
MINNESOTA STATE BOARD OF INVESTMENT

**MINNESOTA STATE BOARD
OF INVESTMENT
MEETING
June 2, 2016**



**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

June 2, 2016

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AGENDA
STATE BOARD OF INVESTMENT MEETING
Thursday, June 2, 2016
10:00 A.M.
Retirement Systems Building
Room 106 – Main Floor
60 Empire Drive, St. Paul, MN

- | | |
|--|------------|
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| 1. Approval of Minutes of March 2, 2016 | |
| 2. Report from the Executive Director (Mansco Perry) | A |
| A. Quarterly Investment Review
(January 1, 2016 – March 31, 2016) | |
| B. Administrative Report | B |
| 1. Reports on Budget and Travel | |
| 2. Legislative Update | |
| 3. Metropolitan Landfill Action Trust | |
| 4. Sudan Update | |
| 5. Iran Update | |
| 6. Litigation Update | |
| 3. Report from the SBI Administrative Committee (Laurie Hacking) | C |
| A. Review of Executive Director's Proposed Workplan FY17 | |
| B. Review of Budget Plan for FY17 and FY18 | |
| C. Review of Continuing Fiduciary Education Plan | |
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| 4. Report from the Deferred Compensation Review Committee (Mansco Perry) | D |
| 5. Investment Advisory Council Report (Jeff Bailey) | |
| A. Private Markets Report | E |
| 1. Review of current strategy | |
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**Minutes
State Board of Investment
March 2, 2016**

The State Board of Investment (SBI) met at 11:20 A.M. Wednesday, March 2, 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 December 2, 2015, meeting were approved.

Executive Director's Report

Executive Director Mansco Perry referred members to Tab A of the meeting materials and reported that the Combined Funds had outperformed its Composite Index over the ten year period ending December 31, 2015 (Combined Funds 6.7% vs. Composite 6.5%) and had provided a real rate of return of 5.6% above inflation over the latest 20 year period (Combined Funds 7.8% vs. CPI 2.2%).

Mr. Perry said that assets increased over the quarter by 2.0% (Combined Funds ending value of \$57.9 versus a beginning value of \$56.7 billion) due to positive investment returns that outweighed net outflows. The Combined Funds return matched the benchmark for the quarter (Combined Funds 2.9% vs. Composite 2.9%) and was 10 basis points higher for the year (Combined Funds 0.0% vs. Composite -0.1%). The Combined Funds also outperformed for longer time periods.

Mr. Perry reported that the domestic stock manager group underperformed its target for the quarter (Domestic Stocks 5.9% vs. Domestic Equity Asset Class Target 6.3%), underperformed for the year (Domestic Stocks 0.3% vs. Domestic Equity Asset Class Target 0.5%), and had mixed performance over longer time periods. He said the international stock manager group outperformed its target for the quarter (International Stocks 3.8% vs. International Equity Asset Class Target 3.2%) and outperformed over longer time periods. Mr. Perry then stated that the bond segment outperformed its target for the quarter (Bonds -0.3% vs. Fixed Income Asset Class Target -0.6%) and for the year (Bonds 0.7% vs. Fixed Income Asset Class Target 0.5%) and also outperformed its target over longer time periods. He stated that the alternative investments detracted from performance for the quarter and contributed to performance for the year (total return of -1.9% and 1.4%, respectively). Mr. Perry concluded his report noting that, as of December 31, 2015, the SBI was responsible for managing slightly under \$80 billion of assets.

Mr. Perry referred members to Tab B of the meeting materials for the Executive Director's Administrative Report. He commented that the SBI is running below budget and that travel expenses had been included through the fourth quarter of 2015. Mr. Perry stated that the SBI received an unqualified clean opinion from the legislative auditor for fiscal year 2015. Mr. Perry also reminded members that the Fiscal Year 2015 Annual Report was distributed to them in January. Mr. Perry stated that Tab B contains the updated information for the divestment of Sudan and Iran holdings. Mr. Perry stated that there was currently no litigation involving the SBI.

As Chair of the Investment Advisory Council (IAC) Membership Review Committee of the SBI, State Auditor Otto gave an overview of the February 12, 2016 meeting. Members met to review applications for IAC membership. The terms of nine public members of the IAC have expired and there was one vacant public member position on the council. Eight of the nine members submitted an application for reappointment to the IAC and one did not. In addition, the committee received eight new applications for membership on the council. After review, the Committee made a recommendation which reads: **“The Committee recommends that the Board designate the following applicants as members of the Investment Advisory Council, with terms expiring in January 2019:**

Mr. Jeffery Bailey

Mr. Kerry Brick

Mr. Dennis Duerst

Mr. Gary Martin

Mr. Malcolm McDonald.

The Committee recommends that the Board appoint the following applicants as members of the Investment Advisory Council, with terms expiring in January 2020:

Ms. Kim Faust

Ms. Susanna Gibbons

Mr. Morris Goodwin

Ms. Carol Peterfeso

Mr. Shawn Wischmeier.”

Governor Dayton moved approval of the ten individuals for the terms as specified. State Auditor Otto seconded the motion. The motion passed unanimously.

The Retirement Plan Directors gave an update on the funding status of the plans and an overview of the importance and success of Minnesota’s pension assets. Dave Bergstrom, Executive Director of the Minnesota State Retirement System (MSRS), Laurie Hacking, the Executive Director of the Teachers Retirement Association (TRA), and Doug Anderson, the Executive Director of the Public Employees Retirement Association (PERA) each addressed the Board members on the results of each system’s recent experience study. The Retirement Plan Directors provided an overview of the key economic and demographic assumptions that drive the liability of those plans.

The Chair of the IAC, Jeff Bailey, briefly mentioned the presentation by alternative investment managers who specialize in Asian private equity and real estate investments. He went on to say that staff is reviewing the investment policy of the private assets and may begin considering investments outside of the program’s current U.S. and Western European opportunity set.

Mr. Bailey referred Board members to the Investment Advisory Council report, found under Tab D. Mr. Bailey reviewed the five alternative investment proposals brought to the February 16, 2016 IAC meeting. Two managers were existing managers: Apax Partners (Private Equity); Strategic Partners (Private Equity); and three were new managers, Angelo, Gordon & Co. (Real Estate); Carlyle Strategic Partners (Private Equity); and Rockpoint Group (Real Estate). Secretary of State Simon moved approval of all five recommendations in Tab D 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 \$150 million, or 20% of Apax IX, 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 Apax 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 Apax Partners 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 Strategic Partners Fund VII, 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 Strategic 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 Strategic Partners 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 AG Realty Fund IX, 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 Angelo, Gordon & 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 Angelo, Gordon & 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 Carlyle Strategic 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 Carlyle Strategic 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 Carlyle Strategic Partners 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 Rockpoint Real Estate Fund V, 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 Rockpoint Group 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 Rockpoint Group or reduction or termination of the commitment." The motion passed unanimously.

Governor Dayton stated that he had received a request by the Break the Bonds Campaign to address the Board. The Board agreed to allow a brief presentation by Elsa Erickson, a student at the University of Minnesota, on the topic of responsible investment guidelines and divestment from Israel.

The meeting adjourned at 12:05 p.m.

Respectfully submitted,



Mansco Perry III
Executive Director and
Chief Investment Officer

TAB

A

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LONG TERM OBJECTIVES

Period Ending 3/31/16

COMBINED FUNDS: \$57.6 Billion	Result	Compared to Objective (2)
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Match or Exceed Composite Index (10 Yr.)

6.3% (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.)

7.6%

5.5 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.

EXECUTIVE SUMMARY

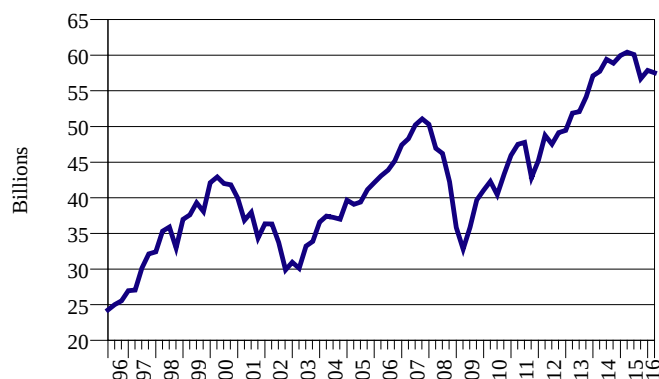
Combined Funds (Net of Fees)

Asset Growth

The market value of the Combined Funds decreased during the first quarter of 2016. The negative net contributions outweighed the positive investment returns during the quarter.

	Asset Growth During First Quarter 2016 (Millions)
Beginning Value	\$57,874
Net Contributions	-578
Investment Return	271
Ending Value	\$57,566

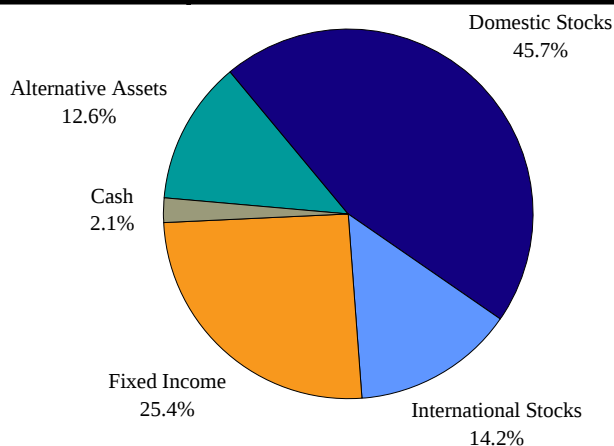
Combined Funds Market Value



Asset Mix

During the first quarter there was an increase in the bonds allocation due to positive performance. The allocation to equities decreased due to a rebalance to cash.

	Policy Targets	Actual Mix 3/31/16	Actual Market Value (Millions)
Domestic Stocks	45.0%	45.7%	\$26,289
International Stocks	15.0%	14.2%	8,165
Bonds	18.0%	25.4%	14,641
Alternative Assets*	20.0%	12.6%	7,235
Cash	2.0%	2.1%	1,236
	100.0%	100.0%	\$57,566

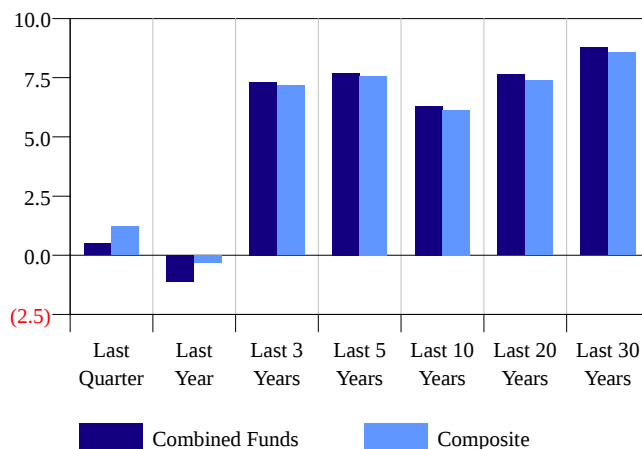


* Any uninvested allocation is held in bonds.

Fund Performance (Net of Fees)

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

	Periods Ended 3/31/16						
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 20 Years	Last 30 Years
Combined Funds	0.5%	-1.1%	7.3%	7.7%	6.3%	7.6%	8.8%
Composite	1.2%	-0.3%	7.2%	7.6%	6.2%	7.4%	8.6%



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)

Domestic Stocks

The domestic stock manager group (active, semi-passive and passive combined) underperformed its target for the quarter and 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 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Dom. Stocks	0.0%	-1.9%	11.0%	10.8%	6.7%
Asset Class Target*	1.0%	-0.3%	11.1%	11.0%	6.9%

* 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 outperformed its target for 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 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Int'l Stocks	-1.4%	-7.7%	1.3%	1.2%	2.5%
Asset Class Target*	-0.4%	-9.2%	0.3%	0.3%	2.0%

* 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) performed in line with its target for the quarter and underperformed for the year.

Barclays Aggregate: The Barclays Aggregate Bond Index 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 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Bonds	3.0%	1.9%	2.7%	4.2%	5.2%
Asset Class Target	3.0%	2.0%	2.5%	3.8%	4.9%

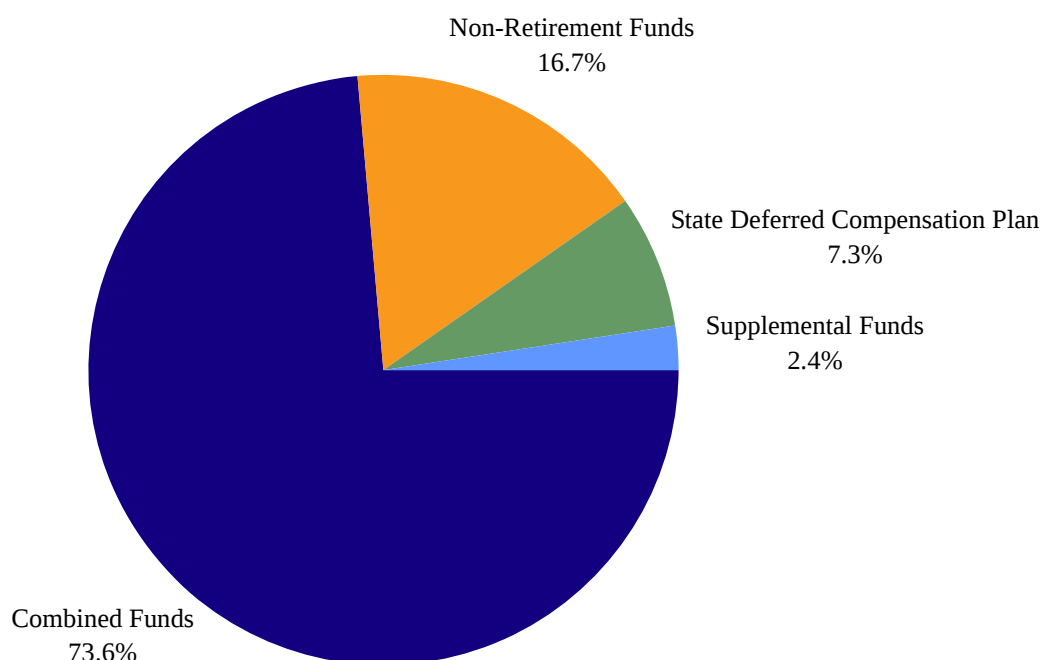
Alternative Investments

	Periods Ended 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Alternatives	-0.4%	4.2%	10.4%	10.8%	10.4%

Note: All periods over one year are annualized.

EXECUTIVE SUMMARY

Funds Under Management



3/31/16 Market Value (Billions)

Retirement Funds

Combined Funds	\$57.6
Supplemental Investment Fund	1.9
(Excluding Deferred Compensation Plan Assets)	
State Deferred Compensation Plan	5.7

Non-Retirement Funds

Assigned Risk Plan	0.3
Permanent School Fund	1.2
Environmental Trust Fund	0.9
Closed Landfill Investment Fund	0.1
Miscellaneous Trust Accounts	0.2
Other Post Employment Benefits Accounts	0.5
State Cash Accounts	8.9
<u>Minnesota College Savings Plan</u>	<u>1.2</u>

Total	\$78.4
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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

First Quarter 2016
(January 1, 2016 - March 31, 2016)

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VARIOUS CAPITAL MARKET INDICES

Periods Ended March 31, 2016

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 20 Years
Domestic Equity						
Russell 3000 (broad market)	1.0%	-0.3%	11.1%	11.0%	6.9%	8.0%
Russell 1000 (large cap)	1.2	0.5	11.5	11.4	7.1	8.1
Russell 2000 (small cap)	-1.5	-9.8	6.8	7.2	5.3	7.7
Dow Jones Wilshire Composite	0.9	-0.4	11.1	11.0	7.0	8.1
Dow Jones Industrials	2.2	2.1	9.3	10.3	7.5	8.4
S&P 500	1.3	1.8	11.8	11.6	7.0	8.0
Domestic Fixed Income						
Barclays Aggregate (1)	3.0	2.0	2.5	3.8	4.9	5.6
Barclays Gov't/Credit	3.5	1.7	2.4	4.0	4.9	5.6
3 month U.S. Treasury Bills	0.1	0.1	0.1	0.1	1.1	2.5
International						
MSCI Emerging Markets Free Index (2)	5.7	-12.0	-4.5	-4.1	3.0	5.2
MSCI ACWI ex USA (3)	-0.4	-9.2	0.3	0.3	1.9	--
MSCI EAFE (4)	-3.0	-8.3	2.2	2.3	1.8	4.1
MSCI World ex USA (5)	-2.0	-8.4	1.7	1.6	1.8	4.3
Salomon Non U.S. Gov't Bond	9.1	7.7	-0.2	0.2	4.0	4.3
Inflation Measure						
Consumer Price Index CPI-U (6)	0.7%	0.9%	0.8%	1.3%	1.8%	2.1%
Consumer Price Index CPI-W (7)	0.6%	0.5%	0.4%	1.1%	1.7%	2.1%

(1) Barclays Capital Aggregate Bond index. 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 1.0% return for the first quarter of 2016. The quarter was a story of two halves: equities posted double digit declines through mid-February as concerns over global growth and continued pressure on oil prices weighed on markets. As oil prices and economic readings stabilized during the latter half of the quarter, investors' appetite for risk grew rapidly and stocks rallied sharply. Within the Russell 3000, Utilities was the best performing sector with a 15.2% return while Health Care was the weakest sector with -7.0% 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	0.7%
Large Value	Russell 1000 Value	1.6%
Small Growth	Russell 2000 Growth	-4.7%
Small Value	Russell 2000 Value	1.7%

The Russell 3000 index returned -0.3% for the year ending March 31, 2016.

DOMESTIC BONDS

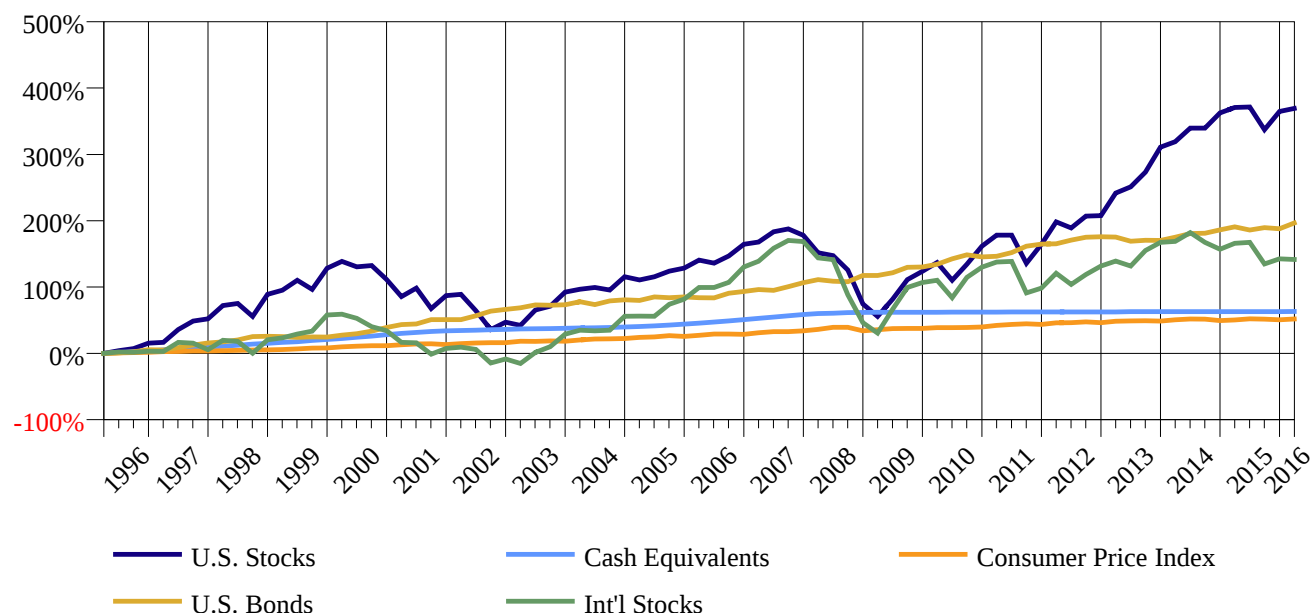
The U.S. bond market, as measured by the Barclays Capital U.S. Aggregate Bond Index, produced a total return of 3.03% for the quarter. The 2-year U.S. Treasury yield ended the quarter lower by 33 basis points at .72%, the 5-year decreased by 55 basis points to 1.20%, the 10-year decreased by 50 basis points to 1.70%, and the 30-year decreased by 40 basis points to 2.60%. Corporate bonds were the biggest driver of performance followed by CMBS.

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

U.S. Treasury	3.2%
Agency	2.4%
Corporates	4.0%
Agency MBS	2.0%
Commercial Mortgages	3.6%
Asset-Backed	1.4%

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 -2.0% for the quarter. Investor sentiment was negative at the beginning of the quarter amid renewed worries about global growth, particularly in China and in other emerging markets. However, a recovery in oil prices and monetary policy accommodation from central banks resulted in a rally in the last half of the quarter. The top performing sectors for the quarter were Energy, Materials and Consumer Staples. The worst performing sectors were Health Care, Financials and Consumer Discretionary.

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

Canada	11.3%
France	0.1%
United Kingdom	-2.3%
Germany	-2.5%
Switzerland	-5.5%
Japan	-6.5%

The MSCI World ex USA index returned -8.4% during the past twelve months.

EMERGING INTERNATIONAL MARKETS

Emerging markets (as measured by MSCI Emerging Markets Free index net) provided a return of 5.7% for the quarter. The quarterly performance of the six largest stock markets in the index is shown below:

China	-4.8%
Korea	5.1%
Taiwan	7.7%
Brazil	28.5%
South Africa	13.8%
India	-2.5%

The Emerging Markets Free index returned -12.0% during the last year.

The Emerging Markets Free (EMF) index is compiled by MSCI and measures performance of 23 stock markets in Latin America, Asia, Africa and Eastern Europe. EMF includes only those securities foreign investors are allowed to hold. The markets listed above comprise about 74% of the value of the emerging international markets in the index.

REAL ESTATE

During the first quarter of 2016, private real estate posted its 25th consecutive quarter of positive returns with the NCREIF Property Index posting a return of 2.2%. Real Estate markets have seen a healthy recovery since the 2008-2009 crash. An aggregate \$21.2bn in private real estate funds was raised in 1Q16, with approximately 82% of the total amount focused on Value Added or Opportunistic strategies. Closed-end private real estate dry powder stands at \$230bn, but 64% of institutional investors still plan to commit more than \$50mn to the space over the next 12 months. (Source: NCREIF; Prequin)

PRIVATE EQUITY

During the first quarter of 2016, an aggregate \$66 billion in private equity funds was raised across 150 funds. Buyout funds topped the list of aggregate capital raised with \$39bn and Venture Capital closed the most funds with 54. Heading into 2Q16, there are 1,684 private equity funds raising capital, targeting an aggregate \$476bn. While the number of funds raising capital is a new record, the aggregate target capital has declined for the third straight quarter. (Source: Prequin)

The aggregate value of the 343 buyout exits in 1Q16 was \$62.2bn. Of the 343 exits, 216, or 63%, were trade sales. This is a marked increase over the recent data - the last twenty-eight quarters produced 52% of exits to strategic buyers. The largest deal announced in the quarter, however, was orchestrated by a financial sponsor. Apollo Global Management took ADT Security Services private in a deal valued at \$15bn. The Apollo/ADT deal was a clear outlier for the quarter as the next four largest transactions were all valued at less than \$2bn (Source: Prequin)

RESOURCE FUNDS

During the first quarter of 2016, crude oil traded between a range of \$26/bbl and \$41/bbl. The average price for the first quarter of 2016 was \$34/bbl, which was \$8 below the average price from the fourth quarter. Continued concerns surrounding an increase in global supply coupled with decreasing demand from China contributed to the drop in oil prices in the quarter. (Source: Bloomberg)

COMBINED FUNDS

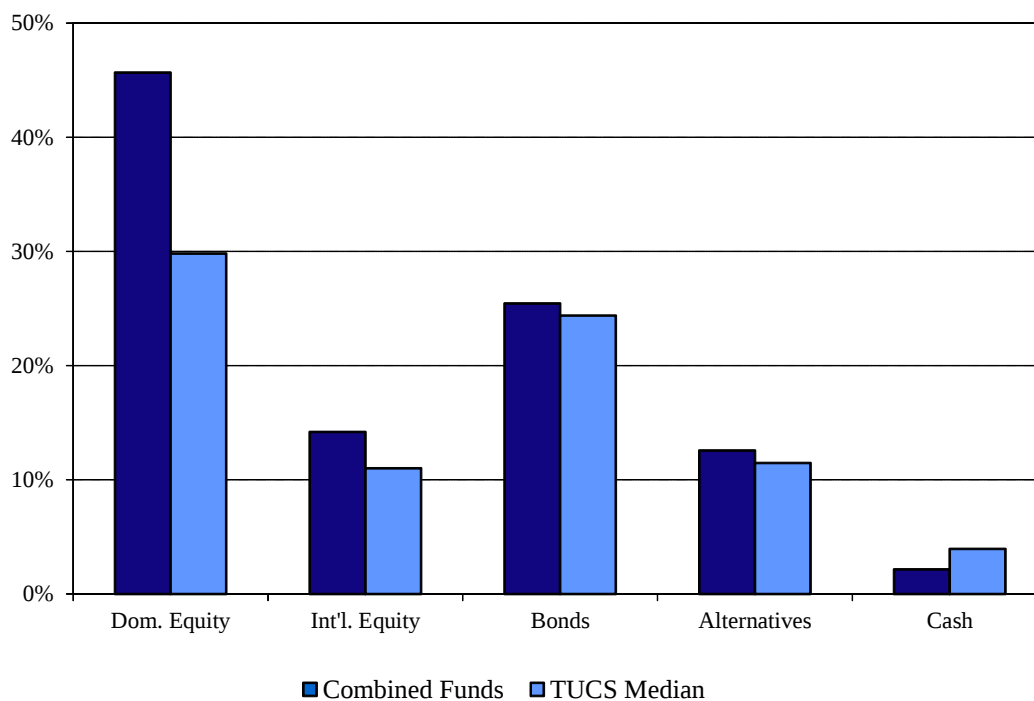
The comparison universe used by the SBI is the Trust Universe Comparison Service (TUCS). Only funds with assets over \$1 billion are included in the comparisons shown in this section.

Asset Mix Compared to Other Pension Funds

On 3/31/16, the asset mix of the Combined Funds was:

	\$ Million	%
Domestic Stocks	\$26,289	45.7%
International Stocks	8,165	14.2%
Bonds	14,641	25.4%
Alternative Assets	7,235	12.6%
Unallocated Cash	1,236	2.1%
Total	\$57,566	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:



	Domestic Equity	Int'l Equity	Bonds	Alternatives	Cash
Combined Funds	45.7%	14.2%	25.4%	12.6%	2.1%
Median Allocation in TUCS*	29.8%	11.0%	24.4%	11.5%**	3.9%

* Public and corporate plans over \$1 billion.

** May include assets other than alternatives.

COMBINED FUNDS

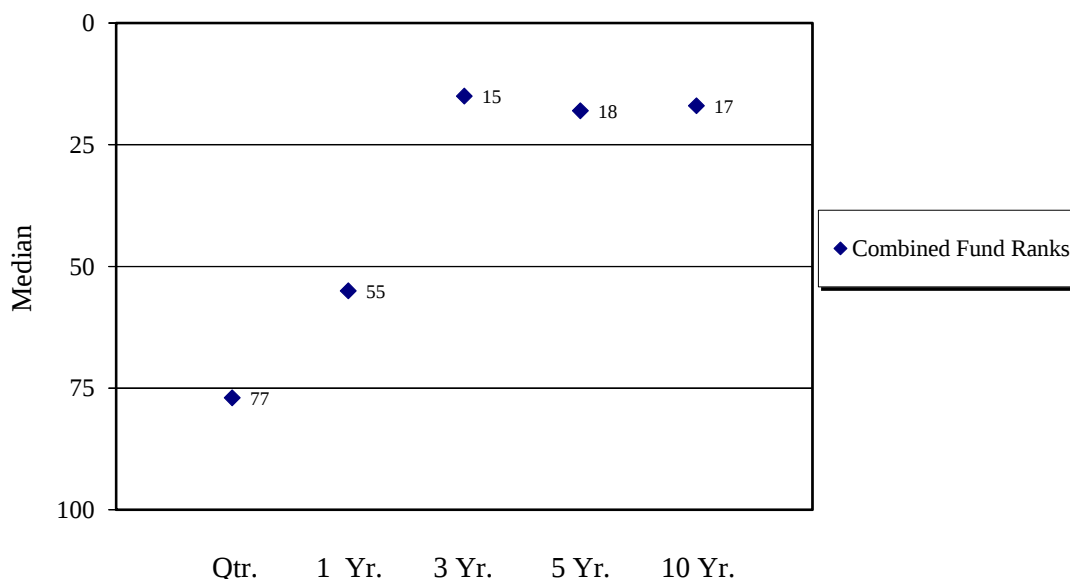
Performance Compared to Other Pension Funds

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 choices on asset mix. 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 3/31/16				
	Quarter	1 Year	3 Years	5 Years	10 Years
Combined Funds					
Percentile Rank in TUCS*	77th	55th	15th	18th	17th

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

Note: All periods over one year are annualized.

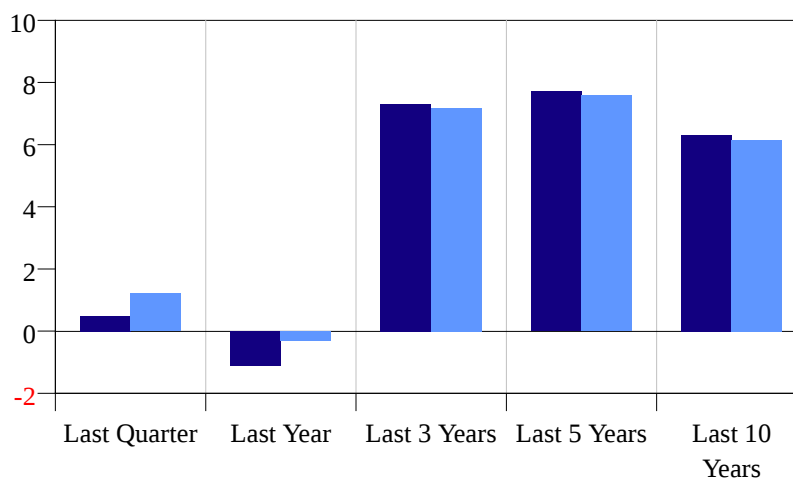
COMBINED FUNDS

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:

	Maret Index	Combined Funds Composite 1Q/16
Domestic Stocks	Russell 3000	45.0%
Int'l Stocks	MSCI ACWI Free ex USA	15.0%
Bonds	Barclays Capital Aggregate	25.6%*
Alternative Investments	Alternative Investments	12.4%*
<u>Unallocated Cash</u>	<u>3 Month T-Bills</u>	<u>2.0%</u>
		100.0%

* Alternative asset and fixed income weights are reset in the composite at the start of each month to reflect the amount of unfunded commitments in alternative asset classes. The above Combined Funds Composite weighting was as of the beginning of the quarter.



Periods Ended 3/31/16

Combined Funds **		0.5%	-1.1%	7.3%	7.7%	6.3%
Composite		1.2%	-0.3%	7.2%	7.6%	6.2%

** 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

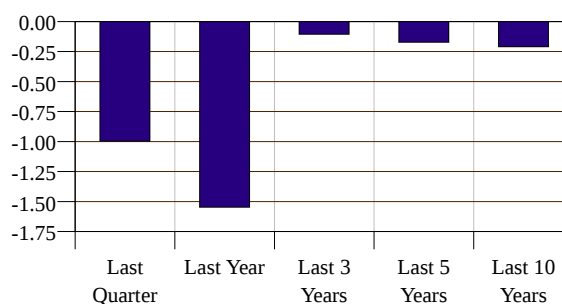
Target: Russell 3000

Expectation: If one-third of the pool is actively managed, one-third is semi-passively managed, and one-third is passively managed, the entire pool is expected to exceed the target by .18% - .40% annualized over time.

	Periods Ended 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Domestic Stocks	0.0%	-1.9%	11.0%	10.8%	6.7%
Asset Class Target*	1.0%	-0.3%	11.1%	11.0%	6.9%

* 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

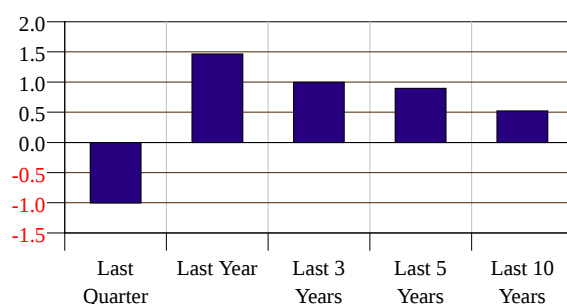
Target: Standard MSCI ACWI Free ex U.S. (net)

Expectation: If at least one-third of the pool is managed actively, no more than one-third is semi-passively managed, and at least one-quarter is passively managed, the entire pool is expected to exceed the target by .25% - .75% annualized, over time.

	Periods Ended 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Int'l Stocks	-1.4%	-7.7%	1.3%	1.2%	2.5%
Asset Class Target*	-0.4%	-9.2%	0.3%	0.3%	2.0%

* 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)



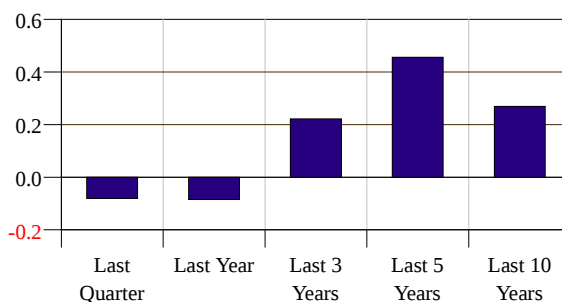
Bonds

Target: Barclays Capital Aggregate Bond Index

Expectation: If half of the pool is actively managed and half is managed semi-passively, the entire pool is expected to exceed the target by .20% - .35% annualized, over time.

	Periods Ended 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Bonds	3.0%	1.9%	2.7%	4.2%	5.2%
Asset Class Target	3.0%	2.0%	2.5%	3.8%	4.9%

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.

ALTERNATIVE INVESTMENTS

Performance of Asset Categories (Net of Fees)

Alternative Investments

Expectation: The Alternative investments are measured against themselves using actual portfolio returns.

	Periods Ended 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Alternatives	-0.4%	4.2%	10.4%	10.8%	10.4%
Inflation	0.7%	0.9%	0.8%	1.3%	1.8%

Real Estate Investments (Equity emphasis)

Expectation: Real estate investments are expected to exceed the rate of inflation by 5% annualized, over the life of the investment.

	Periods Ended 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Real Estate	1.2%	15.5%	15.3%	13.7%	6.3%

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.

Private Equity Investments (Equity emphasis)

Expectation: Private equity investments are expected to exceed the rate of inflation by 10% annualized, over the life of the investment.

	Periods Ended 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Private Equity	2.4%	11.8%	14.4%	12.8%	12.0%

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.

Resource Investments (Equity emphasis)

Expectation: Resource investments are expected to exceed the rate of inflation by 5% annualized, over the life of the investment.

	Periods Ended 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Resource	-9.6%	-18.8%	-2.8%	4.1%	10.4%

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.

Yield Oriented Investments (Debt emphasis)

Expectation: Yield oriented investments are expected to exceed the rate of inflation by 5.5% annualized, over the life of the investment.

	Periods Ended 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Yield Oriented	-2.2%	-5.2%	6.9%	10.1%	11.4%

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.

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.

The investment returns shown in this report are calculated using a time-weighted rate of return formula. All returns are net of investment management fees.

On March 31, 2016 the market value of the entire Fund was \$1.9 billion.

Investment Options

	3/31/16 Market Value (In Millions)
Balanced Fund - a balanced portfolio utilizing both common stocks and bonds.	\$366
U.S. Stock Actively Managed Fund - an actively managed, all common stock portfolio.	\$206
U.S. Stock Index Fund - a passively managed, all common stock portfolio designed to track the performance of the entire U.S. stock market.	\$465
Broad International Stock Fund - a portfolio of non U.S. stocks that incorporates both active and passive management.	\$166
Bond Fund - an actively managed, all bond portfolio.	\$133
Money Market Fund - a portfolio utilizing short-term, liquid debt securities.	\$297
Stable Value Fund - a portfolio of stable value instruments, including security backed contracts and insurance company and bank investment contracts.	\$201
Volunteer Firefighter Account - a balanced portfolio only used by the Voluntary Statewide Volunteer Firefighter Plan.	\$54

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%	60.1%
Bonds	35.0%	35.0%
Cash	5.0%	4.9%
	100.0%	100.0%

Periods Ended 3/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Account	1.7%	0.6%	7.8%	8.3%	6.5%
Benchmark*	1.7%	0.7%	7.7%	8.1%	6.0%

* 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 US companies. The managers in the account also hold varying levels of cash.

Periods Ended 3/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Account	-0.5%	-2.7%	11.0%	10.7%	6.5%
Benchmark*	1.0%	-0.3%	11.1%	11.0%	6.9%

* 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 3/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Account	1.0%	-0.3%	11.2%	11.0%	7.0%
Benchmark*	1.0%	-0.3%	11.1%	11.0%	6.9%

* 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 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Account	-1.4%	-7.7%	1.3%	1.2%	2.6%
Benchmark*	-0.4%	-9.2%	0.3%	0.3%	2.0%

* 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 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Account	3.0%	1.9%	2.7%	4.2%	5.2%
Barclays Agg	3.0%	2.0%	2.5%	3.8%	4.9%

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 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Account	0.1%	0.3%	0.2%	0.2%	1.3%
3 month T-Bills	0.1%	0.1%	0.1%	0.1%	1.1%

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 3/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Account	0.5%	2.0%	2.0%	2.4%	3.4%
Benchmark*	0.3%	1.5%	1.3%	1.1%	2.1%

* 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:

	Target	Actual
Domestic Stocks	35.0%	35.4%
International Stocks	15.0%	14.5%
Bonds	45.0%	45.6%
Cash	5.0%	4.5%
	100.0%	100.0%

Periods Ended 3/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Account	1.5%	-0.4%	5.3%	6.0%	--
Benchmark*	1.8%	-0.4%	5.2%	5.8%	--

* The benchmark for this account is 35% Russell 3000, 15% MSCI ACWI ex USA (net), 45% Barclays 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 mutual funds, 5 passively managed mutual funds and 11 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.

