058	Lukoil Oil Co.	LKOH	69343P105	Russia
RU0009024277	Lukoil Oil Co.	LKOH	69343P105	Russia
ARDEUT114253	Lukoil Oil Co.	LKOH	69343P105	Russia
US56064T1016	Maire Tecnimont S.p.A.	MT	56064T101	Italy
IT0004931058	Maire Tecnimont S.p.A.	MT	56064T101	Italy
US6068272029	Mitsui & Co. Ltd	8031	606827202	Japan
JP3893600001	Mitsui & Co. Ltd	8031	606827202	Japan
INE213A01029	Oil & Natural Gas Corporation Ltd.	500312		India
US71646E1001	PetroChina Co. Ltd.	857	71646E100	China
CNE1000007Q1	PetroChina Co. Ltd.	857	71646E100	China
CNE1000003W8	PetroChina Co. Ltd.	857	71646E100	China
ARDEUT113958	PetroChina Co. Ltd.	857	71646E100	China
JP3607800004	Toyo Engineering Corporation	6330		Japan
JP3635000007	Toyota Tsusho Corporation	8015		Japan

Please note that the SBI does not represent that this is a complete list of identifiers. The manager is responsible for identifying all listings.

Source: IW Financial

Effective Date: December 31, 2016

## Letter to SBI Fixed Income Managers

December 20, 2016

### Regarding: Iran Companies

Dear Manager:

The Minnesota State Board of Investment (SBI) sent you prior communication concerning holdings in companies doing business in Iran. **This communication applies to the SBI fixed income portfolio managed by your organization.**

*Minnesota Statutes*, section 11A.244, requires the Minnesota State Board of Investment (SBI) to implement an Iran restriction.

**Attachment 1** is the List of Restricted Iran Companies. **These securities may not be purchased for the SBI portfolio that your organization manages.** If you own securities of companies on the Restricted List **and** the companies are **not** on the divestment list, then you do not need to sell your holdings. Please note that the attached list makes changes to the List of Restricted Iran Companies that was attached to the September 29, 2016 letter you received. **This new list is effective December 31, 2016.**

#### Changes to **Attachment 1**:

The following company has been **removed** from the Restricted List:

- **Gail Ltd** **India**

**Attachment 2** is the List of Iran Companies Requiring Divestment. If you own securities of companies on this list then you must **divest** those holdings according to the schedule provided in the attachment:

- At least 50 percent of a company's holdings must be sold by the date indicated, and
- At least 100 percent of a company's holdings must be sold by the date indicated.



Changes to **Attachment 2**:

The following company has been **added** to the Divestment List:

- **Eni Spa** **Italy**

If you have any questions about this matter, please contact your assigned SBI Investment Officer.

Sincerely,

Mansco Perry III  
Executive Director and Chief Investment Officer

Enclosures

cc: Michael J. Menssen, Director, Debt Management  
Aaron Griga, Investment Officer, Fixed Income  
Cassandra Boll, Investment Officer, Private Markets  
Steve Kuettel, Investment Officer, Cash Mgmt. Services  
LeaAnn M. Stagg, Chief Operating Officer

**ATTACHMENT 1**  
**RESTRICTED IRAN COMPANIES**  
**SECURITIES OF COMPANIES MAY NOT BE PURCHASED FOR PORTFOLIO**

<b>COMPANY NAME</b>	<b>COUNTRY</b>
Bharat Petroleum Corporation Ltd.	India
China Petroleum & Chemical Corp	China
Daelim Industrial	South Korea
Eni Spa	Italy
Gazprom OAO	Russia
GS Engineering & Construction Corp	South Korea
Gubre Fabrikalari T.A.S.	Turkey
Indian Oil Corporation Ltd.	India
L G International	South Korea
Linde AG	Germany
Lukoil Oil Co.	Russia
Maire Tecnimont S.p.A	Italy
Mitsui & Co. Ltd	Japan
Oil & Natural Gas Corporation Ltd.	India
PetroChina Co. Ltd.	China
Toyo Engineering Corporation	Japan
Toyota Tsusho Corporation	Japan

Effective Date: December 31, 2016

## ATTACHMENT 2

### LIST OF IRAN COMPANIES REQUIRING DIVESTMENT

Company Name	Country of Origin	Divest 50 Percent By this Date	Divest 100 Percent By this Date
Daelim Industrial	South Korea	December 31, 2016	June 30, 2017
Linde AG	Germany	March 31, 2017	September 30, 2017
Eni Spa	Italy	June 30, 2017	December 31, 2017

Effective Date: December 31, 2016

### COMPLETED/HISTORICAL DIVESTMENTS

Company Name	Country of Origin	Divest 50 Percent By this Date	Divest 100 Percent By this Date
GS Engineering & Construction Corp	South Korea	June 30, 2016	December 31, 2016
Lukoil Oil Co.	Russia	March 31, 2016	September 30, 2016
Gazprom OAO	Russia	December 31, 2015	June 30, 2016
Mitsui & Company, Ltd.	Japan	September 30, 2012	March 31, 2013
Toyota Tsusho	Japan	September 30, 2012	March 31, 2013

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## ATTACHMENT G

### RESOLUTION OF THE MINNESOTA BOARD OF INVESTMENT CONCERNING PROXY VOTING

WHEREAS, as a stockholder, the Minnesota State Board of Investment (SBI) is entitled to sponsor and cosponsor shareholder resolutions and participate in corporate annual meetings by casting its votes by proxy or through direct attendance at the meetings; and

WHEREAS, the SBI has previously established a Proxy Committee:

NOW THEREFORE, BE IT RESOLVED THAT:

1. To advise and assist the SBI in the implementation of proxy voting guidelines previously adopted by the Board the SBI hereby authorizes and reaffirms the establishment of the SBI Proxy Committee composed of a representative selected by each member of the SBI to be chaired by the designee of the Governor and convened as necessary in accord with the Guidelines.
2. The SBI further authorizes the SBI Proxy Committee to review the Guidelines periodically and report to the SBI as necessary.
3. The SBI further directs its staff to advise and assist the Proxy Committee in the implementation of this resolution and directs its Executive Director to obtain such consulting and reporting services as may be necessary.
4. This resolution shall take effect immediately.

Adopted this 23<sup>rd</sup> day  
of February, 2017

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Governor Mark Dayton  
Chair, Minnesota  
State Board of Investment

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## **Proxy Voting Guidelines**

The Minnesota State Board of Investment (SBI) has formulated proxy voting guidelines by which it casts votes on a wide range of corporate governance and social responsibility issues.

As a stockholder, the Board is entitled to participate in corporate annual meetings by casting its votes by proxy or through direct attendance at the meetings. The following guidelines constitute an effort by the SBI to manage and control its proxy voting.

### **Overview of the SBI**

By the Minnesota Constitution, the Board is composed of the Governor, the State Auditor, the Secretary of State, and the Attorney General. The Board employs a professional staff to carry out its policies. The Board and staff are assisted by a seventeen member Investment Advisory Council.

The SBI invests the pension assets of the three statewide public employee retirement systems:

- Minnesota State Retirement System (MSRS)
- Public Employees Retirement Association (PERA)
- Teachers Retirement Association (TRA)

The SBI also invests the cash balances of state government funds and assets of several trust funds.

### **Statutory Purpose**

According to statute, state assets are to be responsibly invested by the SBI to maximize the total rate of return without incurring undue risk.<sup>1</sup> Only a small portion of the SBI's equity holdings are in non-pension accounts. The focus, therefore, of the SBI's proxy voting activities is the extensive domestic and international equity holdings within the pension asset portfolios.

### **Fiduciary Responsibility**

As fiduciaries of pension assets, members of the Board and the executive director owe a fiduciary duty to the members of the plans, to the taxpayers of the state and political subdivisions who help to finance the plans, and to the State of Minnesota.<sup>2</sup>

In addition to the general standard of fiduciary conduct, members of the Board, the executive director, the members of the Investment Advisory Council, staff, and members of Board committees must carry out their duties in accordance with the prudent person standard as articulated in statute.<sup>3</sup>

**Voting  
Process**

The Board recognizes its fiduciary responsibility to cast votes on proxy issues. The Board delegates proxy voting responsibilities to its Proxy Committee. Each Board member appoints one member to the Proxy Committee. 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 unusual event that it reaches a tie vote or a quorum is not present, the Committee will cast a vote to abstain.

The Committee has formulated guidelines by which it casts votes on a wide range of corporate governance and social responsibility issues. These guidelines encompass both domestic and international proxy issues. Each year the Committee reviews existing guidelines and determines which issues it will review on a case-by-case basis. The Proxy Committee also may review certain corporate governance issues pertaining to companies headquartered in Minnesota.

Domestic voting: The SBI directly votes shares held in all domestic equity manager portfolios.

International voting: The SBI delegates to international equity managers the voting of shares held in the managers' portfolios following the Proxy Voting Guidelines, where feasible. The SBI believes that several factors affecting the voting of international proxies, including time constraints and lack of company specific information, support the conclusion that the SBI's international equity managers can more efficiently and effectively vote the proxies in their portfolios.

**Corporate Governance Issues**

**Routine  
Matters**

In general, the SBI **supports** management on routine matters of corporate governance. These issues include:

- uncontested election of directors.
- selection of auditors and approval of financial statements.
- management proposals on non-executive compensation issues including savings plans and stock options.
- limits on director and officer liability or increases in director and officer indemnification permitted under the laws of the state of incorporation.

The SBI directs the Proxy Committee, at its discretion, to review the positions taken by directors and withhold votes from or vote against some or all of the directors standing for election if they have taken positions on issues which are potentially not in the best interests of shareholders.



**Shareholder  
Rights**

In general, the SBI **opposes** proposals that would restrict shareholder ability to effect change. Such proposals include:

- instituting supermajority requirements to ratify certain events.
- creating classified boards.
- barring shareholders from participating in the determination of the rules governing the board's actions, such as quorum requirements and the duties of directors.
- prohibiting or limiting shareholder action by written consent.
- granting certain stockholders superior voting rights over other stockholders.

In general, the SBI **supports** proposals that preserve shareholder rights to effect change. Such proposals include:

- having boards of directors comprised of a majority of independent directors.
- having compensation committees comprised entirely of independent directors.
- requiring shareholder approval of poison pill plans.
- repealing classified boards.
- adopting secret ballot of proxy votes.
- reinstating cumulative voting.
- 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.

**Buyouts**

In general, the SBI **supports** friendly takeovers and management buyouts.

**Special Cases**

The SBI evaluates the following proposals on a case-by-case basis:

- hostile takeovers.
- recapitalization plans.
- contested election of directors.

**Social Responsibility Issues**

**Tobacco**

The SBI supports shareholder resolutions that call for a company to reduce its involvement in tobacco production, product marketing and other related lines of business in order to diversify its business in a manner that will reduce or eliminate potential liability to legal claims associated with tobacco that may negatively impact the value of the SBI's holdings.

In furtherance of this policy, the SBI has sponsored and co-sponsored shareholder resolutions to reduce youth access to tobacco products, to request companies to voluntarily comply with FDA regulations, to eliminate smoking in restaurants, and other tobacco related issues.

**Northern  
Ireland**

The SBI **supports** resolutions that call for the adoption of the MacBride Principles as a means to encourage equal employment opportunities in Northern Ireland.

The SBI **supports** resolutions that request companies to submit reports to shareholders concerning their labor practices or their sub-contractors' labor practices in Northern Ireland.

In addition to casting proxy votes, the SBI sponsors and cosponsors Northern Ireland resolutions as required by *Minnesota Statutes*, Section 11A.241.

**Environmental  
Protection/Awareness**

In general, the SBI **supports** resolutions that require a corporation to report or disclose to shareholders company efforts in the environmental arena. Resolutions that request the adoption of various environmental policies are evaluated on a case-by-case basis.

<b>Sudan</b>	<i>Minnesota Statutes</i> , Section 11A.243 requires the SBI to make its best efforts to identify all “scrutinized companies” with operations in Sudan in which the SBI has direct or indirect holdings or could possibly have holdings in the future. The SBI will engage each scrutinized company. The legislation calls for the SBI to: encourage companies with inactive business operations to continue to refrain from initiating active operations; and to notify companies with active business operations that it may be subject to divestment by the State Board of Investment. In general, the SBI <b>supports</b> resolutions consistent with this legislation.
<b>Iran</b>	<i>Minnesota Statutes</i> , Section 11A.244 requires the SBI to make its best efforts to identify all “scrutinized companies” with operations in Iran in which the SBI has direct or indirect holdings or could possibly have holdings in the future. The SBI will engage each scrutinized company. The legislation calls for the SBI to: encourage companies with inactive business operations to continue to refrain from initiating active operations; and to notify companies with active business operations that it may be subject to divestment by the State Board of Investment. In general, the SBI <b>supports</b> resolutions consistent with this legislation.
<b>Other Issues</b>	<p>In general, the SBI <b>supports</b> proposals that require a company to report or disclose to shareholders company efforts concerning a variety of social responsibility issues. In the past, these reporting resolutions have included issues such as affirmative action programs, animal testing procedures, and nuclear plan safety procedures.</p> <p>In general, the SBI <b>opposes</b> proposals that require a company to institute a specific business action in response to such issues. As an example, the SBI voted against a shareholder proposal which would have required a utility to phase out operations of a nuclear power plant.</p>

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1 *Minnesota Statutes*, Section 11A.01.

2 *Minnesota Statutes*, Section 356A.04, subdivision 1.

3 *Minnesota Statutes*, Section 11A.09, and Section 356A.04, subdivision 2.

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## **EXECUTIVE DIRECTOR'S REPORT**

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DATE: February 16, 2017

TO: Members, State Board of Investment

FROM: Mansco Perry III

**SUBJECT: Asset Allocation Transition Update**

Following is a brief update on the progress of transitioning the Combined Funds portfolio to the new asset allocation targets, and increased passive management in Public Equities. Three charts indicating the progression since the beginning of the fiscal year are included.

### **Transition to new Asset Allocation Policy**

The first chart reflects how the asset allocation is moving towards the new target. At the beginning of the third quarter of Fiscal Year 2017 (January 1, 2017), the Combined Funds portfolio reached the Adjusted Policy Target. This occurred primarily as a result of market movements. The Adjusted Policy Target is the basis for the Combined Funds Composite Index and reflects that the uninvested Private Markets allocation will be invested in Public Equities. The allocation to bonds declined to the 20% target level which signifies that the transition has been completed.

### **Public Equity Transition**

The second chart tracks the change in the components of the allocation target for Public Equities.

The target has changed from a 75% U.S./25% Non-U.S. split to a 67% U.S./33% Non-U.S. split. While the transition to the Adjusted Policy Target is complete, we are continuing to transition to the new U.S./Non-U.S. Public Equity allocation targets. As of the beginning of the third quarter of the current Fiscal Year, the U.S./Non-U.S. allocation was at 74%/26%. During January 2017, Staff began the funding process of the six Emerging Markets managers approved by the Board last quarter. We anticipate that these managers will be funded by the end of the current quarter. At that time, Staff will determine the status of the allocation and determine the next steps to take in the transition process.

The source of funds for the transition to Non-U.S. public equities has been a combination of the decline in fixed income and U.S. public equities. The primary source for funding the new Emerging Markets managers will be the termination of several U.S. public equity managers. At this time, the managers have been identified, but will not be announced until the transition of assets has begun. If the transition begins prior to a quarterly IAC and/or SBI meeting, Staff will request the termination of these managers at that time.

In order to move towards the Non-U.S. equity target, additional increases in the allocation will occur due to the market movements, portfolio rebalancing, and additional manager changes in Public Equities.

**Increase Passive Management in Public Equities**

As mentioned during the meetings held in the second quarter of the fiscal year, it is anticipated there will be additional increases in passive management in Public Equity. As reported at the last meeting, the transition to increased passive public equity management began during October 2016. Since that time, there has been no major movement of funds. After Staff has funded the new Emerging Markets managers, we anticipate that additional transactions will result in further increases in passive management. While there is no specified target, it is anticipated that passive management for U.S. public equity will exceed 60%.

Staff will continue to update the SBI and the IAC on the status of these transitions throughout the fiscal year.



# Minnesota State Board of Investment

## Combined Funds Asset Allocation Transition

	Previous Target	Current Target	1-Jul-16	1-Oct-16	1-Jan-17	Adjusted Target* January 1, 2017
Public Equity	60.0%	58.0%	60.4%	61.7%	63.5%	64.8%
Bonds	18.0%	20.0%	24.7%	24.2%	20.1%	20.0%
Private Markets	20.0%	20.0%	12.8%	12.9%	13.2%	13.2%
Cash	2.0%	2.0%	2.1%	1.2%	3.2%	2.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

## Domestic and International Allocation Transition

	Previous Target	Current Target	1-Jul-16	1-Oct-16	1-Jan-17
Domestic	75.0%	67.0%	76.7%	76.5%	74.0%
International	25.0%	33.0%	23.3%	23.5%	26.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

\* “Adjusted Target” reflects current target allocation plus un-invested alternative allocated to Public Equity.

## Active and Passive Allocation Transition

Public Equity	Domestic Equity		International Equity	
	1-Jul-16	1-Jul-16	1-Jul-16	1-Jul-16
Active	64.5%	Active 66.7%	Active 57.3%	
Passive	35.5%	Passive 33.3%	Passive 42.7%	
	1-Jan-17		1-Jan-17	
	1-Jan-17	1-Jan-17	1-Jan-17	1-Jan-17
Active	46.7%	Active 46.0%	Active 48.6%	
Passive	53.3%	Passive 54.0%	Passive 51.4%	

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## **INVESTMENT ADVISORY COUNCIL REPORT**

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DATE: February 16, 2017

TO: Members, State Board of Investment

FROM: Members, Investment Advisory Council and SBI Staff

**SUBJECT: Domestic Equity Portfolio in the Assigned Risk Plan**

The Minnesota Workers' Compensation Assigned Risk Plan (ARP) is a non-profit, tax-exempt entity administered by the Department of Commerce. The ARP provides disability income, medical expenses, retraining expenses and death benefits to high risk entities, with payments being made either periodically or in a lump sum. By statute, the SBI invests the assets of the Plan. The allocation in the ARP is 80 percent bonds and 20 percent equities. As of December 31, 2016, the ARP total assets were \$313.4 million with \$247.4 million in bonds managed by RBC Global Asset Management and \$65.9 million in equities managed by State Street Global Advisors (SSgA). In January of 2017, staff transitioned the U.S. Multi-Style Equity strategy managed by SSgA into the Internal Stock Pool, which is passively managed to the S&P 500 by SBI staff.

### **Investment Management**

GE Asset Management (GEAM) was hired in January 1995 to invest the equity segment of the ARP in their U.S. Multi-Style Equity Strategy. In July 2016, State Street Company acquired GEAM's investment management business. There were no planned changes to the legacy GEAM U.S. equities portfolio management team or legacy U.S. Multi-Style Equity strategy. David Carlson, CIO Equities, was the lead portfolio manager for this strategy. The portfolio was separated into three different strategies: Premier Growth, managed by David Carlson; U.S. Core Value portfolio, managed by Paul Reinhardt; and the U.S. Select Value strategy, managed by Steve Gelhaus. The portfolio was managed with a bottom-up, fundamental process driven by valuations that typically trade below the S&P price to earnings and was agnostic to dividend yield.

Performance of the portfolio has been disappointing during the past several years (see chart below). After the change in ownership, Staff began to evaluate the portfolio due to underperformance and organizational concerns, and examine potential alternatives. Staff believes SSgA is a very capable manager, keeping the portfolio was also under consideration.

### **U.S. Multi-Style Equity Strategy Restructure**

In January of 2017, SSgA notified staff that the legacy U.S. Multi-Style strategy was being restructured to 30 percent U.S. Equity Select and 70 percent U.S. Research Enhanced strategies; U.S. Core Value and U.S. Select Value would be eliminated. U.S. Equity Select would replace Premier Growth, also managed by David Carlson. Chris Sierakowski, in his role as newly appointed co-portfolio manager of U.S. Equity

Select and Tom Lincoln, Director of Fundamental Equity Research and Portfolio Manager of the U.S. Research Enhanced strategy would be additional managers on this strategy replacing Paul Reinhardt and Steve Gelhaus. The U.S. Research Enhanced strategy was based on an analyst portfolio of best stock ideas. SSgA estimated a 35 percent turnover in portfolio holdings as a result of the restructure. Given that concerns had already been raised regarding performance and organizational issues, Staff concluded that the announcement of the restructure required that we arrive at a resolution.

### **Alternative Investment Option**

Staff reviewed various options and concluded that transitioning the legacy U.S. Multi-Style Equity strategy into the Internal Stock Pool prior to the planned restructure to protect the portfolio from higher tracking error and unnecessary trading costs was the best option. Staff discussed its conclusions with members of the Department of Commerce, the agency responsible for the administration of the ARP, who agreed with Staff's conclusion. The Executive Director instructed Staff to defund the SSgA portfolio prior to the restructure and to transition the assets to the SBI Internal Stock Pool.

The Internal Stock Pool is a low cost option that is passively managed internally by SBI Staff and has consistently tracked S&P 500 stock market returns. This portfolio invests over \$1.8 billion in non-retirement fund equity assets. Non-retirement portfolios are prohibited from being commingled with retirement assets.

Staff believes that due to the uncertainty of premium and liability cash flows, the ARP should be invested conservatively and that the 20 percent allocation in equities be passively managed to earn broad market returns.

The following table provides a comparison of the fees and returns for the legacy U.S. Multi-Style strategy managed by SSgA versus the Internal Stock Pool, each portfolio is benchmarked to the S&P 500 Index.

<i><b>Funds</b></i>	<b>AUM In \$Bil</b>	<b>Annual Fee</b>	<b>Returns as of 12/31/16</b>			<b>Calendar Year Ending Returns</b>				
			<b>1Yr</b>	<b>3Yrs</b>	<b>5Yrs</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>
<i>SSGA--US Multi-Style</i>	\$7.4	0.380%	10.2	7.2	14.1	10.2	-1.4	13.2	34.5	16.8
<i>Internal Stock Pool</i>	\$1.9	0.007%	11.8	8.9	14.6	11.8	1.5	13.7	32.2	16.0
<i>S&amp;P 500 Index</i>			12.0	8.9	14.7	12.0	1.4	13.7	32.4	16.0

### **RECOMMENDATION:**

**The Investment Advisory Council concurs with Staff's recommendation to terminate the relationship with SSgA as the domestic equity portfolio manager of the Assigned Risk Plan and that the assets remain invested in the Internal Stock Pool.**

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## **INVESTMENT ADVISORY COUNCIL REPORT**

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DATE: February 16, 2017

TO: Members, State Board of Investment

FROM: Members, Investment Advisory Council and SBI Staff

**SUBJECT: Public Markets, Non-Retirement, and Defined Contribution Report**

This section of the report provides a brief overview of economic and capital market performance as it pertains to the SBI portfolio. Also, included in this section is a summary of investment manager activity and performance summaries of the equity and fixed income managers in the SBI portfolio.

Also, we have included commentary and performance for the non-retirement managers, deferred compensation plan mutual funds, and performance for options within the Minnesota College Savings Plan.

The report includes the following sections:

	<b>Page</b>
• Public Markets Economic and Market Overview	3
• Public Markets Manager Activity	6
• Non-Retirement Manager Update	9
• Deferred Compensation Manager Update	10
• Manager Performance Summaries	A-1

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## **Public Markets Economic and Market Overview Fourth Quarter 2016**

### **Overview**

U.S. equity markets continued to rise during the fourth quarter. The election of Donald Trump fueled expectations for more robust economic growth, tax cuts, infrastructure spending and further rate increases from the Fed. The post-election rotation from defensive to pro-cyclical, economically sensitive sectors constituted the largest shift in market focus since the financial crisis. The earnings recession ended in the third quarter with profits rising for the first time in five quarters by 3 percent. As a result, Financial Services was the best performing sector in the Russell 3000 Index, while Health Care was the weakest.

U.S. Treasury yields started the fourth quarter near record lows and surged in November following the surprise election of Donald Trump and a Republican led Congress. Treasuries sold off as investor optimism about fiscal stimulus and a business friendly regulatory climate boosted inflation expectations. Treasuries continued their selloff throughout December following the FOMC's unanimous decision to increase the Fed Funds target range by 25 basis points. Also, Chair Yellen commented that inflation expectations had increased considerably, and three additional rate increases may be warranted in 2017. The Bloomberg Barclays U.S. Aggregate declined 3.0% for the quarter, with the decline in U.S Treasuries outweighing continued tightening in corporate and other spread sectors.

Developed markets had a negative quarter, as represented by the -0.4% U.S. dollar return of the MSCI World ex. U.S. Index return, amid a sharp decline in the Euro, the Yen and most other currencies. This hurt U.S. dollar-based investors and erased the positive local currency returns achieved in the majority of developed markets (the 4Q16 MSCI World ex USA Index return in local currency terms was 6.9%). Economically sensitive sectors outperformed defensive sectors, boosted by central bank stimulus measures, rising oil prices and investor optimism for an improving global economy. The European Central Bank announced that it would extend the timeline of its bond-buying program to the end of 2017, while lowering the amount of its monthly purchases to 60 billion from 80 billion Euros. Markets advanced despite political turmoil in Italy that triggered the resignation of Prime Minister Renzi after voters rejected his policy initiative to streamline Italy's government. Positive economic data improved sentiment toward Japan's economic growth prospects. Overall, the top performing sectors for the quarter were Financials, Energy and Materials. The worst performing sectors were Real Estate, Health Care and Consumer Discretionary.

The MSCI Emerging Markets index had a return of -4.2% for the fourth quarter. Emerging markets lost ground, blunted by a surge in the U.S. dollar and the U.S. Federal Reserve's move to raise interest rates for the first time in a year. Several currencies reached new lows against the dollar, including the Turkish lira and the Egyptian pound, the two worst performing markets, in U.S. dollar terms, during the quarter. Rising oil prices lifted energy stocks and, led by its energy companies, Russia avoided the sell-off in emerging markets. Overall, Asian markets declined and China lost ground amid concerns about trade relations with the U.S. Turkish stocks fell, hurt by a faltering economy that has been challenged by military conflicts and authoritarian rule following a July coup attempt. Mexican equities declined the most in Latin America, largely hit by fears of

slowing trade with the U.S., its key trading partner. The top performing sectors were Energy, Materials and Financials. The worst performing sectors were Health Care, Real Estate and Consumer Staples.

### **SBI Portfolio**

In the fourth quarter, the SBI's overall portfolio, the Combined Funds, exceeded the composite benchmark return 1.5% versus 1.4%. Domestic equities outperformed the Russell 3000 Index return 4.3% versus 4.2%, while international equities underperformed the MSCI ACWI ex USA Index net return -1.7% versus -1.3%. Although negative in absolute terms, the fixed income portfolio outperformed the Bloomberg Barclays U.S. Aggregate return (2.6%) versus (3.0%). At roughly 1/2 of the SBI's market value, the domestic equity asset class is the single largest contributor to the combined funds return. For the year ending December 31, domestic equity contributed 5.3% of the Combined Funds 7.6% net return.

### **Domestic Equity**

The large cap growth managers trailed the Russell 1000 Growth benchmark by 3.7% for the quarter and by 6.1% for the year. The quarterly return was hurt by stock selection in Technology and Health Care. For the year, stock selection was negative, particularly stock selection in Technology (eg. LinkedIn). The single largest equity manager underperformance came from Sands, which underperformed for both the quarter and the year due to negative stock selection, led by the Technology sector. Stock selection drove Jacob Levy's outperformance in both periods, with the largest contribution coming from the Financial sector.

The large cap value managers outperformed the Russell 1000 Value benchmark by 2.1% for the quarter and trailed by 2.0% for the year. Stock selection in the Financial Services and Health Care sectors helped the quarterly return. Overall stock selection hurt the one year return and TEVA Pharmaceutical Inc. contributed the most to underperformance. All four managers trailed the one-year benchmark. Systematic led the large cap manager quarterly returns with 11.9% due to stock selection in the Financial Services sector.

The small cap growth managers outperformed the Russell 2000 Growth benchmark by 0.1% for the quarter and trailed by 6.6% for the year. Stock selection in the Materials and Processing, and Health Care sectors helped the quarterly performance. For the year, underperformance was driven by negative stock selection in the Technology, Consumer Discretionary and Producer Durables sectors. McKinley outperformed for both periods while Next Century trailed for both periods due to stock selection.

The following four small cap growth managers were funded on November 1: Arrowpoint, Hood River, Rice Hall and Wellington. Their quarterly performance will first be reflected in the next quarter's report.

The small cap value managers matched the Russell 2000 Value benchmark for the quarter and lagged by 5.2% for the year. Negative sector allocation was offset by positive stock selection for the quarter. For the year, negative stock selection led by the Technology and Materials and Processing sectors, hurt performance. Hotchkis & Wiley led the quarterly performance due to stock selection, especially Financial Services. Martingale's strong stock selection, led by Producer Durables, helped them outperform for the year.

**International Equity**

Active developed equity managers underperformed the MSCI World ex USA Index (net) by 0.9 percentage point for the quarter as stock selection and allocation detracted from performance. From a country point of view, stock selection was negative in Germany, Japan, Australia and Spain. From a sector point of view, selection was negative in Financials and Industrials; an overweight to Consumer Discretionary also detracted from performance.

**Emerging Markets**

The SBI's emerging markets equity managers underperformed the benchmark by 3.9 percentage points for the quarter as stock selection, primarily detracted from performance. From a country point of view, stock selection in China, Russia, Taiwan and Brazil and underweight allocations to Russia and Taiwan detracted from performance. From a sector point of view stock selection in the Energy, Financials, and Materials sectors and an overweight to the Consumer Discretionary sector detracted from performance.

**Fixed Income**

While the SBI's fixed income pool outperformed the Bloomberg Barclays U.S. Aggregate benchmark by 0.4 percentage points, relative performance of SBI's fixed income managers was mixed. Managers with underweight duration positioning and exposure to credit largely outperformed the benchmark, while managers with equal or overweight benchmark duration and less credit focus underperformed. Exposure to credit, both corporate investment grade and high yield, was beneficial, as spreads narrowed during the quarter.

## **Public Markets Manager Activity Fourth Quarter 2016**

For the quarter, the majority of investment managers performed in-line with expectations. There were some noteworthy manager developments for the quarter.

### **Domestic Equity Managers**

#### **BlackRock**

After twenty-six years, Amy Schioldager, Global Head of Beta Strategies, announced her intention to retire from BlackRock in the first quarter of 2017 at which time she will transition to a role of senior advisor to the business. In addition, BlackRock has merged its iShares, BlackRock's ETF business, and Beta Strategies group into a new team called ETF & Index Investments (EII). Mark Wideman was named the global head of the ETF & Index Investments group. Manish Mehta, who will report to Mark, will lead the Investments, Products and Markets division of EII. Within the Investments group led by Manish, Alan Mason will continue to lead the Americas portfolio management. None of the portfolio managers running the index equity portfolios on a day-to-day basis are changing.

#### **INTECH**

On October 3, 2016, INTECH's parent company, Janus Capital Group Inc., and Henderson Group entered into an agreed merger. INTECH will become an independently-managed subsidiary of Janus Henderson Global Investors upon completion of the transaction, which is expected to close in the second quarter of 2017, subject to shareholder and regulatory approvals.

#### **J.P. Morgan**

During the fourth quarter of 2016, Andrew Brill joined the U.S. Equity Research team expanding its coverage of the industrials sector and focusing on the capital goods space.

### **International Equity Managers**

#### **Capital International**

Due to persistent underperformance, asset loss, and investment team turnover on November 15, 2016, the IAC agreed with staff's recommendation to terminate the manager. On December 1, 2016, the Board formally ended its relationship with Capital International, Inc. The SBI transitioned the assets from the Capital International portfolio to an MSCI Emerging Markets passive portfolio in the fourth quarter.

#### **Columbia**

Anthony Haugen has been named Vice President and Chief Financial Officer of Columbia Management Investment Advisors, LLC and has replaced Brian McGrane as a member of the Board of Governors. Julie Griffiths has become the Head of Global Investment Risk for Columbia Threadneedle. She will also maintain her responsibilities as head of investment risk for EMEA/APAC. Jane Daniel has joined the Global Business Management Team of Columbia Threadneedle as Head of Enterprise Risk. In this new role, Jane will be responsible for ensuring

the firm meets the Enterprise Risk Management standards set by Ameriprise and will oversee the firm's management of operational risk globally.

### **State Street Global Advisors (SSgA)**

In fourth quarter 2016, Dick Taggart became SSgA's Global Head of Operations. Brian Kinney, SSgA's Global Head of Fixed Income Beta Solutions, will assume the role of Global CIO of Treasury at State Street Corp. In addition, Matt Steinaway, SSgA Chief Risk Officer, will assume the role of CIO for Global Fixed Income, Cash and Currency. Greg Hartch will become SSgA's Chief Risk Officer. John Tucker will assume the newly-created role of Global Investments Chief Operating Officer for SSgA, and Mike Feehily will become the Head of Global Equity Beta Solutions in the Americas. Due to the ongoing high level of management changes at SSgA, staff will continue to monitor the firm closely.

### **Fixed Income Managers**

#### **Aberdeen**

In November 2016, the SBI terminated its relationship with Aberdeen Asset Management due to staff departures, organizational instability, and the sale of Aberdeen's Core fixed income business to a third party. The Aberdeen assets were transitioned by BlackRock to a combination of cash for benefit payments (\$500mm) and passive developed markets exposure (\$450mm) to align with the SBI's new asset allocation policy.

#### **PIMCO**

Effective November 2016, PIMCO appointed Emmanuel (Manny) Roman as their new Chief Executive Officer, replacing Doug Hodges, who had been CEO since 2014. Manny joined PIMCO from Man Group PLC and is expected to provide additional leadership into asset classes such as core and non-core fixed income, private credit, distressed debt and real estate.

## 2016 Manager Meetings

Staff continued with the SBI Stock and Bond Manager Annual Reviews. The fourth quarter manager reviews are noted below.

<b>Investment Manager</b>	<b>Asset Class</b>
• McKinley Capital Management, LLC	Domestic Equity
• INTECH Investment Management, LLC	Domestic Equity
• Hotchkis and Wiley Capital Management, LLC	Domestic Equity
• Peregrine Capital Management	Domestic Equity
• Dodge & Cox	Fixed Income
• Western Asset Management Company	Fixed Income
• Pacific Investment Management Company LLC	Fixed Income
• Goldman Sachs Asset Management	Fixed Income
• Mellon Capital Management	Domestic Equity
• J. P. Morgan Investment Management Inc.	Domestic Equity



## **Non-Retirement Manager Update Fourth Quarter 2016**

### **Domestic Equities**

#### **State Street Global Advisors (Legacy GE Asset Management)**

Performance for the quarter and the year underperformed the benchmark. For the quarter, stock selection and an overweight in the health care sector was the greatest performance detractor, while stock selection in information technology also lagged.

Staff has been closely monitoring this portfolio even prior to the State Street acquisition of GE Asset Management in July of 2016. The fundamental, bottom up actively managed approach has lagged the benchmark over various time periods. The move to passively invest this portfolio was expedited when SSgA announced in January of 2017 that they would make changes to the investment strategy and portfolio managers for this portfolio. Staff transitioned the domestic equity portfolio from the U.S. Multi-Style Equity Strategy managed by SSgA to the Internal Stock Pool, which is passively managed to the S&P 500 by SBI staff.

#### **Internal Stock Pool**

The performance in the domestic equity portfolio slightly lagged the S&P 500 for the quarter and the year.

### **Fixed Income**

#### **RBC Global Asset Management**

The fixed income portfolio outperformed the benchmark, the Bloomberg Barclays U.S. Aggregate, for the quarter and tracked for the year. For the quarter, the allocation to securitized assets and the Government Related and Treasury holdings benefited returns. Excess yield from securitized and municipal securities that aided returns was offset by the yield curve positioning that detracted from returns over the year.

#### **Internal Bond Pool**

The bond portfolio outperformed its benchmark, the Bloomberg Barclays U.S. Aggregate, for the quarter and for the year. For the quarter, the portfolio underweight duration position to the index and overweight allocation to corporate bonds contributed to outperformance. For the year, the allocation to corporates and mortgages were the largest contributors to outperformance followed by the yield curve positioning.

## **Deferred Compensation Managers Fourth Quarter 2016**

### **Domestic Equities**

#### **Vanguard Dividend Growth Fund**

The actively managed Vanguard Dividend Growth Fund was added to the MNDCP investment line-up during 3Q16. The Fund focuses on high-quality companies with a history of paying a stable or increasing dividend over time. The investment team focuses on revenues, earnings, and free cash flow as indicators of growing income streams.

The Fund lagged its benchmark, the NASDAQ US Dividend Achievers Select Index, for the quarter and for the year. Underperformance for the quarter was primarily due to stock selection in Health Care, Industrial, and Consumer Staples sectors. For the year, stock selection in Consumer Discretionary and Industrials, along with an overweight to Health Care served as drags on returns.

#### **Vanguard Institutional Index Plus**

The domestic equity portfolio tracked the return of the S&P 500 Index for the quarter and the year.

#### **Vanguard Mid-Cap Index**

The mid-cap equity portfolio tracked the benchmark, CRSP US Mid Cap Index, for the quarter and the year.

#### **T. Rowe Price**

The small cap equity portfolio underperformed the Russell 2000 for the quarter and for the year. Stock selection in the Information Technology and Materials sectors detracted from performance for both the quarter and the year. Stock selection in the Energy sector also detracted from performance during the quarter. For the year, holdings in the Financial sector lagged.

The succession plan for retired Portfolio Manager, Greg McCrickard, went into effect on October 1, 2016, as Frank Alonso assumed portfolio manager responsibilities of the fund. Staff has met with Frank Alonso and has no concerns with this transition.

## **International Equities**

### **Fidelity Diversified International**

The international equity portfolio underperformed the MSCI EAFE Free for the quarter and for the year. Underperformance for the quarter was due to stock selection in the Energy and Consumer Staples sectors.

In November, participants were transferred from a retail mutual fund vehicle to a lower fee, commingled investment trust vehicle. This was an in-kind transfer with no changes to the investment process, portfolio management team, or portfolio construction.

### **Vanguard Total International Stock Index**

The portfolio underperformed its benchmark, the FTSE Global All Cap ex US Index, for the quarter and for the year. In the short term, the international portfolio will have higher tracking error as a result of fair value pricing, which tends to smooth out over time.

## **Fixed Income**

### **Dodge & Cox Income Fund**

The fixed income portfolio outperformed the benchmark, the Bloomberg Barclays U.S. Aggregate, for the quarter and for the year. The quarterly performance benefited from the portfolio's shorter relative duration in addition to the overweight to corporate bonds and underweight to U.S. Treasuries. Credit security selection was positive, for the quarter and the year, as several commodity related holdings performed well. For the year, the fund's overweight to the Industrial sub-sector and an underweight to U.S. Treasury securities benefited returns.

### **Vanguard Total Bond Market Index**

The fixed income portfolio underperformed the benchmark, the Bloomberg Barclays U.S. Aggregate, for the quarter and tracked the benchmark for the year.

## **Balanced and Conservative Options**

### **Vanguard Balanced**

The portfolio underperformed the benchmark for the quarter and tracked the return for the year. The benchmark is a combined return of 60% CRSP US total Market and 40% Bloomberg Barclays U.S. Aggregate.

### **Galliard Capital Management**

The stable value portfolio outperformed its benchmark, the 3 Year Constant Maturity Treasury plus 0.45%, for the quarter and the year. Allocations to Corporates, ABS, CMBS, and other U.S. Government securities benefited returns. Additionally, an allocation to U.S. TIPS aided performance as inflationary pressures continued to increase. An overweight to the spread sectors, specifically, CMBS, ABS, and other U.S. Government securities, was the largest contributor to the one year outperformance.

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# **STATE BOARD OF INVESTMENT**

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## **Domestic Equity Manager Performance Summaries**

**Fourth Quarter 2016**



# MINNESOTA STATE BOARD OF INVESTMENT

## Domestic Equity

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**COMBINED RETIREMENT FUNDS  
ACTIVE DOMESTIC EQUITY MANAGERS**

**Periods Ended December 31, 2016**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>
Russell 1000 Growth Aggregate	-2.7	1.0	5.0	13.7
<i>Russell 1000 Growth Index</i>	<i>1.0</i>	<i>7.1</i>	<i>8.6</i>	<i>14.5</i>
Russell 1000 Value Aggregate	8.8	15.3	8.1	15.0
<i>Russell 1000 Value Index</i>	<i>6.7</i>	<i>17.3</i>	<i>8.6</i>	<i>14.8</i>
Russell 2000 Growth Aggregate	3.7	4.7	0.7	11.0
<i>Russell 2000 Growth Index</i>	<i>3.6</i>	<i>11.3</i>	<i>5.1</i>	<i>13.7</i>
Russell 2000 Value Aggregate	14.1	26.5	8.4	16.5
<i>Russell 2000 Value Index</i>	<i>14.1</i>	<i>31.7</i>	<i>8.3</i>	<i>15.1</i>
<b>Active Manager Aggregate</b>	5.4	10.9	6.5	14.3
<i>Benchmark</i>	<i>6.2</i>	<i>15.7</i>	<i>8.5</i>	<i>14.9</i>
<b>Semi-Passive Aggregate</b>	3.9	11.1	8.4	14.9
<i>Benchmark</i>	<i>3.8</i>	<i>12.1</i>	<i>8.6</i>	<i>14.7</i>
<b>Passive Manager (BlackRock)</b>	4.2	12.7	8.5	14.7
<i>Russell 3000 Index</i>	<i>4.2</i>	<i>12.7</i>	<i>8.4</i>	<i>14.7</i>
<b>Total Aggregate</b>	<b>4.3</b>	<b>11.5</b>	<b>7.9</b>	<b>14.6</b>
<i>Russell 3000 Index</i>	<i>4.2</i>	<i>12.7</i>	<i>8.4</i>	<i>14.7</i>

**Calendar Years**

	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>
Russell 1000 Growth Aggregate	1.0	4.6	9.6	42.0	15.5
<i>Russell 1000 Growth Index</i>	<i>7.1</i>	<i>5.7</i>	<i>13.0</i>	<i>33.5</i>	<i>15.3</i>
Russell 1000 Value Aggregate	15.3	-3.2	13.1	36.5	16.9
<i>Russell 1000 Value Index</i>	<i>17.3</i>	<i>-3.8</i>	<i>13.5</i>	<i>32.5</i>	<i>17.5</i>
Russell 2000 Growth Aggregate	4.7	1.0	-3.4	47.2	12.0
<i>Russell 2000 Growth Index</i>	<i>11.3</i>	<i>-1.4</i>	<i>5.6</i>	<i>43.3</i>	<i>14.6</i>
Russell 2000 Value Aggregate	26.5	-6.5	7.5	40.8	19.6
<i>Russell 2000 Value Index</i>	<i>31.7</i>	<i>-7.5</i>	<i>4.2</i>	<i>34.5</i>	<i>18.1</i>
<b>Active Manager Aggregate</b>	10.9	-0.4	9.3	40.2	15.4
<i>Active Manager Benchmark</i>	<i>15.7</i>	<i>-0.6</i>	<i>11.0</i>	<i>34.7</i>	<i>16.3</i>
<b>Semi-Passive Aggregate</b>	11.1	0.5	14.2	33.2	17.7
<i>Benchmark</i>	<i>12.1</i>	<i>0.9</i>	<i>13.2</i>	<i>33.1</i>	<i>16.4</i>
<b>Passive Manager (BlackRock)</b>	12.7	0.5	12.6	33.5	16.4
<i>Russell 3000 Index</i>	<i>12.7</i>	<i>0.5</i>	<i>12.6</i>	<i>33.6</i>	<i>16.4</i>
<b>Total Aggregate</b>	<b>11.5</b>	<b>0.3</b>	<b>12.3</b>	<b>35.1</b>	<b>16.6</b>
<i>Russell 3000 Index</i>	<i>12.7</i>	<i>0.5</i>	<i>12.6</i>	<i>33.6</i>	<i>16.4</i>

**COMBINED RETIREMENT FUNDS**  
**ACTIVE DOMESTIC EQUITY MANAGERS**

**Periods Ended December 2016**

**Performance versus Russell Style Benchmarks for All Periods**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception(1)</b>
<b>Russell 1000 Growth Index</b>	<b>1.0</b>	<b>7.1</b>	<b>8.6</b>	<b>14.5</b>	
INTECH	-0.2	6.8	7.8	14.6	7.3
<i>Benchmark</i>	<i>1.0</i>	<i>7.1</i>	<i>8.6</i>	<i>14.5</i>	<i>8.1</i>
Jacobs Levy	2.2	11.2	9.4	15.2	7.4
<i>Benchmark</i>	<i>1.0</i>	<i>7.1</i>	<i>8.6</i>	<i>14.5</i>	<i>8.1</i>
Sands Capital	-7.3	-6.9	1.5	13.1	8.5
<i>Benchmark</i>	<i>1.0</i>	<i>7.1</i>	<i>8.6</i>	<i>14.5</i>	<i>8.1</i>
Winslow-Large Cap	-3.5	-1.9	5.1	12.7	8.4
<i>Benchmark</i>	<i>1.0</i>	<i>7.1</i>	<i>8.6</i>	<i>14.5</i>	<i>8.1</i>
Zevenbergen Capital	-2.9	-2.8	2.3	13.1	9.5
<i>Benchmark</i>	<i>1.0</i>	<i>7.1</i>	<i>8.6</i>	<i>14.5</i>	<i>8.8</i>
<b>Aggregate</b>	<b>-2.7</b>	<b>1.0</b>	<b>5.0</b>	<b>13.7</b>	
 <b>Russell 1000 Value Index</b>	 <b>6.7</b>	 <b>17.3</b>	 <b>8.6</b>	 <b>14.8</b>	
Barrow, Hanley	5.5	12.8	7.7	14.3	7.8
<i>Benchmark</i>	<i>6.7</i>	<i>17.3</i>	<i>8.6</i>	<i>14.8</i>	<i>7.7</i>
Earnest Partners	8.8	16.2	8.8	13.5	6.5
<i>Benchmark</i>	<i>6.7</i>	<i>17.3</i>	<i>8.6</i>	<i>14.8</i>	<i>7.1</i>
LSV Asset Mgmt.	10.3	17.0	9.2	17.3	9.0
<i>Benchmark</i>	<i>6.7</i>	<i>17.3</i>	<i>8.6</i>	<i>14.8</i>	<i>7.7</i>
Systematic Financial Mgmt.	11.9	16.3	6.9	14.3	7.3
<i>Benchmark</i>	<i>6.7</i>	<i>17.3</i>	<i>8.6</i>	<i>14.8</i>	<i>7.7</i>
<b>Aggregate</b>	<b>8.8</b>	<b>15.3</b>	<b>8.1</b>	<b>15.0</b>	

(1) Since inception by the SBI. Inception dates as follows:

4/1/94: Zevenbergen Capital

7/1/00: Earnest Partners

4/1/04: Barrow Hanley, LSV Asset Mgmt., Systematic Financial Mgmt.

1/1/05: INTECH, Jacobs Levy, Sands Capital, Winslow-Large Cap

Note: All aggregates include the performance of terminated managers

**COMBINED RETIREMENT FUNDS**  
**ACTIVE DOMESTIC EQUITY MANAGERS**

**Periods Ended December 2016**

**Performance versus Russell Style Benchmarks for All Periods**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception <sup>(1)</sup></b>
<b>Small Cap</b>					
<b>Russell 2000 Growth Index</b>	<b>3.6</b>	<b>11.3</b>	<b>5.1</b>	<b>13.7</b>	
McKinley Capital	12.0	12.9	6.1	17.4	7.4
<i>Benchmark</i>	<i>3.6</i>	<i>11.3</i>	<i>5.1</i>	<i>13.7</i>	<i>8.4</i>
Next Century Growth	-4.7	-3.7	-4.0	6.3	2.1
<i>Benchmark</i>	<i>3.6</i>	<i>11.3</i>	<i>5.1</i>	<i>13.7</i>	<i>4.5</i>
<b>Aggregate</b>	<b>3.7</b>	<b>4.7</b>	<b>0.7</b>	<b>11.0</b>	
 <b>Russell 2000 Value Index</b>	 <b>14.1</b>	 <b>31.7</b>	 <b>8.3</b>	 <b>15.1</b>	
Goldman Sachs	11.1	24.6	8.2	15.6	10.0
<i>Benchmark</i>	<i>14.1</i>	<i>31.7</i>	<i>8.3</i>	<i>15.1</i>	<i>8.5</i>
Hotchkis & Wiley	17.6	19.9	7.4	17.6	9.0
<i>Benchmark</i>	<i>14.1</i>	<i>31.7</i>	<i>8.3</i>	<i>15.1</i>	<i>8.5</i>
Martingale Asset Mgmt.	15.0	34.3	10.9	18.6	8.7
<i>Benchmark</i>	<i>14.1</i>	<i>31.7</i>	<i>8.3</i>	<i>15.1</i>	<i>8.5</i>
Peregrine Capital	13.4	27.8	7.5	15.2	10.8
<i>Benchmark</i>	<i>14.1</i>	<i>31.7</i>	<i>8.3</i>	<i>15.1</i>	<i>10.2</i>
<b>Aggregate</b>	<b>14.1</b>	<b>26.5</b>	<b>8.4</b>	<b>16.5</b>	
<b>Active Mgr. Aggregate (2)</b>	<b>5.4</b>	<b>10.9</b>	<b>6.5</b>	<b>14.3</b>	

(1) Since inception by the SBI. Inception dates as follows:

7/1/00: Next Century, Peregrine Capital

1/1/04: Goldman Sachs, Hotchkis & Wiley, Martingale Asset Mgmt., McKinley Capital

(2) The Active Manager Aggregate Benchmark is the aggregate of the weighted average of the active manager benchmarks and is not the Russell 3000.