On March 31, 2016, the market value of the entire Fund was \$5.7 billion.

Investment Options

	3/31/16 Market Value (In Millions)
Vanguard Index Institutional Plus Shares (passive)	\$977.3
Janus Twenty (active)	\$536.4
Vanguard Mid Cap Index Institutional Shares (passive)	\$426.5
T. Rowe Price Small-Cap Stock (active)	\$553.1
Fidelity Diversified International (active)	\$278.8
Vanguard Total International Stock Index Institutional Plus (passive)	\$139.3
Vanguard Balanced Index Institutional Shares (passive)	\$684.9
Dodge & Cox Income Fund (active)	\$202.7
Vanguard Total Bond Market Index Institutional Shares (passive)	\$187.4
SIF Money Market Fund	\$62.9
SIF Stable Value Fund	\$1,328.3
State Street Global Advisors MN Target Retirement Funds	\$328.9
Income Fund	\$66.1
2020 Fund	\$75.7
2025 Fund	\$61.9
2030 Fund	\$39.7
2035 Fund	\$30.5
2040 Fund	\$19.4
2045 Fund	\$15.4
2050 Fund	\$10.3
2055 Fund	\$4.9
2060 Fund	\$5.0

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 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	1.3%	1.8%	11.8%	11.6%
S&P 500	1.3%	1.8%	11.8%	11.6%

Janus Twenty (active)

A concentrated fund of large cap stocks which is expected to outperform the S&P 500, over time.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	-1.9%	2.7%	12.4%	10.6%
S&P 500	1.3%	1.8%	11.8%	11.6%

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 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	1.2%	-4.3%	10.8%	10.0%
CRSP U.S. Mid Cap	1.2%	-4.3%	10.8%	10.1%

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 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	-0.2%	-7.0%	8.1%	9.0%
Russell 2000	-1.5%	-9.8%	6.8%	7.2%

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 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	-2.9%	-5.9%	5.1%	3.9%
MSCI EAFE	-3.0%	-8.3%	2.2%	2.3%

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.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	-0.1%	-8.1%	0.9%	--
ACWI ex USA IMI	-0.2%	-7.7%	1.2%	--

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% Barclays Aggregate.

	Periods Ended 3/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	2.0%	0.7%	7.7%	8.3%
Benchmark	1.9	0.8	7.8	8.3

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 Barclays Aggregate, over time.

	Periods Ended 3/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	2.4%	0.5%	2.4%	3.8%
Barclays Agg	3.0%	2.0%	2.5%	3.8%

Vanguard Total Bond Market Index (passive)

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

	Periods Ended 3/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	3.1%	1.8%	2.4%	3.7%
Barclays Agg	3.0%	2.0%	2.5%	3.8%

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 3/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	0.1%	0.3%	0.2%	0.2%
3-Mo. Treas.	0.1%	0.1%	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 3/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	0.5%	2.0%	2.0%	2.4%
Benchmark	0.3%	1.5%	1.3%	1.1%

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

Investment Options

**3/31/16
Market Value
(In Millions)**

Age Based Managed Allocation

Age Band 0-4 Years	\$24.2
Age Band 5-8 Years	\$73.9
Age Band 9-10 Years	\$74.1
Age Band 11-12 Years	\$104.6
Age Band 13-14 Years	\$125.7
Age Band 15 Years	\$63.2
Age Band 16 Years	\$59.2
Age Band 17 Years	\$59.1
Age Band 18 Years and over	\$138.9

Risk Based Managed Allocations

Aggressive	\$8.5
Moderate	\$51.2
Conservative	\$3.0

Static Options:

U.S. Large Cap Equity	\$8.1
International Equity	\$2.2
U.S. and International Equity	\$266.0
Equity and Interest Accumulation	\$1.0
100% Fixed Income	\$10.5
Money Market	\$7.8
Principal Plus Interest	\$103.6

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 3/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	1.3%	1.6%	--	--
S&P 500	1.3%	1.8%	--	--

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 3/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	-1.3%	-9.1%	--	--
Benchmark	-1.3%	-9.2%	--	--

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 3/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	0.7%	-2.4%	7.9%	8.2%
Benchmark	0.8%	-2.4%	8.0%	8.4%

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 3/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	0.7%	0.4%	--	--
Benchmark	0.6%	0.1%	--	--

100% FIXED INCOME

A fund that passively invests in fixed income holdings that tracks the Barclays 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% Barclays Aggregate, 20% inflation-linked bond, and 10% high yield.

	Periods Ended 3/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	3.1%	0.9%	1.1%	2.8%
Benchmark	3.2%	1.3%	1.5%	3.5%

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 3/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	0.0%	0.0%	0.0%	0.0%
iMoney Net Average All Taxable	0.0%	0.0%	0.0%	0.0%

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 3/31/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Fund	0.3%	1.3%	1.3%	1.5%
3-Month T-Bill	0.1%	0.1%	0.0%	0.1%

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.

	3/31/16 Target	3/31/16 Actual
Stocks	20.0%	19.7%
Bonds	80.0%	80.3%
Total	100.0%	100.0%

Investment Management

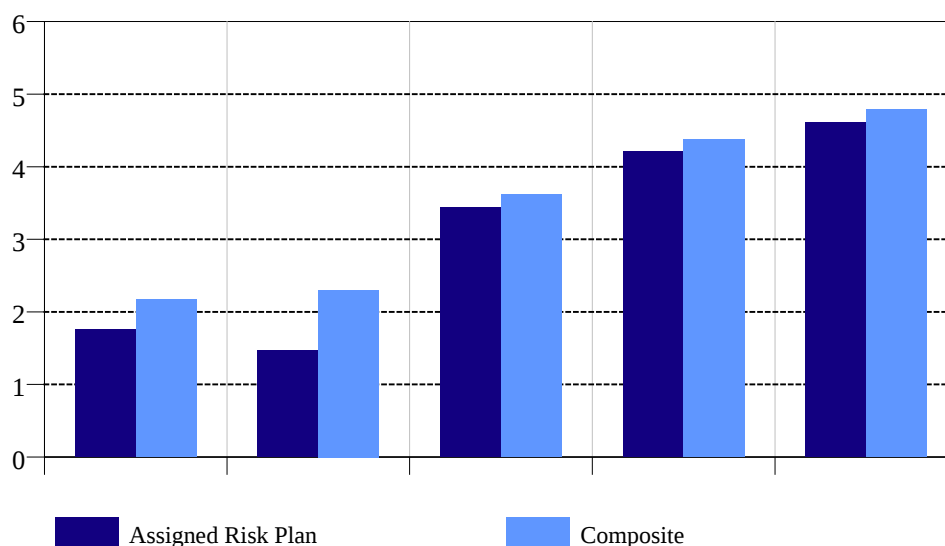
RBC Global Asset Management (US) manages the bond segment of the Fund. GE Investment Management manages the equity segment.

Performance Benchmarks

Since July 1, 2011, the fixed income benchmark has been the Barclays Capital Intermediate Government Index. 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 March 31, 2016 the market value of the Assigned Risk Plan was \$301 million.



Periods Ended 3/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Fund*	1.8%	1.5%	3.4%	4.2%	4.6%
Composite	2.2%	2.3%	3.6%	4.4%	4.8%
Equity Segment*	-0.8%	-2.7%	10.3%	10.0%	6.9%
S&P 500	1.3%	1.8%	11.8%	11.6%	7.0%
Bond Segment*	2.3%	2.4%	1.5%	2.4%	3.8%
Barclays Int Gov Index	2.3%	2.2%	1.5%	2.5%	4.0%

* 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.

	3/31/16 Target	3/31/16 Actual
Stocks	50.0%	51.0%
Bonds	48.0%	47.0%
Cash	2.0%	2.0%
Total	100.0%	100.0%

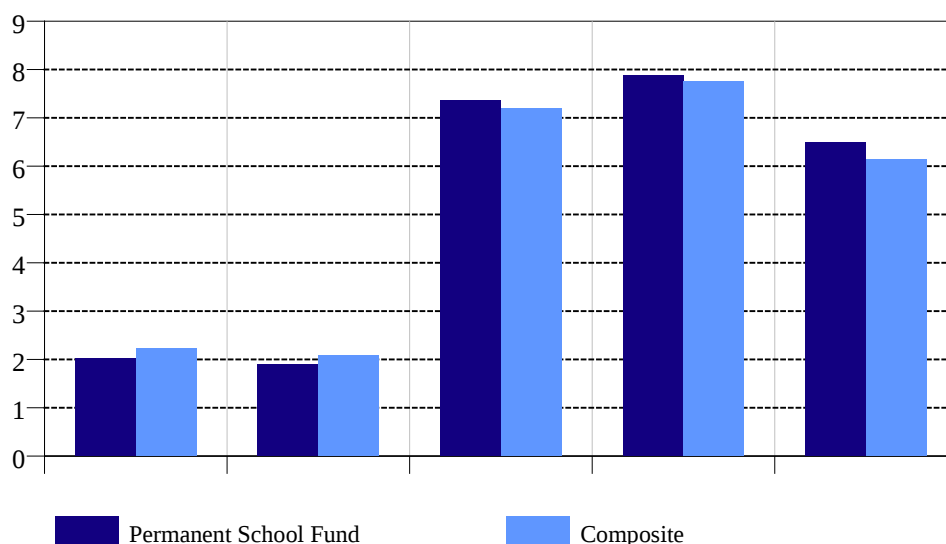
Prior to FY98, the Fund was invested entirely in fixed income securities in order to maximize current income. It is understood that the change in asset mix will reduce portfolio income in the short term, but will enhance the value of the fund, over time.

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 March 31, 2016 the market value of the Permanent School Fund was \$1.2 billion.



	Periods Ended 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Fund*	2.0%	1.9%	7.4%	7.9%	6.5%
Composite	2.2%	2.1%	7.2%	7.8%	6.1%
Equity Segment*	1.3%	1.8%	11.8%	11.6%	7.0%
S&P 500	1.3%	1.8%	11.8%	11.6%	7.0%
Bond Segment*	2.9%	1.9%	3.0%	4.0%	5.4%
Barclays Agg	3.0%	2.0%	2.5%	3.8%	4.9%

* 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.

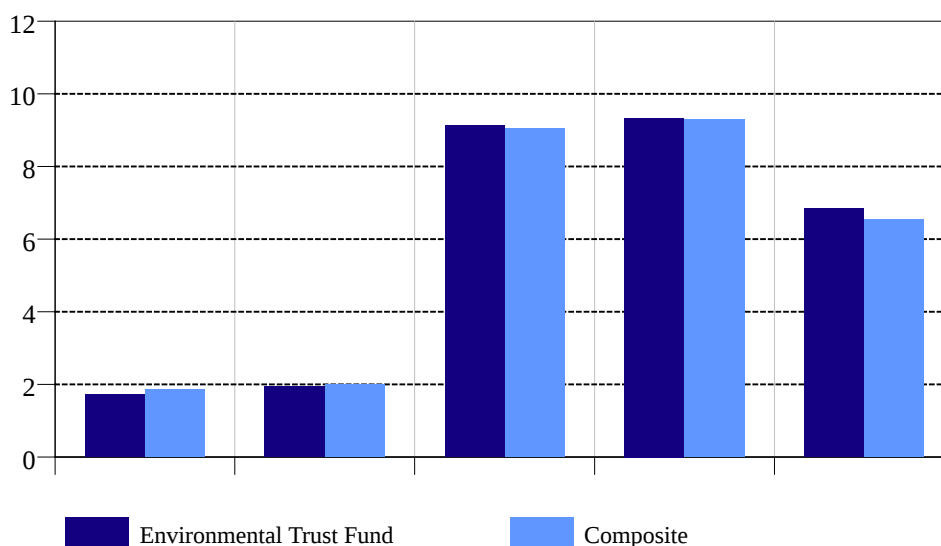
	3/31/16 Target	3/31/16 Actual
Stocks	70.0%	70.5%
Bonds	28.0%	27.6%
Cash	2.0%	2.0%
Total	100.0%	100.0%

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 March 31, 2016 the market value of the Environmental Trust Fund was \$906 million.



	Periods Ended 3/31/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Fund*	1.7%	2.0%	9.1%	9.3%	6.8%
Composite	1.9%	2.0%	9.0%	9.3%	6.5%
Equity Segment*	1.3%	1.8%	11.8%	11.6%	7.1%
S&P 500	1.3%	1.8%	11.8%	11.6%	7.0%
Bond Segment*	2.9%	1.9%	3.0%	4.0%	5.4%
Barclays Agg	3.0%	2.0%	2.5%	3.8%	4.9%

* 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% a domestic equities and 30% bonds as a result of the shorter-time horizon where assets must be made available for annual expenditures.

	3/31/16 Target	3/31/16 Actual
Stocks	70.0%	69.5%
Bonds	30.0%	30.6%
Total	100.0%	100.0%

Investment Management

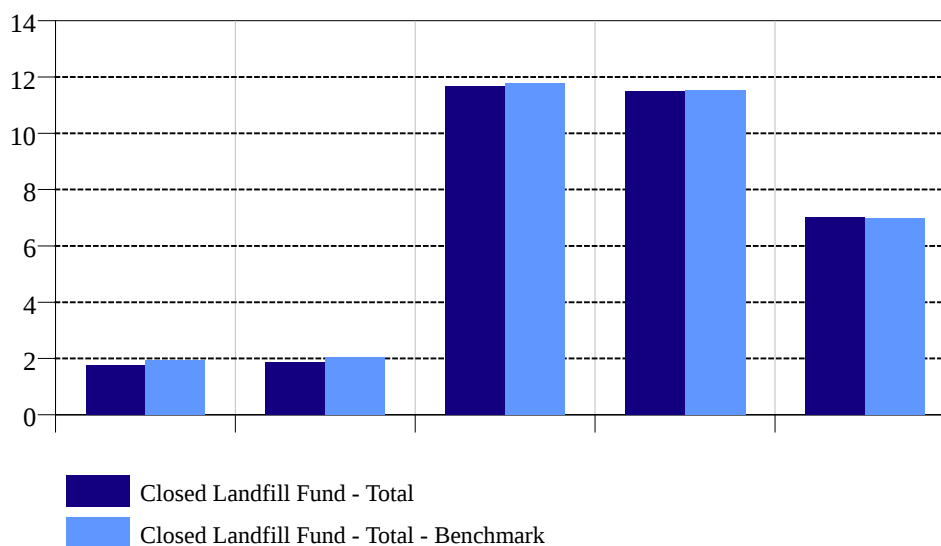
SBI staff manage all assets of the Closed Landfill Investment Fund. The bond segment is actively managed to add incremental value through sector, security and yield curve decisions. The stock segment is managed to passively track the performance of the S&P 500.

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 principle 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 March 31, 2016, the market value of the Closed Landfill Investment Fund was \$70 million.



Periods Ended 3/31/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Fund (1)	1.8%	1.9%	11.7%	11.5%	7.0%
Composite (3)	1.9%	2.0%	11.8%	11.5%	7.0%
Equity Segment (1)	1.3%	1.8%	11.8%	11.6%	7.1%
S&P 500	1.3%	1.8%	11.8%	11.6%	7.0%
Bond Segment (1,2)	2.9%	1.9%	--	--	--
Barclays Agg	3.0%	2.0%	--	--	--

(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 Barclays 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.

Period Ending 3/31/16						
	Market Value (Millions)	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Treasurer's Cash Pool*	\$8,734	0.3%	0.6%	0.5%	0.5%	1.8%
Custom Benchmark**		0.0%	0.0%	0.0%	0.0%	1.0%
3 month T-Bills		0.1%	0.1%	0.1%	0.1%	1.1%

* 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 March 31, 2016 (in Thousands)

	Cash & ST	Bonds Int	Bonds Ext	Stock Int	Stock Ext	Ext Intl	Alternative	Total
COMBINED RETIREMENT FUNDS								
Teachers Retirement Fund	414,283 2.15%	0	4,922,735 25.44%	0	8,839,176 45.67%	2,745,214 14.18%	2,432,536 12.57%	19,353,944 100%
Public Employees Retirement Fund	379,593 2.22%	0	4,342,083 25.41%	0	7,796,569 45.63%	2,421,408 14.17%	2,145,611 12.56%	17,085,264 100%
State Employees Retirement Fund	227,887 2.05%	0	2,832,139 25.45%	0	5,085,340 45.71%	1,579,372 14.20%	1,399,482 12.58%	11,124,220 100%
Public Employees Police & Fire	151,887 2.16%	0	1,793,900 25.43%	0	3,221,096 45.67%	1,000,387 14.18%	886,443 12.57%	7,053,713 100%
Highway Patrol Retirement Fund	13,033 2.07%	0	159,901 25.45%	0	287,115 45.70%	89,170 14.19%	79,014 12.58%	628,233 100%
Judges Retirement Fund	3,781 2.29%	0	41,921 25.40%	0	75,272 45.60%	23,377 14.16%	20,715 12.55%	165,066 100%
Correctional Employees Retirement	19,256 2.17%	0	225,456 25.43%	0	404,825 45.66%	125,728 14.18%	111,407 12.56%	886,672 100%
Public Employees Correctional	11,094 2.23%	0	126,143 25.42%	0	226,500 45.63%	70,345 14.17%	62,332 12.56%	496,414 100%
PERA Minneapolis Retirement	15,055 1.95%	0	196,911 25.49%	0	353,569 45.76%	109,809 14.21%	97,302 12.59%	772,646 100%
TOTAL COMBINED FUNDS	1,235,869 2.15%	0	14,641,189 25.43%	0	26,289,462 45.67%	8,164,810 14.18%	7,234,842 12.57%	57,566,172 100%

	Cash & ST	Bonds Int	Bonds Ext	Stock Int	Stock Ext	Ext Intl	Alternative	Total
MINNESOTA SUPPLEMENTAL FUNDS								
Balanced Fund	18,084 4.94%	127,999 35.00%	0	0	219,633 60.06%	0	0	365,716 100%
U.S. Stock Actively Managed Fund	0	0	0	0	205,979 100.00%	0	0	205,979 100%
Money Market Fund	296,870 100.00%	0	0	0	0	0	0	296,870 100%
U.S. Stock Index Fund	0	0	0	0	464,972 100.00%	0	0	464,972 100%
Bond Fund	0	0	132,892 100.00%	0	0	0	0	132,892 100%
Broad International Stock Fund	0	0	0	0	0	166,343 100.00%	0	166,343 100%
Stable Value Fund	0	0	201,317 100.00%	0	0	0	0	201,317 100%
Volunteer Firefighters Account	2,423 4.51%	0	24,505 45.61%	0	19,007 35.38%	7,794 14.51%	0	53,729 100%
TOTAL SUPPLEMENTAL FUNDS	317,377 16.81%	127,999 6.78%	358,714 19.00%	0	909,591 48.19%	174,137 9.22%	0	1,887,818 100%
MN DEFERRED COMP PLAN	69,721 1.22%	0	2,122,913 37.20%	0	3,028,853 53.08%	484,962 8.50%	0	5,706,449 100%
TOTAL RETIREMENT FUNDS	1,622,967 2.49%	127,999 0.20%	17,122,816 26.28%	0	30,227,906 46.39%	8,823,909 13.54%	7,234,842 11.10%	65,160,439 100%

	Cash & ST	Bonds Int	Bonds Ext	Stock Int	Stock Ext	Ext Intd	Alternative	Total
ASSIGNED RISK PLAN								
	2,163 0.72%	0	239,470 79.57%	0	59,333 19.71%	0	0	300,966 100%
ENVIRONMENTAL FUND								
	17,822 1.97%	249,838 27.58%	0	638,337 70.46%	0	0	0	905,997 100%
PERMANENT SCHOOL FUND								
	23,229 1.95%	562,853 47.04%	0	610,543 51.02%	0	0	0	1,196,625 100%
CLOSED LANDFILL FUND								
	0	21,507 30.55%	0	48,881 69.45%	0	0	0	70,388 100%
MISCELLANEOUS TRUST FUND								
	471 0.30%	66,484 42.30%	0	90,232 57.40%	0	0	0	157,187 100%
Other Post Employment Funds (OPEB's)								
	18,718 3.63%	99,463 19.31%	0	396,876 77.05%	0	0	0	515,057 100%
TREASURERS CASH								
	8,734,493 100.00%	0	0	0	0	0	0	8,734,493 100%
MISCELLANEOUS STATE ACCOUNTS								
	0	164,436 100.00%	0	0	0	0	0	164,436 100%
MN COLLEGE SAVINGS PLAN								
	7,832 0.66%	0	575,913 48.61%	0	434,658 36.69%	166,472 14.05%	0	1,184,875 100%
TOTAL CASH AND NON-RETIREMENT								
	8,804,728 66.55%	1,164,581 8.80%	815,383 6.16%	1,784,869 13.49%	493,991 3.73%	166,472 1.26%	0	13,230,024 100%
GRAND TOTAL								
	10,427,695 13.30%	1,292,580 1.65%	17,938,199 22.88%	1,784,869 2.28%	30,721,897 39.19%	8,990,381 11.47%	7,234,842 9.23%	78,390,463 100%

TAB

B

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EXECUTIVE DIRECTOR'S ADMINISTRATIVE REPORT

DATE: May 26, 2016

TO: Members, State Board of Investment

FROM: **Mansco Perry III**

1. Reports on Budget and Travel

A report on the SBI's administrative budget for the period ending March 31, 2016 is included as **Attachment A**.

A report on travel for the period from January 1, 2016 – March 31, 2016 is included as **Attachment B**.

2. Legislative Update

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

3. Metropolitan Landfill Action Trust

Description

During the 2016 regular session, the State Board of Investment (SBI) received legislative authority in Minnesota Statute 473.845 to invest the assets of Metropolitan Landfill Contingency Action Trust (MLCAT) in a separate account in order to maximize long-term gains.

The MLCAT is dedicated to care for certain closed disposal sites for mixed municipal solid waste in the seven-county Twin Cities metropolitan area. The account is mainly funded by revenue from a fee on mixed municipal solid waste buried at metro-area landfills.

Objective and Asset Allocation

The objective is to provide for long-term growth, to maintain the real purchasing power of the Fund and for safety of principal so that it can meet the needs of long-term care at MLCAT-eligible landfills.

In consultation with Minnesota Pollution Control Agency (MPCA), the SBI Staff recommends that the assets be managed in a similar approach as the Closed Landfill Fund, which is invested with a 70% equities and 30% bond allocation. The long-term rate of return generated from the balanced asset allocation should position the fund to pay for the long-term costs of maintaining the integrity of landfills and for the care of certain closed disposal sites in the seven county Twin Cities metropolitan area.

RECOMMENDATION:

The Executive Director of the State Board of Investment recommends that the Board approve the investment of the Metropolitan Landfill Contingency Action Trust (MLCAT) assets in the SBI Internal Equity and Internal Bond Pools with an asset allocation of 70% to equities and 30% to bonds.

4. 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, 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 first quarter, SBI managers sold 129,000 shares in companies on the divestment list.

Attachment D is a copy of the March 21, 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.

Attachment E is an updated list of companies with operations in Sudan.

5. 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 first quarter, an SBI manager sold 19,600 shares in a company on the divestment list.

Attachment F is a copy of the March 21, 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.

6. Litigation Update

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

ATTACHMENT A

STATE BOARD OF INVESTMENT FISCAL YEAR 2016 ADMINISTRATIVE BUDGET REPORT FISCAL YEAR TO DATE THROUGH MARCH 31, 2016

ITEM	FISCAL YEAR 2016 BUDGET	FISCAL YEAR 2016 3/31/2016
PERSONNEL SERVICES		
FULL TIME EMPLOYEES	\$ 4,591,000	\$ 2,939,780
PART TIME EMPLOYEES	\$ 0	0
MISCELLANEOUS PAYROLL	100,000	3,577
SUBTOTAL	\$ 4,691,000	\$ 2,943,357
STATE OPERATIONS		
RENTS & LEASES	282,000	213,171
REPAIRS/ALTERATIONS/MAINTENANCE	372,000	285,052
PRINTING & BINDING	7,000	5,458
PROFESSIONAL/TECHNICAL SERVICES	150,000	35,689
COMPUTER SYSTEMS SERVICES	20,000	11,993
COMMUNICATIONS	40,000	19,259
TRAVEL, IN-STATE	1,000	271
TRAVEL, OUT-STATE	119,000	43,256
SUPPLIES	122,000	100,919
EQUIPMENT	25,000	7,409
EMPLOYEE DEVELOPMENT	35,000	36,721
OTHER OPERATING COSTS	140,000	85,670
INDIRECT COSTS	250,000	147,918
ATTORNEY GENERAL COSTS	-	46,020
SUBTOTAL	\$ 1,563,000	\$ 1,038,806
TOTAL ADMINISTRATIVE BUDGET	\$ 6,254,000	\$ 3,982,163

ATTACHMENT B

STATE BOARD OF INVESTMENT

Travel Summary by Date SBI Travel January 1, 2016 - March 31, 2016

Purpose	Name(s)	Destination and Date	Total Cost
Manager Monitoring	A. Krech	Boston, MA	\$ 3,347.34
Alternative Investment	N. Blumenshine	New York, NY	
Manager: IK Partners		1/6/-1/8	
Manager Search			
Alternative Investment			
Managers: Rockpoint Group; Carlyle Strategic Partners; Wellspring Capital Management			
Manager Monitoring	M. Perry	Los Angeles, CA	2,156.79
Alternative Investment	J. Stacy	1/6/-1/7	
Manager: Leonard Green & Partners			
Manager Search			
Alternative Investment			
Manager: Angelo, Gordon & Co.			
Conference: Public Funds Summit sponsored by Opal Financial Group	L. Stagg	Scottsdale, AZ 1/13-1/15	626.97
Conference: Elkind Economics, Inc.	M. Perry	Dallas, TX 1/13-1/14	886.45
Conference: Pacific Pension Institute	M. Perry	Los Angeles, CA 2/24-2/26	1,709.66
Conference: ABS Vegas 2016 sponsored by Information Management Network	A. Griga	Las Vegas, NV 2/28-3/2	1,749.93

STATE BOARD OF INVESTMENT

Travel Summary by Date SBI Travel January 1, 2016 - March 31, 2016

Purpose	Name(s)	Destination and Date	Total Cost
Manager Monitoring Domestic Equity Manager: Earnest Partners Conference: INTECH Client Conference	T. Brusehaver	West Palm Beach, FL Atlanta, GA 2/29-3/2	\$ 1,220.09
Conference: Oaktree Annual Investor Conference Manager Monitoring Alternative Investment Manager: Oaktree Capital Management	A. Krech C. Boll	Los Angeles, CA 3/15-3/18	1,764.93
Manager Search Domestic Equity Manager: Hood River Capital Management	R. Weiler	Portland, OR 3/30-3/31	810.29

Bills of Interest to the Minnesota State Board of Investment

2016 Legislative Session through **5/24/2016**

HF/SF #	Author	Name of Bill	Current Status	Notes
SF588 HF659	Pappas O'Driscoll	2016 Omnibus Retirement Bill	Passed the House and Senate Sent to the Governor for signature	Reduces the COLA for retirees to 1.75% for MSRS and to 1% for TRA members for one year. It also removes COLA triggers based on specific funding thresholds. The technical administrative provisions in the bill lowers the investment return assumption for TRA to 8.0% (MSRS and PERA did this in 2015).
HF2841:	McNamara	Metropolitan landfill contingency action trust management provided	Passed House and Senate Sent to the Governor for signature	Adds language to MN Statute 473.845, Subd 1. The SBI is authorized to invest the metropolitan landfill contingency action trust fund assets in a separate account to maximize long-term gain. The account will be administered by Pollution Control Agency.

ATTACHMENT D

Letter to SBI International and Domestic Equity Managers

March 21, 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 December 22, 2015 letter you received. **This new list is effective March 31, 2016.**

- The following companies have changed their names:
 - **Sinopec Oilfield Service Corp.** previously known as **Sinopec Yizheng Chemical Fibre Co Ltd.**
 - **GAZ OAO** previously known as **GAZ Auto Plant.**
 - **Pavlovo Bus JSC** previously known as **Pavlovsky Bus Plant.**

Attachment 2 is the List of Sudan Stocks Requiring Divestment. There have been no changes to this list.

If you own securities of companies on the List of Sudan Companies Requiring Divestment in the SBI portfolio that your organization manages, 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.

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 or Mercy Ndungu.

Sincerely,

LeaAnn M. Stagg
Chief Operating Officer

Enclosures

cc: Michael J. Menssen, Director, Public Markets
Tammy Brusehaver, Investment Officer, Public Markets
Inma Conde Goldman, Investment Officer, Public Markets
Stephanie Gleeson, Investment Officer, Public Markets
Robert Weiler, Investment Officer, Public Markets
Patricia Ammann, Investment Officer, DC & Trust Services
Mercy Ndungu, Investment Officer, DC & Trust Services

ATTACHMENT 1

Restricted Sudan Stocks	
Company Name	Country of Origin
Andritz AG	Austria
Orca Gold Inc.	Canada
AKM Industrial Company Limited	China
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
Jinan Diesel Company Limited	China
Kingdream PLC	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
Shanghai Electric Group Co. Ltd.	China
Sichuan Nitrocell 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
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 and Natural Gas Corp. Ltd.	India
Oil India Limited	India
Energy House Holding Co KSCC, The	Kuwait
Engen Botswana Ltd. AKA Engen	Malaysia
KLCCP Stapled Group AKA KLCC Property Holdings	Malaysia

ATTACHMENT 1

Restricted Sudan Stocks	
Company Name	Country of Origin
Malaysia International Shipping Company AKA MISC Berhad	Malaysia
Malaysia Marine and Heavy Engineering Holdings Bhd	Malaysia
Petroleum Nasional Berhad AKA Petronas	Malaysia
Petronas Chemicals Group Berhad	Malaysia
Petronas Dagangan Berhad	Malaysia
Petronas Gas Berhad	Malaysia
Scomi Energy Services Bhd	Malaysia
Scomi Engineering Berhad	Malaysia
Scomi Group Berhad	Malaysia
Managem	Morocco
Societe Metallurgique D'imitier	Morocco
GAZ OAO	Russia
GAZ Group	Russia
Kamaz OSJC	Russia
Pavlovo Bus JSC	Russia
LS Industrial Systems	South Korea

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

Source: EIRIS Conflict Risk Network

Effective Date: March 31, 2016

ATTACHMENT 2

Sudan Stocks Requiring Divestment

Company Name	Country of Origin	Divest 50 Percent By this Date	Divest 100 Percent By this date
Shanghai Electric Group Co. Ltd.	China	March 31, 2016	September 30, 2016

Effective Date: March 31, 2016.

Completed/Historical Divestments

Company Name	Country of Origin	Divest 50 Percent By this Date	Divest 100 Percent By this date
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
Dongfeng Motor Group Company Limited	China	March 31, 2011	September 30, 2011
Andritz AG	Austria	September 30, 2014	March 31, 2015
Bharat Electronics Limited	India	September 30, 2014	March 31, 2015
Bharat Heavy Electricals	India	September 30, 2014	March 31, 2015
MAN SE	Germany	December 31, 2014	June 30, 2015
Poly Property Group	China	March 31, 2015	September 30, 2015
Volkswagen AG	Germany	June 30, 2015	December 31, 2015

Security Identifiers for "Scrutinized" Stocks

The following security identifiers correlate with the First Quarter 2016 Sudan Company Report and are current as of February 8, 2016

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	SEDOL	CUSIP	Sicovam	ISIN	COMMON	CNS	Fondsecode
ANDRITZ AG	ANDRITZ GROUP	Vennit (WBHAF)	Common Stock	ANDRITZ AG	ANDR AV	632305	BLWVF68 AT			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR BX	632305	BLWVF68 AT			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR IX	632305	BLWVF68 AT			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR TX	632305	BLWVF68 AT			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR TQ	632305	BLWVF68 AT			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	A22 GB	632305	BLX9FH2 DE			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	A22 GD	632305	BLX9FH2 DE			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	A22 GF	632305	BLX9FH2 DE			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	A22 GH	632305	BLX9FH2 DE			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	A22 GM	632305	BLX9FH2 DE			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	A22 GR	632305	BLX9FH2 DE			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	A22 GS	632305	BLX9FH2 DE			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	A22 GT	632305	BLX9FH2 DE			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	A22 HT	632305	BLX9FH2 DE			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	A22 TH	632305	BLX9FH2 DE			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ADR2F UV	632305	BLXBL36			AT0000730007	013042748	AL1123105	
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ADR2F US	632305	BLXBL36			AT0000730007	013042748	AL1123105	
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR EU	632305	B28F3F6 GB			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR LI	632305	B28F3F6 GB			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR LO	632305	B28F3F6 GB			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR LX	632305	B28F3F6 GB			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR XB	632305	B28F3F6 GB			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR XD	632305	B28F3F6 GB			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR XE	632305	B28F3F6 GB			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR XG	632305	B28F3F6 GB			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR XV	632305	B28F3F6 GB			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR BW	632305	BH2L8M4 CH			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR SE	632305	BH2L8M4 CH			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR SW	632305	BH2L8M4 CH			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDR XS	632305	BH2L8M4 CH			AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		
ANDRITZ AG	ANDRITZ GROUP	Common Stock	Common Stock	ANDRITZ AG	ANDRCH EU	632305				AT0000730007	013042748		

KUNLUN ENERGY CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	Common Stock	KUNLUN ENERGY CO LTD	CT01 GR	ALCV3E	5387753 DE	952131	BM55320CI082	05092003
KUNLUN ENERGY CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	Common Stock	KUNLUN ENERGY CO LTD	CT01 GS	ALCV3E	5387753 DE	952131	BM55320CI082	05092003
KUNLUN ENERGY CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Tradegate (XGAT)	Common Stock	KUNLUN ENERGY CO LTD	CT01 TH	ALCV3E	5387753 DE	952131	BM55320CI082	05092003
KUNLUN ENERGY CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Hong Kong (XHKG)	Common Stock	KUNLUN ENERGY CO LTD	135 HK	ALCV3E	6340078 HK	952131	BM55320CI082	05092003
KUNLUN ENERGY CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	OTC Exchange (OOTC)	Common Stock	KUNLUN ENERGY CO LTD	KUNUF PQ	ALCV3E	B01DD23 US	952131	BM55320CI082	05092003
KUNLUN ENERGY CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	OTC Exchange (OOTC)	Common Stock	KUNLUN ENERGY CO LTD	KUNUF US	ALCV3E	B01DD23 US	952131	BM55320CI082	05092003
KUNLUN ENERGY CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	OTC Exchange (OOTC)	Common Stock	KUNLUN ENERGY CO LTD	KUNUF UV	ALCV3E	B01DD23 US	952131	BM55320CI082	05092003
KUNLUN ENERGY CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	OTC Exchange (OOTC)	Common Stock	KUNLUN ENERGY CO LTD	135 H1	ALCV3E	BP9RW39 HK	952131	BM55320CI082	05092003
KUNLUN ENERGY CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Sth SSE-SEHK (SHSC)	Common Stock	CNPC HONG KONG LTD-UNSP ADR	KLYCV PQ	ALJ7V7	B3L2812 US	50126A101	US50126A1016	
KUNLUN ENERGY CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	OTC Exchange (OOTC)	ADR	CNPC HONG KONG LTD-UNSP ADR	KLYCV US	ALJ7V7	B3L2812 US	50126A101	US50126A1016	
KUNLUN ENERGY CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	OTC Exchange (OOTC)	ADR	CNPC HONG KONG LTD-UNSP ADR	KLYCV UV	ALJ7V7	B3L2812 US	50126A101	US50126A1016	
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	Common Stock	PETROCHINA CO LTD-H	P06 GB	A0M4YQ	5939507 DE		CNEI000003W8	011014674
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	Common Stock	PETROCHINA CO LTD-H	P06 GD	A0M4YQ	5939507 DE		CNEI000003W8	011014674
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	Common Stock	PETROCHINA CO LTD-H	P06 GF	A0M4YQ	5939507 DE		CNEI000003W8	011014674
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	Common Stock	PETROCHINA CO LTD-H	P06 GH	A0M4YQ	5939507 DE		CNEI000003W8	011014674
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	Common Stock	PETROCHINA CO LTD-H	P06 GM	A0M4YQ	5939507 DE		CNEI000003W8	011014674
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	Common Stock	PETROCHINA CO LTD-H	P06 GR	A0M4YQ	5939507 DE		CNEI000003W8	011014674
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	Common Stock	PETROCHINA CO LTD-H	P06 GS	A0M4YQ	5939507 DE		CNEI000003W8	011014674
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	Common Stock	PETROCHINA CO LTD-H	P06 GY	A0M4YQ	5939507 DE		CNEI000003W8	011014674
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Quotix Exch (QXTX)	Common Stock	PETROCHINA CO LTD-H	P06 QT	A0M4YQ	5939507 DE		CNEI000003W8	011014674
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	Common Stock	PETROCHINA CO LTD-H	P06 TH	A0M4YQ	5939507 DE		CNEI000003W8	011014674
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Hong Kong (XHKG)	Common Stock	PETROCHINA CO LTD-H	857 HK	A0M4YQ	6226576 HK		CNEI000003W8	011014674
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	OTC US (OOTC)	Common Stock	PETROCHINA CO LTD-H	PCCYF US	A0M4YQ	B01DNL9 US		CNEI000003W8	011014674
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	OTC US (OOTC)	Common Stock	PETROCHINA CO LTD-H	PCCYF UV	A0M4YQ	B01DNL9 US		CNEI000003W8	011014674
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Sth SSE-SEHK (SHSC)	Common Stock	PETROCHINA CO LTD-H	857 H1	A0M4YQ	BP3RWV8 HK		CNEI000003W8	011014674
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Shanghai (XSHG)	Common Stock	PETROCHINA CO LTD-A	601857 CG	A0NANC	B28SLD9 CN		CNEI000007Q1	033421664
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Shanghai (XSHG)	Common Stock	PETROCHINA CO LTD-A	601857 CH	A0NANC	B28SLD9 CN		CNEI000007Q1	033421664
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Nth SSE-SEHK (XSSE)	Common Stock	PETROCHINA CO LTD-A	601857 C1	A0NANC	BP9R206 CN		CNEI000007Q1	033421664
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	New York (XNYS)	ADR	PETROCHINA CO LTD -ADR	PTR UB	936893	2568841 US	74646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	New York (XNYS)	ADR	PETROCHINA CO LTD -ADR	PTR UD	936893	2568841 US	74646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	New York (XNYS)	ADR	PETROCHINA CO LTD -ADR	PTR UF	936893	2568841 US	74646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	New York (XNYS)	ADR	PETROCHINA CO LTD -ADR	PTR UN	936893	2568841 US	74646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	New York (XNYS)	ADR	PETROCHINA CO LTD -ADR	PTR UP	936893	2568841 US	74646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	New York (XNYS)	ADR	PETROCHINA CO LTD -ADR	PTR US	936893	2568841 US	74646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	New York (XNYS)	ADR	PETROCHINA CO LTD -ADR	PTR UT	936893	2568841 US	74646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	New York (XNYS)	ADR	PETROCHINA CO LTD -ADR	PTR UX	936893	2568841 US	74646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	New York (XNYS)	ADR	PETROCHINA CO LTD -ADR	PTR VJ	936893	2568841 US	74646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	New York (XNYS)	ADR	PETROCHINA CO LTD -ADR	PTR VK	936893	2568841 US	74646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	New York (XNYS)	ADR	PETROCHINA CO LTD -ADR	PTR VY	936893	2568841 US	74646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	ADR	PETROCHINA CO LTD -ADR	PC6A GB	936893	4633327 DE	71646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	ADR	PETROCHINA CO LTD -ADR	PC6A GF	936893	4633327 DE	71646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	ADR	PETROCHINA CO LTD -ADR	PC6A GM	936893	4633327 DE	71646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	ADR	PETROCHINA CO LTD -ADR	PC6A GR	936893	4633327 DE	71646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	ADR	PETROCHINA CO LTD -ADR	PC6A GS	936893	4633327 DE	71646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Frankfurt (XFR)	ADR	PETROCHINA CO LTD -ADR	PC6A GY	936893	4633327 DE	71646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Singapore (XSES)	ADR	PETROCHINA CO LTD -ADR	PTR SP	936893	B3KTK63 SG		US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Tradegate (XGAT)	ADR	PETROCHINA CO LTD -ADR	PC6A TH	936893		74646E100	US71646E1001	011511449
PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	Mexico (XMEX)	ADR	PETROCHINA CO LTD -ADR	PTRN MM	936893	B569834	71646E100	US71646E1001	011511449