Note: All aggregates include the performance of terminated managers

**COMBINED RETIREMENT FUNDS**  
**DOMESTIC EQUITY MANAGERS**  
**Periods Ended December 2016**  
**Versus Manager Benchmarks**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception(1)</b>
<b>Semi-Passive Managers (2)</b>					
BlackRock Institutional	4.3	12.5	9.0	15.5	9.5
<i>Benchmark</i>	3.8	12.1	8.6	14.7	9.1
INTECH	2.7	8.7	6.9	13.6	11.9
<i>Benchmark</i>	3.8	12.1	8.6	14.7	12.5
JP Morgan	4.4	12.3	9.2	15.4	9.4
<i>Benchmark</i>	3.8	12.1	8.6	14.7	9.1
Mellon Capital	3.7	10.2	8.4	14.7	8.7
<i>Benchmark</i>	3.8	12.1	8.6	14.7	9.1
<b>Semi-Passive Aggregate (R1000)</b>	<b>3.9</b>	<b>11.1</b>	<b>8.4</b>	<b>14.9</b>	
<b>Passive Manager (R3000)</b>					
BlackRock Institutional	4.2	12.7	8.5	14.7	8.9
<i>Benchmark</i>	4.2	12.7	8.4	14.7	8.8
<b>Total Aggregate (3)</b>	<b>4.3</b>	<b>11.5</b>	<b>7.9</b>	<b>14.6</b>	<b>10.2</b>
<i>Benchmark (3,4)</i>	4.2	12.7	8.4	14.7	10.4
<i>Russell 3000 Index (3)</i>	4.2	12.7	8.4	14.7	10.7
<i>Russell 1000 Index (3)</i>	3.8	12.1	8.6	14.7	10.9
<i>Russell 2000 Index (3)</i>	8.8	21.3	6.7	14.5	9.5

(1) Since retention by the SBI. Inception dates as follows:

1/1/95: BlackRock Institutional (semi-passive), J.P. Morgan, Mellon Capital

7/1/95: BlackRock Institutional (passive)

4/1/10: INTECH

(2) Semi-Passive managers' benchmark is the Russell 1000 index beginning 1/1/04 and was the Completeness Fund benchmark prior to 1/1/04.

(3) Total Aggregate and Benchmarks Inception as of 1/1/84

(4) The Total Aggregate benchmark is the Russell 3000 effective 10/1/03. From 7/1/99 to 9/30/03, it was the Wilshire 5000 Investable Index. From 11/1/93 to 6/30/99, the target was the Wilshire 5000 as reported with no adjustments. Prior to 11/1/93, the Wilshire 5000 was adjusted to reflect SBI mandated restrictions, which included liquor and tobacco, American Home Products and South Africa.

Note: All aggregates include the performance of terminated managers.

**COMBINED RETIREMENT FUNDS  
DOMESTIC EQUITY MANAGERS**

	December 31, 2016		September 30, 2016	
	Market Value	Percent	Market Value	Percent
<b>Russell 1000 Growth Aggregate</b>	<b>\$1,794,412,724</b>	<b>6.1%</b>	<b>\$3,126,050,711</b>	<b>10.7%</b>
INTECH	\$321,081,296	1.1%	\$653,575,148	2.2%
Jacobs Levy	\$347,765,521	1.2%	\$774,360,727	2.7%
Sands Capital	\$452,132,439	1.5%	\$718,656,064	2.5%
Winslow-Large Cap	\$247,530,880	0.8%	\$332,989,863	1.1%
Zevenbergen Capital	\$425,902,588	1.5%	\$646,468,908	2.2%
<b>Russell 1000 Value Aggregate</b>	<b>\$1,984,233,866</b>	<b>6.8%</b>	<b>\$3,090,914,819</b>	<b>10.6%</b>
Barrow Hanley	\$573,784,717	2.0%	\$875,130,045	3.0%
Earnest Partners	\$419,304,818	1.4%	\$587,891,921	2.0%
LSV Asset Mgmt.	\$599,298,104	2.0%	\$872,635,135	3.0%
Systematic Financial Mgmt.	\$391,846,227	1.3%	\$755,257,717	2.6%
<b>Russell 2000 Growth Aggregate</b>	<b>\$1,116,398,549</b>	<b>3.8%</b>	<b>\$769,046,879</b>	<b>2.6%</b>
Arrowpoint (1)	\$164,117,429	0.6%	--	0.0%
Hood River (1)	\$190,190,987	0.7%	--	0.0%
McKinley Capital	\$251,423,306	0.9%	\$404,327,371	1.4%
Next Century Growth	\$148,245,816	0.5%	\$364,719,507	1.3%
Rice Hall James (1)	\$168,734,889	0.6%	--	0.0%
Wellington (1)	\$193,686,123	0.7%	--	0.0%
<b>Russell 2000 Value Aggregate</b>	<b>\$1,222,626,933</b>	<b>4.2%</b>	<b>\$1,148,462,244</b>	<b>3.9%</b>
Goldman Sachs	\$323,748,012	1.1%	\$291,521,871	1.0%
Hotchkis & Wiley	\$286,331,662	1.0%	\$243,458,098	0.8%
Martingale Asset Mgmt.	\$277,996,920	1.0%	\$241,633,910	0.8%
Peregrine Capital	\$334,550,340	1.1%	\$371,848,365	1.3%
<b>Semi-Passive Manager Aggregate</b>	<b>\$7,064,014,920</b>	<b>24.2%</b>	<b>\$10,868,220,873</b>	<b>37.4%</b>
BlackRock Institutional	\$1,768,296,782	6.0%	\$2,712,223,976	9.3%
INTECH	\$1,444,552,593	4.9%	\$2,425,735,898	8.3%
JP Morgan	\$2,185,100,954	7.5%	\$3,107,621,962	10.7%
Mellon Capital	\$1,666,064,591	5.7%	\$2,622,639,037	9.0%
<b>Passive Manager</b>	<b>\$16,060,355,148</b>	<b>54.9%</b>	<b>\$10,084,351,357</b>	<b>34.7%</b>
BlackRock Russell 1000 (2)	\$5,551,321,150	19.0%	--	0.0%
BlackRock Russell 3000	\$10,509,033,999	35.9%	\$10,084,351,357	34.7%
<b>Total Portfolio</b>	<b>\$29,242,042,141</b>	<b>100.0%</b>	<b>\$29,087,046,883</b>	<b>100.0%</b>

(1) Arrowpoint, Hood River, Rice Hall James, and Wellington were funded on November 1, 2016.

(2) BlackRock Russell 1000 passive was funded in October. 2016.

**COMBINED RETIREMENT FUNDS**  
**ACTIVE DOMESTIC EQUITY MANAGERS**  
**Calendar Year Returns**  
**Russell Style Manager Benchmarks**

	2016	2015	2014	2013	2012
<b>LARGE CAP</b>					
<b>Russell 1000 Growth Index</b>	<b>7.1</b>	<b>5.7</b>	<b>13.0</b>	<b>33.5</b>	<b>15.3</b>
INTECH	6.8	4.0	12.8	34.1	17.8
Jacobs Levy	11.2	4.3	12.9	37.0	13.0
Sands Capital	-6.9	2.9	9.1	42.4	24.2
Winslow - Large Cap	-1.9	6.7	11.0	37.4	13.7
Zevenbergen Capital	-2.8	6.4	3.4	60.6	8.0
<b>Aggregate</b>	<b>1.0</b>	<b>4.6</b>	<b>9.6</b>	<b>42.0</b>	<b>15.5</b>
<b>Russell 1000 Value Index</b>	<b>17.3</b>	<b>-3.8</b>	<b>13.5</b>	<b>32.5</b>	<b>17.5</b>
Barrow, Hanley	12.8	-2.1	13.0	35.5	15.5
Earnest Partners	16.2	-2.7	14.0	32.0	10.7
LSV Asset Mgmt.	17.0	-2.2	14.0	41.2	20.4
Systematic Financial Mgmt.	16.3	-5.7	11.6	35.0	18.2
<b>Aggregate</b>	<b>15.3</b>	<b>-3.2</b>	<b>13.1</b>	<b>36.5</b>	<b>16.9</b>
<b>SMALL CAP</b>					
<b>Russell 2000 Growth Index</b>	<b>11.3</b>	<b>-1.4</b>	<b>5.6</b>	<b>43.3</b>	<b>14.6</b>
McKinley Capital	12.9	3.6	2.0	51.6	23.2
Next Century Growth	-3.7	-1.7	-6.5	50.3	1.9
<b>Aggregate</b>	<b>4.7</b>	<b>1.0</b>	<b>-3.4</b>	<b>47.2</b>	<b>12.0</b>
<b>Russell 2000 Value Index</b>	<b>31.7</b>	<b>-7.5</b>	<b>4.2</b>	<b>34.5</b>	<b>18.1</b>
Goldman Sachs	24.6	-5.2	7.4	39.3	16.6
Hotchkis & Wiley	19.9	-8.5	13.0	46.0	24.1
Martingale Asset Mgmt.	34.3	-5.2	7.3	43.1	20.1
Peregrine Capital	27.8	-6.7	4.1	37.3	18.8
<b>Aggregate</b>	<b>26.5</b>	<b>-6.5</b>	<b>7.5</b>	<b>40.8</b>	<b>19.6</b>
<b>Active Mgr. Aggregate</b>	<b>10.9</b>	<b>-0.4</b>	<b>9.3</b>	<b>40.2</b>	<b>15.4</b>
<i>Active Mgr. Aggregate Benchmark (1)</i>	<i>15.7</i>	<i>-0.6</i>	<i>11.0</i>	<i>34.7</i>	<i>16.3</i>

(1) The Active Manager Aggregate Benchmark is the aggregate of the weighted average of the active manager benchmarks and is not the Russell 3000.

Note: All aggregates include the performance of terminated managers. Returns shown are full-year returns only. Performance of managers hired during a calendar year are reported beginning with the following calendar year.

**COMBINED RETIREMENT FUNDS**  
**DOMESTIC EQUITY MANAGERS**  
**Calendar Year Returns**  
**Versus Manager Benchmarks**

	2016	2015	2014	2013	2012
<b>Semi-Passive Managers</b>					
<b>Russell 1000 Index</b>	<b>12.1</b>	<b>0.9</b>	<b>13.2</b>	<b>33.1</b>	<b>16.4</b>
BlackRock Institutional	12.5	0.8	14.2	33.3	19.0
INTECH	8.7	0.7	11.6	33.0	16.6
JP Morgan	12.3	0.8	15.0	33.7	17.6
Mellon Capital	10.2	-0.2	15.9	32.6	17.3
<b>Semi-Passive Aggregate (R1000)</b>	<b>11.1</b>	<b>0.5</b>	<b>14.2</b>	<b>33.2</b>	<b>17.7</b>
<b>Passive Managers</b>					
<b>Russell 3000 Index</b>	<b>12.7</b>	<b>0.5</b>	<b>12.6</b>	<b>33.6</b>	<b>16.4</b>
BlackRock Institutional	12.7	0.5	12.6	33.5	16.4
<b>Total Aggregate</b>	<b>11.5</b>	<b>0.3</b>	<b>12.3</b>	<b>35.1</b>	<b>16.6</b>
<i>Russell 3000 Index</i>	<i>12.7</i>	<i>0.5</i>	<i>12.6</i>	<i>33.6</i>	<i>16.4</i>
<i>Russell 1000 Index</i>	<i>12.1</i>	<i>0.9</i>	<i>13.2</i>	<i>33.1</i>	<i>16.4</i>
<i>Russell 2000 Index</i>	<i>21.3</i>	<i>-4.4</i>	<i>4.9</i>	<i>38.8</i>	<i>16.3</i>

Note: All aggregates include the performance of terminated managers. Returns shown are full year returns only. Performance of managers hired during a calendar year are reported beginning with the following calendar year.







# **STATE BOARD OF INVESTMENT**

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## **International Manager Performance Summaries**

**Fourth Quarter 2016**



# MINNESOTA STATE BOARD OF INVESTMENT

## International Managers

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**COMBINED RETIREMENT FUNDS**  
**INTERNATIONAL MANAGERS**  
**Periods Ended December 2016**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception (1)</b>
<b>Active Developed Markets (2)</b>					
Acadian	0.7	8.1	2.8	10.0	5.2
<i>Benchmark</i>	-0.4	2.7	-1.6	6.1	4.1
Columbia	-3.5	-5.6	-1.7	7.0	1.7
<i>Benchmark</i>	-0.4	2.7	-1.6	6.1	2.6
Fidelity	-0.7	1.2	-1.5	7.8	5.6
<i>Benchmark</i>	-0.4	2.7	-1.6	6.1	4.1
J.P. Morgan	0.5	4.0	-2.0	5.9	4.0
<i>Benchmark</i>	-0.4	2.7	-1.6	6.1	4.1
Marathon Asset Management	-1.4	-1.1	0.4	8.9	7.9
<i>Benchmark</i>	-0.4	2.7	-1.6	6.1	4.6
McKinley	-3.3	-7.5	-2.4	6.8	3.5
<i>Benchmark</i>	-0.4	2.7	-1.6	6.1	4.1
<b>Aggregate</b>	<b>-1.3</b>	<b>-0.2</b>	<b>-0.4</b>	<b>7.9</b>	
<i>Benchmark</i>	-0.4	2.7	-1.6	6.1	
<b>Active Emerging Markets (3)</b>					
Capital International (5)	-5.3	7.6	-5.4	-0.6	7.7
<i>Benchmark</i>	-4.2	11.2	-2.6	1.3	8.7
Morgan Stanley	-8.0	6.1	-2.1	2.7	9.4
<i>Benchmark</i>	-4.2	11.2	-2.6	1.3	8.7
<b>Aggregate</b>	<b>-8.1</b>	<b>5.3</b>	<b>-4.1</b>	<b>0.8</b>	
<i>Benchmark</i>	-4.2	11.2	-2.6	1.3	
<b>Semi-Passive Developed Markets (2)</b>					
AQR	-0.5	0.8	-0.9	7.8	4.7
<i>Benchmark</i>	-0.4	2.7	-1.6	6.1	4.1
Fidelity	-1.3	-1.7	-2.1	6.6	4.7
<i>Benchmark</i>	-0.4	2.7	-1.6	6.1	4.1
SSgA	1.6	0.6	-1.9	6.8	3.7
<i>Benchmark</i>	-0.4	2.7	-1.6	6.1	4.1
<b>Aggregate</b>	<b>-0.3</b>	<b>-0.4</b>	<b>-1.7</b>	<b>7.0</b>	
<i>Benchmark</i>	-0.4	2.7	-1.6	6.1	

(1) Since inception by the SBI. Inception dates as follows:

10/1/92: State Street (semi-passive developed markets)

10/1/93: Marathon Asset Management (active developed markets)

1/1/00: Columbia (active developed markets)

1/1/01: Capital International, Morgan Stanley (active emerging markets)

7/1/05: Acadian, J.P. Morgan, McKinley (active developed markets) AQR, Fidelity (semi-passive developed markets)

(2) Pyramis changed its name to Fidelity in October 2015.

(3) Since 6/1/08 the developed markets manager's benchmark is the Standard (large + mid) MSCI World ex USA (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI World ex USA (net). From 10/1/03 to 9/30/07 the benchmark was MSCI World ex USA (net). Prior to that date, it was MSCI EAFE Free (net). From 10/1/01 to 5/31/02 the benchmark was the Provisional MSCI EAFE Free (net).

(4) Since 6/1/08 the emerging markets manager's benchmark is the Standard (large + mid) MSCI Emerging Markets Free (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI Emerging Markets Free (net). From 1/1/01 to 9/30/07 the benchmark was MSCI Emerging Markets Free (net). Prior to that date, it was MSCI Emerging Markets Free (gross). From 10/1/01 to 5/31/02 the benchmark was the Provisional MSCI Emerging Markets Free (net).

(5) Capital International's portfolio was transitioned to a passive emerging markets portfolio in October 2016.

**COMBINED RETIREMENT FUNDS**  
**INTERNATIONAL MANAGERS**  
**Periods Ended December 2016**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception (1)</b>
<b>Passive Developed Markets (2)</b>					
SSgA	-0.3	3.2	-1.2	6.5	5.9
Benchmark	-0.4	2.7	-1.6	6.1	5.6
<b>Passive Emerging Markets (3)</b>					
SSgA	-4.5	11.1	-2.4	1.4	1.4
Benchmark	-4.2	11.2	-2.6	1.3	1.3
Equity Only (4)	-1.7	2.6	-1.5	5.8	6.2
Benchmark (5)	-1.3	4.5	-1.8	5.0	5.7
<b>Total Program (5,9)</b>	<b>-1.7</b>	<b>2.6</b>	<b>-1.5</b>	<b>5.8</b>	<b>6.3</b>
Benchmark (6,9)	-1.3	4.5	-1.8	5.0	5.7
SBI Int'l Equity Target (6,9)	-1.3	4.5	-1.8	5.0	5.7
MSCI ACWI Free ex USA (7,9)	-1.3	4.5	-1.8	5.0	5.9
MSCI World ex USA (net) (9)	-0.4	2.7	-1.6	6.1	5.7
MSCI EAFE Free (net) (9)	-0.7	1.0	-1.6	6.5	5.5
MSCI Emerging Markets Free (8,9)	-4.2	11.2	-2.6	1.3	6.9

(1) Since retention by the SBI. Inception dates as follows:

10/1/92: State Street (passive developed markets)

1/1/12: State Street (passive emerging markets)

(2) Since 6/1/08 the developed markets managers' benchmark is the Standard (large + mid) MSCI World ex U.S. (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI World ex U.S. (net). From 10/1/03 to 9/30/07 the benchmark was MSCI World ex U.S. (net). Prior to that date, it was MSCI EAFE Free (net). From 10/1/01 to 5/31/02 the benchmark was the Provisional MSCI EAFE Free (net).

(3) Since 6/1/08 the emerging markets manager's benchmark is the Standard (large + mid) MSCI Emerging Markets Free (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI Emerging Markets Free (net). From 1/1/01 to 9/30/07 the benchmark was MSCI Emerging Markets Free (net). Prior to that date, it was MSCI Emerging Markets Free (gross). From 10/1/01 to 5/31/02 the benchmark was the Provisional MSCI Emerging Markets Free (net).

(4) Equity managers only. Includes impact of terminated managers.

(5) Includes impact of currency overlay on the passive EAFE portfolio from 12/1/95-10/31/00.

(6) Since 6/1/08 the International Equity asset class target is the Standard (large + mid) MSCI ACWI ex U.S. (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI ACWI ex U.S. (net). From 10/1/03 to 9/30/07 the target was MSCI ACWI ex U.S. (net). From 1/1/01 to 9/30/03, the target was MSCI EAFE Free (net) plus Emerging Markets Free (net), and from 7/1/99 to 12/31/00 the target was MSCI EAFE Free (net) plus Emerging Markets Free (gross). From 7/1/99 to 9/30/03, the weighting of each index fluctuated with market capitalization. From 10/1/01 to 5/31/02 all international benchmarks being reported were the MSCI Provisional indices. From 12/31/96 to 6/30/99 the benchmark was fixed at 87% EAFE Free (net)/13% Emerging Markets Free (gross). On 5/1/96, the portfolio began transitioning from 100% EAFE Free (net) to the 12/31/96 fixed weights. 100% EAFE Free (net) prior to 5/1/96.

(7) MSCI ACWI Free ex U.S. (gross) through 12/31/00. MSCI ACWI Free ex U.S. (net) thereafter.

(8) MSCI Emerging Markets Free (gross) through 12/31/00. MSCI Emerging Markets Free (net) thereafter.

(9) Total Program and Benchmarks Inception as of 10/1/92

**COMBINED RETIREMENT FUNDS**  
**INTERNATIONAL STOCK MANAGERS**  
**Periods Ended December 2016**

	December 31, 2016		September 30, 2016	
	Market Value	Percent	Market Value	Percent
<b>Active Developed Markets</b>	<b>\$2,422,276,505</b>	<b>23.9%</b>	<b>\$2,453,024,676</b>	<b>27.8%</b>
Acadian	\$400,687,288	3.9%	\$397,971,375	4.5%
Columbia	\$339,402,902	3.3%	\$351,878,958	4.0%
Fidelity	\$347,549,790	3.4%	\$349,827,648	4.0%
J.P. Morgan	\$288,115,277	2.8%	\$286,731,510	3.2%
Marathon	\$762,727,117	7.5%	\$773,260,668	8.8%
McKinley	\$283,794,130	2.8%	\$293,354,517	3.3%
<b>Active Emerging Markets</b>	<b>\$1,382,149,330</b>	<b>13.6%</b>	<b>\$1,482,737,481</b>	<b>16.8%</b>
Capital International (1)	\$632,712,957	6.2%	\$667,957,627	7.6%
Morgan Stanley	\$749,436,373	7.4%	\$814,779,854	9.2%
<b>Semi-Passive Developed Markets</b>	<b>\$1,129,727,026</b>	<b>11.1%</b>	<b>\$1,133,061,024</b>	<b>12.8%</b>
AQR	\$339,888,645	3.4%	\$341,574,462	3.9%
Fidelity	\$488,966,331	4.8%	\$495,324,747	5.6%
State Street	\$300,872,050	3.0%	\$296,161,815	3.4%
<b>Passive Developed Markets</b>	<b>\$4,933,081,598</b>	<b>48.6%</b>	<b>\$3,466,289,968</b>	<b>39.3%</b>
State Street	\$4,928,130,492	48.6%	\$3,466,289,968	39.3%
Intl Transition Account	\$4,951,105	0.0%	\$0	0.0%
<b>Passive Emerging Markets</b>	<b>\$278,408,882</b>	<b>2.7%</b>	<b>\$291,403,298</b>	<b>3.3%</b>
State Street	\$278,408,882	2.7%	\$291,403,298	3.3%
<b>Total Portfolio</b>	<b>\$10,145,643,340</b>	<b>100.0%</b>	<b>\$8,826,516,447</b>	<b>100.0%</b>

(1) Capital International's portfolio was transitioned to a passive emerging markets portfolio in October 2016.

**COMBINED RETIREMENT FUNDS**  
**INTERNATIONAL STOCK MANAGERS**  
**Calendar Year Returns**

	2016	2015	2014	2013	2012
<b>Active Developed Markets (1)</b>					
Acadian	8.1	2.4	-1.7	26.1	17.6
<i>Benchmark</i>	2.7	-3.0	-4.3	21.0	16.4
Columbia	-5.6	6.4	-5.6	23.9	19.0
<i>Benchmark</i>	2.7	-3.0	-4.3	21.0	16.4
Fidelity	1.2	0.1	-5.6	26.7	20.3
<i>Benchmark</i>	2.7	-3.0	-4.3	21.0	16.4
J.P. Morgan	4.0	-4.7	-5.1	19.5	18.4
<i>Benchmark</i>	2.7	-3.0	-4.3	21.0	16.4
Marathon	-1.1	6.7	-4.0	28.5	17.9
<i>Benchmark</i>	2.7	-3.0	-4.3	21.0	16.4
McKinley	-7.5	3.1	-2.7	28.0	16.9
<i>Benchmark</i>	2.7	-3.0	-4.3	21.0	16.4
<b>Aggregate</b>	<b>-0.2</b>	<b>3.2</b>	<b>-4.1</b>	<b>25.4</b>	<b>17.9</b>
<i>Benchmark</i>	2.7	-3.0	-4.3	21.0	16.4
<b>Active Emerging Markets (2)</b>					
Capital International (5)	7.6	-16.4	-5.9	0.7	13.8
<i>Benchmark</i>	11.2	-14.9	-2.2	-2.6	18.2
Morgan Stanley	6.1	-9.4	-2.4	0.5	21.1
<i>Benchmark</i>	11.2	-14.9	-2.2	-2.6	18.2
<b>Aggregate</b>	<b>5.3</b>	<b>-12.7</b>	<b>-4.1</b>	<b>0.6</b>	<b>17.5</b>
<i>Benchmark</i>	11.2	-14.9	-2.2	-2.6	18.2
<b>Semi-Passive Developed Markets (1)</b>					
AQR	0.8	0.9	-4.4	24.1	20.8
<i>Benchmark</i>	2.7	-3.0	-4.3	21.0	16.4
Fidelity	-1.7	-0.7	-4.0	23.2	19.4
<i>Benchmark</i>	2.7	-3.0	-4.3	21.0	16.4
SSgA	0.6	-0.9	-5.1	25.3	17.3
<i>Benchmark</i>	2.7	-3.0	-4.3	21.0	16.4
<b>Aggregate</b>	<b>-0.4</b>	<b>-0.3</b>	<b>-4.4</b>	<b>24.0</b>	<b>19.2</b>
<i>Benchmark</i>	2.7	-3.0	-4.3	21.0	16.4

- (1) Since 6/1/08 the developed markets manager's benchmark is the Standard (large + mid) MSCI World ex USA (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI World ex USA (net). From 10/1/03 to 9/30/07 the benchmark was the MSCI World ex USA (net).
- (2) Since 6/1/08 the emerging markets manager's benchmark is the Standard (large + mid) MSCI Emerging Markets Free (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI Emerging Markets Free (net). From 1/1/01 to 9/30/07 the benchmark was MSCI Emerging Markets Free (net).
- (3) Equity managers only. Includes impact of terminated managers.
- (4) Since 6/1/08 the International Equity asset class target is the Standard (large + mid) MSCI ACWI ex USA (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI ACWI ex USA (net). From 10/1/03 to 9/30/07 the target was MSCI ACWI ex USA (net).
- (5) Capital International's portfolio was transitioned to a passive emerging markets portfolio in October 2016.

**COMBINED RETIREMENT FUNDS**  
**INTERNATIONAL STOCK MANAGERS**  
**Calendar Year Returns**

	2016	2015	2014	2013	2012
<b>Passive Developed Markets (1)</b>					
SSgA	3.2	-2.6	-3.9	21.4	16.7
Benchmark	2.7	-3.0	-4.3	21.0	16.4
<b>Passive Emerging Markets (2)</b>					
SSgA	11.1	-14.6	-2.1	-2.5	18.5
Benchmark	11.2	-14.9	-2.2	-2.6	18.2
Equity Only (3) (4)	2.6	-2.9	-4.0	17.8	17.6
Benchmark	4.5	-5.7	-3.9	15.3	16.8
<b>Total Program (4)</b>	<b>2.6</b>	<b>-2.9</b>	<b>-4.0</b>	<b>17.8</b>	<b>17.6</b>
Benchmark	4.5	-5.7	-3.9	15.3	16.8
<i>SBI Int'l Equity Target (5)</i>	4.5	-5.7	-3.9	15.3	16.8
<i>MSCI ACWI Free ex USA (net)</i>	4.5	-5.7	-3.9	15.3	16.8
MSCI World ex USA (net)	2.7	-3.0	-4.3	21.0	16.4
MSCI EAFE Free (net)	1.0	-0.8	-4.9	22.8	17.3
<i>MSCI Emerging Markets Free (net)</i>	11.2	-14.9	-2.2	-2.6	18.2

- (1) Since 6/1/08 the developed markets manager's benchmark is the Standard (large + mid) MSCI World ex USA (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI World ex USA (net). From 10/1/03 to 9/30/07 the benchmark was the MSCI World ex USA (net).
- (2) Since 6/1/08 the emerging markets manager's benchmark is the Standard (large + mid) MSCI Emerging Markets Free (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI Emerging Markets Free (net). From 1/1/01 to 9/30/07 the benchmark was MSCI Emerging Markets Free (net).
- (3) Equity managers only. Includes impact of terminated managers.
- (4) Since 6/1/08 the International Equity asset class target is the Standard (large + mid) MSCI ACWI ex USA (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI ACWI ex USA (net). From 10/1/03 to 9/30/07 the target was MSCI ACWI ex USA (net).





# **STATE BOARD OF INVESTMENT**

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## **Bond Manager Performance Summaries**

**Fourth Quarter 2016**



# MINNESOTA STATE BOARD OF INVESTMENT

## Bond Managers

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**COMBINED RETIREMENT FUNDS**  
**BOND MANAGERS**  
**Periods Ended December 2016**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception(1)</b>
<b>Active Managers</b>					
<b>Bloomberg Barclays U.S. Aggregate</b>	<b>-3.0</b>	<b>2.6</b>	<b>3.0</b>	<b>2.2</b>	
Columbia	-2.1	5.2	3.7	3.4	5.5
<i>Benchmark</i>	-3.0	2.6	3.0	2.2	5.4
Dodge & Cox	-1.3	4.8	3.7	4.1	6.3
<i>Benchmark</i>	-3.0	2.6	3.0	2.2	5.3
PIMCO	-2.9	2.8	3.1	3.4	5.9
<i>Benchmark</i>	-3.0	2.6	3.0	2.2	4.4
Western	-2.6	4.9	4.2	3.7	8.6
<i>Benchmark</i>	-3.0	2.6	3.0	2.2	7.5
<b>Active Mgr. Aggregate</b>	<b>-2.2</b>	<b>4.4</b>	<b>3.7</b>	<b>3.6</b>	
<b>Semi-Passive Managers</b>					
BlackRock	-3.0	2.8	3.2	2.5	5.4
<i>Benchmark</i>	-3.0	2.6	3.0	2.2	5.4
Goldman	-2.9	3.0	3.3	2.7	5.7
<i>Benchmark</i>	-3.0	2.6	3.0	2.2	5.4
Neuberger	-3.0	2.7	3.2	2.6	6.6
<i>Benchmark</i>	-3.0	2.6	3.0	2.2	6.4
<b>Semi-Passive Mgr. Aggregate</b>	<b>-3.0</b>	<b>2.8</b>	<b>3.2</b>	<b>2.6</b>	
<i>Benchmark</i>	-3.0	2.6	3.0	2.2	
<b>Historical Aggregate (2,3)</b>	<b>-2.6</b>	<b>3.6</b>	<b>3.4</b>	<b>3.1</b>	<b>7.7</b>
<i>Benchmark (3,4)</i>	-3.0	2.6	3.0	2.2	7.5
BB Barclays U.S. Agg. (3,4)	-3.0	2.6	3.0	2.2	7.5

(1) Since inception by the SBI. Inception dates as follows:

7/1/84: Western  
7/1/88: Neuberger  
7/1/93: Columbia, Goldman  
4/1/96: BlackRock  
1/1/00: Dodge & Cox  
10/1/08: PIMCO

(2) Includes performance of terminated managers.

(3) Historical Aggregate and benchmarks inception date: 7/1/84

(4) Prior to July 1994, this index reflects the Solomon BIG

**COMBINED RETIREMENT FUNDS**  
**BOND MANAGERS**  
**Periods Ending December 2016**

	<b>December 31, 2016</b>		<b>September 30, 2016</b>	
	<b>Market Value</b>	<b>Percent</b>	<b>Market Value</b>	<b>Percent</b>
<b>Semi-Passive</b>	<b>\$6,624,979,509</b>	<b>53.3%</b>	<b>\$7,328,967,424</b>	<b>49.8%</b>
BlackRock	\$2,018,527,751	16.2%	\$2,080,716,979	14.1%
Goldman	\$2,425,487,936	19.5%	\$2,497,601,539	17.0%
Neuberger	\$2,180,963,822	17.6%	\$2,750,648,907	18.7%
<b>Active Managers</b>	<b>\$5,799,255,659</b>	<b>46.7%</b>	<b>\$7,378,338,595</b>	<b>50.2%</b>
Aberdeen*	\$1,922	0.0%	\$1,197,469,961	8.1%
Columbia	\$1,128,275,981	9.1%	\$1,152,234,999	7.8%
Dodge & Cox	\$1,606,145,483	12.9%	\$1,626,487,686	11.1%
PIMCO	\$1,532,034,703	12.3%	\$1,577,238,913	10.7%
Western	\$1,532,797,570	12.3%	\$1,824,907,035	12.4%
<b>Total Portfolio</b>	<b>\$12,424,235,168</b>	<b>100.0%</b>	<b>\$14,707,306,019</b>	<b>100.0%</b>

\* In November 2016, SBI terminated its relationship with Aberdeen fixed income and transitioned assets to a combination of cash for benefit payments and additional passive developed markets exposure, per SBI's asset allocation policy.

**COMBINED RETIREMENT FUNDS**  
**BOND MANAGERS**  
**Calendar Year Returns**

	2016	2015	2014	2013	2012
<b>Active Managers</b>					
Columbia (RiverSource)	5.2	0.2	5.8	-1.0	6.9
<i>Benchmark</i>	2.6	0.5	6.0	-2.0	4.2
Dodge & Cox	4.8	0.3	6.0	0.9	8.5
<i>Benchmark</i>	2.6	0.5	6.0	-2.0	4.2
PIMCO	2.8	1.0	5.5	-1.3	9.3
<i>Benchmark</i>	2.6	0.5	6.0	-2.0	4.2
Western	4.9	0.7	7.0	-1.4	7.8
<i>Benchmark</i>	2.6	0.5	6.0	-2.0	4.2
<b>Active Mgr. Aggregate</b>	<b>4.4</b>	<b>0.6</b>	<b>6.2</b>	<b>-0.8</b>	<b>8.1</b>
<i>Benchmark</i>	2.6	0.5	6.0	(2.0)	4.2
<b>Semi-Passive Managers</b>					
BlackRock	2.8	0.9	6.0	-1.8	5.0
<i>Benchmark</i>	2.6	0.5	6.0	-2.0	4.2
Goldman	3.0	0.8	6.1	-1.7	5.4
<i>Benchmark</i>	2.6	0.5	6.0	-2.0	4.2
Neuberger	2.7	0.7	6.1	-2.0	5.4
<i>Benchmark</i>	2.6	0.5	6.0	-2.0	4.2
<b>Semi-Passive Mgr. Aggregate</b>	<b>2.8</b>	<b>0.8</b>	<b>6.1</b>	<b>-1.8</b>	<b>5.3</b>
<i>Benchmark</i>	2.6	0.5	6.0	(2.0)	4.2
<b>Historical Aggregate</b>	<b>3.6</b>	<b>0.7</b>	<b>6.1</b>	<b>-1.3</b>	<b>6.7</b>
<i>Benchmark</i>	2.6	0.5	6.0	-2.0	4.2
BB Barclays U.S. Agg.	2.6	0.5	6.0	-2.0	4.2

The benchmark for the Fixed Income Asset Class is the Bloomberg Barclays U.S. Aggregate.



# **STATE BOARD OF INVESTMENT**

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## **Non-Retirement Manager Performance Summaries**

**Fourth Quarter 2016**





# MINNESOTA STATE BOARD OF INVESTMENT

## Non-Retirement Managers

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**NON-RETIREMENT MANAGERS**  
**Periods Ended December 2016**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception (1)</b>
GE Asset Management	2.8	10.2	7.2	14.1	9.7
<i>S&amp;P 500 Index</i>	3.8	12.0	8.9	14.7	9.5
RBC Global Asset Management (2)	-2.1	1.1	1.6	1.1	5.1
<i>BB Barclays Int Gov</i>	-2.2	1.1	1.6	1.0	5.2
Internal Stock Pool	3.7	11.8	8.9	14.6	9.3
<i>S&amp;P 500 Index</i>	3.8	12.0	8.9	14.7	9.2
Internal Bond Pool - Trust	-2.6	3.3	3.4	3.2	6.2
<i>BB Barclays U.S. Agg.</i>	-3.0	2.6	3.0	2.2	5.7

(1) Since retention by the SBI. Inception dates as follows:

7/1/91: RBC Global Asset Management

7/1/93: Internal Stock Pool

7/1/94: Internal Bond Pool - Trust

1/1/95: GE Asset Management

(2) Prior to July 2011, a blended benchmark consisting of 25% Merrill Lynch (ML) Mortgage Master, 25% ML 1-3 Yr Gov't, 25% ML 5-10 Year Treasury/Ag, 15% ML 3-5 Year Treasury/Ag, and 10% ML 91-day T-Bill was utilized.

**NON-RETIREMENT MANAGERS**  
**Periods Ended December 2016**

	<b>December 31, 2016</b>		<b>September 30, 2016</b>	
	<b>Market Value</b>	<b>Percent</b>	<b>Market Value</b>	<b>Percent</b>
GE Asset Management	\$65,957,739	2.0%	\$64,186,358	2.0%
RBC Global Asset Management	\$247,445,363	7.6%	\$246,700,856	7.7%
Internal Stock Pool	\$1,901,520,126	58.6%	\$1,878,917,044	58.8%
Internal Bond Pool - Trust	\$1,032,062,460	31.8%	\$1,004,681,823	31.5%
<b>Total Portfolio</b>	<b>\$3,246,985,688</b>	<b>100.0%</b>	<b>\$3,194,486,082</b>	<b>100.0%</b>

**NON-RETIREMENT MANAGERS**  
**Calendar Year Returns**

	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>
GE Asset Management	10.2	-1.4	13.2	34.5	16.8
<i>S&amp;P 500 Index</i>	<i>12.0</i>	<i>1.4</i>	<i>13.7</i>	<i>32.4</i>	<i>16.0</i>
RBC Global Asset Management (1)	1.1	1.3	2.5	-1.3	1.8
<i>BB Barclays Int Gov</i>	<i>1.1</i>	<i>1.2</i>	<i>2.5</i>	<i>-1.2</i>	<i>1.7</i>
Internal Stock Pool	11.8	1.5	13.7	32.2	16.0
<i>S&amp;P 500 Index</i>	<i>12.0</i>	<i>1.4</i>	<i>13.7</i>	<i>32.4</i>	<i>16.0</i>
Internal Bond Pool - Trust	3.3	0.8	6.0	0.0	5.8
<i>BB Barclays U.S. Agg.</i>	<i>2.6</i>	<i>0.5</i>	<i>6.0</i>	<i>-2.0</i>	<i>4.2</i>

(1) Prior to July 2011, a blended benchmark consisting of 25% Merrill Lynch (ML) Mortgage Master, 25% ML 1-3 Year Gov't, 25% ML 5-10 Year Treasury/Ag, 15% ML 3-5 Year Treasury/Ag, and 10% ML 91-day T-Bill was utilized.



## **STATE BOARD OF INVESTMENT**

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### **Deferred Compensation Plan Minnesota College Savings Plan Performance Summaries**

**Fourth Quarter 2016**



# MINNESOTA STATE BOARD OF INVESTMENT

## Deferred Compensation Plan and Minnesota College Savings Plan

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**MN STATE 457 DEFERRED COMPENSATION PLAN**  
**FUND OPTIONS**  
**Periods Ended December 2016**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception(1)</b>
<b>Large Cap Equity</b>					
Vanguard Dividend Growth (6)	1.0	7.5	7.3	12.4	8.2
<i>NASDAQ US Dividend Achievers</i>	<i>2.1</i>	<i>11.8</i>	<i>6.5</i>	<i>11.7</i>	<i>--</i>
Vanguard Institutional Index Plus	3.8	12.0	8.9	14.7	4.9
<i>S&amp;P 500</i>	<i>3.8</i>	<i>12.0</i>	<i>8.9</i>	<i>14.7</i>	<i>4.8</i>
<b>Mid Cap Equity</b>					
Vanguard Mid-Cap Index	2.1	11.2	7.7	14.4	9.6
<i>CRSP US Mid Cap (2)</i>	<i>2.1</i>	<i>11.2</i>	<i>7.7</i>	<i>14.5</i>	<i>9.6</i>
<b>Small Cap Equity</b>					
T. Rowe Price Small-Cap Stock	7.6	19.0	7.4	15.5	9.9
<i>Russell 2000</i>	<i>8.8</i>	<i>21.3</i>	<i>6.7</i>	<i>14.5</i>	<i>7.1</i>
<b>International</b>					
Fidelity Diversified International	-4.7	-3.7	-1.3	7.5	5.9
<i>MSCI EAFE Free</i>	<i>-0.7</i>	<i>1.0</i>	<i>-1.6</i>	<i>6.5</i>	<i>3.4</i>
Vanguard Total International Stock Index	-1.9	4.7	-1.3	5.6	1.4
<i>FTSE Global All Cap ex US (3)</i>	<i>-1.2</i>	<i>5.0</i>	<i>-0.8</i>	<i>5.8</i>	<i>1.7</i>
<b>Balanced</b>					
Vanguard Balanced Index Inst. Fund	1.2	8.8	6.4	9.6	7.1
<i>60% CRSP US Tot Mkt, 40% Barclays Agg (4)</i>	<i>1.3</i>	<i>8.8</i>	<i>6.4</i>	<i>9.7</i>	<i>7.0</i>
<b>Fixed Income</b>					
Dodge & Cox Income Fund	-1.2	5.6	3.5	3.8	5.7
<i>BB Barclays U.S. Agg.</i>	<i>-3.0</i>	<i>2.6</i>	<i>3.0</i>	<i>2.2</i>	<i>5.1</i>
Vanguard Total Bond Market Index Inst.	-3.2	2.6	2.9	2.2	4.2
<i>BB Barclays U.S. Agg.</i>	<i>-3.0</i>	<i>2.6</i>	<i>3.0</i>	<i>2.2</i>	<i>4.2</i>
SIF Money Market (5)	0.2	0.6	0.3	0.3	2.1
3 Month T-Bills	0.1	0.3	0.1	0.1	1.8
<b>SIF Fixed Interest (5)</b>					
Galliard Capital Management	0.5	2.1	2.0	2.2	4.6
<i>3-Year Constant Maturity Treasury +45bp</i>	<i>0.4</i>	<i>1.4</i>	<i>1.4</i>	<i>1.2</i>	<i>3.5</i>

Benchmarks for the Funds are noted in italics below the Fund names.

- (1) Since retention by the SBI. Time periods varies for each manager.
- (2) Benchmark is the CRSP US Mid-Cap Index beginning February 2013. Prior to that date it was the MSCI US Mid-Cap 450 Index.
- (3) Benchmark is the FTSE Global All Cap ex US Index beginning June 2013; MSCI ACWI ex USA IMI beginning December 2010; MSCI EAFE and Emerging Markets Index beginning August 2006. Prior to that date it was the total International Composite Index, which is the MSCI EAFE Index and the Select Emerging Markets Free Index.
- (4) Benchmark is 60% CRSP US Total Market Index and 40% Bloomberg Barclays U.S. Aggregate beginning January 2013. Prior to that date it was 60% MSCI US Broad Market Index and 40% Bloomberg Barclays U.S. Aggregate.
- (5) SIF Money Market Account and SIF Fixed Interest Accounts are Supplemental Investment Fund options (SIF), which are also offered under the Deferred Compensation Plan.
- (6) Vanguard Dividend Growth replaced the Janus Twenty Fund in the third quarter of 2016. Historical returns reflect Vanguard Dividend Growth mutual fund returns.



**MN STATE 457 DEFERRED COMPENSATION PLAN**  
**FUND OPTIONS**  
**Periods Ended December 2016**

<b>MN Target Retirement Funds</b>	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception (1)</b>
<b>SSgA</b>					
Income Fund	-0.5	5.8	2.6	4.5	4.2
Income Fund Benchmark	-0.5	5.8	2.7	4.6	4.3
2020 Fund	-0.4	6.6	3.4	6.2	6.1
2020 Fund Benchmark	-0.4	6.6	3.4	6.3	6.2
2025 Fund	-0.4	7.6	3.8	7.6	7.0
2025 Fund Benchmark	-0.4	7.5	3.8	7.6	7.1
2030 Fund	-0.2	8.3	4.1	8.4	7.6
2030 Fund Benchmark	-0.2	8.2	4.2	8.4	7.6
2035 Fund	0.0	8.4	4.2	8.9	7.8
2035 Fund Benchmark	0.0	8.3	4.2	9.0	7.9
2040 Fund	0.2	8.7	4.2	9.3	7.7
2040 Fund Benchmark	0.2	8.5	4.2	9.4	7.8
2045 Fund	0.5	9.1	4.2	9.7	7.8
2045 Fund Benchmark	0.5	8.9	4.3	9.8	7.9
2050 Fund	0.7	9.5	4.3	9.8	7.8
2050 Fund Benchmark	0.7	9.3	4.3	9.9	7.9
2055 Fund	0.7	9.4	4.3	9.8	7.8
2055 Fund Benchmark	0.7	9.3	4.3	9.9	7.9
2060 Fund	0.7	9.4	4.3	9.8	7.8
2060 Fund Benchmark	0.7	9.3	4.3	9.9	7.9

Note: Each SSgA Fund benchmark is the aggregate of the returns of the Fund's underlying index funds weighted by the Fund's asset allocation.  
The underlying index funds are listed below.

(1) Since retention by the SBI. Time period varies for each manager.

**MN STATE 457 DEFERRED COMPENSATION PLAN**  
**FUND OPTIONS**  
**Periods Ended December 2016**

<b>SSgA Index Funds</b>	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception <sup>(1)</sup></b>
S&P 500 Index Fund	3.8	12.0	8.9	14.7	12.5
<i>S&amp;P 500</i>	<i>3.8</i>	<i>12.0</i>	<i>8.9</i>	<i>14.7</i>	<i>12.5</i>
DJ-UBS Roll Select Commodity Index Fund	2.9	14.7	-9.4	--	-7.6
<i>DJ-UBS Roll Select Commodity Index</i>	<i>2.9</i>	<i>14.6</i>	<i>-9.4</i>	<i>--</i>	<i>-7.5</i>
Russell Small/Mid Cap Index Fund	5.8	16.6	6.5	--	14.2
<i>Russell Small Cap Completeness Index</i>	<i>5.8</i>	<i>16.6</i>	<i>6.5</i>	<i>--</i>	<i>14.3</i>
Global All-Cap Equity ex-US Index Fund	-1.5	5.3	-1.2	5.6	1.6
<i>MSCI ACWI ex USA IMI</i>	<i>-1.6</i>	<i>4.4</i>	<i>-1.4</i>	<i>5.3</i>	<i>1.3</i>
Global Real Estate Securities Index Fund	-5.8	3.5	6.2	9.7	6.5
<i>FTSE EPRA/NAREIT Dev Liquid</i>	<i>-6.0</i>	<i>2.4</i>	<i>5.4</i>	<i>8.9</i>	<i>5.8</i>
Long Government Bond Index Fund	-11.5	1.4	7.7	2.6	6.7
<i>BB Barclays Long Government</i>	<i>-11.5</i>	<i>1.4</i>	<i>7.7</i>	<i>2.6</i>	<i>6.7</i>
Bond Index Fund	-3.0	2.6	3.1	2.2	2.9
<i>BB Barclays U.S. Agg.</i>	<i>-3.0</i>	<i>2.6</i>	<i>3.0</i>	<i>2.2</i>	<i>2.9</i>
Inflation Protected Bond Index Fund	-2.4	4.6	2.2	0.9	2.1
<i>BB Barclays U.S. TIPS</i>	<i>-2.4</i>	<i>4.7</i>	<i>2.3</i>	<i>0.9</i>	<i>2.1</i>
High Yield Bond Index Fund	1.8	16.5	4.1	6.6	6.2
<i>BB Barclays U.S. High Yield Very Liquid</i>	<i>1.6</i>	<i>16.6</i>	<i>4.1</i>	<i>6.8</i>	<i>6.4</i>
U.S. Short-Term Gov/Credit Index Fund	-0.4	1.2	0.8	1.4	1.3
<i>BB Barclays 1-3 Yr Govt/Credit</i>	<i>-0.4</i>	<i>1.3</i>	<i>0.9</i>	<i>0.9</i>	<i>0.9</i>

Benchmarks for the SSgA Funds are noted in italics below the Fund names.

(1) Minnesota Target Retirement Funds inception date is July 2011.