PETROCHINA CO LTD	CHINA NATIONAL PETROLEUM CORP aka CNPC	New York (XNYS)	ADR	PETROCHINA CO LTD -ADR	PTR UM	93683	256841 US	71646E100	US71646E1001	011511449
AKN INDUSTRIAL CO. LTD.	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNGCINORCO)	Hong Kong (XHKG)	Common Stock	AKN INDUSTRIAL CO LTD	1639 HK	A0D86T	B02J03 HK		HK298013897	021553654
AKN INDUSTRIAL CO. LTD.	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNGCINORCO)	Berlin (XBER)	Common Stock	AKN INDUSTRIAL CO LTD	AQ GB	A0D86T	B06L0H3 DE		HK298013897	021553654
AKN INDUSTRIAL CO. LTD.	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNGCINORCO)	Berlin (XBER)	Common Stock	AKN INDUSTRIAL CO LTD	AQ GR	A0D86T	B06L0H3 DE		HK298013897	021553654
NORINCO INTERNATIONAL COOPERATION LTD.	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNGCINORCO)	Shenzhen (XSHE)	Common Stock	NORINCO INTL COOPERATION -A	000065 CH	A0M35W	6112125 CN		CNE000000V29	
NORINCO INTERNATIONAL COOPERATION LTD.	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNGCINORCO)	Shenzhen (XSHE)	Common Stock	NORINCO INTL COOPERATION -A	000065 CS	A0M35W	6112125 CN		CNE000000V29	
NORTH HUAJIN CHEMICAL INDUSTRIES CO LTD	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNGCINORCO)	Shenzhen (XSHE)	Common Stock	NORTH HUAJIN CHEMICAL INDU-A	000059 CS	A0M30T	6796143 CN		CNE000000N19	
NORTH HUAJIN CHEMICAL INDUSTRIES CO LTD	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNGCINORCO)	Shenzhen (XSHE)	Common Stock	NORTH HUAJIN CHEMICAL INDU-A	000059 CH	A0M30T	6796143 CN		CNE000000N19	Y7742G105
TECHNOLOGY CO. LTD.	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNGCINORCO)	Shenzhen (XSHE)	Common Stock	NORTH NAVIGATION CONTROL T-A	600435 CG	A0M4L5	6649496 CN		CNE000001F88	
TECHNOLOGY CO. LTD.	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNGCINORCO)	Shenzhen (XSHE)	Common Stock	NORTH NAVIGATION CONTROL T-A	600435 CH	A0M4L5	6649496 CN		CNE000001F88	
TECHNOLOGY CO. LTD.	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNGCINORCO)	Nth SSE-SEHK (XSSE)	Common Stock	NORTH NAVIGATION CONTROL T-A	600435 C1	A0M4L5	BP3RB54 CN		CNE000001F88	
TECHNOLOGY CO. LTD.	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNGCINORCO)	Shenzhen (XSHE)	Common Stock	SICHUAN NITROCELL CO LTD-A	002246 CH	A0RP6J	B9G5K44 CN		CNEI000008W7	
TECHNOLOGY CO. LTD.	CHINA NORTH INDUSTRIES GROUP CORPORATION (CNGCINORCO)	Shenzhen (XSHE)	Common Stock	SICHUAN NITROCELL CO LTD-A	002246 CS	A0RP6J	B9G5K44 CN		CNEI000008W7	
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shanghai (XSHG)	Common Stock	CHINA PETROLEUM & CHEMICAL-A	600028 CH	A0M4G4	6373728 CN		CNE000001861	
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Hong Kong (XHKG)	Common Stock	CHINA PETROLEUM & CHEMICAL-H	386 HK	A0M4G4	6291819 HK		CNEI0000002Q2	012150504
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	CHINA PETROLEUM & CHEMICAL -H	CHU GB	A0M4XN	7027756 DE		CNEI0000002Q2	012150504
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	CHINA PETROLEUM & CHEMICAL -H	CHU GD	A0M4XN	7027756 DE		CNEI0000002Q2	012150504
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	CHINA PETROLEUM & CHEMICAL -H	CHU GF	A0M4XN	7027756 DE		CNEI0000002Q2	012150504
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	CHINA PETROLEUM & CHEMICAL -H	CHU GH	A0M4XN	7027756 DE		CNEI0000002Q2	012150504
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	CHINA PETROLEUM & CHEMICAL -H	CHU GM	A0M4XN	7027756 DE		CNEI0000002Q2	012150504
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	CHINA PETROLEUM & CHEMICAL -H	CHU GR	A0M4XN	7027756 DE		CNEI0000002Q2	012150504
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFRA)	Common Stock	CHINA PETROLEUM & CHEMICAL -H	CHU GS	A0M4XN	7027756 DE		CNEI0000002Q2	012150504
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Qutinx Exch (QXTX)	Common Stock	CHINA PETROLEUM & CHEMICAL -H	CHU QT	A0M4XN	7027756 DE		CNEI0000002Q2	012150504
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OOTS)	Common Stock	CHINA PETROLEUM & CHEMICAL-H	SNPMF PQ	A0M4XN	B0JXK44 US		CNEI0000002Q2	Y15010104
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OOTS)	Common Stock	CHINA PETROLEUM & CHEMICAL-H	SNPMF US	A0M4XN	B0JXK44 US		CNEI0000002Q2	Y15010104
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OOTS)	Common Stock	CHINA PETROLEUM & CHEMICAL-H	SNPMF UV	A0M4XN	B0JXK44 US		CNEI0000002Q2	Y15010104
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Sth SSE-SEHK (SHSC)	Common Stock	CHINA PETROLEUM & CHEMICAL-H	386 H1	A0M4XN	BP3RSW0 HK		CNEI0000002Q2	012150504
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shanghai (XSHG)	Common Stock	CHINA PETROLEUM & CHEMICAL-A	600028 CG	A0M4G4	6373728 CN		CNEI000001861	
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Nth SSE-SEHK (XSSE)	Common Stock	CHINA PETROLEUM & CHEMICAL-A	600028 C1	A0M4G4	BP3R240 CN		CNEI000001861	
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	ADR	SNP UB	578971	2639189 US	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	ADR	SNP UD	578971	2639189 US	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	ADR	SNP UF	578971	2639189 US	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	ADR	SNP UN	578971	2639189 US	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	ADR	SNP UP	578971	2639189 US	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	ADR	SNP US	578971	2639189 US	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	ADR	SNP UT	578971	2639189 US	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	ADR	SNP UX	578971	2639189 US	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	ADR	SNP VJ	578971	2639189 US	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	ADR	SNP VK	578971	2639189 US	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	ADR	SNP VY	578971	2639189 US	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Munch (XMUN)	ADR	ADR	CHUA GB	578971	BORSW00 DE	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Munch (XMUN)	ADR	ADR	CHUA GF	578971	BORSW00 DE	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Munch (XMUN)	ADR	ADR	CHUA GM	578971	BORSW00 DE	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Munch (XMUN)	ADR	ADR	CHUA GR	578971	BORSW00 DE	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Munch (XMUN)	ADR	ADR	CHUA GS	578971	BORSW00 DE	16941R108	US16941R1086	011899374
CHINA PETROLEUM & CHEMICAL CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Tradegate (XGAT)	ADR	CHINA PETROLEUM & CHEM-ADR	CHUA TH	578971	BORSW00 DE	16941R108	US16941R1086	011899374
SINOPEC OILFIELD EQUIPMENT	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shenzhen (XSHE)	Common Stock	SINOPEC OILFIELD EQUIPMENT-A	000852 CH	A0M37A	6136385		CNE000000XK7	Y4446M108
SINOPEC OILFIELD EQUIPMENT	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shenzhen (XSHE)	Common Stock	SINOPEC OILFIELD EQUIPMENT-A	000852 CS	A0M37A	6136385		CNE000000XK7	Y4446M108

SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shi SSE-SEHK (SHSC)	Common Stock	SINOPEC ENGINEERING GROUP-H 2386 H1	AI19T7	B92NYC9	CNEI00001NV2	093502256	
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Hong Kong (XHKG)	Common Stock	SINOPEC ENGINEERING GROUP-H 2386 HK	AI19T7	B92NYC9	CNEI00001NV2	093502256	
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Munich (XMUN)	Common Stock	SINOPEC ENGINEERING GROUP-H 1NS GF	AI19T7	B96WK83	CNEI00001NV2		
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Munich (XMUN)	Common Stock	SINOPEC ENGINEERING GROUP-H 1NS GM	AI19T7	B96WK83	CNEI00001NV2		
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Munich (XMUN)	Common Stock	SINOPEC ENGINEERING GROUP-H 1NS GR	AI19T7	B96WK83	CNEI00001NV2		
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Munich (XMUN)	Common Stock	SINOPEC ENGINEERING GROUP-H 1NS GS	AI19T7	B96WK83	CNEI00001NV2		
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Quinx Exch (XQTX)	Common Stock	SINOPEC ENGINEERING GROUP-H 1NS QT	AI19T7	B96WK83 DE	CNEI00001NV2		Y8C959105
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Eure Comp (XLON)	Common Stock	SINOPEC ENGINEERING GROUP-H 2386EUR EU	AI19T7		CNEI00001NV2	093502256	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFER)	Common Stock	SINOPEC KANTONS HOLDINGS SAK GB	923923	4601197 DE	BMG8165UJ09	011563384	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFER)	Common Stock	SINOPEC KANTONS HOLDINGS SAK GF	923923	4601197 DE	BMG8165UJ09	011563384	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFER)	Common Stock	SINOPEC KANTONS HOLDINGS SAK GR	923923	4601197 DE	BMG8165UJ09	011563384	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFER)	Common Stock	SINOPEC KANTONS HOLDINGS SAK GS	923923	4601197 DE	BMG8165UJ09	011563384	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Hong Kong (XHKG)	Common Stock	SINOPEC KANTONS HOLDINGS 934 HK	923923	6162692 HK	BMG8165UJ09	011563384	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Hong Kong (XHKG)	Common Stock	SINOPEC KANTONS HOLDINGS 934 H1	923923	BP9XCQ9 HK	BMG8165UJ09	011563384	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OQTC)	ADR	SINOPEC KANTONS-UNSPON ADR SPOKY PQ		B3KRT60	US82934W207	82934W207	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OQTC)	ADR	SINOPEC KANTONS-UNSPON ADR SPOKY US		B3KRT60	US82934W207	82934W207	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OQTC)	ADR	SINOPEC KANTONS-UNSPON ADR SPOKY UV		B3KRT60	US82934W207	82934W207	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OQTC)	Common Stock	SINOPEC KANTONS HOLDINGS SINKF US	923923		BMG8165UJ09	011563384	G8165UJ00
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	OTC US (OQTC)	Common Stock	SINOPEC KANTONS HOLDINGS SINKF UV	923923		BMG8165UJ09	011563384	G8165UJ00
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shanghai (XSHG)	Common Stock	SINOPEC SHANGHAI PETROCHEM-A 600688 CG	A0M3RA	6802794	CNE000000BB2		
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shanghai (XSHG)	Common Stock	SINOPEC SHANGHAI PETROCHEM-A 600688 CH	A0M3RA	6802794	CNE000000BB2		
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Nth SSE-SEHK (XSSE)	Common Stock	SINOPEC SHANGHAI PETROCHEM-A 600688 C1	A0M3RA	BP3R596 CN	CNE000000BB2		
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFER)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H 5888632 DE	A0M4Y5	5888632 DE	908303	005096162	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFER)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H 5888632 DE	A0M4Y5	5888632 DE	908303	005096162	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFER)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H 5888632 DE	A0M4Y5	5888632 DE	908303	005096162	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFER)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H 5888632 DE	A0M4Y5	5888632 DE	908303	005096162	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Quinx Exch (XQTX)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H 5888632 DE	A0M4Y5	5888632 DE	908303	005096162	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Hong Kong (XHKG)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H 6797458 HK	A0M4Y5	6797458 HK	908303	005096162	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shi SSE-SEHK (SHSC)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H 338 H1	A0M4Y5	BP3RXR0 HK	908303	005096162	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI SPONS ADR SHI UB	887169	2800059 US	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI SPONS ADR SHI UD	887169	2800059 US	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI SPONS ADR SHI UF	887169	2800059 US	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI SPONS ADR SHI UN	887169	2800059 US	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI SPONS ADR SHI UP	887169	2800059 US	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI SPONS ADR SHI UT	887169	2800059 US	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI SPONS ADR SHI VJ	887169	2800059 US	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI SPONS ADR SHI VK	887169	2800059 US	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI SPONS ADR SHI VY	887169	2800059 US	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFER)	ADR	SINOPEC SHANGHAI SPONS ADR SHI GB	887169	5734638 DE	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFER)	ADR	SINOPEC SHANGHAI SPONS ADR SHI GF	887169	5734638 DE	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFER)	ADR	SINOPEC SHANGHAI SPONS ADR SHI GM	887169	5734638 DE	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFER)	ADR	SINOPEC SHANGHAI SPONS ADR SHI GR	887169	5734638 DE	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFER)	ADR	SINOPEC SHANGHAI SPONS ADR SHI GS	887169	5734638 DE	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Singapore (XSES)	ADR	SINOPEC SHANGHAI SPONS ADR SHI SP	887169	B3MNGN2	908289	012248750	
SINOPEC SHANGHAI PETROCHEMICALS LTD	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (XNYS)	ADR	SINOPEC SHANGHAI SPONS ADR SHI US	887169	2800059 US	908289	012248750	

SINOPEC OILFIELD SERVICE CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shanghai (XSHG)	Common Stock	SINOPEC YZHENH CHEMICAL -A	600871 CG	A0M3V6	6986740 CN	CNEI000000HS3
SINOPEC OILFIELD SERVICE CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shanghai (XSHG)	Common Stock	SINOPEC YZHENH CHEMICAL -A	600871 CH	A0M3V6	6986740 CN	CNEI000000HS3
SINOPEC OILFIELD SERVICE CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Nth SSE-SEHK (XSXC)	Common Stock	SINOPEC YZHENH CHEMICAL -A	600871 C1	A0M3V6	BWTS1511 CN	CNEI000000HS3
SINOPEC OILFIELD SERVICE CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Hong Kong (XHKG)	Common Stock	SINOPEC YZHENH CHEMICAL-H	1033 HK	A0M4Y6	6984669 HK	CNEI000000D6
SINOPEC OILFIELD SERVICE CORP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Sh SSE-SEHK (SHSC)	Common Stock	SINOPEC YZHENH CHEMICAL-H	1033 H1	A0M4Y6	917709	CNEI000000D6
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Hong Kong (XHKG)	Common Stock	POLY PROPERTY GROUP CO LTD	119 HK	885546	622087 HK	HK0119000674
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CMJ GB	885546	BIHJ57 DE	HK0119000674
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CMJ GF	885546	BIHJ57 DE	HK0119000674
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CMJ GR	885546	BIHJ57 DE	HK0119000674
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CMJ GS	885546	BIHJ57 DE	HK0119000674
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	OTC US (OOTS)	Common Stock	POLY PROPERTY GROUP CO LTD	PHKIF US	885546	B23CST1 US	HK0119000674
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Sh SSE-SEHK (SHSC)	Common Stock	POLY PROPERTY GROUP CO LTD	119 H1	885546	BP3RQJ3 HK	HK0119000674
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	OTC US (OOTS)	Common Stock	POLY PROPERTY GROUP CO LTD	PHKIF PQ	885546	BTXRM4 US	US7316541090
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	OTC US (OOTS)	Common Stock	POLY PROPERTY GROUP CO LTD	PHKIF US	885546	BTXRM4 US	US7316541090
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	OTC US (OOTS)	Common Stock	DONGFENG MOTOR GROUP CO LTD	DNFGF PQ	A0M4XY	BOXZ Y65 US	CNEI 100000312
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Hong Kong (XHKG)	Common Stock	DONGFENG MOTOR GROUP CO LTD	489 HK	A0M4XY	B0PH5N3 HK	CNEI000003312
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Frankfurt (XFRA)	Common Stock	DONGFENG MOTOR GROUP CO LTD	D4D GB	A0M4XY	B0TB66 DE	CNEI000003312
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Frankfurt (XFRA)	Common Stock	DONGFENG MOTOR GROUP CO LTD	D4D GF	A0M4XY	B0TB66 DE	CNEI000003312
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Frankfurt (XFRA)	Common Stock	DONGFENG MOTOR GROUP CO LTD	D4D GM	A0M4XY	B0TB66 DE	CNEI000003312
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Frankfurt (XFRA)	Common Stock	DONGFENG MOTOR GROUP CO LTD	D4D GR	A0M4XY	B0TB66 DE	CNEI000003312
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Frankfurt (XFRA)	Common Stock	DONGFENG MOTOR GROUP CO LTD	D4D GS	A0M4XY	B0TB66 DE	CNEI000003312
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Qatar Exch (QXTX)	Common Stock	DONGFENG MOTOR GROUP CO LTD	D4D QT	A0M4XY	B0TB66 DE	CNEI000003312
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	OTC US (OOTS)	Common Stock	DONGFENG MOTOR GROUP CO LTD	DNFGF US	A0M4XY	BOXZ Y65 US	CNEI000003312
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Hong Kong (XHKG)	Common Stock	DONGFENG MOTOR GROUP CO LTD	489 H1	A0M4XY	B0PRTF0 HK	CNEI000003312
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	OTC US (OOTS)	Common Stock	DONGFENG MOTOR GROUP CO LTD	DNFGF PQ	A0M4XY	BSSQPT4 US	US2577382037
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	OTC US (OOTS)	ADR	DONGFENG MOTOR GROUP CO LTD	DNFGF US	A0M4XY	BSSQPT4 US	US2577382037
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	OTC US (OOTS)	Common Stock	DONGFENG MOTOR GROUP CO LTD	DNFGY UV	A0M4XY	BSSQPT4 US	US2577382037
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	OTC US (OOTS)	Common Stock	DONGFENG MOTOR GROUP CO LTD	DNFGF UV	A0M4XY	BOXZ Y65	CNEI000003312
EGYPT KUWAIT HOLDING CO	EGYPT KUWAIT HOLDING CO	Kuwait (XKUW)	Common Stock	EGYPT KUWAIT HOLDING CO SAE	EKHOLDN KK	A0H1G7	B0SHL5 KW	EG06082C013
EGYPT KUWAIT HOLDING CO	EGYPT KUWAIT HOLDING CO	Cairo (XCAL)	Common Stock	EGYPT KUWAIT HOLDING CO SAE	EKHO EC	A0H1G7	BQMD00 EG	EGS6982C013
EGYPT KUWAIT HOLDING CO	EGYPT KUWAIT HOLDING CO	Cairo (XCAL)	Common Stock	EGYPT KUWAIT HOLDING CO SAE	EKHO EY	A0H1G7	BQMD00 EG	EGS6982C013
ENERGY HOUSE HOLDING CO KSCOTHE	ENERGY HOLDING CO KSCOTHE	Kuwait (XKUW)	Common Stock	ENERGY HOLDING CO KSCOTHE	ENERGYH KK	A0ND4C	B13BW99 KW	KW020001801
GAZ OAO	GAZ GROUP	MICEX Main (MISX)	Common Stock	GAZ OAOCLS	GAZA RM	903426	B8RKB39 RU	RU0009034268
GAZ OAO	GAZ GROUP	MICEX Main (MISX)	Common Stock	GAZ OAOCLS	GAZA RX	903426	B8RKB39 RU	RU0009034268
GAZ OAO	GAZ GROUP	MICEX Main (MISX)	Reference	GAZ OAOCLS-REF	GAZAP RW	903426	B8RKB39 RU	RU0009034268
PAVLOVO BUS JSC	PAVLOVO BUS JSC	MICEX Main (MISX)	Common Stock	PAVLOVSKY BUS-CLS	PAZA RM	908324	B57MPC4 RU	RU0009083240
PAVLOVO BUS JSC	PAVLOVO BUS JSC	MICEX Main (MISX)	Common Stock	PAVLOVSKY BUS-CLS	PAZA RX	908324	B57MPC4 RU	RU0009083240
HARBIN ELECTRIC CO LTD	HARBIN ELECTRIC CO LTD	Hong Kong (XHKG)	Common Stock	HARBIN ELECTRIC CO LTD-H	1133 HK	A0M4X8	6422761 HK	CNEI0000009300
HARBIN ELECTRIC CO LTD	HARBIN ELECTRIC CO LTD	Frankfurt (XFRA)	Common Stock	HARBIN ELECTRIC CO LTD-H	HPRH GB	A0M4X8	BHJDX0 DE	CNEI0000009300
HARBIN ELECTRIC CO LTD	HARBIN ELECTRIC CO LTD	Frankfurt (XFRA)	Common Stock	HARBIN ELECTRIC CO LTD-H	HPRH GF	A0M4X8	BHJDX0 DE	CNEI0000009300
HARBIN ELECTRIC CO LTD	HARBIN ELECTRIC CO LTD	Frankfurt (XFRA)	Common Stock	HARBIN ELECTRIC CO LTD-H	HPRH GR	A0M4X8	BHJDX0 DE	CNEI0000009300
CHENNAI PETROLEUM CORPORATION LIMITED	INDIAN OIL CORP LTD aka IOCL	Mumbai (XBOM)	Common Stock	CHENNAI PETROLEUM CORP LTD	MRL IB	A0B968	6121565 IN	INE179A01016
CHENNAI PETROLEUM CORPORATION LIMITED	INDIAN OIL CORP LTD aka IOCL	Mumbai (XBOM)	Common Stock	CHENNAI PETROLEUM CORP LTD	MRL IN	A0B968	6121565 IN	INE179A01016
CHENNAI PETROLEUM CORPORATION LIMITED	INDIAN OIL CORP LTD aka IOCL	Mumbai (XBOM)	Common Stock	CHENNAI PETROLEUM CORP LTD	MRL IS	A0B968	6121565 IN	INE179A01016
INDIAN OIL CORP LTD	INDIAN OIL CORP LTD aka IOCL	Nat India (XNSE)	Common Stock	INDIAN OIL CORPORATION LTD	IOCL IB	A0B9FM	6253767 IN	INE24A01010
INDIAN OIL CORP LTD	INDIAN OIL CORP LTD aka IOCL	Nat India (XNSE)	Common Stock	INDIAN OIL CORPORATION LTD	IOCL IN	A0B9FM	6253767 IN	INE24A01010
INDIAN OIL CORP LTD	INDIAN OIL CORP LTD aka IOCL	Nat India (XNSE)	Common Stock	INDIAN OIL CORPORATION LTD	IOCL IS	A0B9FM	6253767 IN	INE24A01010
INDIAN OIL CORP LTD	INDIAN OIL CORP LTD aka IOCL	Nat India (XNSE)	Sec. Lending	INDIAN OIL CORP LTD-SLB	IOCLIS IN	A0B9FM	6253767 IN	INE24A01010
INDIAN OIL CORP LTD	INDIAN OIL CORP LTD aka IOCL	Nat India (XNSE)	Common Stock	INDIAN OIL CORP LTD-SLB	IOCLIS IS	A0B9FM	6253767 IN	INE24A01010
LANKA IOC PLC	INDIAN OIL CORP LTD aka IOCL	Colombo (XCCL)	Common Stock	LANKA IOC PLC	LIOC SL	A0B968	6121565 IN	INE179A01016
JIANGXI HONGDU AVIATION INDUSTRY CO LTD	JIANGXI HONGDU AVIATION INDUSTRY CO LTD	Shanghai (XSHG)	Common Stock	JIANGXI HONGDU AVIATION-A	600316 CG	A0M4EK	6304375 CN	CNEI0000015N3
JIANGXI HONGDU AVIATION INDUSTRY CO LTD	JIANGXI HONGDU AVIATION INDUSTRY CO LTD	Shanghai (XSHG)	Common Stock	JIANGXI HONGDU AVIATION-A	600316 CH	A0M4EK	6304375 CN	CNEI0000015N3
JIANGXI HONGDU AVIATION INDUSTRY CO LTD	JIANGXI HONGDU AVIATION INDUSTRY CO LTD	Nth SSE-SEHK (XSXC)	Common Stock	JIANGXI HONGDU AVIATION-A	600316 C1	A0M4EK	BP3R8J7 CN	CNEI0000015N3
TOHO TITANIUM CO	JX HOLDINGS INC	Tokyo (XTKS)	Common Stock	TOHO TITANIUM CO LTD	5727 JE	857914	6894627	JP3601800000
TOHO TITANIUM CO	JX HOLDINGS INC	Tokyo (XTKS)	Common Stock	TOHO TITANIUM CO LTD	5727 JI	857914	6894627	JP3601800000
TOHO TITANIUM CO	JX HOLDINGS INC	Tokyo (XTKS)	Common Stock	TOHO TITANIUM CO LTD	5727 JJ	857914	6894627	JP3601800000
TOHO TITANIUM CO	JX HOLDINGS INC	Tokyo (XTKS)	Common Stock	TOHO TITANIUM CO LTD	5727 JP	857914	6894627	JP3601800000
TOHO TITANIUM CO	JX HOLDINGS INC	Tokyo (XTKS)	Common Stock	TOHO TITANIUM CO LTD	5727 JT	857914	6894627	JP3601800000

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VOLLKSWAGEN AG

ATTACHMENT E

EIRIS Conflict Risk Network (CRN) List of "Scrutinized" Companies in Sudan List Effective March 31, 2016

<u>Company Name</u>	<u>Country of Origin</u>
Andritz AG	Austria
ASEC Company for Mining	Egypt
Bharat Electronics Limited	India
Bharat Heavy Electricals Limited	India
Caterpillar Inc.	US
China Gezhouba Group Company Ltd.	China
China Hydraulic and Hydroelectric Construction Group (Sinohydro)	China
Power Construction Corporation of China Ltd.	China
PowerChina Hydropower Development Group Ltd.	China
Sinohydro Bureau 7 Co. Ltd.	China
Sinohydro Engineering Bureau 8 Co. Ltd	China
China National Petroleum Corporation	China
CNPC General Capital Ltd.	China
CNPC HK Overseas Capital Ltd.	China
Daqing Huake Group Co. Ltd.	China
Jinan Diesel Engine Co. Ltd.	China
Kunlun Energy Co. Ltd.	China
PetroChina Co. Ltd.	China
China North Industries Group Corporation	China
AKM Industrial Co. Ltd.	China
NORINCO International Cooperation Ltd.	China
North Huajin Chemical Industries	China
North Navigation Control Technology Co. Ltd	China
Sichuan Nitrocell Co. Ltd	China
China Petrochemical Corporation (Sinopec Group)	China
China Petroleum and Chemical Corporation a.k.a. Sinopec Corp	China
Kingdream PLC	China
Sinopec Capital 2013 Ltd.	China
Sinopec Engineering Group Co. Ltd.	China
Sinopec Group Overseas Development 2012 Ltd.	China
Sinopec Group Overseas Development 2013 Ltd.	China
Sinopec Group Overseas Development 2014 Ltd.	China
Sinopec Group Overseas Development 2015 Ltd.	China
Sinopec Kanton Holdings Ltd.	China
Sinopec Oilfield Equipment	China
Sinopec Oilfield Service Corp.	China
Sinopec Shanghai Petrochemicals Ltd.	China
Sinopec Yizheng Chemical Fibre Co. Ltd.	China
China Poly Group Corporation	China
Poly Property Group Co. Ltd.	China
Dongfeng Motor Group Co. Ltd.	China
Egypt Kuwait Holding Company	Egypt
Energy House Holding Co. K.S.C.C., The	Kuwait
GAZ Group	Russia
GAZ OAO	Russia
Pavlovo Bus JSC	Russia
Kamaz OJSC	Russia
Neftekamsky Avtozavod aka NEFAZ	Russia
Glencore PLC	Switzerland
Glencore Canada Corp.	Switzerland
Glencore Canada Financial Corp.	Switzerland
Glencore Finance Canada Ltd.	Switzerland

Glencore Finance Dubai Ltd.	Switzerland
Glencore Finance Europe	Switzerland
Glencore Funding LLC	Switzerland
Viterra Inc.	Switzerland
Harbin Electric Company Ltd.	China
Indian Oil Corporation Ltd.	India
Chennai Petroleum Corporation Ltd.	India
Lanka IOC PLC	India
Jiangxi Hongdu Aviation Industry Co. Ltd.	China
JX Holdings Inc.	Japan
Eneos Globe Company	Japan
Nippo Corp.	Japan
Toho Titanium Co.	Japan
LS Industrial Systems	South Korea
MAN SE	Germany
Renk AG	Germany
Volkswagen AG	Germany
Managem	Morocco
ONA S.A.	Morocco
Societe Metallurgique D'imiter	Morocco
Societe Nationale d'Investissement (SNI) S.A.	Morocco
Oil and Natural Gas Corporation Limited	India
Mangalore Refinery and Petrochemicals Ltd. a.k.a MRPL	India
ONGC Videsh Limited a.k.a OVL	India
Oil India Ltd.	India
Orca Gold Inc.	Canada
Pertamina Persero PT	Indonesia
Petroliam Nasional Berhad (Petronas)	Malaysia
Engen Botswana Ltd.	Malaysia
Gas District Cooling Putrajaya Sdn Bhd	Malaysia
KLCC Property Holdings Bhd	Malaysia
Malaysia International Shipping Company a.k.a MISC Berhad	Malaysia
Malaysia Marine and Heavy Engineering Holdings Bhd	Malaysia
Petronas Capital Ltd.	Malaysia
Petronas Chemicals Group Berhad	Malaysia
Petronas Dagangan Bhd	Malaysia
Petronas Gas Bhd	Malaysia
Putrajaya Holdings Sdn Bhd	Malaysia
Reliance Industries Ltd.	India
Network 18 Media & Investments Ltd.	India
Reliance Holdings USA Inc	India
Reliance Jio Infocomm Ltd.	India
TV18 Broadcast Ltd.	India
Scomi Group Berhad	Malaysia
KMCOB Capital Berhad	Malaysia
Scomi Energy Services Bhd	Malaysia
Scomi Engineering Berhad	Malaysia
Shanghai Electric Group Co. Ltd.	China
Shanghai Electric Group Corp.	China
Shanghai Mechanical and Electrical Industry Co. Ltd.	China
Trafigura Beheer	Netherlands

Note: List contains parent companies and subsidiaries publicly traded

EIRIS Conflict Risk Network (CRN) List of Companies in Sudan for "Substantial Action"
List Effective March 31, 2016

<u>Company Name</u>	<u>Country of Origin</u>
Atlas Copco AB	Sweden
Wartsila OYJ	Finland

EIRIS Conflict Risk Network (CRN) List of Companies in Sudan with "No Publicly Traded Equity"
or "Not Relevant under the CRN Targeted Divestment Model"
List Effective March 31, 2016

<u>Company Name</u>	<u>Country of Origin</u>
Abdel Hadi Abdullah Al-Qahtani & Sons Group of Companies	Saudi Arabia
Abdel Moniem International Petroleum Co. Ltd. (Petromoniem)	Sudan
ACES (Arab Center for Engineering Studies) Khartoum	Jordan
Africa Energy Sa Nigeria Ltd.	Nigeria
Ansan Wikfs Investments Ltd.	Yemen
Antonov	Ukraine
APS Engineering Company Roma S.p.A.	Italy
Arcadia Petroleum Ltd.	UK
Ariab Mining Company	Sudan
Blue Coat Systems	USA
China International Water & Electric Corporation	China
Concorp Petroleum Limited	Sudan
Daedong Industrial Machinery Co., Ltd	South Korea
Dindir Petroleum International	Jordan
European Marmot Co. Group	Switzerland
Express Petroleum and Gas Company	Nigeria
GIAD Motor Co Ltd.	Sudan
Hemia II AS	Norway
Hi-Tech Petroleum Group Co., Ltd.	Sudan
HTC Yemen International Ltd.	Yemen
IGS (International Geoscience Services) Ltd.	United Kingdom
MAM Holding Group Co. Ltd.	Sudan
Mott MacDonald	UK
Niel Petroleum S.A.	Luxembourg
Petroneeds Service International Company	Sudan
PetroTrans Company Ltd.	Hong Kong
Quest Qualitas FZCO	United Arab Emirates
RAM Energy	Sudan
SFTUE Belspetsvneshteknika	Belarus
Shandong Electric Power Construction Corporation	China
SMEC Holdings Limited	Australia
Soma Group	Turkey
Star Petroleum S.A.	Spain
STR Projetos e Participacoes	Brazil
Sudanese Petroleum Pipeline Holding Co. Ltd.	Sudan
Sudan Petroleum Corporation (Sudapet)	Sudan
Sudatel Telecom Group Limited	Sudan
Toro Gold Ltd.	UK
UAE for Gold Minerals and Investment Company Ltd.	United Arab Emirates
Vitol Group	Switzerland

Source: EIRIS Conflict Risk Network (March 31, 2016)

ATTACHMENT F

Letter to SBI International and Domestic Equity Managers

March 21, 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 December 22, 2015 letter you received. **This new list is effective March 31, 2016.**

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

- **Daelim Industrial** **South Korea**

Attachment 2 is the List of Iran Companies Requiring Divestment.

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

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

If you own securities of companies on the List of Iran Companies Requiring Divestment in the SBI portfolio that your organization manages, 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.

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. The manager is responsible for identifying all listings.

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

Sincerely,

LeaAnn M. Stagg
Chief Operating Officer

Enclosures

cc: Michael J. Menssen, Director, Public Markets
Patricia Ammann, Investment Officer, DC & Trust Services
Mercy Ndungu, Investment Officer, DC & Trust Services
Tammy Brusehaver, Investment Officer, Public Markets
Inma Conde Goldman, Investment Officer, Public Markets
Stephanie Gleeson, Investment Officer, Public Markets
Robert Weiler, Investment Officer, Public Markets

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

COMPANY NAME	COUNTRY
Bharat Petroleum Corporation Ltd.	India
China Petroleum & Chemical Corp	China
Daelim Industrial	South Korea
Eni Spa	Italy
Gail (India) Ltd.	India
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
Lukoil Oil Co.	Russia
Mitsui & Co. Ltd	Japan
Oil & Natural Gas Corporation Ltd.	India
PetroChina Co. Ltd.	China
Toyo Engineering Corporation	Japan
Toyota Tsusho Corporation	Japan

Effective Date: March 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
Eni Spa	Italy	September 30, 2016	March 31, 2017
GS Engineering & Construction Corp	South Korea	June 30, 2016	December 31, 2016
Gazprom OAO	Russia	December 31, 2015	June 30, 2016
Lukoil Oil Co.	Russia	March 31, 2016	September 30, 2016

Effective Date: March 31, 2016

COMPLETED/HISTORICAL DIVESTMENTS

Company Name	Country of Origin	Divest 50 Percent By this Date	Divest 100 Percent By this Date
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

Company	ISIN	SYMBOL	CUSIP	Country
Bharat Petroleum Corporation Ltd.	INE029A01011	500547		India
China Petroleum & Chemical Corp	US16941R1086	386	16941R108	China
China Petroleum & Chemical Corp	CNE1000002Q2	386	16941R108	China
China Petroleum & Chemical Corp	CNE0000018G1	386	16941R108	China
China Petroleum & Chemical Corp	ARDEUT114071	386	16941R108	China
Daelim Industrial	KR7000211003	A000210		South Korea
Daelim Industrial	KR7000210005	A000210		South Korea
Eni Spa	US26874R1086	ENI	26874R108	Italy
Eni Spa	IT0003132476	ENI	26874R108	Italy
Eni Spa	ARDEUT112612	ENI	26874R108	Italy
Gail (India) Ltd.	US36268T2069	532155	36268T206	India
Gail (India) Ltd.	US36268T1079	532155	36268T206	India
Gail (India) Ltd.	INE129A01019	532155	36268T206	India
Gazprom OAO	US3682873068	GAZP	368287207	Russia
Gazprom OAO	US3682873068	GAZP	368287207	Russia
Gazprom OAO	US3682872078	GAZP	368287207	Russia
Gazprom OAO	US3682872078	GAZP	368287207	Russia
Gazprom OAO	US3682872078	GAZP	368287207	Russia
GS Engineering & Construction Corp	KR7006360002	A006360		Korea South
Gubre Fabrikalari T.A.S.	TRAGUBRF91E2	GUBRF		Turkey
Indian Oil Corporation Ltd.	INE242A01010	530965		India
L G International	KR7001120005	A001120		Korea South
Lukoil Oil Co.	US78306P5070	LKOH	677862104	Russia
Lukoil Oil Co.	US6778628726	LKOH	677862104	Russia
Lukoil Oil Co.	US6778628072	LKOH	677862104	Russia
Lukoil Oil Co.	US6778627082	LKOH	677862104	Russia
Lukoil Oil Co.	US6778626092	LKOH	677862104	Russia
Lukoil Oil Co.	US6778622034	LKOH	677862104	Russia
Lukoil Oil Co.	US6778621044	LKOH	677862104	Russia
Lukoil Oil Co.	US5498742049	LKOH	677862104	Russia
Lukoil Oil Co.	RU0009024277	LKOH	677862104	Russia
Lukoil Oil Co.	KYG772401447	LKOH	677862104	Russia
Lukoil Oil Co.	ARDEUT114253	LKOH	677862104	Russia
Mitsui & Co. Ltd	XS0029348686	8031	606827202	Japan
Mitsui & Co. Ltd	US6068272029	8031	606827202	Japan
Mitsui & Co. Ltd	JP3893600001	8031	606827202	Japan
Oil & Natural Gas Corporation Ltd.	INE213A01029	500312		India
Oil & Natural Gas Corporation Ltd.	INE213A01011	500312		India
PetroChina Co. Ltd.	US71646E1001	857	71646E100	China
PetroChina Co. Ltd.	CNE1000007Q1	857	71646E100	China
PetroChina Co. Ltd.	CNE1000003W8	857	71646E100	China
PetroChina Co. Ltd.	ARDEUT113958	857	71646E100	China
Toyo Engineering Corporation	JP3607800004	6330		Japan
Toyota Tsusho Corporation	US89240C1062	8015		Japan
Toyota Tsusho Corporation	JP3635000007	8015		Japan

Letter to Fixed Income Managers

March 21, 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 December 22, 2015 letter you received. **This new list is effective March 31, 2016.**

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

- **Daelim Industrial** **South Korea**

Attachment 2 is the List of Iran Companies Requiring Divestment.