**MN STATE 457 DEFERRED COMPENSATION PLAN**  
**FUND OPTIONS**  
**Calendar Year Returns**

	2016	2015	2014	2013	2012
<b>Large Cap Equity</b>					
Vanguard Dividend Growth (5)	7.5	2.6	11.8	31.5	10.4
<i>NASDAQ US Dividend Achievers</i>	<i>11.8</i>	<i>-1.9</i>	<i>10.1</i>	<i>29.0</i>	<i>11.7</i>
Vanguard Institutional Index Plus	12.0	1.4	13.7	32.4	16.0
<i>S&amp;P 500</i>	<i>12.0</i>	<i>1.4</i>	<i>13.7</i>	<i>32.4</i>	<i>16.0</i>
<b>Mid Cap Equity</b>					
Vanguard Mid-Cap Index	11.2	-1.3	13.8	35.2	16.0
<i>CRSP US Mid Cap (1)</i>	<i>11.2</i>	<i>-1.3</i>	<i>13.8</i>	<i>35.4</i>	<i>16.0</i>
<b>Small Cap Equity</b>					
T. Rowe Price Small-Cap Stock	19.0	-3.1	7.4	39.6	18.7
<i>Russell 2000</i>	<i>21.3</i>	<i>-4.4</i>	<i>4.9</i>	<i>38.8</i>	<i>16.3</i>
<b>International</b>					
Fidelity Diversified International	-3.7	3.1	-3.2	25.2	19.4
<i>MSCI EAFE Free</i>	<i>1.0</i>	<i>-0.8</i>	<i>-4.9</i>	<i>22.8</i>	<i>17.3</i>
Vanguard Total International Stock Index	4.7	-4.2	-4.1	15.2	18.3
<i>FTSE Global All Cap ex US (2)</i>	<i>5.0</i>	<i>-4.0</i>	<i>-3.1</i>	<i>15.9</i>	<i>17.0</i>
<b>Balanced</b>					
Vanguard Balanced Index Inst. Fund	8.8	0.5	10.0	18.1	11.5
<i>60% CRSP US Tot Mkt, 40% Barclays Agg (3)</i>	<i>8.8</i>	<i>0.7</i>	<i>10.0</i>	<i>18.2</i>	<i>11.6</i>
<b>Fixed Income</b>					
Dodge & Cox Income Fund	5.6	-0.6	5.5	0.6	7.9
<i>BB Barclays U.S. Agg.</i>	<i>2.6</i>	<i>0.5</i>	<i>6.0</i>	<i>-2.0</i>	<i>4.2</i>
Vanguard Total Bond Market Index Inst.	2.6	0.4	5.9	-2.1	4.2
<i>BB Barclays U.S. Agg.</i>	<i>2.6</i>	<i>0.5</i>	<i>6.0</i>	<i>-2.0</i>	<i>4.2</i>
SIF Money Market (4)	0.6	0.2	0.1	0.2	0.3
3 Month T-Bills	0.3	0.1	0.0	0.1	0.1
<b>SIF Fixed Interest (4)</b>					
Galliard Capital Management	2.1	2.0	1.8	2.2	2.8
<i>3-Year Constant Maturity Treasury +45bp</i>	<i>1.4</i>	<i>1.5</i>	<i>1.3</i>	<i>1.0</i>	<i>0.8</i>

Benchmarks for the Funds are noted in italics below the Fund names.

- (1) Benchmark is the CRSP US Mid-Cap Index beginning February 2013. Prior to that date it was the MSCI US Mid-Cap 450 Index.
- (2) Benchmark is the FTSE Global All Cap ex US Index beginning June 2013; MSCI ACWI ex USA IMI beginning December 2010; MSCI EAFE and Emerging Markets Index beginning August 2006. Prior to that date it was the total International Composite Index, which is the MSCI EAFE Index and the Select Emerging Markets Free Index.
- (3) Benchmark is 60% CRSP US Total Market Index and 40% Bloomberg Barclays U.S. Aggregate beginning January 2013. Prior to that date it was 60% MSCI US Broad Market Index and 40% Bloomberg Barclays U.S. Aggregate.
- (4) SIF Money Market Account and SIF Fixed Interest Accounts are Supplemental Investment Fund options (SIF), which are also offered under the Deferred Compensation Plan accounts.
- (5) Vanguard Dividend Growth replaced Janus Twenty Fund in the third quarter of 2016. Historical returns reflect the Vanguard Dividend Growth mutual fund returns.

**MN STATE 457 DEFERRED COMPENSATION PLAN**  
**FUND OPTIONS**  
**Calendar Year Returns**

<b>MN Target Retirement Funds</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>
<b>SSgA</b>					
Income Fund	5.8	-1.4	3.6	5.1	9.7
Income Fund Benchmark	5.8	-1.3	3.8	5.3	9.8
2020 Fund	6.6	-1.6	5.3	8.8	12.5
2020 Fund Benchmark	6.6	-1.6	5.5	9.1	12.5
2025 Fund	7.6	-1.9	5.9	13.2	13.7
2025 Fund Benchmark	7.5	-1.9	6.2	13.5	13.7
2030 Fund	8.3	-2.0	6.3	16.0	14.3
2030 Fund Benchmark	8.2	-2.0	6.6	16.3	14.1
2035 Fund	8.4	-2.0	6.4	18.1	14.9
2035 Fund Benchmark	8.3	-2.0	6.7	18.5	14.7
2040 Fund	8.7	-2.2	6.4	19.7	15.5
2040 Fund Benchmark	8.5	-2.1	6.6	20.0	15.3
2045 Fund	9.1	-2.4	6.2	21.3	16.0
2045 Fund Benchmark	8.9	-2.3	6.5	21.6	15.8
2050 Fund	9.5	-2.5	6.2	21.4	15.9
2050 Fund Benchmark	9.3	-2.4	6.5	21.7	15.8
2055 Fund	9.4	-2.5	6.2	21.4	15.9
2055 Fund Benchmark	9.3	-2.4	6.5	21.7	15.8
2060 Fund	9.4	-2.5	6.2	21.4	16.0
2060 Fund Benchmark	9.3	-2.4	6.5	21.7	15.8

Note: Each SSgA Fund benchmark is the aggregate of the returns of the Fund's underlying index funds weighted by the Fund's asset allocation.

**MN STATE 457 DEFERRED COMPENSATION PLAN**  
**FUND OPTIONS**  
**Calendar Year Returns**

<b>SSgA Index Funds</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>
S&P 500 Index Fund	12.0	1.4	13.7	32.4	16.0
<i>S&amp;P 500</i>	<i>12.0</i>	<i>1.4</i>	<i>13.7</i>	<i>32.4</i>	<i>16.0</i>
DJ-UBS Roll Select Commodity Index Fund	14.7	-23.4	-15.3	-9.3	--
DJ-UBS Roll Select Commodity Index	14.6	-23.4	-15.2	-9.1	--
Russell Small/Mid Cap Index Fund	16.6	-3.5	7.5	38.4	--
<i>Russell Small Cap Completeness Index</i>	<i>16.6</i>	<i>-3.4</i>	<i>7.4</i>	<i>38.5</i>	<i>--</i>
Global All-Cap Equity ex-US Index Fund	5.3	-4.4	-4.2	15.4	18.2
<i>MSCI ACWI ex USA IMI</i>	<i>4.4</i>	<i>-4.6</i>	<i>-3.9</i>	<i>15.8</i>	<i>17.0</i>
Global Real Estate Securities Index Fund	3.5	0.2	15.5	2.7	28.9
<i>FTSE EPRA/NAREIT Dev Liquid</i>	<i>2.4</i>	<i>-0.5</i>	<i>15.0</i>	<i>2.5</i>	<i>27.5</i>
Long Government Bond Index Fund	1.4	-1.1	24.6	-12.5	3.8
<i>BB Barclays Long Government</i>	<i>1.4</i>	<i>-1.2</i>	<i>24.7</i>	<i>-12.5</i>	<i>3.8</i>
Bond Index Fund	2.6	0.6	6.0	-2.1	4.2
<i>BB Barclays U.S. Agg.</i>	<i>2.6</i>	<i>0.5</i>	<i>6.0</i>	<i>-2.0</i>	<i>4.2</i>
Inflation Protected Bond Index Fund	4.6	-1.4	3.6	-8.6	6.9
<i>BB Barclays U.S. TIPS</i>	<i>4.7</i>	<i>-1.4</i>	<i>3.6</i>	<i>-8.6</i>	<i>7.0</i>
High Yield Bond Index Fund	16.5	-5.2	2.1	6.6	14.8
<i>BB Barclays U.S. High Yield Very Liquid</i>	<i>16.6</i>	<i>-5.3</i>	<i>2.1</i>	<i>6.6</i>	<i>15.4</i>
U.S. Short-Term Gov/Credit Index Fund	1.2	0.6	0.7	0.6	3.9
<i>BB Barclays 1-3 Yr Govt/Credit</i>	<i>1.3</i>	<i>0.7</i>	<i>0.8</i>	<i>0.6</i>	<i>1.3</i>

Note: Each SSgA Fund benchmark is the aggregate of the returns of the Fund's underlying index funds weighted by the Fund's asset allocation.

Benchmarks for the Funds are noted in italics below the Fund names.

**MN STATE 457 DEFERRED COMPENSATION PLAN  
FUND OPTIONS**

	December 31, 2016		September 30, 2016	
	Market Value	Percent	Market Value	Percent
<b>Fixed Income</b>	<b>\$492,328,818</b>	<b>8.1%</b>	<b>\$497,644,577</b>	<b>8.3%</b>
Dodge & Cox Income Fund	\$215,942,973	3.6%	\$220,259,042	3.7%
Vanguard Total Bond Market Index Inst.	\$208,511,852	3.4%	\$212,281,984	3.6%
Money Market	\$67,873,993	1.1%	\$65,103,551	1.1%
<b>Stable Value</b>	<b>\$1,356,788,939</b>	<b>22.4%</b>	<b>\$1,349,547,509</b>	<b>22.6%</b>
Galliard Stable Value Composite	\$1,356,788,939	22.4%	\$1,349,547,509	22.6%
<b>Large Cap Equity</b>	<b>\$1,584,914,728</b>	<b>26.2%</b>	<b>\$1,552,483,333</b>	<b>26.0%</b>
Vanguard Dividend Growth	\$523,011,275	8.6%	\$523,139,752	8.8%
Vanguard Institutional Index Plus	\$1,061,903,454	17.6%	\$1,029,343,581	17.3%
<b>Mid Cap Equity</b>	<b>\$458,325,491</b>	<b>7.6%</b>	<b>\$447,569,468</b>	<b>7.5%</b>
Vanguard Mid-Cap Index	\$458,325,491	7.6%	\$447,569,468	7.5%
<b>Small Cap Equity</b>	<b>\$633,134,281</b>	<b>10.5%</b>	<b>\$594,827,717</b>	<b>10.0%</b>
T. Rowe Price Small-Cap Stock	\$633,134,281	10.5%	\$594,827,717	10.0%
<b>Balanced</b>	<b>\$711,414,371</b>	<b>11.8%</b>	<b>\$715,625,950</b>	<b>12.0%</b>
Vanguard Balanced Index Inst. Fund	\$711,414,371	11.8%	\$715,625,950	12.0%
<b>International</b>	<b>\$404,769,454</b>	<b>6.7%</b>	<b>\$426,897,778</b>	<b>7.2%</b>
Fidelity Diversified International	\$254,421,266	4.2%	\$282,769,488	4.7%
Vanguard Total International Stock Index	\$150,348,188	2.5%	\$144,128,290	2.4%
<b>Target Retirement Funds (1)</b>	<b>\$405,597,466</b>	<b>6.7%</b>	<b>\$375,557,929</b>	<b>6.3%</b>
Income Fund	\$71,433,140	1.2%	\$69,941,231	1.2%
2020 Fund	\$91,541,248	1.5%	\$83,607,729	1.4%
2025 Fund	\$76,792,957	1.3%	\$73,285,589	1.2%
2030 Fund	\$50,984,179	0.8%	\$46,646,470	0.8%
2035 Fund	\$38,927,981	0.6%	\$35,751,175	0.6%
2040 Fund	\$25,879,551	0.4%	\$22,651,552	0.4%
2045 Fund	\$21,236,662	0.4%	\$18,725,424	0.3%
2050 Fund	\$15,033,723	0.2%	\$12,976,927	0.2%
2055 Fund	\$7,524,215	0.1%	\$6,561,915	0.1%
2060 Fund	\$6,243,808	0.1%	\$5,409,917	0.1%

(1) Target Retirement Funds is a deferred comp option also offered in the Unclassified Plan. The Target Date Funds were first offered in the Unclassified Plan as of July 1, 2015.

**MINNESOTA COLLEGE SAVINGS PLAN**  
**STATIC OPTIONS (1)**  
**Periods Ended December 2016**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception (1)</b>
<b>Equity</b>					
MNCSP US Intl Equity Allocation	1.4	8.9	5.5	11.5	6.3
MNCSP US Intl Equity Allocation Bnmk	1.8	9.5	5.8	11.8	7.3
MNCSP Equity Interest Allocation	2.2	6.9	--	--	4.2
MNCSP Equity Interest Allocation Bnmk	2.2	6.5	--	--	3.8
MNCSP Intl Eq Index Allocation	-2.2	2.8	-2.1	--	1.2
MNCSP Intl Eq Index Allocation Bnmk	-1.4	3.1	-1.8	--	1.6
MNCSP US LC Equity Allocation	3.8	11.7	--	--	8.3
MNCSP US LC Equity Allocation Bnmk	3.8	12.0	--	--	8.5
<b>Fixed Income</b>					
MNCSP Fixed Income Allocation	-2.4	3.8	2.7	1.5	3.7
MNCSP Fixed Income Allocation Bnmk	-2.3	4.1	3.0	2.0	4.4
MNCSP Principal Interest Allocation	0.4	1.4	1.3	1.4	2.6
MNCSP Principal Interest Allocation Bnmk	0.1	0.3	0.1	0.1	1.3
MNCSP Money Market Allocation	0.0	0.1	0.0	0.0	0.3
MNCSP Money Market Allocation Bnmk	0.0	0.1	0.0	0.0	0.3

(1) Since retention by the SBI. Time periods varies for each option

**MINNESOTA COLLEGE SAVINGS PLAN**  
**ALLOCATION OPTIONS**  
**Periods Ended December 2016**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception(1)</b>
<b>Allocation Options</b>					
MNCSP Aggressive Allocation	0.7	7.9	--	--	4.1
MNCSP Aggressive Allocation Bnmk	1.0	8.5	--	--	4.4
MNCSP Moderate Allocation	0.1	6.9	4.4	7.6	4.5
MNCSP Moderate Allocation Bnmk	0.2	7.5	4.8	7.9	5.3
MNCSP Conservative Allocation	-0.6	4.7	--	--	2.1
MNCSP Conservative Allocation Bnmk	-0.4	4.8	--	--	2.2
<b>Managed Allocation Options</b>					
MNCSP Managed 0-4 Yrs	0.6	7.9	--	--	4.2
MNCSP Managed 0-4 Yrs Bnmk	1.0	8.5	--	--	4.4
MNCSP Managed 5-8 Yrs	0.3	7.3	--	--	3.9
MNCSP Managed 5-8 Yrs Bnmk	0.6	8.0	--	--	4.2
MNCSP Managed 9-10 Yrs	0.1	7.0	--	--	3.6
MNCSP Managed 9-10 Yrs Bnmk	0.2	7.5	--	--	3.9
MNCSP Managed 11-12 Yrs	-0.2	6.4	--	--	3.2
MNCSP Managed 11-12 Yrs Bnmk	-0.1	6.7	--	--	3.5
MNCSP Managed 13-14 Yrs	-0.5	5.7	--	--	2.9
MNCSP Managed 13-14 Yrs Bnmk	-0.4	6.0	--	--	3.1
MNCSP Managed 15 Yrs	-0.5	4.7	--	--	2.5
MNCSP Managed 15 Yrs Bnmk	-0.4	4.8	--	--	2.5
MNCSP Managed 16 Yrs	-0.5	4.1	--	--	2.2
MNCSP Managed 16 Yrs Bnmk	-0.4	4.2	--	--	2.1
MNCSP Managed 17 Yrs	-0.4	3.7	--	--	2.0
MNCSP Managed 17 Yrs Bnmk	-0.4	3.5	--	--	1.8
MNCSP Managed 18+ Yrs	-0.3	3.2	--	--	1.8
MNCSP Managed 18+ Yrs Bnmk	-0.4	2.8	--	--	1.4

(1) Since retention by the SBI. Time period varies for each option.



**MINNESOTA COLLEGE SAVINGS PLAN**  
**ALLOCATION OPTIONS UNDERLYING FUNDS**  
**Periods Ended December 2016**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Last 10 Years</b>
TIAA-CREF:Bond Idx;Inst	-3.2	2.4	2.9	2.1	--
BB Barclays U.S. Agg.	-3.0	2.6	3.0	2.2	4.3
TIAA-CREF:EM Eq Idx;Inst	-5.1	11.1	-2.9	1.0	--
MSCI:EM Gross	-4.1	11.6	-2.2	1.6	2.2
TIAA-CREF:Eq Idx;Inst	4.2	12.8	8.4	14.6	7.1
Russell 3000 Index	4.2	12.7	8.4	14.7	7.1
TIAA-CREF:Hi-Yld;Inst	2.6	16.4	4.7	6.9	7.2
ML:1-3 BB US HY CP	0.9	8.5	3.8	5.8	6.5
TIAA-CREF:Infl Bond;Inst	-1.6	3.7	1.8	0.5	4.0
BB Barclays U.S. TIPS Index	-2.4	4.7	2.3	0.9	4.4
TIAA-CREF:Itl Eq Ix;Inst	-1.5	1.2	-1.6	6.7	0.9
MSCI:EAFE	-0.7	1.0	-1.6	6.5	0.7
TIAA-CREF:Money Mkt;Inst	0.1	0.3	0.1	0.1	0.9
MFR Avg All-Taxble	0.1	0.5	0.2	0.2	0.8
TIAA-CREF:Real Est;Inst	-3.8	4.4	11.8	11.2	4.3
FTSE:NAREIT All Eq Index	-3.3	8.6	12.7	12.0	5.1
TIAA-CREF:S&P500 Idx;Ins	3.8	11.9	8.8	14.6	6.9
S&P 500 Index	3.8	12.0	8.9	14.7	6.9

**MINNESOTA COLLEGE SAVINGS PLAN**  
**FUND OPTIONS**

	December 31, 2016		September 30, 2016	
	Market Value	Percent	Market Value	Percent
<b>Fixed Income</b>	<b>\$130,316,283</b>	<b>10.5%</b>	<b>\$126,464,046</b>	<b>10.3%</b>
MNCSP Fixed Income Allocation	\$12,271,093	1.0%	\$11,728,524	1.0%
MNCSP Principal Interest Allocation	\$109,396,676	8.8%	\$106,411,210	8.6%
MNCSP Money Market Allocation	\$8,648,514	0.7%	\$8,324,312	0.7%
<b>Equity</b>	<b>\$288,340,613</b>	<b>23.2%</b>	<b>\$287,536,187</b>	<b>23.3%</b>
MNCSP US Intl Equity Allocation	\$272,671,257	22.0%	\$274,138,971	22.2%
MNCSP Equity Interest Allocation	\$1,417,668	0.1%	\$1,214,523	0.1%
MNCSP Intl Eq Index Allocation	\$2,455,939	0.2%	\$2,379,386	0.2%
MNCSP US LC Equity Allocation	\$11,795,749	0.9%	\$9,803,307	0.8%
<b>Allocation Options</b>	<b>\$71,647,359</b>	<b>5.8%</b>	<b>\$69,012,088</b>	<b>5.6%</b>
MNCSP Aggressive Allocation	\$11,225,108	0.9%	\$9,961,250	0.8%
MNCSP Moderate Allocation	\$55,428,045	4.5%	\$55,018,153	4.5%
MNCSP Conservative Allocation	\$4,994,206	0.4%	\$4,032,685	0.3%
<b>Managed Allocation Options</b>	<b>\$751,419,330</b>	<b>60.5%</b>	<b>\$749,874,319</b>	<b>60.8%</b>
MNCSP Managed 0-4 Yrs	\$24,886,008	2.0%	\$24,604,575	2.0%
MNCSP Managed 5-8 Yrs	\$69,433,908	5.6%	\$71,939,014	5.8%
MNCSP Managed 9-10 Yrs	\$69,723,531	5.6%	\$72,949,422	5.9%
MNCSP Managed 11-12 Yrs	\$100,836,932	8.1%	\$101,719,516	8.3%
MNCSP Managed 13-14 Yrs	\$134,059,123	10.8%	\$136,234,549	11.1%
MNCSP Managed 15 Yrs	\$68,853,652	5.5%	\$64,975,645	5.3%
MNCSP Managed 16 Yrs	\$65,870,851	5.3%	\$64,936,736	5.3%
MNCSP Managed 17 Yrs	\$62,665,569	5.0%	\$64,419,477	5.2%
MNCSP Managed 18+ Yrs	\$155,089,756	12.5%	\$148,095,385	12.0%

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## INVESTMENT ADVISORY COUNCIL REPORT

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DATE: February 16, 2017

TO: Members, State Board of Investment

FROM: **Members, Investment Advisory Council and SBI Staff**

Staff has reviewed the following information and action agenda items:

- Review of current strategy.
- Consideration of new commitments.

### **Existing Managers:**

Private Equity	Adams Street Partners	GSF 6	\$100 Million
Private Equity	KKR Asia	Fund III	\$150 Million
Private Equity	Silver Lake Partners	Fund V	\$150 Million
Private Equity	Vestar Capital Partners	Fund VII	\$150 Million

**IAC action is required on the second item.**

### **INFORMATION ITEM:**

#### **1) Review of Current Strategy.**

To increase overall portfolio diversification, 20% of the Combined Funds is allocated to Private Markets investments. Private Markets investments include real estate, private equity, resource, and yield-oriented investments in which Minnesota State Board of Investment (SBI) participation is limited to commingled funds or other pooled vehicles. Charts summarizing the Board's current commitments are attached (see **Attachments A and B**).

- a. The real estate investment strategy is to establish and maintain a broadly diversified real estate portfolio comprised of investments that provide overall diversification by property type and location. The main component of this portfolio consists of investments in diversified Real Estate Investment Trusts (REITs) and closed-end commingled funds. The remaining portion of the portfolio can include investments in less diversified, more focused (specialty) commingled funds and REITs.
- b. The private equity investment strategy, which includes leveraged buyouts and venture capital, 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.
- c. The strategy for resource investments is to establish and maintain a portfolio of resource investment vehicles that provide an inflation hedge and additional diversification.

Resource investments will include oil and gas investments, energy service industry investments and other investments that are diversified geographically and by type.

- d. The strategy for yield-oriented investments is to target funds that typically provide a current return and may have an equity component such as subordinated debt or mezzanine investments. Yield-oriented investments will provide diversification by including investments in the private equity, resource and real estate categories.

## **ACTION ITEMS:**

- 1) Investment with an existing private equity manager, Adams Street Partners (“Adams Street”), in Adams Street Global Secondary Fund 6 (“GSF 6”).**

Adams Street is seeking investors for a new \$1.2 billion private equity secondaries fund, Adams Street Global Secondary Fund 6. Together with its predecessor organizations, the firm began investing in private equity partnerships in 1979 and has been an active direct investor in private equity since 1972. In 2017, Adams Street Partners has over 60 investment professionals managing \$29 billion of institutional capital across all of its strategies. The SBI has invested in three prior Adams Street funds.

GSF 6 will focus on transactions with a growth orientation and attractive entry valuations where a high quality private market fund manager has significant influence to create value. Adams Street Partners utilizes a thematic approach to target specific funds and exposures that it believes present the best risk/return characteristics for the fund portfolio. It is a process that is active, systematic and ongoing. Once an investment has been made, Adams Street Partners continues to actively monitor investments to ensure that profit allocations, distributions, clawbacks and amendments are made to the benefit of investors.

In addition to reviewing the attractiveness of the Adams Street Global Secondary Fund 6 investment offering, staff conducted on-site due diligence, reference checks, a literature database search, and reviewed the potential investor base for the fund.

More information on Adams Street Global Secondary Fund 6 is included as **Attachment C**.