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

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

If you own securities of companies on the List of Iran Companies Requiring Divestment in the SBI portfolio that your organization manages, 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.

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 Aaron Griga, Cassandra Boll or Mercy Ndungu.

Sincerely,

LeaAnn M. Stagg
Chief Operating Officer

Enclosures

cc: Michael J. Menssen, Director, Public Markets
Aaron Griga, Investment Officer, Public Markets
Cassandra Boll, Investment Officer, Public Markets & Private Markets
Steve Kuettel, Investment Officer, Cash Mgmt. Services
Patricia Ammann, Investment Officer, DC & Trust Services
Mercy Ndungu, Investment Officer, DC & Trust Services

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

COMPANY NAME	COUNTRY
Bharat Petroleum Corporation Ltd.	India
China Petroleum & Chemical Corp	China
Daelim Industrial	South Korea
Eni Spa	Italy
Gail (India) Ltd.	India
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
Lukoil Oil Co.	Russia
Mitsui & Co. Ltd	Japan
Oil & Natural Gas Corporation Ltd.	India
PetroChina Co. Ltd.	China
Toyo Engineering Corporation	Japan
Toyota Tsusho Corporation	Japan

Effective Date: March 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
Eni Spa	Italy	September 30, 2016	March 31, 2017
GS Engineering & Construction Corp	South Korea	June 30, 2016	December 31, 2016
Gazprom OAO	Russia	December 31, 2015	June 30, 2016
Lukoil Oil Co.	Russia	March 31, 2016	September 30, 2016

Effective Date: March 31, 2016

COMPLETED/HISTORICAL DIVESTMENTS

Company Name	Country of Origin	Divest 50 Percent By this Date	Divest 100 Percent By this Date
Mitsui & Company, Ltd.	Japan	September 30, 2012	March 31, 2013
Toyota Tsusho	Japan	September 30, 2012	March 31, 2013

TAB

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SBI ADMINISTRATIVE COMMITTEE REPORT

DATE: May 26, 2016

TO: Members, State Board of Investment

FROM: **SBI Administrative Committee**

The Administrative Committee met on April 18, 2016 to consider the following agenda items:

- Review of Executive Director's Proposed Workplan for FY17
- Review of Budget Plan for FY17 and FY18
- Review of Continuing Fiduciary Education Plan
- Review of Executive Director's Evaluation Process
- Update of Business Continuity Plan

Action is required by the SBI on the first four items.

1. Review of Executive Director's Proposed Workplan for FY17.

The Executive Director's Proposed Workplan for FY17 was presented. As in previous workplans, the FY17 plan follows the same category order found in the Executive Director's position description. The plan is a compilation of on-going responsibilities as well as the new initiatives the Executive Director will undertake during the next fiscal year.

A summary of the proposed plan is shown in **Attachment A** on **page 5** of this Tab. Supporting information was sent to each Board member in April 2016 as part of the FY17 Management and Budget Plan document.

RECOMMENDATION:

The Committee recommends that the SBI approve the FY17 Executive Director's Workplan. Further, the Committee recommends that the Workplan serve as the basis for the Executive Director's performance evaluation for FY17.

2. Review of Budget Plan for FY17 and FY18.

The SBI's Administrative budget is set annually by the Board with direct charge-back to entities that invest with the SBI. The Legislature also provides an appropriation from the general fund to support management of general fund assets.

An overview of the budget is shown in **Attachment B** on **page 9** of this tab. Supporting information was sent to each Board member in April 2016 as part of the FY17 Management and Budget Plan.

RECOMMENDATION:

The Committee recommends that the SBI approve the FY17, and FY18 Administrative Budget Plan, as presented to the Committee, and that the Executive Director have the flexibility to reallocate funds between budget categories if the Executive Director deems necessary.

3. Review of Continuing Fiduciary Education Plan.

Minnesota Statutes, Chapter 356A requires each public pension plan to establish a continuing education plan for its fiduciaries. The plan approved by the Committee is in **Attachment C** on **page 11** of this Tab. Please note that the travel allocation policy for Board members and their designees is included in the plan.

RECOMMENDATION:

The Committee recommends that the SBI adopt the attached Continuing Fiduciary Education Plan.

4. Review of Executive Director's Evaluation and Salary Process.

The Committee discussed the process that will be used by the Board to evaluate the Executive Director for FY16. The Committee members agreed that the performance reviews should be completed prior to the September 2016 meeting of the SBI and should follow the process as discussed.

RECOMMENDATION:

The Committee recommends that the SBI adopt the following performance evaluation and salary process for the SBI Executive Director:

- **The evaluation will be completed by October 1.**
- **The evaluation will be based on the results of the Executive Director's workplan for the fiscal year ending the previous June 30.**

- **The SBI deputies/designees will develop an appropriate evaluation form for use by each member.**
- **As Chair of the Board, the Governor (or his representative) will coordinate distribution of the evaluation forms. Board members will forward completed evaluations to the Executive Director with a copy to the Governor or the Governor's designee and are encouraged to meet individually with the Executive Director to review their own evaluation.**
- **Upon satisfactory performance evaluations from a majority of responding Board Members, the Executive Director's annual salary adjustment will be any Cost-of-Living Adjustment (COLA)/Across the Board (ATB)/General Salary Increase contained in the Managerial Plan for a Fiscal Year as approved by the Legislature to the extent that it is within the Executive Director's salary range. The adjustment shall be effective January 1 of the next calendar year.**

ATTACHMENT A

STATE BOARD OF INVESTMENT Executive Director's Proposed Workplan

FY17

(Categories A, B, C, D, E correspond to the position description)

	Projected Time Frame
A. DEVELOPMENT OF INVESTMENT POLICIES	
1. Enhanced Private Equity Fee Reporting	Ongoing
2. Review of Environmental, Social and Governance Issues	Jul. – May
B. IMPLEMENTATION OF INVESTMENT POLICIES APPROVED BY THE SBI	
1. Implementation of the Asset Allocation for the Combined Funds	FY17/FY18
2. Implementation of Enhancements to Defined Contribution Plan	FY17
3. Meet or Exceed the Performance Objectives	Ongoing
4. Investments with New and Existing Alternative Asset Managers	Ongoing
5. Manager Search Process	Ongoing
6. Conduct Investment Manager Compliance Review of Guidelines and Contracts	Ongoing
7. Implement State Law Concerning Iran	Ongoing
8. Implement State Law Concerning Sudan	Ongoing
C. REVIEW AND CONTROL OF INVESTMENT POLICIES	
1. Monitor and Evaluate Investment Manager Performance	Ongoing
2. Manager Guidelines	May – Jun.
3. Provide Staff Support to Proxy Committee	Jul. – Jun.

- | | |
|---|-------------|
| 4. Monitor Implementation of Northern Ireland Mandate | Oct. – Mar. |
| 5. Provide Staff Support for Corporate Actions and Miscellaneous Legal Issues | Jul. – Jun. |

D. ADMINISTRATION AND MANAGEMENT

- | | |
|---|-------------|
| 1. RFP for Investment Consultant | Jul. – Dec. |
| 2. RFP for Accounting System | Jan. – Jun. |
| 3. Internal Cash Management RFP for Major Revenue Banking Services and Custodial Services for State Cash Accounts | Nov. – Jun. |
| 4. RFP for Custodial Services | Feb. – Sep. |
| 5. Implement GASB 72 | Jan. – Dec. |
| 6. Coordinate Financial Audit by Legislative Auditor | Jul. – Dec. |
| 7. Prepare 2017 Legislative Package | Jul. – May |
| 8. Prepare Fiscal Year 2018 Management and Budget Plan | Mar. – Jun. |
| 9. Annual Update of Business Continuity Plan | Apr. – Jun. |
| 10. Accounting Process Improvements | Jan. – May |
| 11. Prepare Annual SIF Investment Options Prospectus and Information Booklet for the Voluntary Statewide Volunteer Firefighter Plan (VSVFP) | May – Sep. |
| 12. Contract Management | As Needed |
| 13. Respond to Minnesota Government Data Practices Act Requests | Ongoing |

E. COMMUNICATION AND REPORTING

- | | |
|--|--------------|
| 1. Prepare reports on investment results | Qtly |
| 2. Prepare Status Reports | As requested |
| 3. Meet with SBI and IAC | Qtly |
| 4. Meet with Board's designees | Qtly |
| 5. Prepare Fiscal Year 2016 Annual Report | Jul. – Jan. |
| 6. Coordinate Public Pension Plan Performance Reporting Disclosure | Ongoing |
| 7. Conduct Manager Roundtables | Periodic |

F. OTHER ITEMS

During the course of the year, the Executive Director may encounter other significant items which must be addressed that were not contemplated at the time the annual workplan was developed. Any such items will be reported in the Executive Director's Workplan Status Report.

ATTACHMENT B

Administrative Budget Fiscal Year 2016 & 2017 Budget Plan Overview

The Fiscal Years 2016 and 2017 budget request is based on budget procedures instituted by Department of Minnesota Management and Budget. The SBI receives a General Fund appropriation (currently \$139,000) to manage the General Fund portion of the Invested Treasurer's Cash (ITC) pool. The remaining budget revenues are generated from invoicing actual cost of services to plans that have funds under SBI management.

The Fiscal Year 2017 budget includes 30 Full Time Equivalent (FTE) positions. No new FTE's were added from the Fiscal Year 2016 budget request. We have included a 3% projected salary increase in the budget for all staff in Fiscal Years 2017 and 2018. The 3% salary increase extends to the Executive Director in order to accommodate a salary increase that may be approved by the Board in the Executive Director annual evaluation process. The actual salary increases for non-investment staff will be determined by legislative negotiated contracts per bargaining unit. The investment staff salary increase, if any, will be determined in accordance with the SBI Salary Plan.

**STATE BOARD OF INVESTMENT
FISCAL YEAR 2017 BUDGET PLAN**

DESCRIPTION	FY2014 Actual	FY2015 Actual	FY2016 Projected	FY2017 Proposed	FY2018 Proposed
PERSONNEL SERVICES					
FULL TIME EMPLOYEES	\$ 3,129,482	\$ 3,501,165	\$ 3,944,800	\$ 4,838,700	\$ 4,953,400
PART TIME EMPLOYEES	49,632		-	-	-
OTHER BENEFITS	227,178	71,370	5,000	100,000	100,000
SUBTOTAL	\$ 3,406,292	\$ 3,572,535	\$ 3,949,800	\$ 4,938,700	\$ 5,053,400
STATE OPERATIONS					
RENTS & LEASES	200,419	207,109	284,000	300,000	300,000
REPAIRS/ALTERATIONS/MAINTENANCE	21,797	8,906	325,000	15,000	14,000
PRINTING & BINDING	3,603	8,210	7,000	8,000	8,000
PROFESSIONAL/TECHNICAL SERVICES	89,529	14,396	40,400	150,000	150,000
COMPUTER SYSTEMS SERVICES	17,838	13,931	16,400	20,000	20,000
COMMUNICATIONS	21,141	25,338	24,400	36,000	36,000
TRAVEL, IN-STATE	633	390	400	1,000	1,000
TRAVEL, OUT-STATE	37,364	57,200	56,800	119,000	119,000
SUPPLIES	31,246	23,455	120,200	27,000	27,000
EQUIPMENT	72,463	2,613	22,000	25,000	35,000
EMPLOYEE DEVELOPMENT	15,406	18,491	37,000	35,000	35,000
OTHER OPERATING COSTS	99,805	125,511	101,200	140,000	140,000
INDIRECT COSTS			227,600	250,000	250,000
SUBTOTAL	\$ 611,244	\$ 505,549	\$ 1,262,400	1,126,000	1,135,000
TOTAL MSBI OPERATING EXPENDITURES	\$ 4,017,536	\$ 4,078,084	\$ 5,212,200	\$ 6,064,700	\$ 6,188,400
PERCENT INCREASE OVER PRIOR YEAR		1.5%	27.8%	16.4%	2.0%

ATTACHMENT C

CONTINUING FIDUCIARY EDUCATION PLAN

REQUIRED BY MS 356A.13

The State Board of Investment (SBI) undertakes the following activities related to fiduciary education. Taken as a group, these activities shall constitute the plan for continuing fiduciary education required by Minnesota Statutes 356A.13. In addition, pursuant to statutory requirements of qualification, the SBI executive director and many members of the Board's Investment Advisory Council (IAC) can be reasonably considered to be experts with respect to their duties as fiduciaries.

1. Briefing for New Board/IAC Members

Shortly after election to the Board or appointment to the IAC, each new member is briefed on SBI operations and policies. As part of the briefing, SBI's legal counsel will review the member's fiduciary obligations and responsibilities as specified in Minnesota Statutes Chapters 11A and 356A.

2. Development and Review of Investment Policies

The SBI adopts comprehensive investment policies for each fund under its control. The policies cover investment objectives, asset allocation, management structure, and performance evaluation. Policy papers or reports on these topics are developed and written by SBI staff in conjunction with the IAC and consultants. Relevant research and analyses from the academic and professional investment fields are used to formulate these policy guidelines.

After the Board formally adopts them, these written policies guide the management of all assets under the SBI's control. The SBI intends to review its stated investment policies periodically. This review may occur within the framework of the SBI's regular quarterly meetings or may take place at special meetings or seminars specifically designated for this purpose.

3. Input from Board's Consultants

The SBI retains outside investment consultants to advise the Board members on a wide variety of investment management issues. As part of their contracts with the SBI, the consultants offer to meet with the Board members or their designees to discuss investment-related issues. These individual consultations occur throughout the year. In addition, the general consultant is available at each meeting of the Board and IAC. These meetings are supplemented by quarterly reports on investment performance prepared by the general consultant.

4. Manager Roundtables

The SBI intends to convene small groups of its external money managers to discuss issues related to investment management and the financial markets. These roundtable discussions will be held periodically throughout the year and will be open to Board members and their designees, IAC members and other interested parties. It is anticipated that 2-3 roundtables will be held each year.

5. Travel Allocation

The SBI allocates \$5,000 annually to each Board member (or their designee) for costs associated with attendance at investment-related seminars and conferences. This allocation is used at the discretion of each Board member.

2015 Minnesota Statutes

356A.13. CONTINUING FIDUCIARY EDUCATION.

Subdivision 1. **Obligation of fiduciaries.** A fiduciary of a covered pension plan shall make reasonable effort to obtain knowledge and skills sufficient to enable the fiduciary to perform fiduciary activities adequately. At a minimum, a fiduciary of a covered pension plan shall comply with the program established in accordance with subdivision 2.

Subd. 2. **Continuing fiduciary education program.** The governing boards covered pension plans shall each develop and periodically revise a program for the continuing education of any of their board members and any of their chief administrative officers who are not reasonably considered to be experts with respect to their activities as fiduciaries. The program must be designed to provide those persons with knowledge and skills sufficient to enable them to perform their fiduciary activities adequately.

TAB

D

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DEFERRED COMPENSATION REVIEW COMMITTEE REPORT

DATE: May 26, 2016

TO: Members, State Board of Investment

FROM: Members, Deferred Compensation Review Committee

SUBJECT: Review of the State Deferred Compensation Plan

The Deferred Compensation Review Committee (Committee) met on April 18, 2016, to consider recommendations to the State Deferred Compensation Plan (Plan) and to provide a review of the Plan's existing investment structure. The Plan is a tax sheltered IRC 457(b) retirement savings plan available to public employees in the state. It is a supplement to the primary defined benefit retirement plans of Teachers Retirement Association (TRA), Public Employees Retirement Association (PERA) and Minnesota State Retirement System (MSRS). MSRS is the administrator and SBI is responsible for selecting investment options and investments managers for the Plan. As of March 31, 2016, the Plan had more than \$5.8 billion in participant assets making it the fifth largest 457(b) plan in the nation.

Background: Deferred Compensation Plan and Investment Structure Review

For the benefit of new Committee members, MSRS staff provided background on the State's Deferred Compensation Plan. MSRS noted that the Plan, first established in 1971 for state employees, became available to all Minnesota public employees in 1975. In administering the Plan, MSRS stated that they use an unbundled service model with an outside record keeper. In this approach, MSRS staff are responsible for participant service functions including the call center, retirement counseling, and marketing and enrollment. The record keeper, Great-West, is responsible for all other record keeping functions. MSRS staff noted that while the Plan is voluntary, there were more than 83,000 participants with a balance in the Plan as of March 31, 2016. In 2012, the Plan initiated a Roth after-tax savings option as well.

After the MSRS review, State Board of Investment (SBI) staff provided a brief review of the three-tier investment structure of the Plan that is in line with other large public plans and "best practices" in the defined contribution marketplace. The three-tier structure is made up of:

- 1) Target Date Funds (TDFs);
- 2) A set of Core Investment Options; and
- 3) A Brokerage Window.

Target Date Funds

SBI staff explained that TDFs are designed to simplify the investment process for those participants who do not want to select their own investments. TDFs are professionally "pre-packaged" and well diversified investment portfolios that automatically adjust to become more conservative as the fund's retirement date approaches. The significant growth in participant

TDF usage, from only 2% of defined contribution 401(k) assets in 2005 to 23% by 2014, highlights the success TDFs have had in the defined contribution marketplace. (Source: 2015 Vanguard-How America Saves)

Core Investment Options

SBI staff noted that the current set of core investment options in the Plan appropriately span the risk-return spectrum and allow participants to create well-diversified portfolios based on individual risk profiles. Additionally, SBI staff noted that the Plan has a relatively small number of core investment options (i.e. 11) which helps reduce participant confusion and is consistent with “best practices” (i.e. average number of options is 13.) Lastly, staff noted that low cost, passively managed options and actively managed options are offered in the Plan which is also consistent with other public plans.

Brokerage Window

Consistent with “best practices” in plan structure, the Minnesota Plan also offers a brokerage window for those participants who desire a broader range of investment options. The Plan’s brokerage window allows interested participants to select from thousands of mutual funds including sector funds, specialty funds and socially responsible funds such as fossil free funds that may not be appropriate in the core investment line-up.

2016 Deferred Compensation Plan Review

After this brief review, the SBI and MSRS staff presented the recommendations and analysis as outlined in the attached memo, dated April 11, 2016.

In summary, the SBI and MSRS staff made the following recommendations to the Deferred Compensation Plan Committee:

1) Transition to lower fee, institutional share classes where available. Both the Fidelity Diversified International and the T. Rowe Price Small-Cap mutual funds offer lower fee, institutional share classes that will benefit participants.

- Fidelity – fund expense will decline from 0.91% to 0.78%
- T. Rowe Price – fund expense will decline from 0.91% to 0.67%

Note: Subsequent to the Committee meeting, Fidelity announced that they will be offering a lower priced vehicle for the Fidelity Diversified International mutual fund. When this vehicle becomes available, the SBI Staff and MSRS Staff believe transitioning to the new vehicle will be in the best interest of participants.

2) Replace Janus Twenty with the Vanguard Dividend Growth Fund. Due to continued underperformance relative to its benchmark and relatively high fees, staff recommended terminating Janus Twenty as the active large-cap investment option.

Because only one large cap, active investment option is offered to participants, staff felt it would be more appropriate to replace this investment option with a fund that blends both value

and growth in its investment process (i.e. Blend or Core manager.) Janus, similar to other growth managers, has exhibited relatively high levels of volatility compared to core or value managers. Staff reviewed its manager search process with the Committee and recommended that the Vanguard Dividend Growth Fund (Blend or Core fund) replace Janus Twenty. This Vanguard fund was recommended given its strong investment team and process, positive relative investment returns and competitive fees.

- 3) **Maintain the current TDFs and glide path managed by SSgA.** Staff presented Callan's review of SSgA and alternative TDFs providers and glide paths and recommended that the Plan continue with the well diversified and prudently managed SSgA TDF that provide a moderate and suitable glide path for participants.

After discussion, the Committee made the following recommendation:

RECOMMENDATION:

The Deferred Compensation Committee, in conjunction with the MSRS Board, recommends the following changes to the Minnesota Deferred Compensation Plan investments:

- 1) **Transition the Fidelity Diversified International and T. Rowe Price Small Cap retail mutual fund shares into the lower priced institutional share classes. For any Deferred Compensation Plan option where a lower priced share class or vehicle becomes available, the Executive Director is authorized to transition into the lower priced option, if deemed appropriate.**
- 2) **Replace Janus Twenty with the Vanguard Dividend Growth Fund.**

Staff noted that, if approved by both the MSRS Board and the SBI, both changes would be communicated and implemented at the same time in Fiscal Year 2017.

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

DATE: April 11, 2016

TO: Deferred Compensation Committee Members

FROM: Mansco Perry, Executive Director and CIO

MP3

RE: **Recommended Changes to Deferred Compensation Plan**

Executive Summary

MSRS and SBI staff work closely to maintain a well-structured deferred compensation plan (MNDC Plan) that is competitively priced and offers an appropriate range of investment options that are aligned with participants' needs. As of December 31, 2015, the total Defined Contribution assets of \$7.6 billion managed by the SBI ranks as the tenth largest in the U.S. according to Pension & Investments. Of the DC assets, the MNDC Plan is the largest with assets just under \$5.7 billion. For reference, table 1 in Appendix A provides the listing of investment options and a summary of the fee schedule.

In Fiscal Year 2016, staff reviewed investment options, manager performance, investment management fees, and performed an in depth evaluation of the Target Date Funds (TDFs) offered within the defined contribution plans. Overall, the review found that the plan offered an appropriate and well diversified set of investment options (See Appendix A for more details on current plan) but staff made the following recommendations:

Recommendation: Transition to Lower Investment Fee Share Classes

Transition the Fidelity Diversified International and T. Rowe Price Small Cap retail mutual fund shares (table 2 in Appendix A) into the respective institutional share classes to benefit from lower investment management fees.

- T. Rowe Price - fund expense to decline from 0.91% to 0.67%
- Fidelity - fund expense to decline from 0.91% to 0.78%

Recommendation: Replace Janus Twenty with Vanguard Dividend Growth Fund

Due to underperformance relative to its benchmark over various time periods, portfolio manager turnover, and relatively high fees (.81%), replace Janus Twenty (Active, Large-cap) with the Vanguard Dividend Growth Fund (See Appendix B for details). If approved, staff would recommend mapping the Janus Twenty assets to the Vanguard Dividend Growth Fund, which has:

- Investment management fees that are competitively priced at 0.32% (no 12b-1 fees or load fees);
- Earned positive relative returns over their benchmark, the NASDAQ US Dividend Achievers Select over various time periods;

60 Empire Drive
Suite 355
St. Paul, MN 55103
(651) 296-3328
FAX (651) 296-9572
E-mail:
minn.sbi@state.mn.us
www.sbi.state.mn.us

An Equal Opportunity
Employer

- An experienced portfolio manager, Donald Kilbride, who has over 19 years in the investment industry and a strong team of global equity analysts.
- Over \$26 billion in assets managed by Wellington Management Co. LLP, in an actively managed mandate;
- Low risk metrics and is a concentrated portfolio of approximately 50 holdings with a 10% exposure to non US companies that receive a large portion of their revenue from the US. The fund can invest up to a maximum of 25% of assets in non-US stocks.

Recommendation: Maintain SSgA Target Date Fund Option and Current Custom Glide Path

Maintain relationship with current target date fund provider and continue with the custom glide path for the Minnesota Target Retirement Fund (Target Date Fund) managed by State Street Global Advisors (SSgA). As of December 2015, SSgA had \$362.7 billion in defined contribution assets, of this total, target-date funds represented about 8.4% (\$30.5 billion). SBI staff is recommending that plan sponsor retain SSgA for the following reasons:

- SSgA is a stable organization with a long-tenured team.
- DC plan assets in target-date strategies have grown significantly over the past decade (from 2% in 2005 to 23% in 2014)*.
- Target-date funds continue to be a prudent option for participants who want others to make the investment decisions for them and maintain the portfolio with periodic rebalancing.
- Custom glide path is suitable for participants and appropriately addresses their risk behavior and compares favorably relative to peers.
- Is well diversified and prudently managed to appropriately provide for the accumulation of wealth early in the lifecycle stage and protection of the purchasing power of those accumulated assets in the later lifecycle stage.
- Is competitively priced.
- Has favorable long-term return and risk metrics.

Appendix C provides the Callan evaluation of the Minnesota Target Retirement Fund glide path.

Implementation of Timeline

If the committee considers approval of these recommendations, staff would suggest the following implementation timeline:

Deferred Compensation Review Committee	April 18
IAC review	May 17
MSRS Board review	May 19 or July 21
SBI Board review	June 2
Transition period (contracts & communication)	FY2017
Map to new actively managed fund	FY2017
Transition to institutional share class	FY2017

**Based on Vanguard's 2014 DC plan data report – How America Saves 2015*

Appendix A

MNDC Plan Investment Menu

Given the objectives of the plan, staff recommends retaining the funds listed below.

Fund Names	Market Value as of 12/31/15	% of Plan	Mgmt Style	Benchmark
Domestic Equity Funds				
Vanguard Institutional Index	971,370,498	17.1%	Passive	S&P 500
New Large Cap Blend Option*	546,338,564	9.6%	Active	Large Cap Equity
Vanguard Mid Cap Index	424,796,234	7.5%	Passive	CRSP US Mid Cap
T.Rowe Price	559,426,733	9.9%	Active	Russell 2000
International Equity Funds				
Fidelity Diversified Internationa	288,415,743	5.1%	Active	MSCI EAFE
Vanguard Total International	139,522,031	2.5%	Passive	FTSE Global All Cap ex US
Bond Funds				
Dodge & Cox	200,366,580	3.5%	Active	Barclays US Agg
Vanguard Total Bond Market	180,192,579	3.2%	Passive	Barclays US Agg
Conservative Options				3Yr Constant Maturity
Stable Value Fund (SIF)	1,310,485,339	23.1%	Active	Treasury + 0.45%
Money Market Fund (SIF)	62,628,178	1.1%	Active	3 month Treasury
Managed Allocation Options				60% CRSP US Total and
Vanguard Balanced	675,377,409	11.9%	Passive	40% Barclays US Agg
Target Retirement Funds	315,817,850	5.6%	Passive	Managed Allocation
Total Plan	\$ 5,674,737,738	100%		

*If approved by the committee: would map Janus assets to Vanguard Dividend Growth Fund

Review of Investment Options

SBI and MSRS staff discussed the current investment options and made a number of observations:

- It is appropriate to offer a passively managed broad market option for participants. This fund tracks the broad market, S&P 500.
- The mid-capitalization and small capitalization options allow participants to invest according to their risk and reward profiles.
- The current actively managed international equity fund is well received and has consistently added value for the participants.
- The actively managed bond fund has been successful in outperforming the broad domestic bond market over various time periods.
- Offering the Stable Value Fund in addition to the Money Market Fund is appropriate and has benefited participants seeking higher yield during this low interest rate environment.
- A balanced option remains a viable offering and is popular with participants who want a low cost option, has equity and bond exposure, and automatically rebalances back to the target allocation. Over 11% of the participants assets are invested in the Vanguard Balanced Fund.

- The plan also has a brokerage window available to participants who would like access to a broader set of investment options. This would include social responsible, fossil free and other specialty mutual funds that do not meet the objectives of the plan.

Evaluation of Fee Structures in Mutual Funds Invested

Staff conducted a review of the different fee structures available with the current mutual funds in the Plan. All but three of the current funds are currently at the lowest fee structure offered for mutual funds.

Investment Option	Gross Fee	Alternative Fee Option	Share Type	Fund Type
Vanguard Institutional Index Fund	0.02%	at lowest	Institutional Plus	Mutual Fund
Vanguard Total Bond Market Index	0.05%	at lowest	Institutional Plus	Mutual Fund
Vanguard Mid-Cap Index	0.06%	at lowest	Institutional Plus	Mutual Fund
Vanguard Balanced Index Fund	0.08%	at lowest	Institutional shares	Mutual Fund
Vanguard International Stock Fund	0.10%	at lowest	Institutional Plus	Mutual Fund
Target Retirement Funds	0.12%	at lowest	Class K shares	CIT**
Galliard	0.27%	at lowest	Fee schedule	Separately Mgd
Money Market Fund	0.01%	at lowest	STIF managed by SSgA	CIT**
Dodge & Cox Income Fund	0.43%	at lowest	Retail	Mutual Fund
T.Rowe	0.91%	0.67%	Institutional shares	Mutual Fund
Fidelity	0.91%	0.78%	Institutional shares	Mutual Fund
Janus	0.81%	0.56%	Institutional shares	Mutual Fund

**** Commingled Investment Trust**

Appendix B

Large Cap Blend Mutual Fund Evaluation

A review of the legacy mutual funds offered in the MNDC Plan was completed to confirm appropriate mandates, evaluate fees, assess relative performance, and determine suitability of investment process. As a result of this review, SBI and MSRS staff recommended the replacement of Janus Twenty due to underperformance relative to the benchmark over various time periods, portfolio manager turnover and relatively high fees. SBI staff generated a short list of potential actively managed blend large cap broad market mutual funds to replace Janus Twenty.

As shown in the Tables below, the Vanguard Dividend Growth fund stands out relative to peers. The investment management team is comprised of 6 qualified and experienced individuals – 3 portfolio managers and 3 analysts. Lead Portfolio Manager, Donald Kilbride, has managed the strategy since 2006 and has over 19 years of experience in the investment industry. The management team is supported by a group of experienced global industry equity analysts (56), 40 fixed income analysts and 6 macroeconomic specialists (Wellington Management). The fund has consistently outperformed its benchmark over the past 3, 5 and 10 year periods. The fund has a low risk profile relative to peers. Regarding fees, the fund offers rock bottom fees. The 2015 expense ratio of 0.32% was 61 basis points below the peer group median.

Large Cap Blend Mutual Funds

Firm Information

Firm Name	JP Morgan US Equity R6	T.Rowe Price Dividend Growth Fund	Vanguard Dividend Growth Fund	Janus Twenty
Ticker Symbol	JUEMX	PRDGX	VDIGX	JAVLX
Share Class Type	Retirement	Institutional	Investor NASDAQ US	Institutional Russell 1000
Benchmark	S&P 500	S&P 500	Div Achievers	Growth
Inception Date(1)	9/17/1993	12/30/1992	5/15/1992	4/30/1985
Total Expense Ratio	0.51%	0.51%	0.32%	0.56%
Fund Total Net Assets	\$13.2 B	\$4.6B	\$26.2 B	\$9.1B
Fund Objective	Growth	Growth & Div	Growth & Income	Agg Growth

Performance of Large Cap Blend Mutual Funds

The benchmarks used for the funds considered are: T.Rowe Price and JPMorgan use the S&P 500, Vanguard uses the NASDAQ US Dividend Achievers Select and Janus uses the Russell 1000 Growth.

Annualized Returns End 12/31/15	JP Morgan US Equity R6	T.Rowe Price Dividend Growth Fund	Vanguard Dividend Growth Fund	Janus Twenty
1yr	0.9	2.4	2.6	4.9
3Yrs	16.1	14.4	14.7	15.0
5Yrs	12.7	12.3	12.8	11.3
10 yrs	8.9	7.8	9.0	8.8
Reported Calendar Year End Returns				
2015	0.9	2.4	2.6	4.9
2014	14.0	12.3	11.9	8.9
2013	36.2	30.4	31.5	33.1
2012	17.4	14.9	10.4	22.3
2011	-1.3	3.5	9.4	-8.2
Risk Characteristics*				
Standard Deviation 5 Yr	13.1	11.2	10.1	14.4
Standard Deviation 10 Yr	15.6	14.2	12.5	18.3
Information Ratio 5 Yr	-0.1	0.0	0.3	-0.2
Information Ratio 10 Yr	0.7	0.3	0.4	0.2
Tracking Error Ratio 5 Yr	2.3	1.8	3.6	5.1
Tracking Error Ratio 10 Yr	2.0	2.2	4.1	8.2

*Calculated by Morningstar and relative to their assigned benchmark

The following are relative returns to their assigned benchmark for various time periods ending December 31 and for the last five calendar years.

Relative Returns Benchmark*	JP Morgan US Equity R6	T.Rowe Price Dividend Growth Fund	Vanguard Dividend Growth	Janus Twenty
Annualized Ending				
1Yr	-0.5	1.0	4.5	-0.8
3Yrs	1.0	-0.7	3.0	-1.8
5Yrs	0.1	-0.3	2.2	-2.2
10Yrs	1.6	0.5	2.7	0.3
Calendar Year Ending				
2015	-0.5	1.0	4.5	-0.8
2014	0.3	-1.4	1.8	-4.1
2013	3.8	-2.0	2.5	-0.4
2012	1.4	-1.1	-1.3	7.0
2011	-3.4	1.4	3.1	-10.8

*Benchmarks: JPMorgan and T.Rowe Price benchmarks are the S&P 500; Vanguard benchmark is the NASDAQ US Dividend Achievers Select since 2010 and Russell 1000 from 2010-2002; Janus Twenty is compared to the Russell 1000 Growth

Appendix C

Evaluation of MN Target Retirement Fund (Target Date Fund) Glide Path

A target date fund is an investment option that provides participants with a single diversified portfolio whose risk level corresponds with their age. State Street Global Advisors was hired in 2011 as the Target Date Fund provider. The MN Target Retirement Fund is completely passive and seeks to be optimal at all points in the participant's lifecycle.

The composition of the glide path, which is the selection and allocation to the asset classes in the fund, is one of the most important decision in the construction of the target date fund. At inception, Minnesota desired a lower risk offering and shifted SSgA's glide path solution out five years in consideration of participant's conservative risk behavior. Consequently, the Minnesota 2055 fund maps to the SSgA 2050 fund. The glide path is designed to address the following objectives:

- Provide portfolio growth during the wealth accumulation phase with a higher equity allocation early in the lifecycle stage;
- Protect the purchasing power of accumulated asset by including inflation protection investments;
- Address longevity risk of outliving assets within the allocation to various sub-asset class levels with exposure across a range of fixed income sectors;
- Guard accumulated assets from short term volatility by increasing its bond allocation five years earlier due to a lower risk profile at time of retirement.

Staff believes that the Minnesota Target Retirement Fund is competitively priced at 0.12%, is prudently managed, and compared to its peers has favorably long-term return and risk metrics.

Summary of MN Target Date Fund Custom Glide Path

Consideration	SSgA
Team and Organization	Long tenured and stable
Number, type and quality of underlying funds	Ten underlying building blocks, provides greater access to diversified building blocks than many other passive providers. (As of December 30, 2015, total DC assets under management at \$363 billion, TDF strategies represent 8.4% of total assets).
Glide path construction	Features a well diversified portfolio with a moderate glide path in the early stages and then is slightly over allocated to growth assets during the assumed retirement period (relative to Callan Consensus).
Fees	At 0.12% the fees are well below the median (0.60%) for all other providers. Slightly above the median for other passive institutional providers, due to Minnesota plan customization.
Wealth Accumulation	• Exposure to growth assets – allocation to equity and “equity-like” asset classes.
Downside Protection	• Exposure to downside protection assets, assets include core and short-term fixed income, international fixed income as well as cash
Inflation Protection	• Provide breadth and level of inflation sensitive assets. Inflation protection assets include TIPS and inflation focused stocks (REITs) and commodity exposures.

Source: Callan

TAB

E

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INVESTMENT ADVISORY COUNCIL REPORT

DATE: May 26, 2016

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	IK Partners	Fund VIII	€150 Million
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New Managers:

Real Estate	Rockwood Capital	Fund X	\$100 Million
Credit	LBC Credit	Fund IV	\$100 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 alternative investments. Alternative 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, IK Investment Partners Limited (“IK”), in IK VIII Fund (“IK VIII”).

IK is seeking investors for a new €1.6 billion private equity fund, IK VIII. Since its formation in 1989, the firm has invested approximately €6.7 billion of equity in 90 investments. The SBI has invested in one of the prior IK funds.