## **RECOMMENDATION:**

**The Investment Advisory Council concurs with Staff’s recommendation that the SBI authorize the Executive Director, with assistance from the SBI’s legal counsel, to negotiate and execute a commitment of up to \$100 million, or 20% of Adams Street Global Secondary Fund 6, whichever is less. Approval by the SBI of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Adams Street Partners upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Adams Street Partners or reduction or termination of the commitment.**

**2) Investment with an existing private equity manager, Kohlberg Kravis Roberts & Co. (“KKR”), in KKR Asian Fund III (“Asian Fund III”).**

KKR is forming KKR Asian Fund III to pursue investment opportunities in large, industry-leading businesses in Asia. KKR has a history of investing in Asia across various countries, sectors, and types of investments. The Fund is a continuation of, and will build upon, their private equity investment strategy and four decades of global private equity investing experience. Since 1976, KKR’s global private equity funds have invested \$70 billion in over 350 transactions. In Asia, they have invested and committed over \$10 billion in Pan Asia private equity investments since 2005 in 47 transactions.

KKR’s approach in Asia is to fully combine their leading global resources with the Asia team’s extensive local experience, relationships, and operational expertise to build successful partnerships with leading businesses and entrepreneurs. They typically focus their efforts on opportunities where they can invest a meaningful amount of capital in a business with an existing sustainable competitive advantage and where the value of the business can be enhanced through active involvement. KKR investment professionals in Asia are primarily organized along six region/country verticals: Australia, Greater China, India, Japan, Korea, and Southeast Asia. KKR believes that their strong local knowledge, relationships, and deep networks, combined with their ability to adapt their approach to the local market while leveraging global resources and industry expertise, position KKR’s Asia team as a local player with global best practices and differentiate it when sourcing, securing, and executing deals in each country.

In addition to reviewing the attractiveness of the KKR Asian Fund III investment offering, staff conducted on-site due diligence, reference checks, a literature database search, and reviewed the potential investor base for the fund.

More information on KKR Asian Fund III is included as **Attachment D**.

**RECOMMENDATION:**

**The Investment Advisory Council concurs with Staff’s recommendation that the SBI authorize the Executive Director, with assistance from the SBI’s legal counsel, to negotiate and execute a commitment of up to \$150 million, or 20% of KKR Asian Fund III, whichever is less. Approval by the SBI of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Kohlberg Kravis Roberts & Co. upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Kohlberg Kravis Roberts & Co. reduction or termination of the commitment.**

**3) Investment with an existing private equity manager, Silver Lake Partners (“Silver Lake”), in Silver Lake Partners V (“SLP V”).**

Silver Lake is forming Silver Lake Partners V to make large-scale investments in the technology, technology-enabled, and related growth industries. Founded in 1999, Silver Lake has a global presence with over 80 investment and value creation professionals in offices in Silicon Valley, New York, London, Hong Kong, and Tokyo. Silver Lake has raised four flagship strategy funds since inception and has invested approximately \$20.7 billion across 61 investments.

The substantial majority of Silver Lake’s total capital invested to date has been in large and complex control transactions or minority investments where Silver Lake had significant company involvement. The Firm combines sector specialization and industry expertise, rigorous due diligence capabilities, and access to an extensive global network within the technology ecosystem to create a competitive advantage when evaluating, managing, and exiting investments. Silver Lake believes that the Firm’s vast network of relationships, differentiated investment strategy, experience with differentiated and flexible investment structures, and ability to add meaningful strategic value to portfolio companies has helped SLP achieve superior investment performance over time across the Prior Funds.

In addition to reviewing the attractiveness of the Silver Lake Partners V investment offering, staff conducted on-site due diligence, reference checks, a literature database search, and reviewed the potential investor base for the fund.

More information on Silver Lake Partners V is included as **Attachment E**.

**RECOMMENDATION:**

**The Investment Advisory Council concurs with Staff’s recommendation that the SBI authorize the Executive Director, with assistance from the SBI’s legal counsel, to negotiate and execute a commitment of up to \$150 million, or 20% of Silver Lake Partners V, whichever is less. Approval by the SBI of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Silver Lake Partners upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions Silver Lake Partners reduction or termination of the commitment.**



**4) Investment with an existing private equity manager, Vestar Capital Partners (“Vestar”), in Vestar Capital Partners VII (“VCP VII”).**

Vestar is forming Vestar Capital Partners VII to pursue investment opportunities in middle-market companies in the U.S. The Fund is a continuation of Vestar’s strategy of utilizing their operational and strategic capabilities to target middle-market companies in select key sectors and leveraging their experienced and cohesive team to produce attractive risk-adjusted returns to investors. Since its inception in 1988, Vestar has completed more than 100 private equity investments and 200 add-on acquisitions across multiple funds and numerous economic cycles.

Vestar is one of the longest standing private equity firms investing in the middle market. The Firm believes the middle market offers the largest number of available opportunities in private equity. Vestar defines this segment of the market as companies that are generally privately held, founder or family-led, non-core subsidiaries or divisions of larger corporations, subscale public companies, or companies seeking growth capital that can benefit from Vestar’s backing and support. Vestar invests across the following sectors: Consumer, Healthcare, Business Services, and Industrial Products. They believe domain expertise is a key factor for success in today’s competitive private equity industry. Vestar’s dedicated sector teams understand key industry trends, risks, opportunities, and value migration that enable thoughtful sourcing, analysis, and evaluation of potential investments.

In addition to reviewing the attractiveness of the Vestar Capital Partners VII investment offering, staff conducted on-site due diligence, reference checks, a literature database search, and reviewed the potential investor base for the fund.

More information on Vestar Capital Partners VII is included as **Attachment F**.

**RECOMMENDATION:**

**The Investment Advisory Council concurs with Staff’s recommendation that the SBI authorize the Executive Director, with assistance from the SBI’s legal counsel, to negotiate and execute a commitment of up to \$150 million, or 20% of Vestar Capital Partners VII, whichever is less. Approval by the SBI of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Vestar Capital Partners upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions Vestar Capital Partners VII reduction or termination of the commitment.**

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# ATTACHMENT A

## Minnesota State Board of Investment Pooled Alternative Investments Combined Funds December 31, 2016

Combined Funds Market Value \$59,939,554,167

Amount Available for Investment **\$4,234,765,346**

	Current Level	Target Level	Difference
Market Value (MV)	\$7,753,145,487	\$11,987,910,833	\$4,234,765,346
MV +Unfunded	\$13,700,945,106	\$20,978,843,958.42	\$7,277,898,853

Asset Class	Market Value	Unfunded Commitment	Total
Private Equity	\$4,748,232,248	\$3,732,771,787	\$8,481,004,035
Real Estate	\$609,329,219	\$544,637,607	\$1,153,966,827
Resource	\$1,413,506,765	\$802,626,819	\$2,216,133,584
Yield-Oriented	\$982,077,255	\$867,763,405	\$1,849,840,660
<b>Total</b>	<b>\$7,753,145,487</b>	<b>\$5,947,799,618</b>	<b>\$13,700,945,106</b>

### Cash Flows December 31, 2016

Year	Capital Calls	Distributions	Net Invested
2016	\$1,874,320,138	(\$1,728,367,357)	\$145,952,781
2015	\$1,541,161,769	(\$2,128,301,645)	(\$587,139,876)
2014	\$1,378,984,263	(\$2,133,698,037)	(\$754,713,774)
2013	\$1,257,559,066	(\$2,522,817,494)	(\$1,265,258,428)

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# ATTACHMENT B

## Minnesota State Board of Investment - Alternative Investments - As of December 31, 2016

Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<b>I. REAL ESTATE</b>								
<b>Angelo, Gordon &amp; Co.</b>								
AG Asia Realty Fund III, L.P.	50,000,000	16,500,000	16,500,000	0	33,500,000	0.00	<b>1.00</b>	0.83
AG Realty Fund IX	100,000,000	45,750,000	46,069,216	0	54,250,000	2.85	<b>1.01</b>	2.06
<b>Blackstone</b>								
Blackstone Real Estate Partners V	100,000,000	97,030,342	41,113,898	161,826,876	4,174,052	10.92	<b>2.09</b>	10.43
Blackstone Real Estate Partners VI	100,000,000	99,320,387	42,358,763	164,247,876	4,907,906	12.59	<b>2.08</b>	9.51
Blackstone Real Estate Partners VII	100,000,000	92,795,214	91,501,021	70,099,525	17,689,033	18.68	<b>1.74</b>	4.84
Blackstone Real Estate Partners VIII	150,000,000	62,835,616	57,259,801	16,407,674	100,754,218	14.84	<b>1.17</b>	1.53
<b>Blackstone Strategic Partners (CSFB)</b>								
Strategic Partners III RE	25,000,000	25,752,810	5,058,748	10,023,438	9,006	-7.21	<b>0.59</b>	11.25
Strategic Partners IV RE	50,000,000	50,554,889	12,309,133	36,701,404	1,415,359	-0.72	<b>0.97</b>	8.29
<b>Colony Capital</b>								
Colony Investors III	100,000,000	100,000,000	5,202,900	172,642,105	0	14.57	<b>1.78</b>	18.75
<b>Rockpoint</b>								
Rockpoint Real Estate Fund V	100,000,000	18,327,945	20,316,442	269,051	81,941,106	-0.14	<b>1.12</b>	1.97
<b>Rockwood</b>								
Rockwood Capital RE Partners X	100,000,000	18,415,601	18,415,601	0	81,584,399	0.15	<b>1.00</b>	0.46
<b>Silverpeak Real Estate Partners</b>								
Silverpeak Legacy Pension Partners II	75,000,000	77,039,260	6,752,949	86,318,011	9,376,833	4.67	<b>1.21</b>	11.25
Silverpeak Legacy Pension Partners III	150,000,000	69,964,304	17,071,084	9,390,827	80,035,696	-12.82	<b>0.38</b>	8.36
<b>T.A. Associates Realty</b>								
Realty Associates Fund VII	75,000,000	75,000,000	475,946	76,273,641	0	0.33	<b>1.02</b>	11.87
Realty Associates Fund VIII	100,000,000	100,000,000	51,491,766	44,483,384	0	-0.51	<b>0.96</b>	10.25
Realty Associates Fund IX	100,000,000	100,000,000	66,188,716	94,468,866	0	10.87	<b>1.61</b>	8.10
Realty Associates Fund X	100,000,000	100,000,000	86,811,610	48,544,812	0	12.18	<b>1.35</b>	4.59
Realty Associates Fund XI	100,000,000	25,000,000	24,431,625	81,681	75,000,000	-1.96	<b>0.98</b>	1.26
<b>Real Estate Total</b>	<b>1,675,000,000</b>	<b>1,174,286,368</b>	<b>609,329,219</b>	<b>991,779,170</b>	<b>544,637,607</b>		<b>1.36</b>	
<b>II. RESOURCE</b>								
<b>Apache Corp.</b>								
1986 Net Profits Interest	30,000,000	30,000,000	398,910	59,468,540	0	12.14	<b>2.00</b>	29.76
<b>EIG Global Energy Partners</b>								
EIG Energy Fund XIV	100,000,000	113,013,074	10,695,863	92,181,918	2,761,129	-3.81	<b>0.91</b>	9.45
EIG Energy Fund XV	150,000,000	145,074,733	87,192,620	79,690,788	6,322,679	4.41	<b>1.15</b>	6.32
EIG Energy Fund XVI	200,000,000	112,380,546	93,488,380	14,386,031	94,230,852	-3.16	<b>0.96</b>	3.05
<b>EnCap Energy</b>								
EnCap Energy Capital Fund VII	100,000,000	96,692,592	9,828,412	130,765,121	3,860,151	15.36	<b>1.45</b>	9.26
EnCap Energy Capital Fund VIII	100,000,000	89,805,426	40,212,802	36,646,194	10,801,697	-5.92	<b>0.86</b>	6.00
Encap Energy Fund IX	100,000,000	91,673,169	70,524,535	39,573,898	21,391,390	12.46	<b>1.20</b>	3.82
EnCap Energy Capital Fund X	100,000,000	33,109,969	28,941,522	2,719,809	69,609,839	-6.74	<b>0.96</b>	1.58
<b>EnerVest Energy</b>								
EnerVest Energy Institutional Fund XIV	100,000,000	80,721,219	73,682,715	4,147,990	21,033,575	-5.16	<b>0.96</b>	1.45
<b>Energy &amp; Minerals Group</b>								
NGP Midstream & Resources	100,000,000	100,090,315	81,525,360	116,806,346	230,871	16.46	<b>1.98</b>	9.51
The Energy & Minerals Group Fund II	100,000,000	94,281,168	126,244,304	25,880,117	5,993,843	16.46	<b>1.61</b>	5.03
The Energy & Minerals Group Fund III	200,000,000	174,257,942	133,459,059	4,392,731	27,471,516	-11.61	<b>0.79</b>	2.57
The Energy & Minerals Group Fund IV	150,000,000	87,306,512	96,678,080	470,734	62,694,335	10.05	<b>1.11</b>	1.17
<b>Energy Capital Partners</b>								
Energy Capital Partners II	100,000,000	80,529,511	44,103,594	74,904,183	30,099,613	11.20	<b>1.48</b>	6.21
Energy Capital Partners III	200,000,000	68,790,968	77,625,173	0	131,209,032	7.45	<b>1.13</b>	2.79
<b>First Reserve</b>								
First Reserve Fund X	100,000,000	100,000,000	396,923	182,429,002	0	31.06	<b>1.83</b>	11.92
First Reserve Fund XI	150,000,000	150,292,121	15,553,770	87,487,946	0	-8.57	<b>0.69</b>	9.78
First Reserve Fund XII	150,000,000	160,229,286	45,765,866	71,186,004	3,354,186	-8.56	<b>0.73</b>	7.92
First Reserve Fund XIII	200,000,000	47,911,206	33,521,949	2,345,408	152,088,794	-28.42	<b>0.75</b>	2.92
<b>NGP</b>								
Natural Gas Partners IX	150,000,000	161,322,217	17,095,844	226,248,564	1,854,282	11.89	<b>1.51</b>	8.94
NGP Natural Resources X	150,000,000	137,068,848	69,089,802	87,339,116	12,931,152	5.32	<b>1.14</b>	4.98
Natural Gas Capital Resources XI	150,000,000	77,124,124	74,305,973	12,411,675	79,037,882	24.41	<b>1.12</b>	1.81
<b>Sheridan</b>								
Sheridan Production Partners I	100,000,000	116,550,000	69,532,003	82,750,000	0	6.82	<b>1.31</b>	9.51
Sheridan Production Partners II	100,000,000	100,000,000	71,031,975	7,000,000	0	-6.43	<b>0.78</b>	6.00
Sheridan Production Partners III-B	100,000,000	34,350,000	31,399,986	0	65,650,000	-15.46	<b>0.91</b>	1.82
<b>T. Rowe Price</b>								
	18,513,566	18,513,566	11,211,345	5,680,149	0	-11.69	<b>0.91</b>	
<b>Resource Total</b>	<b>3,198,513,566</b>	<b>2,501,088,513</b>	<b>1,413,506,765</b>	<b>1,446,912,264</b>	<b>802,626,819</b>		<b>1.14</b>	

**Minnesota State Board of Investment**  
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Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<b>III. YIELD-ORIENTED</b>								
<b>Audax Group</b>								
<i>Audax Mezzanine Fund III</i>	100,000,000	89,141,369	53,566,610	56,277,226	19,366,627	9.46	<b>1.23</b>	6.49
<i>Audax Mezzanine Fund IV</i>	100,000,000	2,445,606	1,905,415	305,066	97,554,394	-11.10	<b>0.90</b>	1.49
<b>Avenue Capital Partners</b>								
<i>Avenue Energy Opportunities Fund</i>	100,000,000	95,026,598	102,165,376	934,495	4,973,402	6.22	<b>1.08</b>	1.53
<b>Citicorp Mezzanine</b>								
<i>CM Liquidating Partnership</i>	100,000,000	88,029,296	11,522,970	132,324,719	0	16.20	<b>1.63</b>	16.92
<b>Crescent Capital Group</b>								
<i>TCW/Crescent Mezzanine Partners III</i>	75,000,000	68,835,269	2,390,845	156,868,939	29,733,852	35.89	<b>2.31</b>	15.51
<b>Gold Hill Venture Lending</b>								
<i>Gold Hill Venture Lending</i>	40,000,000	40,000,000	956,492	63,913,250	0	10.62	<b>1.62</b>	12.01
<i>Gold Hill 2008</i>	25,852,584	25,852,584	9,379,884	32,238,919	0	12.49	<b>1.61</b>	8.25
<b>GS Mezzanine Partners</b>								
<i>GS Mezzanine Partners 2006</i>	100,000,000	74,999,888	2,834,091	131,092,684	9,858,563	4.77	<b>1.79</b>	10.49
<i>GS Mezzanine Partners V</i>	150,000,000	112,057,963	13,229,059	165,434,372	60,803,216	9.27	<b>1.59</b>	8.94
<b>Kohlberg Kravis Roberts</b>								
<i>KKR Lending Partners II</i>	75,000,000	57,365,397	48,622,307	16,388,767	27,381,173	13.16	<b>1.13</b>	1.58
<b>LBC Credit Partners</b>								
<i>LBC Credit Partners IV</i>	69,072,965	10,688,871	10,653,843	0	58,384,094	-0.84	<b>1.00</b>	0.67
<b>Merit Capital Partners</b>								
<i>William Blair Mezzan. Cap. Fd. III</i>	60,000,000	57,243,241	620,620	112,755,951	2,756,759	15.51	<b>1.98</b>	16.75
<i>Merit Mezzanine Fund IV</i>	75,000,000	70,178,571	21,373,157	95,625,429	4,821,429	9.77	<b>1.67</b>	11.80
<i>Merit Mezzanine Fund V</i>	75,000,000	70,420,408	54,649,720	34,321,417	4,579,592	8.02	<b>1.26</b>	6.79
<i>Merit Mezzanine Fund VI</i>	50,125,000	7,149,579	6,993,883	0	42,975,421	-2.23	<b>0.98</b>	0.77
<b>Merit Energy Partners</b>								
<i>Merit Energy Partners B</i>	24,000,000	24,000,000	9,860,038	181,045,738	0	24.31	<b>7.95</b>	20.25
<i>Merit Energy Partners C</i>	50,000,000	50,000,000	17,274,700	493,654,262	0	30.96	<b>10.22</b>	17.93
<i>Merit Energy Partners D</i>	88,000,000	70,938,303	33,501,728	305,623,509	0	22.76	<b>4.78</b>	15.36
<i>Merit Energy Partners E</i>	100,000,000	39,983,197	24,926,862	66,686,905	0	12.48	<b>2.29</b>	11.96
<i>Merit Energy Partners F</i>	100,000,000	59,522,861	27,423,658	27,251,921	0	-1.50	<b>0.92</b>	10.53
<i>Merit Energy Partners H</i>	100,000,000	100,000,000	71,462,339	12,410,723	0	-6.39	<b>0.84</b>	5.67
<i>Merit Energy Partners I</i>	169,721,518	125,099,999	145,494,927	246,000	44,621,519	29.08	<b>1.16</b>	1.96
<b>Oaktree Capital Management</b>								
<i>Oaktree Opportunities Fund X</i>	50,000,000	17,500,000	19,215,333	619,660	32,500,000	21.09	<b>1.13</b>	1.58
<i>Oaktree Opportunities Fund Xb</i>	100,000,000	0	0	0	100,000,000	0.00	<b>0.00</b>	1.58
<b>Pimco Brovo**</b>								
<i>Pimco Bravo Fund OnShore Feeder I</i>	3,958,027	3,958,027	404,667	3,651,709	2,021,147	118.45	<b>1.02</b>	1.76
<i>Pimco Bravo Fund OnShore Feeder II</i>	5,243,670	5,243,670	5,848,034	0	0	5.84	<b>1.12</b>	1.76
<b>Portfolio Advisors</b>								
<i>DLJ Investment Partners II</i>	27,375,168	23,164,217	80,565	34,829,566	0	10.37	<b>1.51</b>	16.75
<i>DLJ Investment Partners III</i>	100,000,000	72,260,040	5,936,220	88,389,198	29,739,249	7.47	<b>1.31</b>	10.28
<b>Prudential Capital Partners</b>								
<i>Prudential Capital Partners I</i>	100,000,000	99,713,348	0	155,231,567	286,652	11.06	<b>1.56</b>	15.46
<i>Prudential Capital Partners II</i>	100,000,000	96,976,021	5,038,927	135,267,203	3,156,732	8.87	<b>1.45</b>	11.26
<i>Prudential Capital Partners III</i>	100,000,000	95,838,210	41,379,426	115,214,733	7,604,183	13.31	<b>1.63</b>	7.46
<i>Prudential Capital Partners IV</i>	100,000,000	90,515,665	79,919,179	29,496,957	10,050,449	12.63	<b>1.21</b>	4.70
<i>Prudential Capital Partners V</i>	150,000,000	0	0	0	150,000,000	0.00	<b>0.00</b>	0.37
<b>Summit Partners</b>								
<i>Summit Subordinated Debt Fund III</i>	45,000,000	42,750,000	6,582,445	55,057,070	2,250,000	8.58	<b>1.44</b>	12.63
<i>Summit Subordinated Debt Fund IV</i>	50,000,000	55,250,000	24,924,166	45,467,890	15,669,302	9.36	<b>1.27</b>	8.51
<b>TCW Asset Management</b>								
<i>TCW Direct Lending LLC</i>	100,000,000	58,019,463	46,743,041	12,603,079	48,887,731	2.13	<b>1.02</b>	1.71
<b>Windjammer Capital Investors</b>								
<i>Windjammer Mezzanine &amp; Equity Fund II</i>	66,708,861	56,569,498	379,140	84,439,334	10,139,363	8.93	<b>1.50</b>	16.50
<i>Windjammer Senior Equity Fund III</i>	75,000,000	61,619,620	17,599,220	126,252,774	13,380,380	18.87	<b>2.33</b>	10.74
<i>Windjammer Senior Equity Fund IV</i>	100,000,000	68,274,074	57,218,369	6,359,090	34,268,177	-3.82	<b>0.93</b>	4.60
<b>Yield-Oriented Total</b>	<b>3,100,057,793</b>	<b>2,186,630,854</b>	<b>982,077,255</b>	<b>2,978,280,124</b>	<b>867,763,405</b>		<b>1.81</b>	