IK VIII intends to follow the firm’s investment strategy, which targets middle-market companies in Northern Europe with strong potential for growth through operation improvements, add-on acquisitions and international expansion. Target companies will typically be in the €100-500 million EV range and require an equity check of €50-150 million from the fund. Five regional teams focused on investments in Benelux, DACH (German-speaking), Denmark & Norway, France, and Sweden & Finland create what IK believes is unique geographic footprint. Broadly, IK focuses on industrial goods, consumer goods, business services and care sectors. Over the years, the Firm has developed a particularly strong track record in engineering, food, business process outsourcing, rental and healthcare. During its ownership of a portfolio company, IK engages in a systematic value creation program of operational improvement.

In addition to reviewing the attractiveness of the IK VIII 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 IK VIII 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 €150 million, or 20% of IK VIII Fund, whichever is less. Approval 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 IK Investment 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 IK Investment Partners or reduction or termination of the commitment.

2) Investment with a new real estate manager, Rockwood Capital, LLC (“Rockwood”), in Rockwood Capital Real Estate Partners Fund X, L.P. (“Rockwood X”).

Rockwood is seeking investors for a new \$800 million private real estate fund, Rockwood X. Since 1990, Rockwood has raised approximately \$6.1 billion in private and institutional equity capital over its previous nine funds. The SBI has not invested in any of the prior Rockwood funds.

Rockwood Capital Real Estate Partners Fund X is the latest offering in a series of Rockwood-sponsored “value creation” real estate investment vehicles that dates back to 1990. The Fund will focus its investment activities on real estate and real estate related assets within the United States. It will target office and other workspace, retail, hotel, and multifamily residential assets. Fund X will employ active asset management to reposition, re-lease, rehabilitate, and/or develop real estate assets. The Fund will employ active portfolio management with the goals of enhancing returns and mitigating risk.

In addition to reviewing the attractiveness of the Rockwood X 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 Rockwood X 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 \$100 million, or 20% of Rockwood Capital Real Estate Partners Fund X, L.P., whichever is less. Approval 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 Rockwood Capital, LLC 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 Rockwood Capital, LLC or reduction or termination of the commitment.

3) Investment with a new credit manager, LBC Credit Management, L.P. (“LBC”), in LBC Credit Partners IV, L.P. (“LBC IV”).

LBC is seeking investors for a new \$600 million private credit fund, LBC IV. In its first three funds, LBC has funded over \$3.4 billion to 153 issuers. The SBI has not invested in any of the prior LBC funds.

LBC seeks to maximize current return while preserving investors’ capital. LBC intends to execute this strategy by originating and managing a diversified portfolio of high-yielding loans in the middle market. LBC defines middle-market companies as those with revenues of typically less than \$750 million and EBITDA of \$5 million to \$50 million. Fund IV will originate and manage investments with maturities ranging generally from three to seven years. Typical investments will range in size between \$10 million and \$50 million. Fund IV expects to invest throughout the capital structure with a primary focus on senior loans. Typical investments are expected to be corporate loans possessing a senior lien on all or specific assets of a borrower or a junior lien on all assets of the borrower. The firm is not dependent on a particular type of capital transaction and will pursue both sponsored and non-sponsored deals.

In addition to reviewing the attractiveness of the LBC IV 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 LBC IV 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 \$100 million, or 20% of LBC Credit Partners IV, L.P., whichever is less. Approval 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 LBC Credit Management, L.P. 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 LBC Credit Management, L.P. or reduction or termination of the commitment.

ATTACHMENT A

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

Combined Funds Market Value \$57,566,172,211

Amount Available for Investment \$4,354,471,723

	Current Level	Target Level	Difference
Market Value (MV)	\$7,158,762,719	\$11,513,234,442	\$4,354,471,723
MV +Unfunded	\$12,837,947,909	\$20,148,160,274	\$7,310,212,365

Asset Class	Market Value	Unfunded Commitment	Total
Private Equity	\$4,598,713,134	\$3,181,453,347	\$7,780,166,481
Real Estate	\$586,077,776	\$518,765,374	\$1,104,843,150
Resource	\$1,215,340,540	\$1,070,351,935	\$2,285,692,475
Yield-Oriented	\$758,631,269	\$908,614,534	\$1,667,245,803
Total	\$7,158,762,719	\$5,679,185,190	\$12,837,947,909

Cash Flows March 31, 2016

Year	Capital Calls	Distributions	Net Invested
2016 (thru 3/31)	\$414,970,983	(\$275,655,685)	\$139,315,298
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)

ATTACHMENT B

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

Investment	Total Commitment	Funded Commitment	MarketValue	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
I. REAL ESTATE								
Angelo, Gordon & Co.								
AG Realty Fund IX	100,000,000	0	0	0	100,000,000	0.00	0.00	0.00
Blackstone								
Blackstone Real Estate Partners V	100,000,000	97,030,342	61,109,440	139,179,706	4,174,052	11.02	2.06	9.68
Blackstone Real Estate Partners VI	100,000,000	99,049,644	58,018,849	144,216,688	5,178,649	12.67	2.04	8.75
Blackstone Real Estate Partners VII	100,000,000	92,390,006	104,183,009	51,787,341	18,094,241	21.14	1.69	4.09
Blackstone Real Estate Partners VIII	150,000,000	49,053,447	49,700,454	385,868	101,295,361	2.96	1.02	0.77
Blackstone Strategic Partners (CSFB)								
Strategic Partners III RE	25,000,000	25,752,810	6,544,651	8,653,277	9,006	-7.35	0.59	10.50
Strategic Partners IV RE	50,000,000	50,361,311	15,985,434	33,037,278	1,608,937	-0.63	0.97	7.54
Colony Capital								
Colony Investors III	100,000,000	100,000,000	5,198,800	172,642,105	0	14.58	1.78	18.00
Silverpeak Real Estate Partners								
Silverpeak Legacy Pension Partners II	75,000,000	78,517,189	10,521,016	84,149,030	7,898,904	3.69	1.21	10.50
Silverpeak Legacy Pension Partners III	150,000,000	69,493,776	21,867,625	6,047,362	80,506,224	-12.85	0.40	7.61
Rockpoint								
Rockpoint Real Estate Fund V	100,000,000	0	0	0	100,000,000	0.00	0.00	0.00
T.A. Associates Realty								
Realty Associates Fund VII	75,000,000	75,000,000	5,840,258	70,877,039	0	0.32	1.02	11.12
Realty Associates Fund VIII	100,000,000	100,000,000	58,025,462	35,589,306	0	-0.86	0.94	9.50
Realty Associates Fund IX	100,000,000	100,000,000	80,591,359	75,591,448	0	11.06	1.56	7.35
Realty Associates Fund X	100,000,000	100,000,000	108,491,419	20,092,388	0	12.90	1.29	3.83
Realty Associates Fund XI	100,000,000	0	0	0	100,000,000	0.00	0.00	0.50
Real Estate Total	1,525,000,000	1,036,648,525	586,077,776	842,248,835	518,765,374		1.38	
II. RESOURCE								
Apache Corp.								
1986 Net Profits Interest	30,000,000	30,000,000	1,301,130	59,462,245	0	12.17	2.03	29.00
EIG Global Energy Partners								
EIG Energy Fund XIV	100,000,000	110,381,819	15,017,127	91,398,102	5,392,385	-1.37	0.96	8.70
EIG Energy Fund XV	150,000,000	137,226,144	90,988,075	57,655,077	14,171,267	2.94	1.08	5.57
EIG Energy Fund XVI	200,000,000	76,699,981	54,590,038	2,201,637	123,300,019	-21.64	0.74	2.30
EnCap Energy								
EnCap Energy Capital Fund VII	100,000,000	95,536,192	9,945,858	130,396,887	5,016,551	15.81	1.47	8.50
EnCap Energy Capital Fund VIII	100,000,000	83,181,712	39,499,929	24,048,325	17,143,557	-11.52	0.76	5.25
Encap Energy Fund IX	100,000,000	64,899,229	56,317,069	13,236,020	41,092,697	5.15	1.07	3.06
EnCap Energy Capital Fund X	100,000,000	12,241,538	8,850,506	1,536,826	89,295,288	-32.99	0.85	0.82
EnerVest Energy								
EnerVest Energy Institutional Fund XIV	100,000,000	36,775,525	35,018,041	307,292	63,224,475	-7.22	0.96	0.69
Energy & Minerals Group								
NGP Midstream & Resources	100,000,000	99,954,848	100,497,034	110,530,234	366,338	18.70	2.11	8.75
The Energy & Minerals Group Fund II	100,000,000	85,435,728	130,276,756	19,304,848	14,813,685	22.30	1.75	4.27
The Energy & Minerals Group Fund III	200,000,000	167,008,451	174,064,952	4,387,669	34,715,945	5.19	1.07	1.82
The Energy & Minerals Group Fund IV	150,000,000	93,783,420	93,783,420	0	56,216,580	-0.85	1.00	0.42
Energy Capital Partners								
Energy Capital Partners II	100,000,000	78,605,087	49,703,459	68,244,933	32,024,037	12.61	1.50	5.45
Energy Capital Partners III	200,000,000	54,189,931	49,890,123	0	145,810,069	-6.47	0.92	2.03
First Reserve								
First Reserve Fund X	100,000,000	100,000,000	511,481	182,429,002	0	31.07	1.83	11.16
First Reserve Fund XI	150,000,000	150,292,121	18,194,292	86,471,982	0	-8.43	0.70	9.02
First Reserve Fund XII	150,000,000	157,721,850	50,122,924	69,465,629	5,861,622	-7.82	0.76	7.17
First Reserve Fund XIII	200,000,000	28,400,868	17,247,047	2,279,302	171,599,132	-35.34	0.69	2.16
NGP								
Natural Gas Partners IX	150,000,000	160,873,757	41,677,687	201,193,234	2,302,742	12.17	1.51	8.19
NGP Natural Resources X	150,000,000	127,637,737	90,304,747	35,672,466	22,362,263	-0.60	0.99	4.23
Natural Gas Capital Resources XI	150,000,000	21,756,717	20,515,820	0	128,243,283	-12.23	0.94	1.06

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

Investment	Total Commitment	Funded Commitment	MarketValue	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
Sheridan								
<i>Sheridan Production Partners I</i>	100,000,000	100,000,000	42,917,005	82,750,000	0	5.58	1.26	8.75
<i>Sheridan Production Partners II</i>	100,000,000	100,000,000	23,647,020	7,000,000	0	-34.93	0.31	5.25
<i>Sheridan Production Partners III</i>	100,000,000	2,600,000	459,001	0	97,400,000	-88.24	0.18	1.06
Resource Total	3,180,000,000	2,175,202,656	1,215,340,540	1,249,971,710	1,070,351,935		1.13	
III. YIELD-ORIENTED								
Audax Group								
<i>Audax Mezzanine Fund III</i>	100,000,000	88,374,937	54,518,644	49,058,454	20,133,059	8.59	1.17	5.74
<i>Audax Mezzanine Fund IV</i>	100,000,000	0	0	0	100,000,000	0.00	0.00	0.73
Avenue Capital Partners								
<i>Avenue Energy Opportunities Fund</i>	100,000,000	74,026,598	59,993,524	934,495	25,973,402	-25.94	0.82	0.77
Citicorp Mezzanine								
<i>CM Liquidating Partnership</i>	100,000,000	88,029,296	11,534,804	132,324,719	0	16.28	1.63	16.16
Crescent Capital Group								
<i>TCW/Crescent Mezzanine Partners III</i>	75,000,000	68,835,269	4,102,238	156,868,939	29,733,852	35.92	2.34	14.75
Gold Hill Venture Lending								
<i>Gold Hill Venture Lending</i>	40,000,000	40,000,000	1,000,569	63,913,250	0	10.64	1.62	11.26
<i>Gold Hill 2008</i>	25,852,584	25,852,584	15,329,232	26,270,123	0	13.11	1.61	7.50
GS Mezzanine Partners								
<i>GS Mezzanine Partners 2006 Institutional</i>	100,000,000	74,999,888	11,699,640	121,581,034	13,858,563	4.76	1.78	9.73
<i>GS Mezzanine Fund V</i>	150,000,000	112,057,963	13,511,682	165,434,372	60,803,216	9.49	1.60	8.19
Kohlberg Kravis Roberts								
<i>KKR Lending Partners II</i>	75,000,000	33,598,075	25,006,720	12,154,635	50,367,155	11.39	1.11	0.83
Merit Capital Partners								
<i>William Blair Mezzan. Cap. Fd. III</i>	60,000,000	57,243,241	620,711	112,755,951	2,756,759	15.51	1.98	16.00
<i>Merit Mezzanine Fund IV</i>	75,000,000	70,178,571	30,995,689	74,560,091	4,821,429	8.41	1.50	11.04
<i>Merit Mezzanine Fund V</i>	75,000,000	70,420,408	53,594,950	30,119,366	4,579,592	7.07	1.19	6.03
<i>Merit Mezzanine Fund VI</i>	45,000,000	0	0	0	45,000,000	0.00	0.00	0.02
Merit Energy Partners								
<i>Merit Energy Partners B</i>	24,000,000	24,000,000	13,597,097	179,952,067	0	24.37	8.06	19.50
<i>Merit Energy Partners C</i>	50,000,000	50,000,000	22,556,554	489,223,800	0	30.99	10.24	17.18
<i>Merit Energy Partners D</i>	88,000,000	70,938,303	40,788,497	299,459,151	0	20.86	4.80	14.60
<i>Merit Energy Partners E</i>	100,000,000	39,983,197	26,474,407	66,033,008	0	12.84	2.31	11.21
<i>Merit Energy Partners F</i>	100,000,000	59,522,861	27,254,703	27,251,921	0	-1.67	0.92	9.77
<i>Merit Energy Partners H</i>	100,000,000	81,860,748	56,690,883	7,499,078	18,139,252	-9.24	0.78	4.91
<i>Merit Energy Partners I</i>	169,721,518	4,700,000	4,519,501	246,000	165,021,518	1.24	1.01	1.21
Oaktree Capital Management								
<i>Oaktree Opportunities Fund X</i>	50,000,000	7,500,000	6,842,340	0	42,500,000	-10.71	0.91	0.83
<i>Oaktree Opportunities Fund Xb</i>	100,000,000	0	0	0	100,000,000	0.00	0.00	0.83
Pimco Bravo**								
<i>Pimco Bravo Fund OnShore Feeder I</i>	3,958,027	3,958,027	1,282,556	2,735,197	1,379,331	2.07	1.02	1.01
<i>Pimco Bravo Fund OnShore Feeder II</i>	5,243,670	5,243,670	5,581,892	0	0	5.50	1.06	1.01
Portfolio Advisors								
<i>DLJ Investment Partners II</i>	27,375,168	23,164,217	80,530	34,829,566	0	10.37	1.51	16.00
<i>DLJ Investment Partners III</i>	100,000,000	63,523,951	7,185,436	75,601,649	38,475,338	6.74	1.30	9.53
Prudential Capital Partners								
<i>Prudential Capital Partners I</i>	100,000,000	99,713,348	8,691	155,231,567	286,652	11.06	1.56	14.70
<i>Prudential Capital Partners II</i>	100,000,000	96,843,034	7,836,582	134,690,562	3,289,719	9.20	1.47	10.50
<i>Prudential Capital Partners III</i>	100,000,000	95,574,726	55,497,109	101,439,385	7,867,668	14.21	1.64	6.71
<i>Prudential Capital Partners IV</i>	100,000,000	73,644,834	67,218,642	18,063,838	26,921,281	12.19	1.16	3.95
Summit Partners								
<i>Summit Subordinated Debt Fund III</i>	45,000,000	42,750,000	5,746,843	55,057,070	2,250,000	8.44	1.42	11.87
<i>Summit Subordinated Debt Fund IV</i>	50,000,000	51,745,151	24,154,577	39,930,617	1,754,849	8.76	1.24	7.76
TCW Asset Management								
<i>TCW Direct Lending LLC</i>	100,000,000	36,741,017	32,647,329	3,741,017	67,000,000	-2.16	0.99	0.96
Windjammer Capital Investors								
<i>Windjammer Mezzanine & Equity Fund II</i>	66,708,861	56,569,498	371,020	84,439,334	10,139,363	8.93	1.50	15.75
<i>Windjammer Senior Equity Fund III</i>	75,000,000	61,619,620	31,996,163	105,562,177	13,380,380	18.20	2.23	9.99
<i>Windjammer Senior Equity Fund IV</i>	100,000,000	49,610,808	38,391,512	5,107,209	52,182,157	-7.20	0.88	3.85
Yield-Oriented Total	2,875,859,828	1,902,823,841	758,631,269	2,832,069,642	908,614,534		1.89	

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

Investment	Total Commitment	Funded Commitment	MarketValue	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
IV. PRIVATE EQUITY								
Adams Street Partners								
<i>Adams Street Global Secondary Fund 5</i>	100,000,000	61,270,000	42,243,007	16,728,046	38,730,000	-3.08	0.96	3.54
Advent International								
<i>Advent International GPE VI</i>	50,000,000	48,325,005	44,284,801	55,464,201	1,674,995	18.24	2.06	7.75
<i>Advent International GPE VII</i>	90,000,000	68,895,000	72,880,986	10,890,083	21,105,000	10.65	1.22	3.29
<i>Advent International GPE VIII</i>	100,000,000	0	0	0	100,000,000	0.00	0.00	0.15
Affinity Ventures								
<i>Affinity Ventures IV</i>	4,000,000	4,000,000	2,048,297	1,541,970	0	-2.10	0.90	11.50
<i>Affinity Ventures V</i>	5,000,000	4,500,000	2,419,110	1,585,611	500,000	-2.76	0.89	7.49
APAX Partners								
<i>Apax VIII - USD</i>	200,000,000	171,727,016	195,738,918	5,233,328	33,506,312	14.24	1.17	2.82
Banc Fund								
<i>Banc Fund VII</i>	45,000,000	45,000,000	47,392,065	812,725	0	0.76	1.07	10.75
<i>Banc Fund VIII</i>	98,250,000	98,250,000	137,952,137	21,809,973	0	12.85	1.63	7.68
<i>Banc Fund IX</i>	107,205,932	34,670,625	36,876,682	0	72,535,307	6.74	1.06	1.56
BlackRock**								
<i>BlackRock Tempus Fund</i>	1,774,870	1,774,870	1,299,991	791,992	0	24.69	1.18	0.56
Blackstone								
<i>Blackstone Capital Partners IV</i>	70,000,000	72,253,913	17,313,292	178,460,348	2,017,395	37.14	2.71	13.47
<i>Blackstone Capital Partners V</i>	140,000,000	130,900,605	56,469,998	175,706,021	8,616,043	7.97	1.77	9.91
<i>Blackstone Capital Partners VI</i>	100,000,000	78,297,917	91,768,516	10,611,728	24,080,411	10.48	1.31	7.43
<i>Blackstone Capital Partners VII</i>	130,000,000	0	0	0	130,000,000	0.00	0.00	0.50
Blackstone Strategic Partners (CSFB/ DLJ)								
<i>Strategic Partners I</i>	100,000,000	95,365,771	0	173,768,477	3,084,229	22.39	1.82	14.95
<i>Strategic Partners II-B</i>	100,000,000	86,120,599	2,743,132	159,916,183	4,726,962	35.10	1.89	12.46
<i>Strategic Partners III-B</i>	100,000,000	78,066,047	29,939,569	87,816,131	15,092,801	6.67	1.51	10.58
<i>Strategic Partners III VC</i>	25,000,000	24,638,379	7,714,984	25,627,930	1,318,838	6.31	1.35	10.58
<i>Strategic Partners IV-B</i>	100,000,000	91,706,719	29,627,044	118,937,846	24,506,674	13.03	1.62	7.77
<i>Strategic Partners IV VC</i>	40,500,000	39,462,012	19,891,279	40,824,817	3,552,504	10.38	1.54	7.54
<i>Strategic Partners V</i>	100,000,000	75,508,901	56,350,752	66,941,818	43,708,581	23.85	1.63	4.37
<i>Strategic Partners VI</i>	150,000,000	65,844,059	88,629,125	2,898,221	87,054,162	42.19	1.39	1.71
BLUM Capital Partners								
<i>Blum Strategic Partners II</i>	50,000,000	40,185,889	66,057	89,708,870	2,127,584	22.42	2.23	14.45
<i>Blum Strategic Partners III</i>	75,000,000	78,121,020	0	83,508,219	471,064	0.25	1.07	10.58
<i>Blum Strategic Partners IV</i>	150,000,000	170,916,780	0	167,939,991	5,896,033	-0.75	0.98	8.12
Brookfield Asset Management Inc.								
<i>Brookfield Capital Partners Fund IV</i>	100,000,000	23,879,468	23,553,251	687,022	76,807,554	-0.92	1.02	0.53
Carval Investors								
<i>CVI Global Value Fund</i>	200,000,000	190,000,000	41,988,945	276,650,075	10,000,000	9.80	1.68	8.97
<i>CVI Credit Value Fund I</i>	100,000,000	95,000,000	82,015,664	115,589,334	5,000,000	19.26	2.08	5.25
<i>CVI Credit Value Fund A II</i>	150,000,000	142,500,000	168,940,262	428,690	7,500,000	6.81	1.19	3.17
<i>CVI Credit Value Fund A III</i>	150,000,000	52,500,000	53,511,150	0	97,500,000	3.14	1.02	0.58
Cardinal Partners								
<i>DSV Partners IV</i>	10,000,000	10,000,000	31,480	39,196,082	0	10.61	3.92	30.72
Carlyle Group								
<i>Carlyle Strategic Partners IV, L.P.</i>	100,000,000	0	0	0	100,000,000	0.00	0.00	0.00
Chicago Growth Partners (William Blair)								
<i>William Blair Capital Partners VII</i>	50,000,000	48,150,000	2,999,356	64,292,866	1,650,000	8.15	1.40	14.82
<i>Chicago Growth Partners I</i>	50,000,000	52,441,998	8,175,166	50,319,021	300,000	2.58	1.12	10.43
<i>Chicago Growth Partners II</i>	60,000,000	57,711,626	49,827,355	54,637,903	2,036,374	17.85	1.81	7.81
Court Square Capital Partners								
<i>Court Square Capital Partners</i>	100,000,000	80,813,422	315,541	181,487,931	1,934,741	28.91	2.25	14.05
<i>Court Square Capital Partners II</i>	175,000,000	158,029,645	77,590,572	216,183,160	18,017,553	13.27	1.86	9.32
<i>Court Square Capital Partners III</i>	175,000,000	71,669,179	48,850,788	31,632,963	110,994,910	4.83	1.12	3.58
Crescendo								
<i>Crescendo IV</i>	101,500,000	101,500,000	11,957,014	37,386,052	0	-6.82	0.49	15.81

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CVC Capital Partners								
<i>CVC European Equity Partners V</i>	133,982,558	128,715,190	58,499,774	132,842,453	5,267,369	10.81	1.49	7.77
<i>CVC Capital Partners VI</i>	257,174,526	93,141,812	85,867,263	545,893	164,540,324	-10.53	0.93	2.48
Diamond Castle Partners								
<i>Diamond Castle Partners IV</i>	92,487,949	91,151,326	58,760	94,068,606	1,377,108	0.41	1.03	9.31
Elevation Partners								
<i>Elevation Partners</i>	75,000,000	69,659,671	447,627	112,437,120	451,673	11.72	1.62	10.62
Fox Paine & Company								
<i>Fox Paine Capital Fund II</i>	50,000,000	46,299,626	6,057,684	86,859,891	11,953,212	19.20	2.01	15.50
GHJM Marathon Fund								
<i>GHJM Marathon Fund V</i>	50,000,000	50,093,425	424,969	95,449,011	46,502	12.10	1.91	11.25
<i>TrailHead Fund</i>	20,000,000	14,014,187	15,087,744	6,955	5,985,813	2.97	1.08	3.85
GS Capital Partners								
<i>GS Capital Partners 2000</i>	50,000,000	50,000,000	3,051,435	110,660,346	0	23.44	2.27	15.33
<i>GS Capital Partners V</i>	100,000,000	73,958,901	4,345,953	207,811,727	3,441,099	17.97	2.87	10.75
<i>GS Capital Partners VI</i>	100,000,000	80,011,283	28,241,061	91,322,955	22,144,307	5.18	1.49	8.91
GTCR Golder Rauner								
<i>GTCR VI</i>	90,000,000	90,000,000	2,201,177	77,813,800	0	-3.82	0.89	17.50
<i>GTCR IX</i>	75,000,000	69,539,933	8,328,781	117,507,637	5,460,067	13.97	1.81	9.50
<i>GTCR X</i>	100,000,000	85,498,604	68,897,685	86,344,657	14,501,396	20.70	1.82	5.06
<i>GTCR Fund XI</i>	110,000,000	33,262,553	33,905,385	649,653	76,737,447	3.94	1.04	2.13
HarbourVest**								
<i>Dover Street VII Cayman Fund</i>	2,198,112	2,070,612	1,211,490	871,128	127,500	0.42	1.01	1.01
<i>HarbourVest Intl PE Partners V-Cayman US</i>	3,521,649	3,293,739	2,337,703	1,416,704	227,910	15.15	1.14	1.01
<i>Harbourvest Intl PE Partners VI-Cayman</i>	4,255,513	3,298,291	3,233,056	595,124	957,222	17.53	1.16	1.01
<i>HarbourVest Partners VIII Cayman Buyout</i>	4,506,711	4,064,711	3,048,598	1,559,397	442,000	14.60	1.13	1.01
<i>HarbourVest Partners VIII-Cayman Venture</i>	7,190,898	7,015,898	6,107,349	1,761,901	175,000	11.73	1.12	1.01
Hellman & Friedman								
<i>Hellman & Friedman Capital Partners V</i>	160,000,000	146,165,961	3,554,477	414,391,023	8,070,303	27.92	2.86	11.08
<i>Hellman & Friedman Capital Partners VI</i>	175,000,000	170,217,201	42,324,541	295,203,519	5,905,418	12.96	1.98	8.75
<i>Hellman & Friedman Capital Partners VII</i>	50,000,000	46,950,376	48,741,409	15,402,506	3,049,624	15.33	1.37	6.70
IK Investment Partners								
<i>IK Fund VII</i>	180,690,599	153,516,263	157,892,424	7,279,701	27,174,337	5.90	1.08	2.30
Kohlberg Kravis Roberts								
<i>KKR Millennium Fund</i>	200,000,000	200,000,000	41,462,677	381,323,911	0	16.52	2.11	13.06
<i>KKR 2006 Fund</i>	200,000,000	209,602,896	136,720,072	204,720,428	4,820,615	8.56	1.63	9.26
<i>KKR Americas Fund XII</i>	150,000,000	0	0	0	150,000,000	0.00	0.00	0.08
Leonard Green & Partners								
<i>Green Equity Investors VI</i>	200,000,000	139,863,488	158,913,068	7,451,804	61,387,529	10.69	1.19	3.80
Lexington Capital Partners								
<i>Lexington Capital Partners VI-B</i>	100,000,000	98,365,297	32,375,744	110,100,827	1,634,703	8.15	1.45	10.02
<i>Lexington Capital Partners VII</i>	200,000,000	163,011,214	108,463,196	138,686,889	44,596,190	17.08	1.52	6.55
<i>Lexington Capital Partners VIII</i>	150,000,000	33,194,146	36,000,738	4,911,056	118,170,905	45.40	1.23	1.82
Madison Dearborn Capital Partners								
<i>Madison Dearborn Capital Partners VII</i>	100,000,000	9,035,442	8,005,682	0	90,964,558	-11.83	0.89	0.28
MHR Institutional Partners								
<i>MHR Institutional Partners IV</i>	75,000,000	13,875,000	13,020,730	31,839	61,125,000	-9.89	0.94	0.71
Merced Capital								
<i>Merced Partners II</i>	75,000,000	63,768,881	11,130,420	118,459,254	0	24.12	2.03	8.75
<i>Merced Partners III</i>	100,000,000	100,000,000	66,161,596	64,260,775	0	7.13	1.30	5.65
<i>Merced Partners IV</i>	125,000,000	125,000,000	125,091,250	0	0	0.07	1.00	2.47
Nordic Capital								
<i>Nordic Capital Fund VIII</i>	178,925,211	91,235,026	84,285,996	49,418	87,690,184	-4.65	0.92	2.30
North Sky Capital**								
<i>North Sky Capital LBO Fund III</i>	1,070,259	720,259	566,686	222,711	350,000	9.30	1.10	1.01
<i>North Sky Capital Venture Fund III</i>	1,384,080	1,277,830	715,291	669,069	106,250	8.25	1.08	1.01
Oaktree Capital Management								
<i>Oaktree Principal Fund VI</i>	100,000,000	18,893,823	12,121,614	6,962,555	87,669,872	3.91	1.01	1.01
Paine & Partners								
<i>Paine & Partners Capital Fund IV</i>	75,000,000	16,214,688	12,720,115	0	58,785,312	-33.22	0.78	1.05

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Permal Capital**								
<i>Permal PE Opportunities IV</i>	5,337,098	4,247,098	3,099,985	1,385,487	1,090,000	5.94	1.06	1.01
PERMIRA								
<i>Permira V</i>	179,365,840	121,676,099	118,959,859	2,229,773	57,689,742	-0.31	1.00	2.00
Public Pension Capital Management								
<i>Public Pension Capital</i>	92,000,000	7,517,316	8,496,780	0	84,482,684	-25.52	1.13	1.63
RWI Ventures								
<i>RWI Ventures I</i>	7,603,265	7,603,265	487,500	6,094,262	0	-4.44	0.87	9.50
Sightline Healthcare								
<i>Sightline Healthcare Fund III</i>	20,000,000	20,000,000	16,727	8,718,066	0	-8.15	0.44	16.94
<i>Sightline Healthcare Fund IV</i>	7,700,000	7,753,673	0	7,829,436	0	0.02	1.01	12.27
Silver Lake Partners								
<i>Silver Lake Partners II</i>	100,000,000	90,089,780	24,705,071	148,017,485	11,771,953	11.29	1.92	11.50
<i>Silver Lake Partners III</i>	100,000,000	86,004,153	64,158,421	99,803,926	15,442,553	17.39	1.91	8.75
<i>Silver Lake Partners IV</i>	100,000,000	48,629,517	55,255,276	9,717,978	59,205,797	31.26	1.34	3.26
Split Rock Partners								
<i>Split Rock Partners</i>	50,000,000	47,454,543	29,455,580	10,305,582	2,545,457	-2.56	0.84	10.67
<i>Split Rock Partners II</i>	60,000,000	56,965,000	37,806,561	22,389,936	3,035,000	1.83	1.06	7.67
Summit Partners								
<i>Summit Ventures V</i>	25,000,000	24,125,000	47,512	33,358,461	875,000	8.11	1.38	17.75
<i>Summit Partners Growth Equity Fund VIII</i>	100,000,000	73,500,000	85,480,228	10,098,648	26,500,000	15.35	1.30	4.66
<i>Summit Partners Growth Equity Fund IX</i>	100,000,000	0	0	0	100,000,000	0.00	0.00	0.59
TPG Capital								
<i>TPG Partners VII</i>	100,000,000	9,600,220	7,844,618	10,660	90,399,780	-23.72	0.82	0.31
Thomas H. Lee Partners								
<i>Thomas H. Lee Equity Fund VII</i>	100,000,000	11,608,994	8,589,480	0	88,391,006	-43.44	0.74	0.31
T. Rowe Price	62,829,396	62,829,396	21,028,975	45,634,878	0	4.98	1.06	
Thoma Cressey								
<i>Thoma Cressey Fund VI</i>	35,000,000	33,915,000	430,178	34,128,882	1,085,000	0.22	1.02	17.36
<i>Thoma Cressey Fund VII</i>	50,000,000	50,000,000	4,665,433	103,686,816	0	23.69	2.17	15.35
<i>Thoma Cressey Fund VIII</i>	70,000,000	68,932,574	6,620,841	224,285,894	770,000	18.15	3.35	9.67
Thomas, McNerney & Partners								
<i>Thomas, McNerney & Partners I</i>	30,000,000	30,000,000	7,652,650	10,504,694	0	-9.69	0.61	13.15
<i>Thomas, McNerney & Partners II</i>	50,000,000	47,125,000	24,380,793	79,319,983	2,875,000	16.64	2.20	9.50
Varde Fund								
<i>Varde Fund IX</i>	100,000,000	100,000,000	30,548,036	170,921,811	0	14.37	2.01	7.52
<i>Varde Fund X</i>	150,000,000	150,000,000	171,291,494	75,492,881	0	11.13	1.65	5.70
<i>Varde Fund XI</i>	200,000,000	200,000,000	236,315,800	0	0	7.72	1.18	2.48
Vestar Capital Partners								
<i>Vestar Capital Partners IV</i>	55,000,000	53,635,969	1,135,012	101,917,140	737,136	14.68	1.92	16.04
<i>Vestar Capital Partners V</i>	75,000,000	74,813,444	54,950,357	35,038,613	186,556	2.89	1.20	10.03
<i>Vestar Capital Partners VI</i>	100,000,000	52,799,550	66,760,109	8,808,934	47,200,450	24.10	1.43	4.27
Warburg Pincus								
<i>Warburg Pincus Equity Partners</i>	100,000,000	100,000,000	1,304,446	162,262,253	0	10.02	1.64	17.51
<i>Warburg Pincus Private Equity VIII</i>	100,000,000	100,000,000	23,201,759	199,586,506	0	14.67	2.23	13.71
<i>Warburg Pincus Private Equity IX</i>	100,000,000	100,000,000	15,033,038	160,077,206	0	10.03	1.75	10.43
<i>Warburg Pincus Private Equity X</i>	150,000,000	150,000,000	78,728,467	134,001,247	0	7.56	1.42	8.19
<i>Warburg Pincus Private Equity XI</i>	200,000,000	170,500,000	192,393,270	20,152,200	29,500,000	13.75	1.25	3.03
<i>Warburg Pincus Private Equity XII</i>	131,000,000	4,847,000	4,607,529	0	126,153,000	-8.60	0.95	0.12
Wayzata								
<i>Wayzata Opportunities Fund</i>	100,000,000	93,180,000	4,535,758	152,705,583	18,920,000	8.46	1.69	10.03
<i>Wayzata Opportunities Fund II</i>	150,000,000	57,450,000	31,184,269	167,602,071	30,000,000	16.23	3.46	8.19
<i>Wayzata Opportunities Fund III</i>	150,000,000	66,750,000	56,786,294	136,917	83,250,000	-13.04	0.85	3.54
Welsh, Carson, Anderson & Stowe								
<i>Welsh, Carson, Anderson & Stowe VIII</i>	100,000,000	100,000,000	151,455	128,668,552	0	3.12	1.29	17.44
<i>Welsh, Carson, Anderson & Stowe IX</i>	125,000,000	123,750,000	72,024	205,602,079	1,250,000	11.19	1.66	15.51
<i>Welsh, Carson, Anderson & Stowe X</i>	100,000,000	98,000,000	31,730,531	130,961,206	2,000,000	7.94	1.66	10.04
<i>Welsh, Carson, Anderson & Stowe XI</i>	100,000,000	96,427,184	67,081,120	80,463,834	3,572,816	13.70	1.53	7.44
<i>Welsh, Carson, Anderson & Stowe XII</i>	150,000,000	38,858,359	36,692,394	0	111,141,641	-7.21	0.94	1.00
Private Equity Total	11,556,454,466	8,386,582,151	4,598,713,134	8,348,587,754	3,181,453,347		1.54	
Alternatives Total	19,137,314,294	13,501,257,172	7,158,762,719	13,272,877,941	5,679,185,190		1.51	

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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.

ATTACHMENT C

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

<i>Name of Fund:</i>	IK VIII Fund
<i>Type of Fund:</i>	Private Equity Limited Partnership
<i>Target Fund Size:</i>	€1.6 billion
<i>Fund Manager:</i>	IK Investment Partners
<i>Manager Contact:</i>	Mads Ryum Larsen Brettenham House 5 Lancaster Place London, England, WC2E 7EN Ph. +44-20-7304 4300

II. Organization and Staff

IK Investment Partners (“IK” or the “Firm”) is sponsoring IK Fund VIII (the “Fund” or “IK VIII”) to make control buyouts of middle market companies with strong growth potential in Northern Continental Europe.

The Firm was founded in 1989 by Björn Savén, who now serves as non-executive Chairman. The investment team of 30 professionals is led by nine partners who have worked together for an average of 14 years. Christopher Masek (CEO), Detlef Dinsel (CIO), Dan Soudry (COO), Remko Hilhorst and Remi Buttiaux are permanent members of the Investment Committee which also includes one rotating junior partner. IK operates out of offices in France, Germany, Sweden and the United Kingdom.

IK VIII is a continuation of the investment strategy that has been developed through the course of seven prior middle market focused funds. In addition to this strategy, IK recently raised a separate small cap focused fund in 2015 that is managed by 10 additional investment professionals. From 1989 through December 31, 2015, IK has invested approximately €6.7 billion of equity in 90 investments and have realized 74 of those investments, representing €5.4 billion of invested capital and generating €11.7 billion in value.

III. Investment Strategy

IK VIII will seek to invest in regional middle market companies in Northern Europe with strong potential for growth and attempt to double the earnings of each company through add-on acquisitions and international expansion, and operational improvements. IK believes that its strategy is differentiated across several dimensions:

Middle Market Focus: The Fund will focus primarily on companies with enterprise value of between €100-€500 million, investing equity of between €50 million and €150 million in approximately 14-18 companies. IK's average equity investment over the last 10 years was approximately €90 million. IK believes that by focusing on this segment of the lower middle-market it is able to exploit inefficiencies that are not present at the larger end of the market, as well as avoid competition from larger pan-European or Global funds.

Geographic Focus: IK VIII will focus on Northern Continental Europe, primarily Benelux (Belgium, the Netherlands and Luxembourg), DACH (Germany, Austria and Switzerland), France and the Nordic region. These are collectively known as IK's "Core Markets," and the firm has been active in each for more than 15 years. A small portion of the Fund may be opportunistically invested outside the Core Markets, for instance in the Central & Eastern Europe region (primarily Poland). The Firm's investment professionals are organized into five regional teams (Benelux, DACH, France, Denmark & Norway, and Sweden & Finland) to better serve this unique geographic footprint.

Sector Focus: Over its 26-year history, IK has transitioned from a generalist approach to become a firm broadly focused on the industrial goods, consumer goods, business services, and care sectors. In particular, IK has developed a strong track record and deep industry network within the engineering, food, business process outsourcing, rental, and healthcare subsectors. The Firm's networks and industry knowledge often provide early access to owners and management, allowing IK to limit the level of competition around target companies and help IK position itself as a knowledgeable and supportive partner to management.

Sourcing: IK sources investment opportunities by combining a strategic screening process with proactive outreach. All new potential investments are evaluated against a consistent set of investment criteria: the aforementioned size, geography, and sector, as well as performance, positioning, and potential. In terms of company performance, IK seeks to invest in high EBITDA margin businesses with strong EBITDA-to-cash conversion rates. In the 29 investments made across IK 2007 and IK VII, the EBITDA margin was over 20%, and the cash conversion rate was approximately 80%. The ideal acquisition target is positioned as a leader in its local market, has a sustainable competitive advantage, and has a defensible market share. Finally, a prospective IK investment should have the potential to realize significant strategic and operational improvement as the result of an international buy-and-build strategy. The IK team spends significant time and energy to create the opportunities to invest in these types of companies at an attractive basis by actively marketing the Firm's capabilities to business owners, industrial advisors, M&A houses, management teams, financing sources, and other industry participants. In IK's last three funds, these sourcing efforts resulted in IK pre-empting an auction or participating in a limited auction with respect to 73% of its investments.

Ownership: A centerpiece of IK's investment strategy is to seek to double the earnings of its portfolio companies by transforming strong local businesses into international leaders through add-on acquisitions and operational improvement. IK believes that its international footprint has given the Firm the ability to identify investment opportunities outside a company's local market that enhance growth by providing the company access to new markets, products, technology, and services. To add value to its portfolio companies, IK also engages in a systematic program of operational improvement that include both a 100 Day Plan as well as Mid-term Plans. This value creation program is called the "IK Way Toolkit," and is implemented by the IK deal team with support from the Strategy, Operations and Business

Control team and the Operational Support Group. The IK Way Toolkit includes initiatives to improve top-line growth and cost efficiencies as well as balance sheet optimization and management augmentation. In addition, IK encourages its portfolio companies to implement responsible environmental, social, and governance policies in order to manage business risks, increase brand value, and pre-empt regulatory changes. In IK's last three funds, these operational improvement efforts have generated 187 add-on investments and 79% average earnings growth across its portfolio.

Exit: As with sourcing and value creation, IK has a common structure and process for realizing a successful exit. Likely exit options are an important part of due diligence for every investment proposal. Once an investment is completed, regular reviews take place that include a "Hold/Sell" analysis, which considers multiple exit paths and evaluates incremental return prospects. These reviews help ensure objectivity from the deal team and challenge the team to justify why an investment should continue to be held. Given IK's typical investment size, most historical exits have been to a strategic or financial buyer.

IV. Investment Performance

Previous fund performance as of December 31, 2015 for IK Investment Partners is shown below:

Fund	Inception Date	Total Committed Capital	SBI Investment	Net IRR*	Net MOIC*
IK 1989 Fund	1989	€108 million	--	46%	5.3
IK 1994 Fund	1994	€250 million	--	49%	3.8
IK 1997 Fund	1997	€750 million	--	9%	1.7
IK 2000 Fund	2000	€2,100 million	--	9%	1.6
IK 2004 Fund	2004	€825 million	--	36%	2.2
IK 2007 Fund	2007	€1,675 million	--	11%	1.6
IK VII	2013	€1,400 million	€150 million	14%	1.2

* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Net IRR and Net MOIC were provided by IK.

V. General Partner's Investment

The General Partner will invest a minimum of €50 million.

VI. Fees

1.75% of capital committed to the Fund or 1.5% of capital committed to the Fund for commitments over €150 million, declining after the investment period to 1.5% of acquisition cost of unrealized investments.

VII. Distributions

80% of realized profits to the Limited Partners and 20% to the General Partner, subject to an 8% preferred return on the whole fund to the Limited Partners.

VIII. Key Persons

The Investment Period will be automatically suspended if (i) less than two of Detlef Dinsel, Christopher Masek, and Dan Soudry continue to devote substantially all of their business time to the IK Group, or (ii) if less than five of the Nominated Executives (Detlef Dinsel, Thomas Klitbo, Mads Ryum Larsen, Christopher Masek, Remko Hilhorst, Remi Buttiaux, Dan Soudry, Alireza Etemad and James Yates) continue to devote substantially all of their business time to the IK Group.

IX. Investment Period and Term

The Investment Period will last for a period of five years. The Fund will have a term of ten years, with the possibility of three one-year extensions.

** 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.*

ATTACHMENT D

REAL ESTATE MANAGER SUMMARY PROFILE

I. Background Data

<i>Name of Fund:</i>	Rockwood Capital Real Estate Partners Fund X, L.P.
<i>Type of Fund:</i>	Private Real Estate
<i>Target Fund Size:</i>	\$800 million
<i>Fund Manager:</i>	Rockwood Capital, LLC
<i>Manager Contact:</i>	Peter J. Falco 140 East 45 th Street New York, NY, 10017 (212) 402-8500

II. Organization and Staff

Rockwood Capital, LLC (“Rockwood” or the “Firm”) is forming Rockwood Capital Real Estate Partners Fund X, L.P. (the “Fund” or “Fund X”) to make value add investments in commercial real estate. Fund X will continue Rockwood’s real estate investment activities which are focused on the acquisition of equity or debt interests in properties, principally in the United States, across a broad range of geographical markets and product types.

Rockwood was formed in 1995 by Neil Smith, Ed Kavounas, Walter Schmidt, Bob Gray, and Peter Falco. Headquartered in New York City, the firm is 100% employee owned and has approximately 85 employees focused on real estate. As of December 2015, the firm managed nearly \$8.9 billion of gross real estate value across all of its funds and separate accounts.

Over the past 26 years, Rockwood has invested approximately \$6.1 billion in equity and debt investments across a broad spectrum of property types totaling \$18.2 billion of gross asset value. Of the 291 assets Rockwood has purchased, the majority of transactions have occurred in office, hotel, residential apartments, and retail assets. To date, investors have committed \$600M to the Fund, plus \$50M in a related side car vehicle. The side car vehicle is offered to limited partners that commit at least \$100 million to the main Fund and will co-invest with the main Fund in certain large investments.

III. Investment Strategy

Rockwood Capital Real Estate Partners Fund X is the latest offering in a series of Rockwood-sponsored “value creation” real estate investment vehicles that dates back to 1990. The Fund will focus its investment activities on real estate and real estate

related assets within the United States. It will target office and other workspace, retail, hotel, and multifamily residential assets. Fund X will employ active asset management to reposition, re-lease, rehabilitate, and/or develop real estate assets, but will not pursue investment opportunities predicated on significant land entitlement. The Fund will employ active portfolio management with the goals of enhancing returns and mitigating risk.

The Fund will seek to make investments in a select number of major U.S. metropolitan areas – New York, Boston, San Francisco, and Los Angeles, among others – with highly educated workforces and high household incomes, and where growth is being driven by knowledge-based industries that are prospering from technological advances, globalization and other socioeconomic trends. Within each of these metro areas, the Manager will target urban and urban-suburban locations for investment.

Fund X will pursue a mix of assets, some with income in place and others where the business plan will require some time to put income in place. In so doing, the Manager will seek to implement its risk/return and “speed to income” focused “bucket classification system” on behalf of the Fund to construct a diverse and balanced portfolio that has a combination of current return and value creation upside. More specifically, each investment, at inception and over time as value creation plans are implemented, will be classified into one of three “risk buckets”. The first risk bucket will be comprised of assets with an income stream already in place that Rockwood will endeavor to enhance, either through growth of the income or improvement in the income (e.g., improvement in duration or credit). The second risk bucket will be comprised of assets that require more comprehensive value creation strategies (relative to the first risk bucket) to create value and stabilize income, ideally within the first 12 to 24 months of investment. The third risk bucket will be comprised of substantially vacant buildings and development opportunities generally located in deep urban or urban-suburban markets. This final type of investment will generally have no current cash flow at acquisition and generally will require 24 to 36 months to put income in place. Investments made by the Fund will be reclassified over time. Generally, investments will move from higher risk buckets to lower risk buckets as business plans are implemented and income is put into place. The target net return of Fund X is 12% - 14%.

Rockwood believes that at the current stage of the real estate cycle: (i) supply/demand fundamentals are in relative balance; (ii) most properties have recovered recession-related losses in value and are fully priced; and (iii) there is little owner, lender or asset related distress on which to capitalize. Given this environment, the Fund intends to pursue a number of basic investment approaches to achieve its return objectives, which will include:

- Investment in “next neighborhoods” (emerging submarkets with attractive valuations), where the Fund will seek both income and capital value appreciation from submarket trends as well as value creation business plans.
- Micro market/product sharp shooting, where Rockwood believes that its local market/product knowledge will enable it to invest in an asset where there is

an opportunity to capitalize upon one or more of (i) real estate value-add work (re-leasing, repositioning, rehabilitation, re-development, or development); (ii) a threshold market change; and/or (iii) a particular demand shift due to evolving markets/neighborhoods.

- Operational/asset management and/or capital expenditure turnarounds, where Rockwood believes it can apply its experience and product expertise on operations combined with careful investment in rehabilitation and repositioning.
- Change of use opportunities, where Rockwood believes it can apply its experience and product expertise to identify underutilized properties and convert them into different and higher uses.
- Densification opportunities, where Rockwood believes continued growth and demand justifies costs of increasing density of use.

IV. Investment Performance

Previous fund performance as of December 31, 2015, shown on a liquidated basis, for Rockwood Capital's Value-Add strategy is shown below:

Fund	Inception Date	Total Committed Capital	SBI Investment	Net IRR*	Net MOIC*
Rockwood Capital Fund I	1990	\$266 million	-	20%	1.7
Rockwood Capital Fund II	1995	\$83 million	-	31%	2.2
Rockwood Capital Fund III	1998	\$221 million	-	15%	2.1
Rockwood Capital Fund IV	2000	\$366 million	-	24%	1.8
Rockwood Capital Fund V	2003	\$460 million	-	12%	1.4
Rockwood Capital Fund VI	2005	\$657 million	-	2%	1.1
Rockwood Capital Fund VII	2006	\$1,094 million	-	(4.3%)	0.7
Rockwood Capital Fund VIII	2008	\$964 million	-	20%	1.7
Rockwood Capital Fund IX	2012	\$678 million	-	18%	1.2

* Previous Fund investments may be relatively immature and therefore, returns may not be indicative of future results. Net IRR and MOIC provided by Rockwood Capital.

V. General Partner's Investment

Rockwood Capital Partners will invest, in or alongside the Fund and the Side Car Fund, an amount equal to at least 2% of the total capital commitments of the Limited Partners to the main Fund X and the Side Car Fund, up to \$15 million, but in no event will the General Partner invest, in or alongside the main Fund X, less than the lesser of (a) 2% of the total Capital Commitments of the Limited Partners and (b) \$12 million.

VI. Fees

The Management Fee will be paid quarterly in advance and will be calculated with respect to (and may be drawn down from) each Limited Partner in accordance with such Limited Partner's Management Fee Rate. A Limited Partner's "Management Fee Rate" will equal:

- a) 1.25% for Limited Partners with Capital Commitments at least equal to \$100 million;
- b) for Limited Partners with Capital Commitments at least equal to \$40 million but less than \$100 million, a blended rate determined as follows:
 - (i) 1.40% on the first \$40 million of such Limited Partner's Capital Commitment; plus
 - (ii) 1.30% on such Limited Partner's Capital Commitment in excess of \$40 million; and
- c) 1.40% for Limited Partners with Capital Commitments of less than \$40 million.

VII. Distributions

Amounts apportioned to each Limited Partner will be divided between and distributed to each Limited Partner and the General Partner in the following amounts and order of priority:

- 1. First, 100% to such Limited Partner, until such Limited Partner has received a 9% cumulative preferred return, compounded annually, on such Limited Partner's unreturned Capital Contributions;
- 2. Second, 100% to such Limited Partner until such Limited Partner has received a return of all such Limited Partner's unreturned Capital Contributions;
- 3. Third, (a) 50% to such Limited Partner and (b) 50% to the General Partner, until the General Partner has received 20% of the aggregate distributions made pursuant to clause (2) and this clause (3); and
- 4. Thereafter, (a) 80% to such Limited Partner, and (b) 20% to the General Partner.

VIII. Key Persons

The General Partner shall promptly notify the Limited Partners if at any time during the Investment Period more than two of Peter Falco, Walter Schmidt, Robert Gray, Jr., Tyson Skillings and Peter Kaye (a) no longer serve on the Investment Committee for any reason or (b) cease to devote, during the Exclusivity Period, substantially all of such person's business-related time and attention to the

conduct of the operations of the Fund. Thereafter, the Investment Period will be suspended (except with respect to the ability to make Committed Investments and Follow-on Investments) and will terminate unless, (i) within 90 days thereafter, the General Partner delivers a written request for the reinstatement of the Investment Period to the Limited Partners, which request shall identify the individuals who have replaced the former Investment Committee members and (ii) Limited Partners holding a majority of the Interests deliver their written approval of the reinstatement of the Investment Period.

(The “Exclusivity Period” is the period beginning on the Initial Closing Date and ending on the earliest to occur of (a) the termination of the Investment Period and (b) the first date on which 75% of the Capital Commitments have been invested or committed to investments.)

IX. Investment Period and Term

The term of the Partnership is nine years, subject to the discretion of the General Partner to extend the term of the Fund for an initial one-year period and for a second successive one-year period with the approval of the Advisory Committee.

** 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.*

ATTACHMENT E

CREDIT MANAGER SUMMARY PROFILE

I. Background Data

<i>Name of Fund:</i>	LBC Credit Partners IV, L.P.
<i>Type of Fund:</i>	Credit
<i>Target Fund Size:</i>	\$600 million
<i>Fund Manager:</i>	LBC
<i>Manager Contact:</i>	Nevin Murkley 2929 Arch Street, Suite 1550 Philadelphia, PA 19104-7340 (215) 609-3363

II. Organization and Staff

LBC was co-founded by John Brignola, Christopher Calabrese, Nathaniel Cohen, and Ira Lubert in 2005. The firm has raised over \$1.7 billion of total committed capital through three funds.

LBC is headquartered in Philadelphia with offices in Chicago, IL and Greenwich, CT. The offices are staffed by senior investment professionals, with an average of over 21 years of experience at the Vice President level and above. Brignola, Calabrese and Cohen will be supported by Allan Allweiss, John Capprella, Homyar Choksi, and David Fraimow, the senior management team at LBC, and other principals, all of whom have direct experience and a collective track record of origination and managing loans. Senior investment professionals are supported by a team of research analysts, underwriters and portfolio managers and a sophisticated technology platform which enables the management of deal flow, research, underwriting, portfolio servicing, finance and accounting and investor relations.

III. Investment Strategy

LBC seeks to maximize current return while preserving investors' capital. LBC intends to execute this strategy by originating and managing a diversified portfolio of high-yielding loans in the middle market. LBC defines middle-market companies as those with revenues of typically less than \$750 million and EBITDA of \$5 million to \$50 million. Fund IV will originate and manage investments with maturities ranging generally from three to seven years. Typical investments will range in size between \$10 million and \$50 million. LBC expects Fund IV to be made up of 70 to 75 individual loans.

Fund IV intends to manage risk and minimize volatility by making investments in private loan transactions across a broad range of industry sectors. Fund IV expects to invest throughout the capital structure with a primary focus on senior loans. Typical investments are expected to be corporate loans possessing a senior lien on all or specific assets of a borrower or a junior lien

on all assets of the borrower. The firm is not dependent on a particular type of capital transaction and will pursue both sponsored and non-sponsored deals.

Fund IV will be built with the goal of providing investors with current income (targeted 7% per annum, paid quarterly) and a targeted total net IRR of 14% to 16% after all fees, carried interest and expenses. Exposure to interest rate fluctuations will be minimized through floating rate structures tied to market base rates with interest rate floors. Yields will be enhanced through various fees, payment in kind interest accruals, equity participations and the use of leverage.

Preliminary Evaluation

LBC's team members will actively source opportunities on prospective investments from their referral network. In the initial analysis of each potential investment, a Senior Member or Deal Team Professional will review information furnished by the prospective borrower to determine whether the investment meets Fund IV's basic underwriting and investment criteria. If the Senior Member or Deal Team Professional determines to initially proceed with the investment opportunity, LBC's research team will prepare a formal prescreen. The investment opportunity will then be presented to the Investment Committee. If the Investment Committee determines to proceed with the investment, a proposal will be submitted to the borrower outlining key terms, based upon agreed requirements resulting from the screening meetings.

Research & Underwriting

After the borrower accepts the proposal, LBC will conduct a thorough analysis of the business and its industry. Following the business and industry analysis, LBC will analyze the full historical and projected financial performance.

Investment Selection

The investment selection process will generally consist of at least three formal meetings of the Investment Committee. The first meeting introduces the borrower, loan structure, financials, senior lender and Equity Owner. The second meeting reviews the investment thesis, risks, capital structure, business attributes, industry dynamics and relative and absolute returns. The third meeting considers the historical and projected financials, financial covenants, sensitivities, business and collateral valuations and exit strategy. Of the seven-member Investment Committee, five affirmative votes at all meetings are required to approve the investment.

Investment Structures

Transactions will be structured with a goal of maximizing Fund IV's creditor rights appropriate for the type of loan. A strong creditor's position for a cash flow, uni-tranche, bifurcated, second lien, or secured mezzanine loan will give Fund IV downside protection and negotiating leverage should a portfolio investment under-perform.

Investment Monitoring

An important component of LBC's oversight efforts include closely monitoring each investment on a regular basis through a loan-servicing program designed to track a borrower's financial and operating performance and its ongoing liquidity. The research team will also augment monitoring by continuing to provide industry-related research for each investment.

All investments will be assigned to a portfolio manager at LBC who will be responsible for maintaining communication with the management teams, senior lenders and Equity Owners. Formal portfolio review meetings will be held at least quarterly with the Senior Members, or more frequently on an as-needed basis.

IV. Investment Performance

Previous fund performance as of December 31, 2015 is shown below:

Fund	Inception Date	Total Committed Capital	SBI Investment	Net IRR*	Net MOIC*
LBC Credit Partners Fund I	2005	\$300 Million	-	11%	1.3
LBC Credit Partners Fund II	2008	\$642 Million	-	14%	1.2
LBC Credit Partners Fund III	2013	\$839 Million	-	15%	0.4

* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Net IRR and Net MOIC provided by the manager.

V. General Partner's Investment

The General Partner, Founding Partners, and employees of the Manager collectively will make aggregate Commitments of 2% of the total Limited Partner Commitments to Fund IV, up to a \$15 million maximum amount.

VI. Fees

The Management Fee will be calculated based on Fund IV's investments. The Management fee will equal an annual rate of 1.5% of the lower of the cost or fair market value of Fund IV's investments as of each payment date. The Management Fee will be payable quarterly on the first day of each calendar quarter and continue until fund IV's termination date.

VII. Distributions

Amounts apportioned to each Limited Partner will be divided between and distributed to each Limited Partner and the General Partner in the following amounts and order of priority:

For Limited Partners with Commitments of \$50 million or more:

- First, to the Limited Partner until it has received a 7% cumulative annual return on its unreturned capital contributions;
- Next, to the Limited Partner until its capital contributions have been fully returned;

- Next, 100% to the General Partner until such time as the General Partner has received 19.5% of the (i) the aggregate distributions made to the Limited Partner of the Preferred Return and (ii) amounts distributed under this paragraph (c); and
- Thereafter, 80.5% to the Limited Partner and 19.5% to the General Partner.

VIII. Key Persons

Until the Trigger Date, Brignola, Calabrese and Cohen (the “Key Persons”) will devote substantially all of their business time to Fund IV. If any two Key Persons fail to satisfy their respective time commitment (a “Key Person Event”) then, after 120 days of the notice to the Limited Partners of the Key Person Event, the Commitment Period will terminate unless, within the 120 day period, Limited Partners holding 66-2/3% of the Aggregate Interests in the Fund IV may vote to continue the commitment Period.

IX. Investment Period and Term

The Commitment Period will end three years from final closing. The term of the Partnership will end on the 5th anniversary of the end of the Commitment Period, but may be extended for up to two one-year periods with the consent of the Advisory Committee, to facilitate an orderly dissolution.

** 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.*

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INVESTMENT ADVISORY COUNCIL REPORT

DATE: May 26, 2016

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:

	Page
• Public Markets Economic and Market Overview	3
• Public Markets Manager Activity	5
• Non-Retirement Manager Update	8
• Deferred Compensation Manager Update	9
• Manager Performance Summaries	A-1

Public Markets Economic and Market Overview First Quarter 2016

Overview

Volatility returned to global financial markets at the start of the year. Investor sentiment was negative at the beginning of the quarter amid renewed worries about global growth, particularly in China and in other emerging markets. However, a recovery in oil prices and monetary policy accommodation from central banks resulted in a rally in the second half of the quarter.

The U.S. equity market recovered from an early year retreat to finish the first quarter with a slight advance. Stocks began the year with a sell-off induced by concerns about geopolitical issues and mixed global economic signals. Subsequently, domestic markets rallied following the Federal Reserve announcement of no change in interest rates. As the probability of an interest rate increase diminished, investors began searching for higher yields in the equity market. As a result, Telecommunication Services, Utilities and Consumer Staples were among the best performing sectors within the *S&P 500 Index*. The worst performing sectors were Health Care, Financials and Consumer Discretionary.

International equity markets staged a rally in March after negative returns in January and February. Investor sentiment at the beginning of the first quarter was decidedly negative, leading to an immediate sell-off in global equity markets. Subsequently, a recovery in oil prices and the expansive monetary policy by the European Central Bank and the Bank of Japan resulted in a rally in the second half of the quarter. The best performing sectors within the *MSCI World ex USA Index* for the quarter were Energy, Materials and Consumer Staples. The worst performing sectors were Health Care, Financials and Consumer Discretionary.

Emerging markets equities saw many investors return to the asset class after a challenging 2015. Despite weakness at the start of 2016, emerging markets equities closed the first quarter of the year substantially higher, due to a rally in the second half of the quarter. Market participants were reassured by the tone struck by several central banks around the world, especially the Federal Reserve, which led to weakness of the U.S. dollar and the corresponding strength in most emerging markets currencies. The best performing sectors within *MSCI Emerging Markets Index* were Materials, Energy and Utilities. The worst performing sectors were Health Care, Industrials and Consumer Discretionary.

In fixed income markets, sentiment shifted from “risk-off” to “risk-on” during the quarter. Concerns over weakness in commodities and uncertainty around China caused a flight to quality in the Treasury markets over the months of January and February. Oil prices stabilized in the second half of the quarter and fears over a U.S. recession subsided. As anticipated, the FOMC left rates unchanged at the March meeting. The FOMC median rate projection forecast for 2016 was revised to .875 down from 1.375. The *Barclays Aggregate Index* rose 3.0% for the quarter with long duration Treasuries contributing the most to performance.

SBI Portfolio

In the first quarter, SBI’s overall portfolio, the Combined Funds, underperformed the composite benchmark return (Combined Funds 0.5% vs. 1.2% Composite Benchmark return). Domestic equities underperformed the *Russell 3000 Index* return (1.0%) by 1 percentage point, while

international equities underperformed the *MSCI ACWI ex USA Index* return (-0.4%) by one percentage point. The fixed income portfolio matched the *Barclays Aggregate Index* return (3.0%).

Domestic Equity

The large cap growth managers trailed the *Russell 1000 Growth Index* by 5.1 percentage points for the quarter. The quarterly return was hurt by stock selection in Technology (LinkedIn) and an overweight to and stock selection in the Health Care sector. The large cap value managers underperformed the *Russell 1000 Value Index* by 2.6 percentage points for the quarter. Negative stock selection across several sectors detracted from the quarterly return, led by stock selection in the Financial Services sector. The SBI small cap growth portfolio trailed the *Russell 2000 Growth Index* by 1.1 percentage points for the first quarter due primarily to the underperformance of Next Century Growth. More specifically, Next Century Growth's subpar stock selection in the Information Technology sector as well as in the Pharmaceuticals industry derailed returns during the volatile period. During the quarter, SBI's small cap value portfolio failed to keep pace with the *Russell 2000 Value Index* underperforming by 1.2 percentage points. In aggregate, disappointing stock picking in the Financials and Information Technology sectors was too much to overcome during this challenging quarter. The SBI's semi-passive domestic equity portfolio trailed the *Russell 1000 Index* by 0.2 percentage point for the quarter. Poor stock selection in the Financials and Health Care sectors were the most detrimental to returns.

International Equity

Active developed equity managers underperformed the *MSCI World ex USA Index (net)* by 1.3 percentage points for the quarter, as stock selection and country allocation detracted from performance. From a country point of view, stock selection was negative in the United Kingdom, France, Italy and Switzerland. Country allocation was negative in Japan and Canada. From a sector point of view, stock selection was negative in Financials and Materials. The SBI's semi-passive, international equity managers underperformed the benchmark by 1.5 percentage points due to negative stock selection in the United Kingdom, Canada and France. Country allocation was negative in Canada and Italy.

Emerging Markets Equity

The active emerging markets managers underperformed the index return 5.7% by 1.9 percentage points for the quarter. Stock selection in the Energy, Health Care and Financials sectors detracted from performance as did an underweight position and stock selection in both South Africa and Russia. Regarding passive emerging markets, the portfolio's positive tracking error during the quarter was primarily due to restricted stocks (Iran and Sudan) in the benchmark that the fund was not permitted to hold and also due to the subsequent over-weights that resulted from having to purchase more of other stocks instead of the restricted names.

Fixed Income

The relative performance of SBI's fixed income managers vs. the Barclays Aggregate benchmark for the quarter was mixed. Managers with underweight duration positioning largely underperformed the benchmark. Managers with equal or overweight benchmark duration, particularly in the long end, outperformed. Exposure to corporate bonds in the energy sector and CMBS also benefited from narrowing spreads during the quarter. Manager holdings in Treasury Inflation Protected Securities (TIPS) also contributed positively to performance.

Public Markets Manager Activity First Quarter 2016

Manager Summary

For the quarter, the majority of the investment managers had no material organizational issues. There were some noteworthy manager developments for the quarter involving Barrow Hanley, Sands Capital, Peregrine, Winslow Capital, BlackRock, Acadian, J.P. Morgan, Capital International, SSgA, Aberdeen and Columbia.

Barrow Hanley

As previously mentioned, Tim Culler retired March 31, 2016. Jeff Fahrenbruch is the lead portfolio manager. It was a well communicated, long transition and staff has no concerns.

Sands Capital

Tom Ricketts, one of three Select Growth Portfolio Managers, will be departing Sands on June 30, 2016 to pursue other interests. He will be replaced by Wes Johnston, who has managed the Global Life Sciences sector the last 3 years. Wes joined Sands in 2004 and has been a part of the Select Growth team for several years. Staff will monitor the change and does not have any concerns with the pending change.

Peregrine

During the first quarter, the SBI was informed that Peregrine Capital Management, Inc. had entered into an agreement with Wells Fargo to become 100% employee-owned. Peregrine has been a subsidiary of Wells Fargo since 1984. This transaction is expected to be completed in July 2016 and will be partially financed through debt. Staff is comfortable with this development, as it further aligns the best interests of Peregrine's investment personnel with those of its clients. With that said, the SBI staff will continue to monitor this transition closely.

Winslow Capital

Winslow Capital launched Growth Capital Fund I on January 4, 2016. The Fund is intended to realize long-term appreciation from late stage venture capital investments in private companies. Winslow began an International Small Cap strategy in March 2016. A new international small cap investment team joined Winslow on March 8, 2016 from Arbor Capital. They brought one client with them and will function as an investment team separate from the large cap portfolio team. Staff has no concerns with the changes.

BlackRock

Chris Bliss, Head of Institutional Portfolio Management, departed BlackRock on March 31, 2016. Creighton Jue, Head of Alternative Beta, and Rachel Aguirre, Senior Portfolio Manager of International Developed Markets, have assumed Chris' role and responsibilities. Staff will monitor the changes.

Acadian

In January 2016, Acadian announced the departure of the Director of Global Macro Research, Matthew Rothman. He was replaced by Ryan Stever, who has been a senior member of the research team since 2007. Staff does not have concerns with this announcement but will monitor the situation.

J.P. Morgan

In February 2016, J.P. Morgan announced the appointment of Mark Egert as Chief Compliance Officer. He succeeds Joseph Sanzone who served in the interim after the departure of Joseph Bertini in October 2015. Staff is comfortable with this announcement, but will monitor this transition in responsibilities.

Capital International

In April 2016, Capital announced changes to the emerging markets equity investment team which will take effect in June 2016. Two portfolio managers, David Fisher and Luis Freitas de Oliveira, of the six-member multi-manager team will transition out of portfolio management duties. Chapman Taylor, a long-term emerging markets equity research analyst covering Asian telecoms ex-Japan as well as generalist coverage of Indonesia, the Philippines and New Zealand, will become a new member of the portfolio management team. Staff will monitor this transition closely.

SSgA

In March 2016, SSgA announced that Yosuke Ota, a member of the team managing the SBI's semi-passive developed markets equity portfolio and the point person for Japan in this quantitative strategy, had left SSgA. He has been replaced by Ami Teruya with back-up from Stuart Hall and Chee Ooi. In addition, during the quarter, State Street Corporation announced that it had agreed to acquire GE Asset Management. The transaction is expected to increase SSgA's assets under management by \$100 billion. The transaction is expected to be finalized early in the third quarter of 2016. Staff will monitor these changes.

Aberdeen

On Friday March 11th, Aberdeen Asset Management and Neil Moriarty, Aberdeen's Head of U.S. Core Fixed income, came to a mutually agreeable resolution to the legal dispute that both parties were involved in. Neil has been with Aberdeen since 2005 and will continue to oversee the firm's U.S. Core Fixed Income strategy in Philadelphia. Staff will continue to evaluate this outcome closely.

Columbia

Dan Segner, Senior Portfolio Manager, High Yield Fixed Income, retired in March of 2016. Dan had been with the firm since 1994. His position will be replaced from within the high yield sector team. MSBI's account currently holds 7.6% of the portfolio in high yield. Staff will monitor this change.

2016 Manager Meetings

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

Investment Manager	Asset Class
• BlackRock Financial Management, Inc.	Fixed Income
• Columbia Management Investment Advisers, LLC	Fixed Income
• Earnest Partners, LLC	Domestic Equity
• Goldman Sachs Asset Management	Fixed Income
• Hotchkis and Wiley Capital Management, LLC	Domestic Equity
• INTECH Investment Management, LLC	Domestic Equity
• J. P. Morgan Investment Management Inc.	International Equity
• LSV Asset Management	Domestic Equity
• Martingale Asset Management, L.P.	Domestic Equity
• Pacific Investment Management Company LLC	Fixed Income
• Peregrine Capital Management	Domestic Equity

Non-Retirement Manager Update First Quarter 2016

Domestic Equities

GE Asset Management

The domestic equity portfolio underperformed the S&P 500 for the quarter and for the year. Performance lagged during the quarter from the stock selection in Consumer Staples and Financials along. An underweight in Consumer Staples, Telecommunications and Utilities and an overweight in Financials and Health Care sectors also detracted from performance. For the year, stock selection in Technology and Consumer Discretionary sectors in addition to an underweight in the Consumer Staples sector detracted from performance.

GE Asset Management (GEAM) announced that it will sell its asset management and advisory services business to State Street Corporation. The assets will be managed by State Street Global Advisors, a division of State Street Bank and Trust. The transaction is expected to close during 3Q16. Staff will continue to monitor and has no recommendation at this time.

Internal Stock Pool

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

Fixed Income

RBC Global Asset Management

The fixed income portfolio tracked the benchmark, the Barclays Intermediate Government Index, for the quarter and provided positive relative return for the year. For the quarter, the portfolio was slightly short duration, which detracted from performance, while excess yield from the securitized sector contributed to performance. For the year, excess yield, almost entirely from the securities sector, benefited performance.

Internal Bond Pool

The bond portfolio slightly underperformed its benchmark, the Barclays Aggregate, for the quarter and the year. For the quarter and the year the portfolio's defensive duration position detracted from performance as rates fell across the yield curve. In addition curve positioning and security selection within industrial corporates also detracted from performance.

Deferred Compensation Managers First Quarter 2016

Domestic Equities

Janus Twenty

The domestic equity portfolio underperformed the S&P 500 for the quarter and outperformed for the year. For the quarter, a combination of stock selection in the Health Care and Consumer Staples sectors detracted from performance. For the year, the portfolio benefited from strong stock selection in Technology and Consumer Discretionary sectors in addition to an underweight in the Energy sector.

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 outperformed the Russell 2000 for the quarter and for the year. For the year, the portfolio benefited from strong stock selection in the energy and industrial sectors.

Greg McCrickard, Small Cap Core Equity Portfolio Manager, will retire during 3Q16. Frank Alonso, Associate Portfolio Manager, will succeed Mr. McCrickard. Staff has no concerns at this time but will monitor the transaction.

International Equities

Fidelity Diversified International

The international equity portfolio outperformed the MSCI EAFE Free for the quarter and the year. Performance for the quarter benefited from sector-level stock decisions, most notably in the tech and financials sectors. The portfolio's non-index holdings in U.S., Canada, and emerging markets helped to offset some stock selection headwinds in the U.K. and Asia ex Japan.

Vanguard Total International Stock Index

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

Dodge & Cox Income Fund

The fixed income portfolio underperformed the benchmark, the Barclays Aggregate, for the quarter and for the year. Key detractors to performance for the quarter included the portfolio's shorter relative duration, bond selection in credit, and an overweight to the financial institutions sub-sector.

Vanguard Total Bond Market Index

The portfolio slightly outperformed the benchmark, the Barclays Aggregate Index, for the quarter and slightly underperformed for the year.

Balanced and Conservative Options***Vanguard Balanced***

The portfolio slightly outperformed for the quarter slightly underperformed the benchmark for the year. The benchmark is a combined return of 60% CRSP US total Market and 40% Barclays 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. For the quarter, the portfolio benefited from holdings in CMBS, TIPS, ABS, and higher quality shorter duration corporate bonds.

During the 1Q16 participants in the CVS Health Corporation 401(k) plan sued CVS, the plan sponsor, and Galliard for breach of fiduciary duty. The lawsuit alleges that Galliard improperly invested the plan's portfolio in short-term money market funds with low yields resulting in a loss of potential earnings. Staff has discussed this issue with Galliard has no concerns. Galliard invested the stable value portfolio according to the investment guidelines provided to them by the plan sponsor, CVS Health Corporation.