**Minnesota State Board of Investment**  
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Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<b>IV. PRIVATE EQUITY</b>								
<b>Adams Street Partners</b>								
<i>Adams Street Global Secondary Fund 5</i>	100,000,000	69,429,750	52,850,238	18,625,419	30,570,250	1.82	<b>1.03</b>	4.29
<b>Advent International</b>								
<i>Advent International GPE VI</i>	50,000,000	49,000,005	33,815,934	69,942,764	999,995	17.91	<b>2.12</b>	8.50
<i>Advent International GPE VII</i>	90,000,000	78,930,000	86,667,679	23,940,083	11,070,000	15.36	<b>1.40</b>	4.04
<i>Advent International GPE VIII</i>	100,000,000	2,100,000	1,625,797	0	97,900,000	-22.79	<b>0.77</b>	0.90
<b>Affinity Ventures</b>								
<i>Affinity Ventures IV</i>	4,000,000	4,000,000	1,785,924	1,541,970	0	-3.37	<b>0.83</b>	12.25
<i>Affinity Ventures V</i>	5,000,000	5,000,000	3,052,588	1,585,611	0	-1.76	<b>0.93</b>	8.25
<b>APAX Partners</b>								
<i>Apax VIII - USD</i>	200,000,000	204,727,016	222,785,478	21,197,192	16,470,176	11.59	<b>1.19</b>	3.57
<i>Apax IX - USD</i>	150,000,000	0	0	0	150,000,000	0.00	<b>0.00</b>	0.50
<b>Banc Fund</b>								
<i>Banc Fund VII</i>	45,000,000	45,000,000	49,841,730	812,725	0	1.21	<b>1.13</b>	11.50
<i>Banc Fund VIII</i>	98,250,000	98,250,000	139,592,687	28,097,973	0	12.18	<b>1.71</b>	8.44
<i>Banc Fund IX</i>	107,205,932	64,323,559	70,112,551	0	42,882,373	8.11	<b>1.09</b>	2.31
<b>BlackRock**</b>								
<i>BlackRock Tempus Fund</i>	1,774,870	1,774,870	919,078	1,143,599	0	16.71	<b>1.16</b>	1.31
<b>Blackstone</b>								
<i>Blackstone Capital Partners IV</i>	70,000,000	72,277,804	16,832,628	180,558,753	1,993,504	37.07	<b>2.73</b>	14.22
<i>Blackstone Capital Partners V</i>	140,000,000	130,900,605	32,159,955	202,479,723	8,616,043	7.96	<b>1.79</b>	10.66
<i>Blackstone Capital Partners VI</i>	100,000,000	86,786,134	94,903,401	22,120,609	16,668,352	9.81	<b>1.35</b>	8.19
<i>Blackstone Capital Partners VII</i>	130,000,000	790,936	849,171	8,309	129,209,064	-76.40	<b>1.08</b>	1.26
<b>Blackstone Strategic Partners (CSFB/ DLJ)</b>								
<i>Strategic Partners II-B</i>	100,000,000	86,154,714	580,355	161,889,320	4,692,847	35.07	<b>1.89</b>	13.21
<i>Strategic Partners III-B</i>	100,000,000	78,066,047	22,620,543	95,157,808	15,092,801	6.51	<b>1.51</b>	11.34
<i>Strategic Partners III VC</i>	25,000,000	24,772,008	7,035,047	26,962,967	1,185,209	6.40	<b>1.37</b>	11.34
<i>Strategic Partners IV-B</i>	100,000,000	91,609,280	24,637,411	124,469,365	18,810,860	12.55	<b>1.63</b>	8.52
<i>Strategic Partners IV VC</i>	40,500,000	39,710,807	15,399,188	44,715,963	3,303,709	9.66	<b>1.51</b>	8.29
<i>Strategic Partners V</i>	100,000,000	77,163,379	41,156,380	83,885,185	42,054,103	21.04	<b>1.62</b>	5.12
<i>Strategic Partners VI</i>	150,000,000	77,232,147	87,867,370	19,858,489	75,666,074	24.71	<b>1.39</b>	2.46
<i>Strategic Partners VII</i>	150,000,000	6,762,131	7,620,137	0	143,237,869	20.50	<b>1.13</b>	0.88
<b>BLUM Capital Partners</b>								
<i>Blum Strategic Partners II</i>	50,000,000	40,185,889	123,922	89,708,870	2,127,584	22.42	<b>2.24</b>	15.21
<i>Blum Strategic Partners III</i>	75,000,000	78,121,020	0	83,508,219	471,064	0.25	<b>1.07</b>	11.33
<i>Blum Strategic Partners IV</i>	150,000,000	170,916,780	0	167,939,991	5,896,033	-0.75	<b>0.98</b>	8.87
<b>Brookfield Asset Management Inc.</b>								
<i>Brookfield Capital Partners Fund IV</i>	100,000,000	32,373,929	33,927,820	3,763,032	68,878,870	8.55	<b>1.16</b>	1.29
<b>CVC Capital Partners</b>								
<i>CVC European Equity Partners V</i>	133,633,532	129,528,618	70,725,240	146,401,306	4,204,765	13.05	<b>1.68</b>	8.52
<i>CVC Capital Partners VI</i>	245,598,501	139,735,099	132,895,578	545,893	106,371,012	-4.69	<b>0.95</b>	3.23
<b>Carval Investors</b>								
<i>CVI Global Value Fund</i>	200,000,000	190,000,000	32,313,079	286,206,686	10,000,000	9.67	<b>1.68</b>	9.72
<i>CVI Credit Value Fund I</i>	100,000,000	95,000,000	54,719,176	151,844,663	5,000,000	19.22	<b>2.17</b>	6.00
<i>CVI Credit Value Fund A II</i>	150,000,000	142,500,000	146,595,286	36,161,276	7,500,000	7.74	<b>1.28</b>	3.92
<i>CVI Credit Value Fund A III</i>	150,000,000	75,000,000	83,905,425	0	75,000,000	12.11	<b>1.12</b>	1.33
<b>Cardinal Partners</b>								
<i>DSV Partners IV</i>	10,000,000	10,000,000	31,318	39,196,082	0	10.61	<b>3.92</b>	31.48
<b>Carlyle Group</b>								
<i>Carlyle Strategic Partners IV, L.P.</i>	100,000,000	5,114,788	5,114,788	0	94,885,212	0.13	<b>1.00</b>	0.75
<b>Chicago Growth Partners (William Blair)</b>								
<i>William Blair Capital Partners VII</i>	50,000,000	48,150,000	0	67,985,017	1,650,000	8.25	<b>1.41</b>	15.57
<i>Chicago Growth Partners I</i>	50,000,000	52,441,998	5,593,561	53,058,188	300,000	2.59	<b>1.12</b>	11.19
<i>Chicago Growth Partners II</i>	60,000,000	58,095,626	23,195,645	94,583,860	1,652,374	19.40	<b>2.03</b>	8.56
<b>Court Square Capital Partners</b>								
<i>Court Square Capital Partners</i>	100,000,000	80,813,422	285,108	181,548,807	1,934,741	28.91	<b>2.25</b>	14.80
<i>Court Square Capital Partners II</i>	175,000,000	158,078,327	49,736,529	254,401,935	17,968,871	13.36	<b>1.92</b>	10.07
<i>Court Square Capital Partners III</i>	175,000,000	87,825,909	57,015,019	47,448,930	94,838,180	8.22	<b>1.19</b>	4.33
<b>Crescendo</b>								
<i>Crescendo IV</i>	101,500,000	101,500,000	11,928,423	37,386,052	0	-6.69	<b>0.49</b>	16.56
<b>Diamond Castle Partners</b>								
<i>Diamond Castle Partners IV</i>	92,487,949	91,151,326	0	94,068,606	1,377,108	0.40	<b>1.03</b>	10.07

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<b>Elevation Partners</b>								
<i>Elevation Partners</i>	75,000,000	69,311,710	623,481	113,091,463	799,634	11.83	<b>1.64</b>	11.38
<b>Fox Paine &amp; Company</b>								
<i>Fox Paine Capital Fund II</i>	50,000,000	46,299,626	4,012,101	86,859,891	11,953,212	18.93	<b>1.96</b>	16.25
<b>GHJM Marathon Fund</b>								
<i>GHJM Marathon Fund V</i>	50,000,000	50,093,425	59,707	95,838,392	46,502	12.10	<b>1.91</b>	12.00
<i>TrailHead Fund</i>	20,000,000	14,914,187	18,247,575	2,406,955	5,085,813	11.11	<b>1.38</b>	4.61
<b>GTCR Golder Rauner</b>								
<i>GTCR VI</i>	90,000,000	90,000,000	0	80,017,082	0	-3.78	<b>0.89</b>	18.25
<i>GTCR IX</i>	75,000,000	69,539,933	4,711,834	119,144,001	5,460,067	13.59	<b>1.78</b>	10.25
<i>GTCR X</i>	100,000,000	93,248,604	68,750,700	110,882,059	6,751,396	20.62	<b>1.93</b>	5.81
<i>GTCR Fund XI</i>	110,000,000	56,362,553	58,224,562	4,291,892	53,637,447	8.90	<b>1.11</b>	2.88
<b>GS Capital Partners</b>								
<i>GS Capital Partners 2000</i>	50,000,000	50,000,000	70,913	115,122,481	0	23.49	<b>2.30</b>	16.09
<i>GS Capital Partners V</i>	100,000,000	73,958,901	8,495,205	209,467,705	1,041,099	18.21	<b>2.95</b>	11.50
<i>GS Capital Partners VI</i>	100,000,000	80,215,619	27,023,535	99,023,935	15,039,971	6.05	<b>1.57</b>	9.67
<i>West Street Capital Partners</i>	150,000,000	7,500,000	7,500,000	0	142,500,000	0.00	<b>1.00</b>	0.03
<b>HarbourVest**</b>								
<i>Dover Street VII Cayman Fund</i>	2,198,112	2,070,612	944,023	1,050,545	127,500	-3.17	<b>0.96</b>	1.76
<i>HarbourVest Intl PE Partners V-Cayman US</i>	3,504,689	3,293,739	1,761,603	2,038,753	210,950	11.26	<b>1.15</b>	1.76
<i>Harbourvest Intl PE Partners VI-Cayman</i>	4,190,735	3,517,013	3,079,964	956,742	673,722	10.00	<b>1.15</b>	1.76
<i>HarbourVest Partners VIII Cayman Buyout</i>	4,506,711	4,194,711	2,729,737	2,208,582	312,000	12.72	<b>1.18</b>	1.76
<i>HarbourVest Partners VIII-Cayman Venture</i>	7,190,898	7,050,898	5,245,004	2,480,721	140,000	5.86	<b>1.10</b>	1.76
<b>Hellman &amp; Friedman</b>								
<i>Hellman &amp; Friedman Capital Partners V</i>	160,000,000	146,165,961	3,677,954	414,854,231	8,070,303	27.91	<b>2.86</b>	11.83
<i>Hellman &amp; Friedman Capital Partners VI</i>	175,000,000	170,943,607	43,560,080	302,689,925	5,179,012	13.11	<b>2.03</b>	9.51
<i>Hellman &amp; Friedman Capital Partners VII</i>	50,000,000	47,237,591	50,258,807	21,018,764	2,762,409	16.14	<b>1.51</b>	7.45
<b>IK Investment Partners</b>								
<i>IK Fund VII</i>	179,492,394	169,629,300	162,736,783	9,140,544	9,863,094	0.63	<b>1.01</b>	3.05
<i>IK Fund VIII</i>	159,063,593	15,829,146	14,378,358	0	143,234,446	-9.22	<b>0.91</b>	0.45
<b>Kohlberg Kravis Roberts</b>								
<i>KKR Millennium Fund</i>	200,000,000	200,000,000	23,615,955	395,739,083	0	16.34	<b>2.10</b>	13.81
<i>KKR 2006 Fund</i>	200,000,000	210,482,718	97,428,427	243,860,357	3,940,793	8.18	<b>1.62</b>	10.01
<i>KKR Americas Fund XII</i>	150,000,000	0	0	0	150,000,000	0.00	<b>0.00</b>	0.83
<b>Leonard Green &amp; Partners</b>								
<i>Green Equity Investors VI</i>	200,000,000	200,616,637	210,374,369	39,571,481	22,690,338	12.68	<b>1.25</b>	4.55
<b>Lexington Capital Partners</b>								
<i>Lexington Capital Partners VI-B</i>	100,000,000	98,365,297	24,423,273	116,890,836	1,634,703	7.79	<b>1.44</b>	10.77
<i>Lexington Capital Partners VII</i>	200,000,000	165,827,835	87,760,270	162,181,639	41,970,278	15.52	<b>1.51</b>	7.31
<i>Lexington Capital Partners VIII</i>	150,000,000	38,529,780	35,535,753	12,236,977	116,059,870	23.26	<b>1.24</b>	2.57
<i>Lexington Middle Market Investors IV</i>	100,000,000	0	0	0	100,000,000	0.00	<b>0.00</b>	0.03
<b>MHR Institutional Partners</b>								
<i>MHR Institutional Partners IV</i>	75,000,000	14,250,000	13,462,566	247,460	60,813,243	-3.79	<b>0.96</b>	1.46
<b>Madison Dearborn Capital Partners</b>								
<i>Madison Dearborn Capital Partners VII</i>	100,000,000	16,637,653	14,083,108	57,142	83,362,347	-25.31	<b>0.85</b>	1.03
<b>Merced Capital</b>								
<i>Merced Partners II</i>	75,000,000	63,768,881	8,345,378	121,622,383	0	24.01	<b>2.04</b>	9.50
<i>Merced Partners III</i>	100,000,000	100,000,000	61,275,833	70,997,107	0	6.86	<b>1.32</b>	6.41
<i>Merced Partners IV</i>	125,000,000	125,000,000	140,210,500	0	0	5.48	<b>1.12</b>	3.23
<b>Neuberger Berman LLC</b>								
<i>Dyal Capital Partners III</i>	175,000,000	83,650,000	31,062,500	56,023,629	147,373,629	5.47	<b>1.04</b>	1.70
<b>Nordic Capital</b>								
<i>Nordic Capital Fund VIII</i>	172,863,917	97,819,773	98,305,240	49,418	75,044,144	0.62	<b>1.01</b>	3.05
<b>North Sky Capital**</b>								
<i>North Sky Capital LBO Fund III</i>	1,070,259	720,259	492,885	392,234	350,000	14.44	<b>1.23</b>	1.76
<i>North Sky Capital Venture Fund III</i>	1,384,080	1,277,830	568,697	773,202	106,250	3.63	<b>1.05</b>	1.76
<b>Oaktree Capital Management</b>								
<i>Oaktree Principal Fund VI</i>	100,000,000	21,393,823	14,460,124	9,743,624	87,950,941	16.87	<b>1.13</b>	1.76
<b>Paine &amp; Partners</b>								
<i>Paine &amp; Partners Capital Fund IV</i>	75,000,000	31,073,781	25,122,406	900,605	43,926,219	-19.57	<b>0.84</b>	1.81
<b>Permal Capital**</b>								
<i>Permal PE Opportunities IV</i>	5,337,098	4,247,098	2,416,846	2,135,487	1,090,000	4.30	<b>1.07</b>	1.76
<b>PERMIRA</b>								
<i>Permira V</i>	177,075,259	156,744,953	153,518,367	2,229,773	20,330,306	-0.39	<b>0.99</b>	2.75
<i>Permira VI</i>	126,569,996	0	0	0	126,569,996	0.00	<b>0.00</b>	0.44



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<b>Public Pension Capital Management</b>								
<i>Public Pension Capital</i>	100,000,000	28,888,694	29,435,273	214,861	71,111,306	-18.09	<b>1.03</b>	2.38
<b>RWI Ventures</b>								
<i>RWI Ventures I</i>	7,603,265	7,603,265	486,319	6,094,262	0	-4.35	<b>0.87</b>	10.26
<b>Silver Lake Partners</b>								
<i>Silver Lake Partners II</i>	100,000,000	90,121,966	20,251,811	155,275,475	11,771,953	11.37	<b>1.95</b>	12.25
<i>Silver Lake Partners III</i>	100,000,000	91,165,628	62,563,152	119,567,404	10,675,428	17.69	<b>2.00</b>	9.51
<i>Silver Lake Partners IV</i>	100,000,000	67,898,930	66,102,516	28,383,248	43,732,022	27.07	<b>1.39</b>	4.01
<b>Split Rock Partners</b>								
<i>Split Rock Partners</i>	50,000,000	47,454,543	27,451,116	25,998,744	2,545,457	1.60	<b>1.13</b>	11.42
<i>Split Rock Partners II</i>	60,000,000	57,825,000	39,661,108	23,289,936	2,175,000	2.47	<b>1.09</b>	8.43
<b>Summit Partners</b>								
<i>Summit Ventures V</i>	25,000,000	24,125,000	46,786	33,358,461	875,000	8.11	<b>1.38</b>	18.50
<i>Summit Partners Growth Equity Fund VIII</i>	100,000,000	101,435,470	97,314,257	38,496,655	11,623,886	16.30	<b>1.34</b>	5.41
<i>Summit Partners Growth Equity Fund IX</i>	100,000,000	0	0	0	100,000,000	0.00	<b>0.00</b>	1.34
<b>T. Rowe Price</b>	37,957,338	37,881,741	11,683,402	34,036,316	0	17.70	<b>1.21</b>	
<b>TPG Capital</b>								
<i>TPG Partners VII</i>	100,000,000	23,070,847	21,807,592	25,996	76,929,153	-8.51	<b>0.95</b>	1.06
<b>Thoma Cressey</b>								
<i>Thoma Cressey Fund VI</i>	35,000,000	33,915,000	1,891	34,556,478	1,085,000	0.22	<b>1.02</b>	18.12
<i>Thoma Cressey Fund VII</i>	50,000,000	50,000,000	916,275	106,625,069	0	23.61	<b>2.15</b>	16.10
<i>Thoma Cressey Fund VIII</i>	70,000,000	68,932,574	1,510,948	233,860,926	770,000	18.28	<b>2.93</b>	10.42
<b>Thoma Bravo</b>								
<i>Thoma Bravo Fund XII</i>	75,000,000	23,912,123	22,946,241	0	51,087,877	-4.40	<b>0.96</b>	0.31
<b>Thomas H. Lee Partners</b>								
<i>Thomas H. Lee Equity Fund VII</i>	100,000,000	26,259,850	28,765,200	31,244	73,740,150	18.51	<b>1.10</b>	1.06
<b>Thomas, McNerney &amp; Partners</b>								
<i>Thomas, McNerney &amp; Partners I</i>	30,000,000	30,000,000	5,982,671	10,504,694	0	-11.37	<b>0.55</b>	13.91
<i>Thomas, McNerney &amp; Partners II</i>	50,000,000	47,125,000	16,534,907	93,155,007	2,875,000	17.22	<b>2.33</b>	10.25
<b>Varde Fund</b>								
<i>Varde Fund IX</i>	100,000,000	100,000,000	30,819,159	179,575,924	0	14.80	<b>2.10</b>	8.27
<i>Varde Fund X</i>	150,000,000	150,000,000	152,726,817	117,491,182	0	11.95	<b>1.80</b>	6.45
<i>Varde Fund XI</i>	200,000,000	200,000,000	250,336,600	0	0	7.78	<b>1.25</b>	3.23
<b>Vestar Capital Partners</b>								
<i>Vestar Capital Partners IV</i>	55,000,000	53,635,969	979,626	101,917,140	57,313	14.66	<b>1.92</b>	16.80
<i>Vestar Capital Partners V</i>	75,000,000	74,936,812	17,010,389	82,019,219	63,188	3.97	<b>1.32</b>	10.79
<i>Vestar Capital Partners VI</i>	100,000,000	69,414,329	68,327,965	46,389,057	30,585,671	30.46	<b>1.65</b>	5.03
<b>Warburg Pincus</b>								
<i>Warburg Pincus China, L.P.</i>	45,000,000	3,825,000	3,825,000	0	41,175,000	0.00	<b>1.00</b>	0.05
<i>Warburg Pincus Equity Partners</i>	100,000,000	100,000,000	392,743	163,222,253	0	10.02	<b>1.64</b>	18.27
<i>Warburg Pincus Private Equity VIII</i>	100,000,000	100,000,000	14,673,478	212,740,851	0	14.78	<b>2.27</b>	14.47
<i>Warburg Pincus Private Equity IX</i>	100,000,000	100,000,000	13,369,062	163,310,456	0	10.08	<b>1.77</b>	11.19
<i>Warburg Pincus Private Equity X</i>	150,000,000	150,000,000	76,463,540	141,544,787	0	7.65	<b>1.45</b>	8.94
<i>Warburg Pincus Private Equity XI</i>	200,000,000	175,800,000	194,622,018	33,185,800	24,200,000	11.83	<b>1.30</b>	3.78
<i>Warburg Pincus Private Equity XII</i>	131,000,000	23,514,500	21,588,615	0	107,485,500	-20.65	<b>0.92</b>	0.87
<b>Wayzata</b>								
<i>Wayzata Opportunities Fund</i>	100,000,000	93,180,000	1,668,756	155,536,211	18,920,000	8.45	<b>1.69</b>	10.78
<i>Wayzata Opportunities Fund II</i>	150,000,000	57,450,000	21,067,894	179,098,550	30,000,000	16.13	<b>3.48</b>	8.94
<i>Wayzata Opportunities Fund III</i>	150,000,000	68,415,000	48,442,968	17,836,917	99,285,000	-1.77	<b>0.97</b>	4.29
<b>Welsh, Carson, Anderson &amp; Stowe</b>								
<i>Welsh, Carson, Anderson &amp; Stowe VIII</i>	100,000,000	100,000,000	2,395	128,816,862	0	3.12	<b>1.29</b>	18.19
<i>Welsh, Carson, Anderson &amp; Stowe IX</i>	125,000,000	123,750,000	2,579	205,668,645	1,250,000	11.19	<b>1.66</b>	16.26
<i>Welsh, Carson, Anderson &amp; Stowe X</i>	100,000,000	98,000,000	18,108,790	146,916,912	2,000,000	8.02	<b>1.68</b>	10.80
<i>Welsh, Carson, Anderson &amp; Stowe XI</i>	100,000,000	98,118,032	64,150,223	83,305,432	1,881,968	12.20	<b>1.50</b>	8.20
<i>Welsh, Carson, Anderson &amp; Stowe XII</i>	150,000,000	41,709,761	44,820,558	0	108,290,239	5.22	<b>1.07</b>	1.76
<b>Private Equity Total</b>	<b>12,520,959,126</b>	<b>8,922,442,411</b>	<b>4,748,232,248</b>	<b>9,095,039,313</b>	<b>3,732,771,787</b>		<b>1.55</b>	
<b>Private Markets Total</b>	<b>20,494,530,485</b>	<b>14,784,448,146</b>	<b>7,753,145,487</b>	<b>14,512,010,871</b>	<b>5,947,799,619</b>		<b>1.51</b>	

**Notes**

None of the data presented herein has been reviewed or approved by either the general partner or investment manager. The performance and valuation data presented herein is not a guarantee or prediction of future results. Ultimately, the actual performance and value of any investment is not known until final liquidation. Because there is no industry-standardized method for valuation or reporting comparisons of performance and valuation data among different investments is difficult.

\* MOIC: Multiple of Invested Capital

\*\* Partnership interests transferred to the MSBI during 1Q2015. All data presented as of the transfer date.

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<p align="center"><b>PRIVATE EQUITY MANAGER SUMMARY PROFILE</b></p>
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**I. Background Data**

<b><i>Name of Fund:</i></b>	Adams Street Global Secondary Fund 6 LP
<b><i>Type of Fund:</i></b>	Private Equity – Secondary Interests
<b><i>Target Fund Size:</i></b>	\$1.2 billion
<b><i>Fund Manager:</i></b>	Adams Street Partners
<b><i>Manager Contact:</i></b>	Steve Wilde, CFA Adams Street Partners One North Wacker Drive Suite 2200 Chicago, IL 60606-2823 P: (312) 553-7867

**II. Organization and Staff**

Adams Street Partners is a leading private equity investment firm, providing primary, secondary, co-investment, private capital, and venture capital investment management services to institutional clients. Together with its predecessor organizations, the firm began investing in private equity partnerships in 1979 and has been an active direct investor in private equity since 1972. Adams Street Partners was formed on January 1, 2001 and was comprised of the members of Brinson Partners' Private Equity Group. Adams Street Partners is an independent, 100% employee owned organization. In 2017, Adams Street Partners has over 60 investment professionals managing \$29 billion of institutional capital across all of its strategies.

Adams Street Partners was a pioneer in the private equity secondaries market, first investing in secondaries in 1986. Since that time, the firm has closed over 190 secondary transactions and now has over \$5 billion of secondary assets under management. Throughout this history, Adams Street Partners has maintained a focused approach on investing in high quality funds. The Venture Partnership Acquisition Fund and the Venture Partnership Acquisition Fund II (“VPAF II”) were formed in 1988 and 1990, respectively, for the purpose of acquiring private equity limited partner interests in the secondary market. These funds were among the first dedicated funds in the industry formed to purchase secondaries. Following the investment of VPAF II, Adams Street Partners continued making secondary investments via its fund of funds programs. In 2004, Adams Street Partners began raising funds again for the purpose of investing in interests that exceeded the Adams Street Partners’ managed entities allocations to secondary investments. The Secondary Investments team is led by Jeff Akers and includes 12 investment professionals.

### **III. *Investment Strategy***

Adams Street Partners believes that outperformance can be achieved through a selective, disciplined and integrated process. Collaboration with the Primary, Venture, Credit and Co-Investment teams provides the Secondary Investment team with an information advantage when choosing investments. In general, the team will focus on transactions with a growth orientation and attractive entry valuations where a high quality private market fund manager has significant influence to create value. Portfolio construction is a key part of its investment process as well. Adams Street Partners utilizes a thematic approach to target specific funds and exposures that it believes present the best risk/return characteristics for the fund portfolio. It is a process that is active, systematic and ongoing. Early due diligence is more focused on understanding the broader outlook of the portfolio, while the final due diligence involves a more granular analysis of the underlying company investments and exit assumptions. Once an investment has been made, Adams Street Partners continues to actively monitor investments to ensure that profit allocations, distributions, clawbacks and amendments are made to the benefit of investors.

The Secondary Investment Team views the secondary landscape through several different lenses: macroeconomic trends, sub-class exposure, supply and demand, and manager / investor related issues driven by fundraising or market sentiment. Because the secondary market has become more active, transparent and efficient, the Secondary Investment Team's success is driven by understanding where the best secondary investments can be found in a broader landscape. Adams Street Partners intends to capitalize on the experience of its Secondary Investment Team, its substantial expertise in transactions, its proprietary database of information, its extensive global sourcing and its over 250 existing General Partner relationships. Adams Street Partners believes that it is viewed by sellers as an efficient and discrete buyer of private market fund interests.