STATE BOARD OF INVESTMENT

Domestic Equity Manager Performance Summaries

First Quarter 2016

MINNESOTA STATE BOARD OF INVESTMENT

Domestic Equity

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**COMBINED RETIREMENT FUNDS
ACTIVE DOMESTIC EQUITY MANAGERS**

Periods Ended March 31, 2016

	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Russell 1000 Growth Aggregate	-4.4	-3.2	12.5	10.7
<i>Russell 1000 Growth Index</i>	<i>0.7</i>	<i>2.5</i>	<i>13.6</i>	<i>12.4</i>
Russell 1000 Value Aggregate	-1.0	-5.0	9.8	9.6
<i>Russell 1000 Value Index</i>	<i>1.6</i>	<i>-1.5</i>	<i>9.4</i>	<i>10.2</i>
Russell 2000 Growth Aggregate	-5.8	-13.6	6.3	5.2
<i>Russell 2000 Growth Index</i>	<i>-4.7</i>	<i>-11.8</i>	<i>7.9</i>	<i>7.7</i>
Russell 2000 Value Aggregate	0.5	-8.8	8.0	8.5
<i>Russell 2000 Value Index</i>	<i>1.7</i>	<i>-7.7</i>	<i>5.7</i>	<i>6.7</i>
Active Manager Aggregate	-2.6	-5.7	10.2	9.2
<i>Benchmark</i>	<i>0.7</i>	<i>-2.0</i>	<i>10.4</i>	<i>10.2</i>
Semi-Passive Aggregate	1.0	-0.4	11.6	11.9
<i>Benchmark</i>	<i>1.2</i>	<i>0.5</i>	<i>11.5</i>	<i>11.4</i>
Passive Manager (BlackRock)	1.0	-0.3	11.2	11.0
<i>Russell 3000 Index</i>	<i>1.0</i>	<i>-0.3</i>	<i>11.1</i>	<i>11.0</i>
Total Aggregate	0.0	-1.9	11.0	10.8
<i>Russell 3000 Index</i>	<i>1.0</i>	<i>-0.3</i>	<i>11.1</i>	<i>11.0</i>

Calendar Years

	2015	2014	2013	2012	2011
Russell 1000 Growth Aggregate	4.6	9.6	42.0	15.5	-0.4
<i>Russell 1000 Growth Index</i>	<i>5.7</i>	<i>13.0</i>	<i>33.5</i>	<i>15.3</i>	<i>2.6</i>
Russell 1000 Value Aggregate	-3.2	13.1	36.5	16.9	-2.1
<i>Russell 1000 Value Index</i>	<i>-3.8</i>	<i>13.5</i>	<i>32.5</i>	<i>17.5</i>	<i>0.4</i>
Russell 2000 Growth Aggregate	1.0	-3.4	47.2	12.0	-5.6
<i>Russell 2000 Growth Index</i>	<i>-1.4</i>	<i>5.6</i>	<i>43.3</i>	<i>14.6</i>	<i>-2.9</i>
Russell 2000 Value Aggregate	-6.5	7.5	40.8	19.6	-4.5
<i>Russell 2000 Value Index</i>	<i>-7.5</i>	<i>4.2</i>	<i>34.5</i>	<i>18.1</i>	<i>-5.5</i>
Active Manager Aggregate	-0.4	9.3	40.2	15.4	-2.7
<i>Active Manager Benchmark</i>	<i>-0.6</i>	<i>11.0</i>	<i>34.7</i>	<i>16.3</i>	<i>0.0</i>
Semi-Passive Aggregate	0.5	14.2	33.2	17.7	2.2
<i>Benchmark</i>	<i>0.9</i>	<i>13.2</i>	<i>33.1</i>	<i>16.4</i>	<i>1.5</i>
Passive Manager (BlackRock)	0.5	12.6	33.5	16.4	0.8
<i>Russell 3000 Index</i>	<i>0.5</i>	<i>12.6</i>	<i>33.6</i>	<i>16.4</i>	<i>1.0</i>
Total Aggregate	0.3	12.3	35.1	16.6	0.4
<i>Russell 3000 Index</i>	<i>0.5</i>	<i>12.6</i>	<i>33.6</i>	<i>16.4</i>	<i>1.0</i>

COMBINED RETIREMENT FUNDS
ACTIVE DOMESTIC EQUITY MANAGERS

Periods Ended March 2016

Performance versus Russell Style Benchmarks for All Periods

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception(1)
Russell 1000 Growth Index	0.7	2.5	13.6	12.4	--
INTECH	2.1	0.7	14.1	12.2	7.4
<i>Benchmark</i>	<i>0.7</i>	<i>2.5</i>	<i>13.6</i>	<i>12.4</i>	<i>8.1</i>
Jacobs Levy	0.4	0.4	13.7	12.2	7.0
<i>Benchmark</i>	<i>0.7</i>	<i>2.5</i>	<i>13.6</i>	<i>12.4</i>	<i>8.1</i>
Sands Capital	-9.4	-7.4	10.5	12.0	8.8
<i>Benchmark</i>	<i>0.7</i>	<i>2.5</i>	<i>13.6</i>	<i>12.4</i>	<i>8.1</i>
Winslow-Large Cap	-5.5	-2.4	12.0	10.2	8.6
<i>Benchmark</i>	<i>0.7</i>	<i>2.5</i>	<i>13.6</i>	<i>12.4</i>	<i>8.1</i>
Zevenbergen Capital	-9.8	-6.6	12.5	7.3	9.4
<i>Benchmark</i>	<i>0.7</i>	<i>2.5</i>	<i>13.6</i>	<i>12.4</i>	<i>8.8</i>
Aggregate	-4.4	-3.2	12.5	10.7	
 Russell 1000 Value Index	 1.6	 -1.5	 9.4	 10.2	 --
Barrow, Hanley	-0.1	-2.8	10.4	10.4	7.3
<i>Benchmark</i>	<i>1.6</i>	<i>-1.5</i>	<i>9.4</i>	<i>10.2</i>	<i>6.9</i>
Earnest Partners	-0.7	-5.0	9.9	7.9	5.8
<i>Benchmark</i>	<i>1.6</i>	<i>-1.5</i>	<i>9.4</i>	<i>10.2</i>	<i>6.4</i>
LSV Asset Mgmt.	-0.2	-3.4	11.5	11.6	8.1
<i>Benchmark</i>	<i>1.6</i>	<i>-1.5</i>	<i>9.4</i>	<i>10.2</i>	<i>6.9</i>
Systematic Financial Mgmt.	-3.1	-9.1	7.3	7.1	6.2
<i>Benchmark</i>	<i>1.6</i>	<i>-1.5</i>	<i>9.4</i>	<i>10.2</i>	<i>6.9</i>
Aggregate	-1.0	-5.0	9.8	9.6	

(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 March 2016

Performance versus Russell Style Benchmarks for All Periods

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception (1)
Small Cap					
Russell 2000 Growth Index	-4.7	(11.8)	7.9	7.7	--
McKinley Capital	-3.3	-9.0	11.4	10.5	6.5
<i>Benchmark</i>	<i>-4.7</i>	<i>-11.8</i>	<i>7.9</i>	<i>7.7</i>	<i>7.5</i>
Next Century Growth	-8.6	-18.5	3.3	1.4	1.9
<i>Benchmark</i>	<i>-4.7</i>	<i>-11.8</i>	<i>7.9</i>	<i>7.7</i>	<i>3.6</i>
Aggregate	-5.8	-13.6	6.3	5.2	
 Russell 2000 Value Index	 1.7	 -7.7	 5.7	 6.7	 --
Goldman Sachs	0.5	-7.6	8.1	9.3	8.7
<i>Benchmark</i>	<i>1.7</i>	<i>-7.7</i>	<i>5.7</i>	<i>6.7</i>	<i>6.8</i>
Hotchkis & Wiley	-2.9	-12.9	8.2	8.5	7.7
<i>Benchmark</i>	<i>1.7</i>	<i>-7.7</i>	<i>5.7</i>	<i>6.7</i>	<i>6.8</i>
Martingale Asset Mgmt.	3.1	-6.6	10.0	9.7	7.0
<i>Benchmark</i>	<i>1.7</i>	<i>-7.7</i>	<i>5.7</i>	<i>6.7</i>	<i>6.8</i>
Peregrine Capital	1.4	-8.2	6.5	7.2	9.7
<i>Benchmark</i>	<i>1.7</i>	<i>-7.7</i>	<i>5.7</i>	<i>6.7</i>	<i>8.9</i>
Aggregate	0.5	-8.8	8.0	8.5	
Active Mgr. Aggregate (2)	-2.6	-5.7	10.2	9.2	

(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 March 2016
Versus Manager Benchmarks

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception(1)
Semi-Passive Managers (2)					
BlackRock Institutional	1.0	-0.4	11.9	12.2	9.2
<i>Benchmark</i>	<i>1.2</i>	<i>0.5</i>	<i>11.5</i>	<i>11.4</i>	<i>8.9</i>
INTECH	0.4	-0.9	10.6	11.0	12.0
<i>Benchmark</i>	<i>1.2</i>	<i>0.5</i>	<i>11.5</i>	<i>11.4</i>	<i>12.2</i>
JP Morgan	0.8	0.2	12.0	11.9	9.2
<i>Benchmark</i>	<i>1.2</i>	<i>0.5</i>	<i>11.5</i>	<i>11.4</i>	<i>8.9</i>
Mellon Capital	1.6	-0.7	11.7	12.3	8.6
<i>Benchmark</i>	<i>1.2</i>	<i>0.5</i>	<i>11.5</i>	<i>11.4</i>	<i>8.9</i>
Semi-Passive Aggregate (R1000)	1.0	-0.4	11.6	11.9	
Passive Manager (R3000)					
BlackRock Institutional	1.0	-0.3	11.2	11.0	8.6
<i>Benchmark</i>	<i>1.0</i>	<i>-0.3</i>	<i>11.1</i>	<i>11.0</i>	<i>8.5</i>
Total Aggregate (3)	0.0	-1.9	11.0	10.8	10.1
<i>Benchmark (3,4)</i>	<i>1.0</i>	<i>-0.3</i>	<i>11.1</i>	<i>11.0</i>	<i>10.3</i>
<i>Russell 3000 Index (3)</i>	<i>1.0</i>	<i>-0.3</i>	<i>11.1</i>	<i>11.0</i>	<i>10.6</i>
<i>Russell 1000 Index (3)</i>	<i>1.2</i>	<i>0.5</i>	<i>11.5</i>	<i>11.4</i>	<i>10.8</i>
<i>Russell 2000 Index (3)</i>	<i>-1.5</i>	<i>-9.8</i>	<i>6.8</i>	<i>7.2</i>	<i>9.1</i>

(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**

	March 31, 2016		December 31, 2015	
	Market Value	Percent	Market Value	Percent
Russell 1000 Growth Aggregate	\$2,877,850,847	10.6%	\$3,011,674,266	10.8%
INTECH	\$623,902,612	2.3%	\$611,220,427	2.2%
Jacobs Levy	\$714,173,102	2.6%	\$711,472,412	2.6%
Sands Capital	\$647,770,046	2.4%	\$715,365,792	2.6%
Winslow-Large Cap	\$309,319,168	1.1%	\$327,479,694	1.2%
Zevenbergen Capital	\$582,685,919	2.1%	\$646,135,941	2.3%
Russell 1000 Value Aggregate	\$2,888,809,485	10.6%	\$2,917,907,087	10.5%
Barrow Hanley	\$816,226,050	3.0%	\$817,255,167	2.9%
Earnest Partners	\$546,450,674	2.0%	\$550,291,157	2.0%
LSV Asset Mgmt.	\$821,627,065	3.0%	\$823,317,537	3.0%
Systematic Financial Mgmt.	\$704,505,696	2.6%	\$727,043,225	2.6%
Russell 2000 Growth Aggregate	\$718,031,890	2.6%	\$762,024,137	2.7%
McKinley Capital	\$387,875,733	1.4%	\$400,965,621	1.4%
Next Century Growth	\$330,156,157	1.2%	\$361,058,516	1.3%
Russell 2000 Value Aggregate	\$1,040,840,007	3.8%	\$1,035,494,197	3.7%
Goldman Sachs	\$260,962,327	1.0%	\$259,792,792	0.9%
Hotchkis & Wiley	\$231,805,552	0.9%	\$238,810,890	0.9%
Martingale Asset Mgmt.	\$213,517,184	0.8%	\$207,040,802	0.7%
Peregrine Capital	\$334,554,944	1.2%	\$329,849,712	1.2%
Semi-Passive Manager Aggregate	\$10,260,447,586	37.7%	\$10,457,737,535	37.6%
BlackRock Institutional	\$2,537,992,028	9.3%	\$2,512,239,487	9.0%
INTECH	\$2,299,573,591	8.5%	\$2,290,796,384	8.2%
JP Morgan	\$2,914,534,102	10.7%	\$2,890,071,759	10.4%
Mellon Capital	\$2,508,347,865	9.2%	\$2,764,629,905	9.9%
Passive Manager	\$9,413,074,009	34.6%	\$9,619,602,187	34.6%
BlackRock Institutional	\$9,413,074,009	34.6%	\$9,619,602,187	34.6%
Total Portfolio	\$27,199,053,825	100.0%	\$27,804,439,409	100.0%

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

	2015	2014	2013	2012	2011
LARGE CAP					
Russell 1000 Growth Index	5.7	13.0	33.5	15.3	2.6
INTECH	4.0	12.8	34.1	17.8	0.1
Jacobs Levy	4.3	12.9	37.0	13.0	6.6
Sands Capital	2.9	9.1	42.4	24.2	2.7
Winslow - Large Cap	6.7	11.0	37.4	13.7	0.1
Zevenbergen Capital	6.4	3.4	60.6	8.0	-9.8
Aggregate	4.6	9.6	42.0	15.5	-0.4
 Russell 1000 Value Index	 -3.8	 13.5	 32.5	 17.5	 0.4
Barrow, Hanley	-2.1	13.0	35.5	15.5	1.7
Earnest Partners	-2.7	14.0	32.0	10.7	-4.7
LSV Asset Mgmt.	-2.2	14.0	41.2	20.4	-0.8
Systematic Financial Mgmt.	-5.7	11.6	35.0	18.2	-7.4
Aggregate	-3.2	13.1	36.5	16.9	-2.1
 SMALL CAP					
Russell 2000 Growth Index	-1.4	5.6	43.3	14.6	-2.9
McKinley Capital	3.6	2.0	51.6	23.2	-7.9
Next Century Growth	-1.7	-6.5	50.3	1.9	-4.5
Aggregate	1.0	-3.4	47.2	12.0	-5.6
 Russell 2000 Value Index	 -7.5	 4.2	 34.5	 18.1	 -5.5
Goldman Sachs	-5.2	7.4	39.3	16.6	1.3
Hotchkis & Wiley	-8.5	13.0	46.0	24.1	-10.8
Martingale Asset Mgmt.	-5.2	7.3	43.1	20.1	-5.2
Peregrine Capital	-6.7	4.1	37.3	18.8	-4.1
Aggregate	-6.5	7.5	40.8	19.6	-4.5
Active Mgr. Aggregate	-0.4	9.3	40.2	15.4	-2.7
<i>Active Mgr. Aggregate Benchmark (1)</i>	<i>-0.6</i>	<i>11.0</i>	<i>34.7</i>	<i>16.3</i>	<i>0.0</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

	2015	2014	2013	2012	2011
Semi-Passive Managers					
Russell 1000 Index	0.9	13.2	33.1	16.4	1.5
BlackRock Institutional	0.8	14.2	33.3	19.0	1.6
INTECH	0.7	11.6	33.0	16.6	2.9
JP Morgan	0.8	15.0	33.7	17.6	1.1
Mellon Capital	-0.2	15.9	32.6	17.3	4.6
Semi-Passive Aggregate (R1000)	0.5	14.2	33.2	17.7	2.2
Passive Managers					
Russell 3000 Index	0.5	12.6	33.6	16.4	1.0
BlackRock Institutional	0.5	12.6	33.5	16.4	0.8
Total Aggregate	0.3	12.3	35.1	16.6	0.4
<i>Russell 3000 Index</i>	<i>0.5</i>	<i>12.6</i>	<i>33.6</i>	<i>16.4</i>	<i>1.0</i>
<i>Russell 1000 Index</i>	<i>0.9</i>	<i>13.2</i>	<i>33.1</i>	<i>16.4</i>	<i>1.5</i>
<i>Russell 2000 Index</i>	<i>-4.4</i>	<i>4.9</i>	<i>38.8</i>	<i>16.3</i>	<i>-4.2</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

International Manager Performance Summaries

First Quarter 2016

MINNESOTA STATE BOARD OF INVESTMENT

International Managers

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COMBINED RETIREMENT FUNDS
INTERNATIONAL MANAGERS
Periods Ended March 2016

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception (1)
Active Developed Markets (2)					
Acadian	0.2	-0.6	5.8	4.8	4.8
<i>Benchmark</i>	-2.0	-8.4	1.7	1.6	3.9
Columbia	-4.9	-4.8	3.7	3.6	1.8
<i>Benchmark</i>	-2.0	-8.4	1.7	1.6	2.5
J.P. Morgan	-3.6	-11.2	0.2	1.1	3.6
<i>Benchmark</i>	-2.0	-8.4	1.7	1.6	3.9
Marathon Asset Management	-3.1	-2.5	5.7	5.6	8.1
<i>Benchmark</i>	-2.0	-8.4	1.7	1.6	4.6
McKinley	-6.6	-6.1	3.4	3.1	3.8
<i>Benchmark</i>	-2.0	-8.4	1.7	1.6	3.9
Fidelity	-2.8	-7.1	3.2	3.6	5.6
<i>Benchmark</i>	-2.0	-8.4	1.7	1.6	3.9
Aggregate	-3.3	-4.7	4.1	3.9	
<i>Benchmark</i>	-2.0	-8.4	1.7	1.6	
Active Emerging Markets (3)					
Capital International	3.6	-14.2	-6.4	-6.6	7.8
<i>Benchmark</i>	5.7	-12.0	-4.5	-4.1	8.7
Morgan Stanley	4.1	-8.5	-3.0	-1.4	9.7
<i>Benchmark</i>	5.7	-12.0	-4.5	-4.1	8.7
Aggregate	3.8	-11.1	-4.6	-4.1	
<i>Benchmark</i>	5.7	-12.0	-4.5	-4.1	
Semi-Passive Developed Markets (2)					
AQR	-2.4	-5.6	3.4	3.1	4.7
<i>Benchmark</i>	-2.0	-8.4	1.7	1.6	3.9
Fidelity	-3.5	-8.2	2.8	2.6	4.9
<i>Benchmark</i>	-2.0	-8.4	1.7	1.6	3.9
State Street	-4.7	-9.7	2.4	1.2	3.4
<i>Benchmark</i>	-2.0	-8.4	1.7	1.6	3.9
Aggregate	-3.5	-7.9	2.9	2.4	
<i>Benchmark</i>	-2.0	-8.4	1.7	1.6	

(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).

COMBINED RETIREMENT FUNDS
INTERNATIONAL MANAGERS
Periods Ended March 2016

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception (1)
Passive Developed Markets (2)					
State Street	-1.8	-8.0	2.1	2.0	5.9
Benchmark	-2.0	-8.4	1.7	1.6	5.6
Passive Emerging Markets (3)					
State Street	5.8	-11.5	-4.1	--	0.5
Benchmark	5.7	-12.0	-4.5	--	0.3
Equity Only (4)	-1.4	-7.7	1.3	1.2	6.2
Benchmark (5)	-0.4	-9.2	0.3	0.3	5.6
Total Program (5,9)	-1.4	-7.7	1.3	1.2	6.3
Benchmark (6,9)	-0.4	-9.2	0.3	0.3	5.6
SBI Int'l Equity Target (6,9)	-0.4	-9.2	0.3	0.3	5.6
MSCI ACWI Free ex USA (7,9)	-0.4	-9.2	0.3	0.3	5.9
MSCI World ex USA (net) (9)	-2.0	-8.4	1.7	1.6	5.7
MSCI EAFE Free (net) (9)	-3.0	-8.3	2.2	2.3	5.5
MSCI Emerging Markets Free (8,9)	5.7	-12.0	-4.5	-4.1	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 March 2016

	March 31, 2016		December 31, 2015	
	Market Value	Percent	Market Value	Percent
Active Developed Markets	\$2,347,786,243	28.2%	\$2,428,272,026	28.7%
Acadian	\$371,434,968	4.5%	\$370,569,661	4.4%
Columbia	\$341,915,380	4.1%	\$359,392,647	4.3%
J.P. Morgan	\$267,053,655	3.2%	\$277,042,954	3.3%
Marathon	\$747,151,369	9.0%	\$771,187,605	9.1%
McKinley	\$286,334,605	3.4%	\$306,674,597	3.6%
Fidelity	\$333,896,266	4.0%	\$343,404,562	4.1%
Active Emerging Markets	\$1,344,015,078	16.1%	\$1,294,382,900	15.3%
Capital International	\$608,669,952	7.3%	\$587,800,414	7.0%
Morgan Stanley	\$735,345,126	8.8%	\$706,582,486	8.4%
Semi-Passive Developed Markets	\$1,094,272,615	13.1%	\$1,133,826,108	13.4%
AQR	\$329,055,342	3.9%	\$337,256,607	4.0%
Fidelity	\$480,024,995	5.8%	\$497,456,948	5.9%
State Street	\$285,192,278	3.4%	\$299,112,554	3.5%
Passive Developed Markets	\$3,287,682,382	39.4%	\$3,348,389,904	39.6%
State Street	\$3,287,682,382	39.4%	\$3,348,389,904	39.6%
Passive Emerging Markets	\$265,190,891	3.2%	\$250,558,729	3.0%
State Street	\$265,190,891	3.2%	\$250,558,729	3.0%
Total Portfolio	\$8,338,947,209	100.0%	\$8,455,429,666	100.0%

COMBINED RETIREMENT FUNDS
INTERNATIONAL STOCK MANAGERS
Calendar Year Returns

	2015	2014	2013	2012	2011
Active Developed Markets (1)					
Acadian	2.4	-1.7	26.1	17.6	-12.9
Benchmark	-3.0	-4.3	21.0	16.4	-12.2
Columbia	6.4	-5.6	23.9	19.0	-12.1
Benchmark	-3.0	-4.3	21.0	16.4	-12.2
J.P. Morgan	-4.7	-5.1	19.5	18.4	-10.2
Benchmark	-3.0	-4.3	21.0	16.4	-12.2
Marathon	6.7	-4.0	28.5	17.9	-9.2
Benchmark	-3.0	-4.3	21.0	16.4	-12.2
McKinley	3.1	-2.7	28.0	16.9	-15.5
Benchmark	-3.0	-4.3	21.0	16.4	-12.2
Fidelity	0.1	-5.6	26.7	20.3	-11.9
Benchmark	-3.0	-4.3	21.0	16.4	-12.2
Aggregate	3.2	-4.1	25.4	17.9	-11.7
Benchmark	-3.0	-4.3	21.0	16.4	-12.2
Active Emerging Markets (2)					
Capital International	-16.4	-5.9	0.7	13.8	-22.8
Benchmark	-14.9	-2.2	-2.6	18.2	-18.4
Morgan Stanley	-9.4	-2.4	0.5	21.1	-17.8
Benchmark	-14.9	-2.2	-2.6	18.2	-18.4
Aggregate	-12.7	-4.1	0.6	17.5	-20.6
Benchmark	-14.9	-2.2	-2.6	18.2	-18.4
Semi-Passive Developed Markets (1)					
AQR	0.9	-4.4	24.1	20.8	-13.9
Benchmark	-3.0	-4.3	21.0	16.4	-12.2
Fidelity	-0.7	-4.0	23.2	19.4	-12.6
Benchmark	-3.0	-4.3	21.0	16.4	-12.2
State Street	-0.9	-5.1	25.3	17.3	-15.6
Benchmark	-3.0	-4.3	21.0	16.4	-12.2
Aggregate	-0.3	-4.4	24.0	19.2	-13.8
Benchmark	-3.0	-4.3	21.0	16.4	-12.2

- (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).

COMBINED RETIREMENT FUNDS
INTERNATIONAL STOCK MANAGERS
Calendar Year Returns

	2015	2014	2013	2012	2011
Passive Developed Markets (1)					
State Street	-2.6	-3.9	21.4	16.7	-11.9
Benchmark	-3.0	-4.3	21.0	16.4	-12.2
Passive Emerging Markets (2)					
State Street	-14.6	-2.1	-2.5	18.5	--
Benchmark	-14.9	-2.2	-2.6	18.2	--
Equity Only (3) (4)	-2.9	-4.0	17.8	17.6	-14.2
Benchmark	-5.7	-3.9	15.3	16.8	-13.7
Total Program (4)	-2.9	-4.0	17.8	17.6	-14.2
Benchmark	-5.7	-3.9	15.3	16.8	-13.7
<i>SBI Int'l Equity Target (5)</i>	-5.7	-3.9	15.3	16.8	-13.7
<i>MSCI ACWI Free ex USA (net)</i>	-5.7	-3.9	15.3	16.8	-13.7
MSCI World ex USA (net)	-3.0	-4.3	21.0	16.4	-12.2
MSCI EAFE Free (net)	-0.8	-4.9	22.8	17.3	-12.1
<i>MSCI Emerging Markets Free (net)</i>	-14.9	-2.2	-2.6	18.2	-18.4

- (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).



STATE BOARD OF INVESTMENT

Bond Manager Performance Summaries

First Quarter 2016

MINNESOTA STATE BOARD OF INVESTMENT

Bond Managers

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COMBINED RETIREMENT FUNDS
BOND MANAGERS
Periods Ended March 2016

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception (1)
Active Managers					
Barclays Aggregate Index	3.0	2.0	2.5	3.8	
Aberdeen	2.8	1.7	2.8	4.6	5.6
Benchmark	3.0	2.0	2.5	3.8	5.5
Columbia (RiverSource)	3.3	1.7	2.6	4.4	5.6
Benchmark	3.0	2.0	2.5	3.8	5.6
Dodge & Cox	2.6	1.4	3.0	4.3	6.4
Benchmark	3.0	2.0	2.5	3.8	5.5
PIMCO	2.6	1.8	2.4	4.0	6.5
Benchmark	3.0	2.0	2.5	3.8	4.9
Western	3.0	1.7	3.0	4.6	8.8
Benchmark	3.0	2.0	2.5	3.8	7.7
Active Mgr. Aggregate	2.8	1.7	2.8	4.4	
Semi-Passive Managers					
BlackRock	3.0	2.1	2.7	4.1	5.6
Benchmark	3.0	2.0	2.5	3.8	5.6
Goldman	3.0	2.1	2.7	4.2	5.9
Benchmark	3.0	2.0	2.5	3.8	5.6
Neuberger	3.1	2.1	2.7	4.0	6.8
Benchmark	3.0	2.0	2.5	3.8	6.6
Semi-Passive Mgr. Aggregate	3.1	2.1	2.7	4.1	
Benchmark	3.0	2.0	2.5	3.8	
Historical Aggregate (2,3)	3.0	1.9	2.7	4.2	7.8
Benchmark (3,4)	3.0	2.0	2.5	3.8	7.7
Barclays Aggregate Index (3,4)	3.0	2.0	2.5	3.8	7.7

(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: Aberdeen, 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 March 2016

	March 31, 2016		December 31, 2015	
	Market Value	Percent	Market Value	Percent
Semi-Passive	\$7,523,746,727	50.4%	\$7,300,559,314	50.4%
BlackRock	\$2,023,187,167	13.6%	\$1,964,089,600	13.5%
Goldman	\$2,821,911,617	18.9%	\$2,739,443,239	18.9%
Neuberger	\$2,678,647,943	17.9%	\$2,597,026,476	17.9%
Active Managers	\$7,402,769,031	49.6%	\$7,197,986,751	49.6%
Aberdeen	\$1,154,268,239	7.7%	\$1,122,777,815	7.7%
Columbia (RiverSource)	\$1,254,855,655	8.4%	\$1,214,639,031	8.4%
Dodge & Cox	\$1,571,046,145	10.5%	\$1,531,929,095	10.6%
PIMCO	\$1,676,896,224	11.2%	\$1,634,361,508	11.3%
Western	\$1,745,702,767	11.7%	\$1,694,279,302	11.7%
Total Portfolio	\$14,926,515,758	100.0%	\$14,498,546,065	100.0%

COMBINED RETIREMENT FUNDS
BOND MANAGERS
Calendar Year Returns

	2015	2014	2013	2012	2011
Active Managers					
Aberdeen	0.8	6.7	-1.5	7.7	8.0
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
Columbia (RiverSource)	0.2	5.8	-1.0	6.9	8.1
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
Dodge & Cox	0.3	6.0	0.9	8.5	5.0
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
PIMCO	1.0	5.5	-1.3	9.3	4.5
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
Western	0.7	7.0	-1.4	7.8	7.1
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
Active Mgr. Aggregate	0.6	6.2	-0.8	8.1	6.4
<i>Benchmark</i>	0.5	6.0	(2.0)	4.2	7.8
Semi-Passive Managers					
BlackRock	0.9	6.0	-1.8	5.0	8.0
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
Goldman	0.8	6.1	-1.7	5.4	8.3
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
Neuberger	0.7	6.1	-2.0	5.4	7.6
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
Semi-Passive Mgr. Aggregate	0.8	6.1	-1.8	5.3	8.0
<i>Benchmark</i>	0.5	6.0	(2.0)	4.2	7.8
Historical Aggregate	0.7	6.1	-1.3	6.7	7.2
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
Barclays Aggregate Index	0.5	6.0	-2.0	4.2	7.8

The benchmark for the Fixed Income Asset Class is the Barclays Capital U.S. Aggregate Bond Index.



STATE BOARD OF INVESTMENT

Non-Retirement Manager Performance Summaries

First Quarter 2016

MINNESOTA STATE BOARD OF INVESTMENT

Non-Retirement Managers

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NON-RETIREMENT MANAGERS
Periods Ended March 2016

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception (1)
GE Asset Management	-0.8	-2.7	10.3	10.0	9.6
<i>S&P 500 Index</i>	<i>1.3</i>	<i>1.8</i>	<i>11.8</i>	<i>11.6</i>	<i>9.4</i>
RBC Global Asset Management (2)	2.3	2.4	1.5	2.4	5.3
<i>Barclays Intermediate Government</i>	<i>2.3</i>	<i>2.2</i>	<i>1.5</i>	<i>2.5</i>	<i>5.4</i>
Internal Stock Pool	1.3	1.8	11.8	11.6	9.1
<i>S&P 500 Index</i>	<i>1.3</i>	<i>1.8</i>	<i>11.8</i>	<i>11.6</i>	<i>9.0</i>
Internal Bond Pool - Trust	2.9	1.9	3.0	4.0	6.4
<i>Barclays Aggregate</i>	<i>3.0</i>	<i>2.0</i>	<i>2.5</i>	<i>3.8</i>	<i>5.9</i>

(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 March 2016

	March 31, 2016		December 31, 2015	
	Market Value	Percent	Market Value	Percent
GE Asset Management	\$60,669,329	2.0%	\$56,876,072	1.9%
RBC Global Asset Management	\$240,296,585	7.9%	\$238,868,351	8.0%
Internal Stock Pool	\$1,781,456,409	58.3%	\$1,749,682,253	58.4%
Internal Bond Pool - Trust	\$973,416,156	31.9%	\$952,829,036	31.8%
Total Portfolio	\$3,055,838,479	100.0%	\$2,998,255,712	100.0%

NON-RETIREMENT MANAGERS
Calendar Year Returns

	2015	2014	2013	2012	2011
GE Asset Management	-1.4	13.2	34.5	16.8	-2.2
<i>S&P 500 Index</i>	<i>1.4</i>	<i>13.7</i>	<i>32.4</i>	<i>16.0</i>	<i>2.1</i>
RBC Global Asset Management (1)	1.3	2.5	-1.3	1.8	7.1
<i>Barclays Intermediate Gov</i>	<i>1.2</i>	<i>2.5</i>	<i>-1.2</i>	<i>1.7</i>	<i>6.2</i>
Internal Stock Pool	1.5	13.7	32.2	16.0	2.2
<i>S&P 500 Index</i>	<i>1.4</i>	<i>13.7</i>	<i>32.4</i>	<i>16.0</i>	<i>2.1</i>
Internal Bond Pool - Trust	0.8	6.0	0.0	5.8	5.6
<i>Barclays Aggregate</i>	<i>0.5</i>	<i>6.0</i>	<i>-2.0</i>	<i>4.2</i>	<i>7.8</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

Deferred Compensation Plan Minnesota College Savings Plan Performance Summaries

First 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 March 2016

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception(2)
Large Cap Equity					
Janus Twenty	-1.9	2.7	12.4	10.6	4.1
<i>S&P 500</i>	1.3	1.8	11.8	11.6	4.4
Vanguard Institutional Index Plus	1.3	1.8	11.8	11.6	4.5
<i>S&P 500</i>	1.3	1.8	11.8	11.6	4.4
Mid Cap Equity					
Vanguard Mid-Cap Index	1.2	-4.3	10.8	10.0	9.3
<i>CRSP US Mid Cap (3)</i>	1.2	-4.3	10.8	10.1	9.3
Small Cap Equity					
T. Rowe Price Small-Cap Stock	-0.2	-7.0	8.1	9.0	9.5
<i>Russell 2000</i>	-1.5	-9.8	6.8	7.2	6.9
International					
Fidelity Diversified International	-2.9	-5.9	5.1	3.9	6.3
<i>MSCI EAFE Free</i>	-3.0	-8.3	2.2	2.3	3.3
Vanguard Total International Stock Index	-0.1	-8.1	0.9	--	0.6
<i>FTSE Global All Cap ex US (5)</i>	-0.2	-7.7	1.2	--	0.9
Balanced					
Vanguard Balanced Index Inst. Fund	2.0	0.7	7.7	8.3	7.0
<i>60% CRSP US Tot Mkt, 40% Barclays Agg (4)</i>	1.9	0.8	7.8	8.3	6.9
Fixed Income					
Dodge & Cox Income Fund	2.4	0.5	2.4	3.8	5.7
<i>Barclays Aggregate</i>	3.0	2.0	2.5	3.8	5.3
Vanguard Total Bond Market Index Inst.	3.1	1.8	2.4	3.7	4.5
<i>Barclays Aggregate</i>	3.0	2.0	2.5	3.8	4.5
SIF Money Market (1)	0.1	0.3	0.2	0.2	2.1
3 Month T-Bills	0.1	0.1	0.1	0.1	1.8
SIF Fixed Interest (1)					
Galliard Capital Management	0.5	2.0	2.0	2.4	4.7
<i>3-Year Constant Maturity Treasury +45bp</i>	0.3	1.5	1.3	1.1	3.6

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

- (1) SIF Money Market Account and SIF Fixed Interest Accounts are Supplemental Investment Fund options (SIF), which are also offered under the Deferred Compensation Plan.
- (2) Since retention by the SBI. Time periods varies for each manager.
- (3) Benchmark is the CRSP US Mid-Cap Index beginning February 2013. Prior to that date it was the MSCI US Mid-Cap 450 Index.
- (4) Benchmark is 60% CRSP US Total Market Index and 40% Barclays Aggregate Bond Index beginning January 2013. Prior to that date it was 60% MSCI US Broad Market Index and 40% Barclays Aggregate Bond Index.
- (5) 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.

MN STATE 457 DEFERRED COMPENSATION PLAN
FUND OPTIONS
Periods Ended March 2016

MN Target Retirement Funds	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception (1)
SSgA					
Income Fund	2.2	-0.7	2.3	--	4.1
Income Fund Benchmark	2.1	-0.7	2.4	--	4.2
2020 Fund	2.3	-1.2	3.6	--	6.2
2020 Fund Benchmark	2.2	-1.1	3.7	--	6.3
2025 Fund	2.2	-1.8	4.7	--	7.0
2025 Fund Benchmark	2.1	-1.8	4.7	--	7.1
2030 Fund	2.0	-2.4	5.3	--	7.4
2030 Fund Benchmark	1.9	-2.4	5.4	--	7.5
2035 Fund	1.8	-2.7	5.7	--	7.6
2035 Fund Benchmark	1.6	-2.7	5.8	--	7.7
2040 Fund	1.6	-3.1	5.9	--	7.5
2040 Fund Benchmark	1.4	-3.1	6.0	--	7.6
2045 Fund	1.4	-3.6	6.1	--	7.4
2045 Fund Benchmark	1.3	-3.6	6.1	--	7.5
2050 Fund	1.3	-3.8	6.0	--	7.4
2050 Fund Benchmark	1.2	-3.8	6.1	--	7.5
2055 Fund	1.3	-3.9	6.0	--	7.4
2055 Fund Benchmark	1.2	-3.8	6.1	--	7.5
2060 Fund	1.3	-3.8	6.0	--	7.4
2060 Fund Benchmark	1.2	-3.8	6.1	--	7.5

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 March 2016

SSgA Index Funds	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception (1)
S&P 500 Index Fund	1.4	1.8	11.8	--	12.2
<i>S&P 500</i>	1.3	1.8	11.8	--	12.2
DJ-UBS Roll Select Commodity Index Fund	1.6	-17.7	-15.4	--	-11.9
<i>DJ-UBS Roll Select Commodity Index</i>	1.6	-17.7	-15.3	--	-11.8
Russell Small/Mid Cap Index Fund	-0.7	-8.8	8.1	--	12.4
<i>Russell Small Cap Completeness Index</i>	-0.7	-8.8	8.1	--	12.4
Global All-Cap Equity ex-US Index Fund	0.3	-7.9	1.1	--	0.8
<i>MSCI ACWI ex USA IMI</i>	-0.2	-8.1	0.8	--	0.6
Global Real Estate Securities Index Fund	5.3	1.1	6.1	--	8.0
<i>FTSE EPRA/NAREIT Dev Liquid</i>	4.8	0.2	5.3	--	7.2
Long Government Bond Index Fund	8.0	2.9	6.0	--	9.3
<i>Barclays Long Government</i>	8.1	2.8	6.0	--	9.3
Bond Index Fund	3.0	2.0	2.5	--	3.5
<i>Barclays Aggregate</i>	3.0	2.0	2.5	--	3.5
Inflation Protected Bond Index Fund	4.4	1.5	-0.7	--	2.4
<i>Barclays U.S. TIPS</i>	4.5	1.5	-0.7	--	2.4
High Yield Bond Index Fund	3.4	-4.5	1.4	--	4.6
<i>Barclays U.S. High Yield Very Liquid</i>	3.7	-4.3	1.5	--	4.8
U.S. Short-Term Gov/Credit Index Fund	1.0	1.0	0.9	--	1.5
<i>Barclays 1-3 Yr Govt/Credit</i>	1.0	1.0	0.9	--	1.0

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

	2015	2014	2013	2012	2011
Large Cap Equity					
Janus Twenty	4.9	8.9	33.1	22.3	-8.2
<i>S&P 500</i>	1.4	13.7	32.4	16.0	2.1
Vanguard Institutional Index Plus	1.4	13.7	32.4	16.0	2.1
<i>S&P 500</i>	1.4	13.7	32.4	16.0	2.1
Mid Cap Equity					
Vanguard Mid-Cap Index	-1.3	13.8	35.2	16.0	-2.0
<i>CRSP US Mid Cap (2)</i>	-1.3	13.8	35.4	16.0	-1.9
Small Cap Equity					
T. Rowe Price Small-Cap Stock	-3.2	6.9	37.6	18.0	-0.1
<i>Russell 2000</i>	-4.4	4.9	38.8	16.3	-4.2
International					
Fidelity Diversified International	3.1	-3.2	25.2	19.4	-13.8
<i>MSCI EAFE Free</i>	-0.8	-4.9	22.8	17.3	-12.1
Vanguard Total International Stock Index	-4.2	-4.1	15.2	18.3	--
<i>FTSE Global All Cap ex US (4)</i>	-4.0	-3.1	15.9	17.0	--
Balanced					
Vanguard Balanced Index Inst. Fund	0.5	10.0	18.1	11.5	4.3
<i>60% CRSP US Tot Mkt, 40% Barclays Agg (3)</i>	0.7	10.0	18.2	11.6	4.1
Fixed Income					
Dodge & Cox Income Fund	-0.6	5.5	0.6	7.9	4.8
<i>Barclays Aggregate</i>	0.5	6.0	-2.0	4.2	7.8
Vanguard Total Bond Market Index Inst.	0.4	5.9	-2.1	4.2	7.7
<i>Barclays Aggregate</i>	0.5	6.0	-2.0	4.2	7.8
SIF Money Market (1)	0.2	0.1	0.2	0.3	0.2
3 Month T-Bills	0.1	0.0	0.1	0.1	0.1
SIF Fixed Interest (1)					
Galliard Capital Management	2.0	1.8	2.2	2.8	3.4
<i>3-Year Constant Maturity Treasury +45bp</i>	1.5	1.3	1.0	0.8	1.2

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

- (1) 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.
- (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 60% CRSP US Total Market Index and 40% Barclays Aggregate Bond Index beginning January 2013. Prior to that date it was 60% MSCI US Broad Market Index and 40% Barclays Aggregate Bond Index.
- (4) 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.