Adams Street Partners believes that the Investment Period for Fund 6 will overlap with a market environment conducive to the firm's long-term strategy. Given the Fund's anticipated focus on private market fund interests that are 3-8 years old, the record levels of primary commitments made between 2012 and 2015 should provide ample amounts of deal flow. In addition, the recent and expected increase in volatility will likely decrease the ability of competing secondary buyers to use leverage to purchase large portfolios at high prices. This will likely result in more sales being broken up into smaller portfolios or single deals, which are a key part of Adams Street Partners' strategy. Adams Street Partners does not intend to use leverage as part of its underwriting process but plans to use a credit facility of up to 30% of aggregate commitments in Adams Street Global Secondary Fund VI.

#### **IV. Investment Performance**

Previous fund performance as of September 30, 2016 is shown below:

<b>Fund</b>	<b>Vintage Year</b>	<b>Total Committed Capital</b>	<b>SBI Investment</b>	<b>Net IRR*</b>	<b>Net MOIC*</b>
VPAF	1988	\$47 million	\$3.8 million	14.7%	2.49
VPAF II	1990	\$111 million	\$20 million	24.1%	1.90
ASGOS	2004	\$211 million	-	11.0%	1.53
ASGOS II	2009	\$738 million	-	15.9%	1.62
ASGSF V	2012	\$1.1 billion	\$100 million	1.8%	1.03

\* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Net IRR and Net MOIC provided by State Street for VPAF, VPAF II and ASGSF V. All other data provided by the manager.

#### **V. General Partner's Investment**

The General Partner will contribute 1% of the aggregate subscriptions to the Fund.

#### **VI. Fees**

The Fund will pay Adams Street Partners an annual management fee as described below.

*Fee Break Points:* Each investor (other than Adams Street Partners and its affiliates) that invests in the Fund will be assessed, quarterly in arrears, a management fee equal to 100 basis points per annum of the first \$25 million of its aggregate subscription to the Fund, 90 basis points per annum on amounts subscribed over \$25 million and up to \$50 million, 75 basis points per annum on amounts subscribed over \$50 million and up to \$100 million, 50 basis points per annum on amounts subscribed over \$100 million and up to \$150 million, and 40 basis points per annum on amounts subscribed over \$150 million.

*Fee Tail-down:* Beginning on the sixth anniversary of the initial investment date, the annual management fee will be reduced by 10% of the original annual fee and by 10% of the original annual fee on each anniversary thereafter (i.e., 90% of the original annual fee beginning on the sixth anniversary of the initial investment date, 80% of the original annual fee beginning on the seventh anniversary of the initial investment date, etc.).

The expected average annual management fee with respect to an investor's subscription to the Fund in an amount of \$100 million would be approximately 60 basis points. This assumes no fee credits and a Fund term of 15 years.

**VII. Distributions**

The Fund General Partner will receive 10% carried interest on cumulative profit distributions attributable to Secondary Investments after each partner receives a preferred return of 7%. No carried interest is earned from Primary Investments.

**VIII. Key Persons**

This fund does not have a key person provision.

**IX. Investment Period and Term**

The Investment Period ends five years after the Initial Investment Date. The term of the Fund is 12 years from the Initial Investment Date with three, one-year extensions at the discretion of the General Partner.

*Note: This document is a summary of more detailed information provided in the Confidential Private Placement Memorandum (the “PPM”). It is qualified in its entirety by the more detailed information provided in the PPM.*

<p align="center"><b>PRIVATE EQUITY MANAGER SUMMARY PROFILE</b></p>
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**I. Background Data**

<i>Name of Fund:</i>	KKR Asian Fund III, L.P.
<i>Type of Fund:</i>	Private Equity - Buyout
<i>Target Fund Size:</i>	\$7.0 billion
<i>Fund Manager:</i>	Kohlberg Kravis Roberts & Co.
<i>Administrative Contact:</i>	Ari Barkan 9 West 57 <sup>th</sup> Street New York, NY 10019 (212) 271-9107

**II. Organization and Staff**

Kohlberg Kravis Roberts & Co. L.P. (“KKR” or the “Firm”) is forming KKR Asian Fund III (“Asian Fund III” or the “Fund”) to pursue investment opportunities in large, industry-leading businesses in Asia. KKR has a history of investing in Asia across various countries, sectors, and types of investments. The Fund is a continuation of, and will build upon, their private equity investment strategy and four decades of global private equity investing experience.

KKR was established in 1976 and continues to be one of the world’s largest private equity firms. Two of the Firm’s founders, Henry R. Kravis and George R. Roberts, are co-Chairman and co-CEOs as well as members of the Firm’s Management Committee and regional Private Equity Investment committees. Currently, KKR has approximately 180 private equity investment professionals dedicated to sourcing, analyzing, executing, and managing private equity investments. In addition to the experience of their investment professionals, they have a significant global network of resources available to contribute additional expertise to the investment process, including approximately 50 operational professionals, over 40 capital markets professionals, a roster of over 30 senior advisors as well as a dedicated macro team and public affairs team.

Since 1976, KKR’s global private equity funds have invested \$70 billion in over 350 transactions. In Asia, they have invested and committed over \$10 billion in Pan Asia private equity investments since 2005 in 47 transactions. They have invested across both emerging and developed markets in Asia, and have taken publicly listed companies private, acquired divisional assets through corporate divestiture transactions, partnered with family-owned businesses and strategic buyers, structured meaningful minority investments enabling them to drive improvement at companies while limiting downside risk, and acquired and grown businesses through industry consolidation strategies. The KKR Asia private equity investment team consists of approximately 60 investment professionals and approximately 15 KKR Capstone executives (operational consulting team dedicated to KKR portfolio companies in Asia), who are located in offices across the Asian region: Hong Kong, Tokyo, Sydney, Beijing, Mumbai, Seoul and Singapore. Across its different business units, KKR

has approximately 120 professionals on the ground in Asia. (Information is as of September 30, 2016 unless otherwise noted. KKR Capstone is not a subsidiary or affiliate of KKR.).

### **III. Investment Strategy**

KKR's approach in Asia is to fully combine their leading global resources with the Asia team's extensive local experience, relationships, and operational expertise to build successful partnerships with leading businesses and entrepreneurs. They typically focus their efforts on opportunities where they can invest a meaningful amount of capital in a business with an existing, sustainable competitive advantage and where the value of the business can be enhanced through active involvement. They seek to acquire businesses they believe are at an inflection point where KKR's involvement will drive transformational change, whether through a traditional buyout or as a minority investor. Given the dynamic market environment across the pan-Asia region, KKR remains highly flexible with investment structures, ownership stakes, and transaction types.

KKR investment professionals in Asia are primarily organized along six region/country verticals: Australia, Greater China, India, Japan, Korea, and Southeast Asia. KKR believes that their strong local knowledge, relationships, and deep networks – combined with the Firm's global resources and industry expertise – positions KKR's Asia team as a local player with global best practices. KKR believes this allows the Asia team to successfully differentiate itself when sourcing, securing, and executing deals in each country.

KKR anticipates that significant investment opportunities will continue to emerge in the current Asian market environment as entrepreneurs and large corporations seek to further drive growth and expansion through a value added partner. KKR believes their Pan Asia investment approach allows for the flexibility to deploy capital across different countries at different points in the cycle as well as to pivot between the developed and emerging markets of the region. They anticipate that the Fund's investments will primarily take the following forms:

- Growth capital to support continued expansion, particularly in emerging markets;
- Corporate divestitures – “carve-outs”;
- Traditional buy-out and take private transactions;
- Companies with significant potential for operational improvements;
- Companies seeking a global presence and expansions through cross-border transactions;
- Companies impacted by regional market dislocations;
- Opportunities to invest in platforms for industry consolidation; or
- Opportunistic public toehold investments.

For Asian Fund III, the strong industry knowledge of KKR's regional teams in Asia is further supported by the full capabilities and resources of their global industry teams, with whom their regional teams actively collaborate. By combining a dedicated, regionally-focused approach with their global industry expertise and market understanding, KKR has also been



able to identify and invest behind important industry themes in Asia across both control-oriented and minority stake transactions. While the areas on which they focus consistently evolve, KKR's flexible and thematic investment approach has led them to identify and currently focus on the following industries and types of opportunities across Asia:

- Food Safety & Agriculture
- Health Care
- Financial Services
- Large-Scale Corporate Carve-Outs
- Cross-Border M&A Investments
- Specialty Investment Platforms

KKR believes that the combination of their global resources, a strong local team across seven offices in Asia, and their investment and operational expertise provide an advantage in identifying and creating value in exceptional investment opportunities that will support the growth of leading companies in Asia. KKR seeks to capitalize on the region's strong economic dynamics, as well as to introduce global best practices and operational value creation for high-quality, leading local businesses. Ultimately, KKR seeks to find companies they are proud to own and to sustainably improve them while generating strong investment returns for their investors.

#### **IV. Investment Performance**

Previous fund performance as of September 30, 2016 for KKR Asian funds are shown below:

<b>Fund</b>	<b>Vintage Year</b>	<b>Total Committed Capital</b>	<b>SBI Investment</b>	<b>Net IRR*</b>	<b>Net MOIC*</b>
Asian Fund	2007	\$4.0 billion	--	14%	1.8
Asian Fund II	2013	\$5.8 billion	--	26%	1.4

\* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Performance provided by KKR.

#### **V. General Partner's Investment**

The General Partner, together with the Firm's employees, will commit at least \$750 million.

#### **VI. Fees**

1.50% of committed capital during the investment period, stepping down to 1.25% on invested capital after the investment period. The management fee will be further reduced by 25 basis points with effect as of each successive eighth calendar quarter thereafter (but will not be reduced below 0.75% per annum).

## **VII. Distributions**

Distributions will be apportioned to Limited Partners as follows:

- (a) first, 100% to each Limited Partner until it has received total distributions equal to its capital contributions:
  - a. of the investment disposed,
  - b. used to pay fees and expenses,
  - c. relating to the amount of realized losses on any other Fund investment allocated to such Limited Partner that has not been previously recouped, and
  - d. of the Limited Partner's share of unrealized investments written down;
- (b) second, 100% to each Limited Partner until the proceeds equal an amount necessary to provide an internal rate of return of 7% per annum;
- (c) third, 100% of the proceeds to the General Partner until it receives cumulative proceeds equal to 20% of the profits distributed; and
- (d) thereafter, 80% to such Limited Partner and 20% to the General Partner.

## **VIII. Key Persons**

A "Key Executive Event" will have occurred if fewer than half of the Key Executives or fewer than half of the Asian Investment Professionals continue to devote the substantial majority of their business time to the management and operation of KKR and its investment activities on behalf of the Fund and other KKR-sponsored investments, in each case, during the Investment Period.

## **IX. Investment Period and Term**

The investment period will last for a period of six years from the date of the initial investment. The Fund will terminate eleven years from the initial investment, but may be extended for two additional one-year periods following consultation with LP Advisory Committee and with the consent of a majority in interest of the Limited Partners.

*Note: This document is a summary of more detailed information provided in the Confidential Private Placement Memorandum (the "PPM"). It is qualified in its entirety by the more detailed information provided in the PPM and any supplemental thereto.*

<p align="center"><b>PRIVATE EQUITY MANAGER SUMMARY PROFILE</b></p>
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**I. Background Data**

<b><i>Name of Fund:</i></b>	Silver Lake Partners V, L.P.
<b><i>Type of Fund:</i></b>	Private Equity - Buyout
<b><i>Target Fund Size:</i></b>	\$12.5 billion
<b><i>Fund Manager:</i></b>	Silver Lake Technology Management, LLC
<b><i>Administrative Contact:</i></b>	Dan Hoevel 9 West 57 <sup>th</sup> Street 32 <sup>nd</sup> Floor New York, NY 10019 (212) 381-7307

**II. Organization and Staff**

Silver Lake Partners (“Silver Lake”, “SLP”, or “Firm”) was founded in 1999 and is a leading private equity firm focused on large-scale investing in the technology, technology-enabled, and related growth industries. Silver Lake has a global presence with over 80 investment and value creation professionals in offices in Silicon Valley, New York, London, Hong Kong, and Tokyo. The Firm also assembled a group of technology executives who serve as Senior Advisors to the Firm. With extensive industry knowledge and leadership experience, these Advisors share subject matter expertise, evaluate market trends and help identify strategic opportunities for Silver Lake.

Silver Lake Partners is led by 4 Managing Partners that oversee all investing and business operations. Collectively known as the “Managing Partner Committee”, they are also responsible for policy-making, strategy, and business development.

In addition to its flagship strategy, the Firm manages investment strategies in growth capital for tech-enabled efficiency (Silver Lake Kraftwerk), debt capital for later-stage venture capital-backed technology companies (Silver Lake Waterman), and middle market technology (Silver Lake Sumeru).

**III. Investment Strategy**

Silver Lake Partners focuses on large-scale investing in the technology, technology-enabled, and related growth industries. The substantial majority of Silver Lake’s total capital invested to date has been in large and complex control transactions or minority investments where Silver Lake obtained corporate governance consistent with its ownership position or had significant company involvement. The Firm combines sector specialization and industry expertise, rigorous due diligence capabilities, and access to an extensive global network within the technology ecosystem to create a competitive advantage when evaluating, managing, and exiting investments. Silver Lake believes that the Firm’s vast network of

relationships, differentiated investment strategy, experience with differentiated and flexible investment structures, and ability to add meaningful strategic value to portfolio companies has helped SLP achieve superior investment performance over time across the Prior Funds.

As with the prior funds, Silver Lake's goal is to create sustainable outperformance across market cycles with both higher returns and lower volatility. Silver Lake seeks to: (i) apply its technology expertise thematically across the diversified technology ecosystem; (ii) leverage its global relationship network, partnering with management teams to implement value creation initiatives; (iii) focus on market leaders with transformational opportunities and invest in companies with exceptional growth prospects; (iv) demonstrate a consistent approach to risk management by utilizing flexible investment structures and formats; and (v) build great technology businesses and leadership teams and generate strong fund performance and monetizations.

When constructing SLP V, Silver Lake will target market-leading companies with identified transformational value creation opportunities. Silver Lake is focused on leading, franchise-quality companies with inherent competitive advantages, where the Firm can further improve the business by implementing a number of transformational value creation programs in partnership with its management teams. The value creation and investment teams work collaboratively with Silver Lake's portfolio companies to introduce new products and services, enter new global markets, develop new strategic partnerships, realize operating efficiencies, and expand the network of relationships available to management. Another key theme for SLP V is targeting companies with exceptional growth potential at compelling valuation levels. Silver Lake targets companies with strong top-line growth rates, where the business is mispriced relative to its underlying future cash flow potential and is willing to pay higher multiples for companies growing at a higher rate with attractive cash flow yield characteristics.

The Fund expects to make investments ranging from approximately \$200 million to \$1.25 billion or more in Fund capital per transaction (or series of transactions). Regarding geographic allocation, SLP funds are global funds with no geographic allocation. The investment committee reviews hundreds of investment opportunities annually and aims to select the best opportunities globally without any limitations from subsector or geographical allocations. Silver Lake believes this flexibility has been critical in enabling their outperformance during a range of economic, market, and technology cycles.

#### **IV. Investment Performance**

Previous fund performance as of September 30, 2016 for Silver Lake Partners is shown below:

<b>Fund</b>	<b>Vintage Year</b>	<b>Total Committed Capital</b>	<b>SBI Investment</b>	<b>Net IRR*</b>	<b>Net MOIC*</b>
SLP I	1999	\$2.3 billion	--	25%	2.2
SLP II	2004	\$3.6 billion	\$100 million	11%	1.9
SLP III	2007	\$9.4 billion	\$100 million	17%	1.9
SLP IV	2013	\$10.3 billion	\$100 million	25%	1.3

\* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Performance was provided by Silver Lake Partners for SLP I and by State Street for SLP II – IV.

#### **V. General Partner's Investment**

The General Partner will commit to invest a minimum of the lesser of (i) \$400 million and (ii) 3% of aggregate Commitments.

#### **VI. Fees**

1.50% of committed capital during the investment period, stepping down to 1.0% after the investment period.

#### **VII. Distributions**

Distributions will be apportioned to Limited Partners as follows:

- (a) first, 100% to each Limited Partner until it has received total distributions equal to its capital contributions:
  - a. attributable to realized investments and unrealized investments to the extent they are permanently written down as of that time; and
  - b. used to pay fees and expenses;
- (b) second, 100% to each Limited Partner until the proceeds equal an amount necessary to provide an internal rate of return of 8% per annum;
- (c) third, 100% of the proceeds to the General Partner until it receives cumulative proceeds equal to 20% of the profits distributed; and
- (d) thereafter, 80% to such Limited Partner and 20% to the General Partner.

## **VIII. Key Persons**

A “Key Person Event” will have occurred if (i) there are not at least three Key Persons devoting substantially all of his/her business time to matters relating to the business of the General Partner. The Key Persons listed are the four Managing Partners of the Firm; or (ii) the Key Persons, Silver Lake employees and professionals, and other persons holding a GP interest as of close, and their respective related persons/entities, cease to own in the aggregate at least 70% of the carried interest or voting interest in the General Partner and Investment Adviser.

## **IX. Investment Period and Term**

The investment period will be six years and the term will be ten years. The term may be extended for up to three consecutive one-year periods at the discretion of the General Partner with the consent of either the LP Advisory Committee or a majority in interest of the Limited Partners.

*Note: Past performance is not indicative of future results. This document is a summary of more detailed information provided in the Confidential Private Placement Memorandum (the “PPM”). It is qualified in its entirety by the more detailed information provided in the PPM and any supplemental thereto and by reference to the Amended and Restated Limited Partnership Agreement of the Fund, as amended, restated, or otherwise modified from time to time (the “Partnership Agreement”). The Partnership Agreement and subscription materials will be provided to qualified investors prior to closing. To the extent that the terms set forth above are inconsistent with those of the Partnership Agreement, the Partnership Agreement will control.*

<p align="center"><b>PRIVATE EQUITY MANAGER SUMMARY PROFILE</b></p>
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**I. Background Data**

<b><i>Name of Fund:</i></b>	Vestar Capital Partners VII, L.P.
<b><i>Type of Fund:</i></b>	Private Equity - Buyout
<b><i>Target Fund Size:</i></b>	\$1.0 billion
<b><i>Fund Manager:</i></b>	Vestar Capital Partners LLC
<b><i>Administrative Contact:</i></b>	Ken O’Keefe 200 Clarendon Street, 48th Floor Boston, MA 02116 (617) 247-1360

**II. Organization and Staff**

Vestar Capital Partners (“Vestar” or the “Firm”) is forming Vestar Capital Partners VII (“VCP VII” or the “Fund”) to pursue investment opportunities in middle-market companies in the U.S. The Fund is a continuation of Vestar’s successful strategy of utilizing their operational and strategic capabilities to target middle-market companies in select key sectors and leveraging their experienced and cohesive team to produce attractive risk-adjusted returns to investors.

The Firm’s founders began working together at First Boston in the early 1980s at the inception of the modern private equity industry. Over the years, Vestar has compiled an impressive track record, completing more than 100 private equity investments and 200 add-on acquisitions across multiple funds and numerous economic cycles.

Vestar is headquartered in New York with additional offices in Boston and Denver. The Firm has approximately 40 employees, including 22 investment and operating professionals. Roughly half of Vestar’s investment and operating professionals have spent 10 or more years with the Firm.

**III. Investment Strategy**

Vestar is one of the longest standing private equity firms investing in the middle market. The Firm believes the middle market offers the largest number of available opportunities in private equity. Vestar defines this segment of the market as companies that are generally privately held, founder or family-led, non-core subsidiaries or divisions of larger corporations, subscale public companies, or companies seeking growth capital that can benefit from Vestar’s backing and support. The Firm’s target market includes U.S. companies with total enterprise value ranging between \$100 million – \$1 billion with which Vestar would target an equity investment between \$50 million – \$150 million.

Vestar invests across the following sectors: Consumer, Healthcare, Business Services, and Industrial Products. They believe domain expertise is a key factor for success in today's competitive private equity industry. Vestar's dedicated sector teams understand key industry trends, risks, opportunities, and value migration that enable thoughtful sourcing, analysis, and evaluation of potential investments. Sector teams actively network with executives, consultants, advisors, and deal sources, continually enhancing their knowledge and seeking to create a competitive advantage. They believe a multi-sector approach leads to the construction of a diversified portfolio by deploying capital across the most attractive opportunities.

Once a potential investment has been approved by Vestar's Investment Committee, the deal team (typically consisting of four or five professionals, including two Managing Directors, at least one of whom is a Vestar Resources operating professional) works together with portfolio company management on implementing the value creation plan. Examples of operational improvement initiatives include:

- Revitalizing or extending strong brands or franchises;
- Professionalizing teams with a focus on talent recruitment and development;
- Developing strong boards of directors with experienced independent directors;
- Repositioning products or services to capture new and growing market opportunities;
- Expanding existing products or services into adjacent markets;
- Identifying platform companies that can benefit from attractive follow-on acquisitions;
- Utilizing growth equity to build businesses in fragmented industries with unmet demand;
- Discerning situations where value creation can be accelerated by making and implementing fundamental operational and business decisions such as prioritizing capital allocation decisions or by spinning off non-core divisions;
- Finding stable but under-developed companies that can be transformed through operational improvements; and
- Applying unique business intelligence.

Vestar's Portfolio Review Committee periodically reviews the performance of each portfolio company with the goal of identifying and implementing operational improvements and sharing other value-enhancing or risk-mitigating practices. Vestar is proud of its experience in building what it believes are dynamic, engaged boards of directors with seasoned and value-adding independent directors. These directors bring domain expertise, strong customer access, and governance experience and Vestar believes they have enhanced value for portfolio companies.



#### **IV. Investment Performance**

Previous fund performance as of September 30, 2016 for Vestar Capital Partners funds are shown below:

<b>Fund</b>	<b>Vintage Year</b>	<b>Total Committed Capital</b>	<b>SBI Investment</b>	<b>Net IRR*</b>	<b>Net MOIC*</b>
Vestar Capital Partners I	1988	\$35 million	--	54%	8.3
Vestar Capital Partners II	1993	\$260 million	--	58%	3.5
Vestar Capital Partners III	1997	\$803 million	--	3%	1.1
Vestar Capital Partners IV	1999	\$2.5 billion	\$55 million	15%	1.9
Vestar Capital Partners V	2005	\$3.7 billion	\$75 million	4%	1.3
Vestar Capital Partners VI	2012	\$814 million	\$100 million	30%	1.6

\* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Performance provided by Vestar Capital Partners for Funds I – III and by State Street for Funds IV – VI.

#### **V. General Partner's Investment**

The principals and other investment professionals of Vestar will commit in aggregate 10% of limited partner commitments (up to \$100 million).

#### **VI. Fees**

During the commitment period, the annual management fee is 2% of commitments. After the expiration of the Commitment Period, the Management Fee will equal 2% of (i) the aggregate investment contributions, less (ii) the aggregate amount of investment contributions with respect to the portion of each investment that has been disposed of or permanently written-down.

#### **VII. Distributions**

Distributions will be apportioned to Limited Partners as follows:

- (a) first, 100% to each Limited Partner until it has received total distributions equal to its capital contributions:
  - a. attributable to realized investments and unrealized investments to the extent they are permanently written down as of that time; and
  - b. used to pay fees and expenses;
- (b) second, 100% to each Limited Partner until the proceeds equal an amount necessary to provide an internal rate of return of 8% per annum;

- (c) third, 100% of the proceeds to the General Partner until it receives cumulative proceeds equal to 20% of the profits distributed; and
- (d) thereafter, 80% to such Limited Partner and 20% to the General Partner.

### **VIII. Key Persons**

A “Key Person Event” will have occurred if, (i) Daniel S. O’Connell, together with three or more persons that are Approved Executive Officers cease to be active in the Partnership’s affairs; (ii) there ceases to be at least six Approved Executive Officers active in the Partnership’s affairs; or (iii) Daniel S. O’Connell, Robert L. Rosner, and Norman W. Alpert cease to be active in the Partnership’s affairs.

### **IX. Investment Period and Term**

The investment period will be six years and the term will be ten years. The term may be extended for up to three consecutive one-year periods at the discretion of the General Partner with the consent of the Advisory Board.

*Note: This document is a summary of more detailed information provided in the Confidential Private Placement Memorandum (the “PPM”). It is qualified in its entirety by the more detailed information provided in the PPM and any supplemental thereto.*