MN STATE 457 DEFERRED COMPENSATION PLAN
FUND OPTIONS
Calendar Year Returns

MN Target Retirement Funds	2015	2014	2013	2012	2011
SSgA					
Income Fund	-1.4	3.6	5.1	9.7	--
Income Fund Benchmark	-1.3	3.8	5.3	9.8	--
2020 Fund	-1.6	5.3	8.8	12.5	--
2020 Fund Benchmark	-1.6	5.5	9.1	12.5	--
2025 Fund	-1.9	5.9	13.2	13.7	--
2025 Fund Benchmark	-1.9	6.2	13.5	13.7	--
2030 Fund	-2.0	6.3	16.0	14.3	--
2030 Fund Benchmark	-2.0	6.6	16.3	14.1	--
2035 Fund	-2.0	6.4	18.1	14.9	--
2035 Fund Benchmark	-2.0	6.7	18.5	14.7	--
2040 Fund	-2.2	6.4	19.7	15.5	--
2040 Fund Benchmark	-2.1	6.6	20.0	15.3	--
2045 Fund	-2.4	6.2	21.3	16.0	--
2045 Fund Benchmark	-2.3	6.5	21.6	15.8	--
2050 Fund	-2.5	6.2	21.4	15.9	--
2050 Fund Benchmark	-2.4	6.5	21.7	15.8	--
2055 Fund	-2.5	6.2	21.4	15.9	--
2055 Fund Benchmark	-2.4	6.5	21.7	15.8	--
2060 Fund	-2.5	6.2	21.4	16.0	--
2060 Fund Benchmark	-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

SSgA Index Funds	2015	2014	2013	2012	2011
S&P 500 Index Fund	1.4	13.7	32.4	16.0	--
<i>S&P 500</i>	<i>1.4</i>	<i>13.7</i>	<i>32.4</i>	<i>16.0</i>	<i>2.1</i>
DJ-UBS Roll Select Commodity Index Fund	-23.4	-15.3	-9.3	--	--
DJ-UBS Roll Select Commodity Index	-23.4	-15.2	-9.1	--	--
Russell Small/Mid Cap Index Fund	-3.5	7.5	38.4	--	--
<i>Russell Small Cap Completeness Index</i>	<i>-3.4</i>	<i>7.4</i>	<i>38.5</i>	<i>--</i>	<i>--</i>
Global All-Cap Equity ex-US Index Fund	-4.4	-4.2	15.4	18.2	--
<i>MSCI ACWI ex USA IMI</i>	<i>-4.6</i>	<i>-3.9</i>	<i>15.8</i>	<i>17.0</i>	<i>--</i>
Global Real Estate Securities Index Fund	0.2	15.5	2.7	28.9	--
<i>FTSE EPRA/NAREIT Dev Liquid</i>	<i>-0.5</i>	<i>15.0</i>	<i>2.5</i>	<i>27.5</i>	<i>-5.8</i>
Long Government Bond Index Fund	-1.1	24.6	-12.5	3.8	--
<i>Barclays Long Government</i>	<i>-1.2</i>	<i>24.7</i>	<i>-12.5</i>	<i>3.8</i>	<i>29.1</i>
Bond Index Fund	0.6	6.0	-2.1	4.2	--
<i>Barclays Aggregate</i>	<i>0.5</i>	<i>6.0</i>	<i>-2.0</i>	<i>4.2</i>	<i>7.8</i>
Inflation Protected Bond Index Fund	-1.4	3.6	-8.6	6.9	--
<i>Barclays U.S. TIPS</i>	<i>-1.4</i>	<i>3.6</i>	<i>-8.6</i>	<i>7.0</i>	<i>13.6</i>
High Yield Bond Index Fund	-5.2	2.1	6.6	14.8	--
<i>Barclays U.S. High Yield Very Liquid</i>	<i>-5.3</i>	<i>2.1</i>	<i>6.6</i>	<i>15.4</i>	<i>6.1</i>
U.S. Short-Term Gov/Credit Index Fund	0.6	0.7	0.6	3.9	--
<i>Barclays 1-3 Yr Govt/Credit</i>	<i>0.7</i>	<i>0.8</i>	<i>0.6</i>	<i>1.3</i>	<i>1.6</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.

Numbers in blue include returns prior to retention by SBI.

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

	March 31, 2016		December 31, 2015	
	Market Value	Percent	Market Value	Percent
Fixed Income	\$453,053,487	7.9%	\$443,187,337	7.8%
Dodge & Cox Income Fund	\$202,700,466	3.6%	\$200,366,580	3.5%
Vanguard Total Bond Market Index Inst.	\$187,412,239	3.3%	\$180,192,579	3.2%
Money Market	\$62,940,782	1.1%	\$62,628,178	1.1%
Stable Value	\$1,328,303,451	23.3%	\$1,310,485,339	23.1%
Galliard Stable Value Composite	\$1,328,303,451	23.3%	\$1,310,485,339	23.1%
Large Cap Equity	\$1,513,716,635	26.5%	\$1,517,709,062	26.7%
Janus Twenty	\$536,377,526	9.4%	\$546,338,564	9.6%
Vanguard Institutional Index Plus	\$977,339,109	17.1%	\$971,370,498	17.1%
Mid Cap Equity	\$426,482,793	7.5%	\$424,796,234	7.5%
Vanguard Mid-Cap Index	\$426,482,793	7.5%	\$424,796,234	7.5%
Small Cap Equity	\$553,059,949	9.7%	\$559,426,733	9.9%
T. Rowe Price Small-Cap Stock	\$553,059,949	9.7%	\$559,426,733	9.9%
Balanced	\$684,879,511	12.0%	\$675,377,409	11.9%
Vanguard Balanced Index Inst. Fund	\$684,879,511	12.0%	\$675,377,409	11.9%
International	\$418,055,434	7.3%	\$427,937,774	7.5%
Fidelity Diversified International	\$278,760,306	4.9%	\$288,415,743	5.1%
Vanguard Total International Stock Index	\$139,295,128	2.4%	\$139,522,031	2.5%
Target Retirement Funds	\$328,897,989	5.8%	\$315,817,850	5.6%
Income Fund	\$66,060,967	1.2%	\$66,098,570	1.2%
2020 Fund	\$75,748,637	1.3%	\$73,700,657	1.3%
2025 Fund	\$61,907,901	1.1%	\$59,705,833	1.1%
2030 Fund	\$39,710,496	0.7%	\$37,232,137	0.7%
2035 Fund	\$30,503,496	0.5%	\$28,954,190	0.5%
2040 Fund	\$19,427,250	0.3%	\$18,001,593	0.3%
2045 Fund	\$15,368,881	0.3%	\$13,837,903	0.2%
2050 Fund	\$10,314,461	0.2%	\$9,142,180	0.2%
2055 Fund	\$4,901,470	0.1%	\$4,447,598	0.1%
2060 Fund	\$4,954,431	0.1%	\$4,697,188	0.1%

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

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception (1)
Equity					
MNCSP US Intl Equity Allocation	0.7	-2.4	7.9	8.2	6.1
MNCSP US Intl Equity Allocation Bnmk	0.8	-2.4	8.0	8.4	7.1
MNCSP Equity Interest Allocation	0.7	0.4	--	--	2.4
MNCSP Equity Interest Allocation Bnmk	0.6	0.1	--	--	2.1
MNCSP Intl Eq Index Allocation	-1.3	-9.1	--	--	0.1
MNCSP Intl Eq Index Allocation Bnmk	-1.3	-9.2	--	--	0.5
MNCSP US LC Equity Allocation	1.3	1.6	--	--	5.8
MNCSP US LC Equity Allocation Bnmk	1.3	1.8	--	--	6.1
Fixed Income					
MNCSP Fixed Income Allocation	3.1	0.9	1.1	2.8	3.9
MNCSP Fixed Income Allocation Bnmk	3.2	1.3	1.5	3.5	4.7
MNCSP Principal Interest Allocation	0.3	1.3	1.3	1.5	2.7
MNCSP Principal Interest Allocation Bnmk	0.1	0.1	0.0	0.1	1.3
MNCSP Money Market Allocation	0.0	0.0	0.0	0.0	0.3
MNCSP Money Market Allocation Bnmk	0.0	0.0	0.0	0.0	0.4

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

MINNESOTA COLLEGE SAVINGS PLAN
ALLOCATION OPTIONS
Periods Ended March 2016

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception(1)
Allocation Options					
MNCSP Aggressive Allocation	1.3	-1.9	--	--	2.0
MNCSP Aggressive Allocation Bnmk	1.3	-1.5	--	--	2.2
MNCSP Moderate Allocation	1.6	-1.1	5.3	6.1	4.3
MNCSP Moderate Allocation Bnmk	1.8	-0.7	5.5	6.6	5.1
MNCSP Conservative Allocation	1.7	0.0	--	--	1.3
MNCSP Conservative Allocation Bnmk	1.8	0.1	--	--	1.3
Managed Allocation Options					
MNCSP Managed 0-4 Yrs	1.3	-1.7	--	--	2.1
MNCSP Managed 0-4 Yrs Bnmk	1.3	-1.5	--	--	2.2
MNCSP Managed 5-8 Yrs	1.4	-1.4	--	--	2.1
MNCSP Managed 5-8 Yrs Bnmk	1.6	-1.1	--	--	2.3
MNCSP Managed 9-10 Yrs	1.7	-1.1	--	--	2.1
MNCSP Managed 9-10 Yrs Bnmk	1.8	-0.7	--	--	2.3
MNCSP Managed 11-12 Yrs	1.8	-0.8	--	--	2.0
MNCSP Managed 11-12 Yrs Bnmk	1.9	-0.4	--	--	2.2
MNCSP Managed 13-14 Yrs	1.9	-0.4	--	--	1.9
MNCSP Managed 13-14 Yrs Bnmk	2.0	-0.1	--	--	2.1
MNCSP Managed 15 Yrs	1.7	0.0	--	--	1.8
MNCSP Managed 15 Yrs Bnmk	1.8	0.1	--	--	1.8
MNCSP Managed 16 Yrs	1.5	0.1	--	--	1.7
MNCSP Managed 16 Yrs Bnmk	1.6	0.1	--	--	1.6
MNCSP Managed 17 Yrs	1.4	0.4	--	--	1.6
MNCSP Managed 17 Yrs Bnmk	1.4	0.2	--	--	1.3
MNCSP Managed 18+ Yrs	1.2	0.5	--	--	1.5
MNCSP Managed 18+ Yrs Bnmk	1.1	0.2	--	--	1.1

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

MINNESOTA COLLEGE SAVINGS PLAN
ALLOCATION OPTIONS UNDERLYING FUNDS
Periods Ended March 2016

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
TIAA-CREF:Bond Idx;Inst	3.1	2.0	2.4	3.7	--
Barclays Agg (SBI Toolbox Returns)	3.0	2.0	2.5	3.8	4.9
TIAA-CREF:EM Eq Idx;Inst	6.0	-12.0	-4.6	-4.4	--
MSCI:EM Gross	5.8	-11.7	-4.2	-3.8	3.3
TIAA-CREF:Eq Idx;Inst	1.0	-0.3	11.1	11.0	6.9
Russell 3000 Index	1.0	-0.3	11.1	11.0	6.9
TIAA-CREF:Hi-Yld;Inst	2.7	-3.8	1.7	4.7	6.5
ML:1-3 BB US HY CP	2.2	1.9	3.1	4.9	6.6
TIAA-CREF:Infl Bond;Inst	3.5	0.4	-1.2	2.6	4.2
Barclays U.S. TIPS Index	4.5	1.5	-0.7	3.0	4.6
TIAA-CREF:Itl Eq Ix;Inst	-2.7	-8.2	2.2	2.4	1.9
MSCI EAFE USD Index	-3.0	-8.3	2.2	2.3	1.8
TIAA-CREF:Money Mkt;Inst	0.1	0.1	0.0	0.0	1.3
MFR Avg All-Taxble	0.1	0.2	0.1	0.1	1.1
TIAA-CREF:Real Est;Inst	4.3	3.8	10.7	11.3	6.0
FTSE:NAREIT All Eq Index	5.8	4.7	9.9	11.6	6.5
TIAA-CREF:S&P500 Idx;Ins	1.3	1.8	11.7	11.5	7.0
S&P 500 Index	1.3	1.8	11.8	11.6	7.0

Numbers in blue include returns prior to retention by SBI.

MINNESOTA COLLEGE SAVINGS PLAN
FUND OPTIONS

	March 31, 2016		December 31, 2015	
	Market Value	Percent	Market Value	Percent
Fixed Income	\$121,885,865	10.3%	\$119,096,764	10.2%
MNCSP Fixed Income Allocation	\$10,493,389	0.9%	\$9,875,794	0.8%
MNCSP Principal Interest Allocation	\$103,559,974	8.7%	\$101,532,446	8.7%
MNCSP Money Market Allocation	\$7,832,502	0.7%	\$7,688,524	0.7%
Equity	\$277,398,582	23.4%	\$277,727,948	23.8%
MNCSP US Intl Equity Allocation	\$266,034,649	22.5%	\$267,494,130	22.9%
MNCSP Equity Interest Allocation	\$1,024,576	0.1%	\$971,248	0.1%
MNCSP Intl Eq Index Allocation	\$2,193,065	0.2%	\$2,145,302	0.2%
MNCSP US LC Equity Allocation	\$8,146,292	0.7%	\$7,117,268	0.6%
Allocation Options	\$62,744,588	5.3%	\$59,809,862	5.1%
MNCSP Aggressive Allocation	\$8,497,245	0.7%	\$7,172,237	0.6%
MNCSP Moderate Allocation	\$51,244,574	4.3%	\$49,719,827	4.3%
MNCSP Conservative Allocation	\$3,002,769	0.3%	\$2,917,798	0.3%
Managed Allocation Options	\$722,846,372	61.0%	\$709,601,188	60.8%
MNCSP Managed 0-4 Yrs	\$24,205,225	2.0%	\$23,140,088	2.0%
MNCSP Managed 5-8 Yrs	\$73,908,200	6.2%	\$74,969,234	6.4%
MNCSP Managed 9-10 Yrs	\$74,062,494	6.3%	\$73,775,240	6.3%
MNCSP Managed 11-12 Yrs	\$104,608,402	8.8%	\$104,814,168	9.0%
MNCSP Managed 13-14 Yrs	\$125,726,404	10.6%	\$123,776,355	10.6%
MNCSP Managed 15 Yrs	\$63,150,089	5.3%	\$60,181,587	5.2%
MNCSP Managed 16 Yrs	\$59,186,557	5.0%	\$56,941,036	4.9%
MNCSP Managed 17 Yrs	\$59,057,970	5.0%	\$55,824,138	4.8%
MNCSP Managed 18+ Yrs	\$138,941,031	11.7%	\$136,179,342	11.7%

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DATE: May 26, 2016

TO: Members, State Board of Investment

FROM: Mansco Perry III

SUBJECT: **2016 Combined Funds Asset Liability Study**

EXECUTIVE SUMMARY

The SBI Staff worked with Callan Associates (Callan) to conduct an asset/liability study for the Combined Funds. A summary of the study appears in **Appendix A**. Callan presented the asset/liability study at the May 17, 2016 Investment Advisory Council (IAC) meeting. The Executive Director presented his plan for implementing the recommended changes to the asset allocation if approved by the Board. Copies of Callan and Staff presentations are presented as **Appendix B** and **Appendix C**, respectively.

Based on the asset/liability study, the SBI Staff recommends that the SBI adopt the proposed asset allocation shown below:

	Current	Proposed
	<u>Combined Funds</u>	<u>Combined Funds</u>
	<u>Asset Allocation</u>	<u>Asset Allocation</u>
	%	%
Public Equity	60	58
Domestic Equity	45	39
International Equity	15	19
Domestic Bonds	18	20
Private Markets	20⁽¹⁾	20⁽²⁾
Cash	2	2

(1) *Un-invested Private Equity allocated to Bonds*

(2) *Un-invested Private Equity allocated to Public Equity*

Importantly, the proposal recommends that the un-invested private equity be allocated to Public Equity instead of Bonds.

In addition to the Combined Funds asset allocation changes outlined above, SBI staff recommends expanding the use of domestic, international and global equity benchmarks to increase flexibility in the management of the U.S. and Non U.S. Public Equity programs.

While the proposed asset mix yields a nominal expected return of 7.3%, we do not draw the conclusion that achievement of the current 8.0% nominal return is unattainable given some important differences in the assumptions underlying the numbers.

The first important difference is the time horizon. The study is based on a planning period of 10 years which is shorter than the actuarial perspective of 50 years. This is most apparent in the inflation assumptions. Callan's inflation assumption of 2.25% for the next 10 years is 0.50 percentage points lower than the 50 year projection of 2.75% used by the actuaries of the State's Retirement Plans. When adjusting for inflation, the differences in real expected return become significantly smaller as shown below.

	<u>Nominal Expected Return</u>	-	<u>Inflation</u>	=	<u>Real Expected Return</u>
Proposed Policy - Callan Asset Allocation Study	7.30%		2.25%		5.05%
Current Actuarial Assumptions	8.00%		2.75%		5.25%
SBI's 2011 Asset Allocation Study	8.36%		3.00%		5.36%

As illustrated above, we can see that the real returns are similar in each case. Moreover, it is instructive to examine the long-term, real return experience of the SBI. For the period ending March 31, 2016, the SBI's actual, annualized real return over 20 and 30 years was 5.5% and 6.2%, respectively.

In addition, Callan's asset class return expectations reflect beta only and do not include the potential for positive active risk and incremental return, or alpha, that the SBI has historically achieved for the Combined Funds portfolio overall.

This is especially relevant for the Private Equity portion of SBI's program. Callan's nominal return expectation for Private Equity of 8.15% assumes a portfolio that can be implemented by a broad range of institutional investors including smaller investors and those making their first commitments to private equity. With its large asset base and a long history in private equity investing, the SBI has been successful in hiring some of the best Private Equity managers in the marketplace and achieving private markets performance that has been accretive to the SBI Combined Funds portfolio.

Based on these differences in assumptions, we believe that an 8% nominal expected return, while challenging near term due to the current low interest rate environment, is still an attainable long-term target rate of return for the Combined Funds.

RECOMMENDATION:

As a result of the 2016 Asset Liability Study, the Investment Advisory Council concurs with the SBI Executive Director's recommendation of the following as it relates to the Combined Funds Policy asset allocation:

1. Adopt the Combined Funds Asset Allocation Policy shown below;

	<i>Combined Funds Asset Allocation</i>
	<i>%</i>
<i>Public Equity</i>	<i>58</i>
<i>Domestic Bonds</i>	<i>20</i>
<i>Private Markets</i>	<i>20</i>
<i>Cash</i>	<i>2</i>
<i>Total</i>	<i>100</i>

2. Allocate the un-invested Private Markets allocation to Public Equities.
3. The Asset Class Target for Public Equities will be a composite index of the domestic equity asset class target, the Russell 3000 Index and the international equity asset class target, the MSCI ACWI ex USA Index. The current weighting of these two indices is 75% U.S. and 25% Non-U.S. The weightings will transition to a blend of 67% U.S. and 33% Non-U.S. by Fiscal Year 2018.
4. The U.S. equity portion of the Public Equities will continue to be benchmarked against the Russell 3000. The SBI will be authorized to invest in and benchmark U.S. Equity managers to the Russell 3000 Index or any of the Russell 3000 sub-indices that are segmented by market cap and by style such that the aggregation of the U.S. equity manager benchmarks are reflective of the Russell 3000 Index.
5. The Non-U.S. equity portion of the Public Equities will continue to be benchmarked against the MSCI ACWI ex USA Index. The SBI will be authorized to invest in and benchmark Non-U.S. equity managers to the MSCI ACWI ex USA (standard) Index or any of the MSCI ACWI ex USA sub-indices that are segmented by market cap, style, or geography such that the aggregation of the Non-U.S. equity manager benchmarks are reflective of the MSCI ACWI ex USA Index. Additionally, the SBI will be authorized to opportunistically invest in Non-U.S. equity managers that are benchmarked to the small cap segments of the MSCI ACWI.
6. Authorize the SBI to invest with Global Managers who invest in and are benchmarked to the MSCI ACWI or the MSCI World indices.

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APPENDIX A

ASSET LIABILITY STUDY SUMMARY

The SBI Staff worked with Callan Associates to conduct an asset/liability study for the Combined Funds. The study was last done in 2008 and SBI Staff updated the asset allocation assumptions in 2011. The study was conducted in two phases. Phase I was designed to confirm the methodology and assumptions for the study. Phase II focused on the analysis of various asset mixes to provide the asset/liability analysis and support the conclusions. (Callan will provide the asset/liability report at the IAC meeting.)

PHASE I – METHODOLOGY AND ASSUMPTIONS

The first phase of the study began by reviewing the four major plans individually - MSRS, PERA General, TRA and PERA Police and Fire (Plans) - to determine if a single asset mix policy was appropriate for all Plans or if separate asset mixes were necessary for the Plans. Callan compared the Plans in terms of actuarial discount rates, plan demographics such as maturity, and percentage of retirees. Because of similar current and proposed actuarial discount rates, similar rates of plan maturity and similar funded ratios, Callan's analysis found that there was no compelling reason to move to separate policy asset allocations for the four major Plans. It was recommended that the Combined Funds Policy asset allocation cover all Plans as has been done historically.

Liability Assumptions:

Actuarial data from the 2014 plan valuations with 2015 liabilities projected as a roll forward of 2014 data formed the basis for the study. Updated assumptions resulting from the experience studies, recently incorporated by the Plans and presented to the legislature in the first quarter of 2016, were not included in this asset/liability study. Because the emphasis of an asset/liability study is focused on the relative impact of alternative asset mixes on the overall financial health of the consolidated Plans, it was felt that excluding this update would not impact the results of the study.

Callan modeled each of the four Plans individually based on each Plan's benefit structure, population and actuarial assumptions. After this step, Callan summed the separate plan cash inflows and the separate plan liabilities into one set of consolidated plan data. The study used this consolidated liability data as the basis for the analysis.

Capital Market Assumptions:

Callan's 10-year forward looking January 2016 Capital Market projections were used to create the risk, return and correlation projections for the asset classes. Callan's capital market projections covered inflation and most broad asset classes. Callan's inflation expectation is 2.25% and the 10-year geometric nominal and real return expectations for the asset classes are shown below:

	<u>Nominal</u>	<u>Real</u>
- Domestic Equity	7.35%	5.10%
- Non-U.S. Equity	7.55%	5.30%
- U.S. Bonds	3.00%	0.75%
- Real Estate	6.00%	3.75%
- Private Equity	8.15%	5.90%
- Cash Equivalents	2.25%	0.00%

PHASE II – ASSET/LIABILITY ANALYSIS AND CONCLUSIONS

The objective of Phase II of the study was to combine the liability modeling and the various asset class projections in order to select the appropriate asset mix for the Combined Funds.

Callan employed a mean-variance optimization using expected returns and standard deviations of the broad asset classes as well as the correlations among the asset classes to determine the composition of several potential asset mixes located on the efficient frontier.

In addition, Callan employed a Monte Carlo method to simulate a distribution of financial outcomes 10 years out using five selected asset mixes. The rewards and risks of each of the alternative asset mixes were evaluated using ultimate net cost. Ultimate net cost represents the total dollars that are to be paid into the fund over the next 10 years through planned employee and employer contributions plus the additional dollars after this 10 year period that will have to be paid into the plan to fully fund the benefits. The ultimate net cost concept is similar to how one looks at a mortgage.

Ultimate net costs were evaluated over a range of potential investment return scenarios. If investment returns are higher than expected over the 10 year time period, the ultimate net costs to fully fund the plan will be lower. Conversely, if investment returns are lower than expected over the 10 year period, the ultimate net costs to fully fund the plan will be higher. In helping to choose the most appropriate asset mix, Callan's analysis focused on ultimate net costs in the median and the 97.5 percentile outcomes.

(Note: **Median Outcome:** Represents that there is a 50% probability of achieving the outcome.

97.5% Outcome: Represents that there is 97.5% probability of achieving a return better than this outcome or a 2.5% probability that the outcome will be as bad, or worse than this level.).

CONSIDERATION OF FIVE ASSET MIXES

Staff selected five potential asset mixes (Mix 1 - Mix 5) to be considered in this asset/liability study. ***Note that current policy allocates the un-invested Private Equity to Bonds resulting in an actual asset allocation that is different from the Combined Funds policy asset allocation. This was not modeled as part of the allocation asset mix review.***

A summary comparison of these 5 mixes to the current policy is shown below:

- All five asset mixes maintain an allocation to Private Equity at 20% and Cash at 2%.
- Mixes 1 and 2 increase Domestic Bonds to 23% and reduce Public Equity to 55%, relative to current policy.
 - Mix 1 maintains the current allocation between U.S. and Non U.S. Equity at 75%/25%.
 - Mix 2 has an allocation between U.S. and Non U.S. Equity of 67%/33%.

- Mixes 3 and 4 increase domestic bonds to 20% and reduce Public Equity to 58%, relative to current policy.
 - Mix 3 maintains the current allocation between U.S. and Non-U.S. Equity at 75%/25%.
 - Mix 4 has an allocation between U.S. and Non U.S. equity of 67% /33%.
- Mix 5 is the current policy asset allocation but changes the U.S./Non U.S. allocation to 67%/33%.

OBSERVATIONS AND CONCLUSIONS

- Liquidity: The study found that 60% of the absolute cash outflows and 20% of the discounted cash outflows occur later than 20 years. This confirms that the Combined Funds have a long-term time horizon and can maintain their current allocation in illiquid assets.
- Expected returns: Expected returns of the five asset mixes vary only slightly, from 7.19% to 7.35%. In addition, the risk profiles are similar. All mixes are expected to have an approximately 45% chance of meeting the 8% return hurdle rate based on a 10-year time horizon.
- Ultimate Net Cost: Moving to a policy of 67% U.S. and 33% Non-U.S. is anticipated to improve median outcomes without increasing risks (i.e. lower median and 97.5 ultimate net costs).
- Un-invested Private Equity: Placing the un-invested Private Equity assets in Public Equity instead of Domestic Bonds decreases the median ultimate net cost outcome. The tradeoff is a proportionate increase in ultimate net costs in the 97.5 percentile outcomes.

PROPOSAL

Combined Funds Asset Allocation Policy

Based on the asset/liability study, Staff recommends that the SBI Combined Funds Policy Allocation change to Mix 4 as shown in the following table (Proposed Combined Funds Asset Allocation.)

- **Allocation changes from current Policy**
 - Mix 4 increases Domestic Bonds from 18% to 20% and reduces Public Equity from 60% to 58%.
 - Mix 4 slightly adjusts the equity allocation between U.S. and Non U.S. from 75%/25% to 67%/33%.

	Current	Proposed
	<u>Combined Funds Asset Allocation</u>	<u>Combined Funds Asset Allocation</u>
	%	%
Public Equity	60	58
Domestic Equity	45	39
International Equity	15	19
Domestic Bonds	18	20
Private Markets	20⁽¹⁾	20⁽²⁾
Cash	2	2

(1) Un-invested Private Equity allocated to Bonds

(2) Un-invested Private Equity allocated to Public Equity

- **Ultimate Net Costs**

Overall, these portfolio changes result in a similar ultimate net cost in the median outcomes and a slightly lower ultimate net cost in the 97.5 percentile outcomes compared to the current policy asset allocation.

- **Expected Returns**

While the proposed asset mix yields an expected return of 7.3%, we do not draw the conclusion that achievement of the current 8.0% annualized return is unattainable given some important differences in the assumptions underlying the numbers.

The first important difference is the time horizon. The study is based on a planning period of 10 years which is shorter than the actuarial perspective of 50 years. This is most apparent in the inflation assumptions. Callan's inflation assumption of 2.25% for the next 10 years is 0.50 percentage points lower than the 50 year projection of 2.75% used by the actuaries of the State's Retirement Plans. When adjusting for inflation, the differences in real expected return become significantly smaller as shown below.

	Nominal		
	<u>Expected Return</u>	<u>- Inflation</u>	<u>= Real Expected Return</u>
Proposed Policy - Callan Asset Allocation Study	7.30%	2.25%	5.05%
Current Actuarial Assumptions	8.00%	2.75%	5.25%
SBI's 2011 Asset Allocation Study	8.36%	3.00%	5.36%

As illustrated above, the real returns are similar in each case. Moreover, it is instructive to examine the long-term, real return experience of the SBI. For the period ending March 31, 2016, the SBI's actual, annualized real return over 20 and 30 years was 5.5% and 6.2%, respectively.

In addition, Callan's asset class return expectations reflect beta only and do not include the potential for positive active risk and incremental return, or alpha, that the SBI has historically achieved for the Combined Funds portfolio overall.

This is especially relevant for the Private Equity portion of SBI's program. Callan's return expectation for Private Equity of 8.15% assumes a portfolio that can be implemented by a broad range of institutional investors including smaller investors and those making their first commitments to private equity. With its large asset base and a long history in private equity investing, the SBI has been successful in hiring some of the best Private Equity managers in the marketplace and achieving private markets performance that has been accretive to the SBI Combined Funds portfolio.

Implementation

- 1) Importantly, in order to more closely match the market exposure of Private Equity and reduce the long-term costs associated with an increased allocation to Bonds, the proposal recommends that the un-invested Private Equity be allocated to Public Equities.
- 2) Additionally, as noted previously, Staff is proposing increased flexibility in the management of the U.S. and Non U.S. Equity programs.
 - The objective of the SBI U.S. Equity program is to match or exceed the return of the asset class target, the Russell 3000, net of fees and expenses. The proposal recommends that the SBI be authorized to invest in and benchmark managers to the Russell 3000 Index and any of the Russell 3000 sub-indexes that are segmented by market cap and by style, for each of the three management approaches - Passive, Semi-Passive (Enhanced) and Active.
 - Similarly, the objective of the SBI Non U.S. Equity program is to match or exceed the return of the asset class target, the MSCI ACWI ex USA, net of fees and expenses. The proposal recommends that the SBI be authorized to invest in and benchmark managers to the MSCI ACWI ex USA (standard) Index and any of the MSCI ACWI ex USA (standard) sub-indexes that are segmented by country areas and/or style, for all three management approaches - Passive, Semi-Passive (Enhanced) and Active. Additionally, the proposal recommends that the SBI opportunistically invest in the managers benchmarked to the MSCI ACWI Small Cap Index and to the MSCI Emerging Markets Small Cap Index.
 - In addition, the proposal recommends that the SBI be authorized to invest with Global Managers who invest in and are benchmarked to the MSCI ACWI or the MSCI World indices.

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May 17, 2016



MN SBI Asset/Liability Study

**Presentation to
Investment Advisory Council**

Jim Van Heuit

Senior Vice President

Ann Posey

Senior Vice President

Rod Bare

Senior Vice President

Today's conversation

- Overview of an Asset/Liability Study
- Executive summary of the SBI study
- Details of key components
 - Phase 1 – establish process and inputs*
 - Methodology
 - Liability assumptions
 - Capital markets assumptions
 - Phase 2 – calculate possible outcomes*
 - Liability projections
 - Alternative asset mixes
 - Distribution of financial outcomes
 - Risk tolerance determination
- Observations and conclusions
 - Proposed policy mix

Overview of an Asset/Liability Study

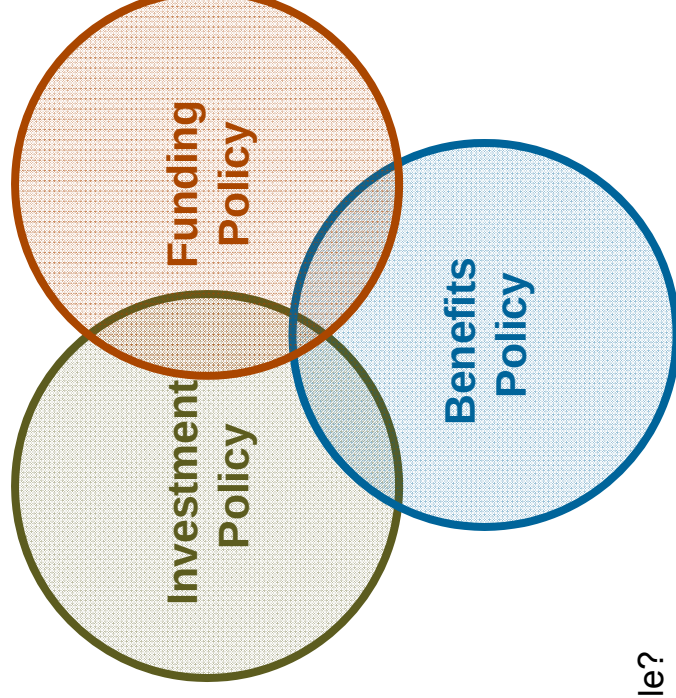
Evaluating the interaction of the three key policies that govern a defined benefit plan with the goal of establishing the best investment policy

Investment Policy

- How will the assets supporting the benefits be invested?
- What are the return and risk objectives?
- How will the cash flows be managed?

Benefits Policy

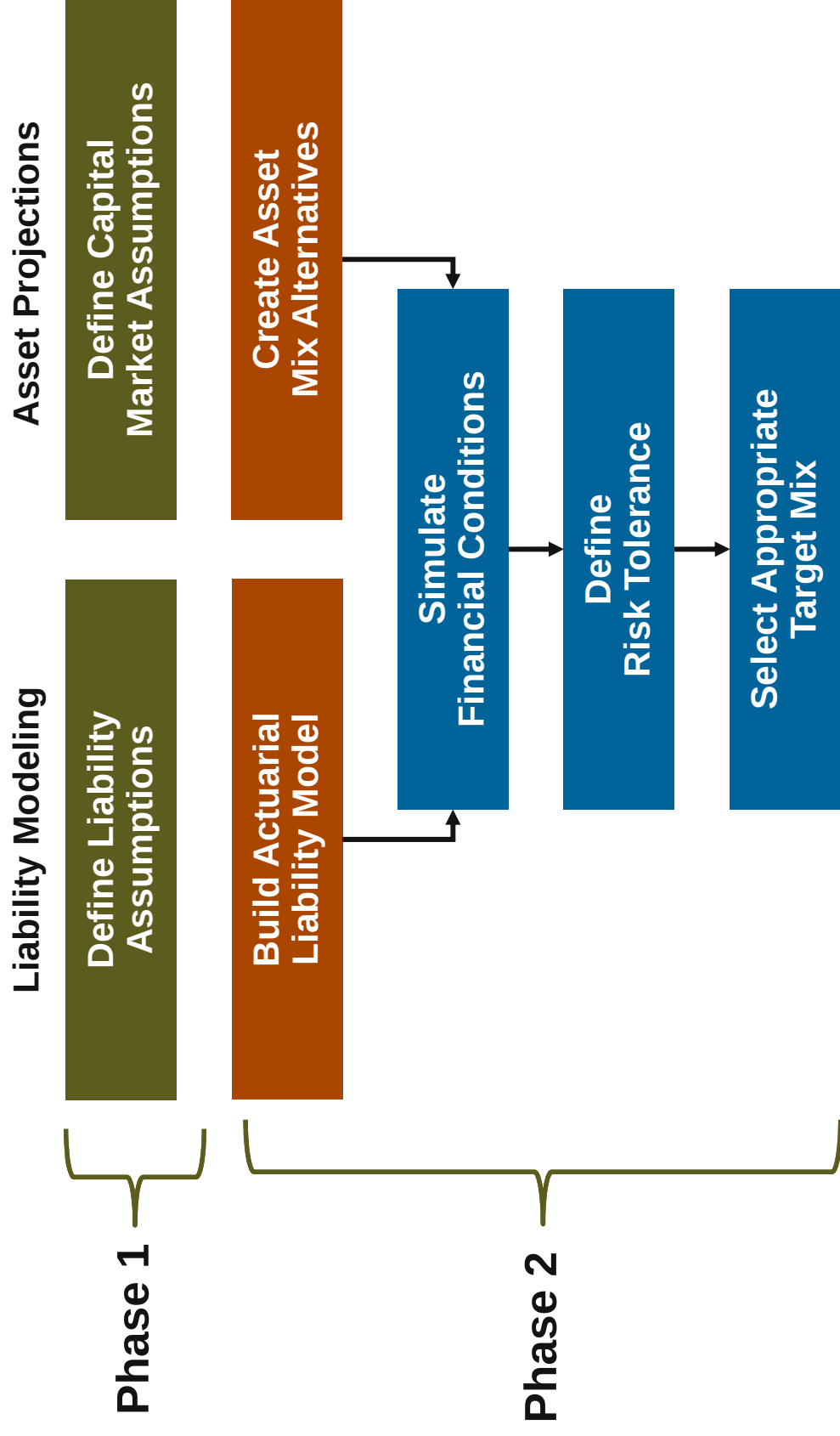
- What is the nature of the benefits?
- What are the benefit parameters?
- When and to whom are they payable?



Funding Policy

- How will the benefits be funded?
- What is the assumed investment return?
- How are deficits amortized?
- Is contribution volatility dampened? If so, how?

Callan's Asset Allocation and Liability Process



Executive Summary

Process

- Asset/liability study for MNSBI Combined Funds was conducted in two phases
 - Phase I: Methodology and Assumptions
 - Phase II: Build liability model, Create asset mixes, Simulate financial condition, Define risk tolerance
- Study modeled liabilities of the four largest Plans
 - MSRS
 - TRA
 - PERA - General
 - PERA - Fire/Police

Key findings

- Re-affirmed that one asset allocation policy can serve all participating plans well
 - Same actuarial discount rate today, and proposed for the future
 - Similar rates of plan maturity
 - Similar funded ratio level trends and continued convergence around 75-80%
- Modest changes to current policy could improve risk/reward and decrease expected costs
 - Confirmed long-term horizon with focus on growth of assets. Evaluated modest changes to overall equity/bond mix
 - Affirmed that the program can maintain current target allocation to illiquid investments. The duration of liabilities is 11 years and 60% of cash flows are beyond 20 years. Thus allocations to Private Equity and Cash were held constant
 - Considered a reduction of the relative allocation to US vs Non US equity to improve median expected returns without increasing risk
 - Revisited the current policy of using fixed income as the “parking” spot for un-invested private equity and considered an alternative to shift the parking spot to public equity



Phase I: Methodology and Assumptions

Phase 1: Methodology and Assumptions

Single versus Separate Asset Allocations for the Combined Funds

- **Primary factors that would drive the need for separate asset allocations for each plan:**
 - Discount rates
 - *Set by legislature*
 - *Actuarially assumed discount rate for future liabilities and proxy target for investment returns*
 - Levels of maturity
 - *Benefit payments as a percent of market assets*
 - *Net cash flow, plans with positive net cash flow would have longer investment horizons*
 - Funded Ratio
 - *Overfunded plans can use surplus to reduce investment risk*
 - Asset Size
 - *Access to investment strategies*
 - *Lower fees*
 - Risk tolerance of Plan fiduciaries
 - *Trustee dependent, if governance model is unique to each plan*
- **Conclusion – no compelling reason to move to separate asset allocations, given:**
 - Same actuarial discount rate today, and proposed for the future
 - Similar rates of plan maturity
 - Similar funded ratio level trends

Phase 1: Methodology and Assumptions

Liability Assumptions and Projections

- This study is based on the consolidated the data from the four largest plans
 - TRA, PERA, MSRS and Police and Fire make up approximately \$56.5B
 - SBI Combined Funds total assets cover 10 Plans
 - The Asset Liability Study completed in 2008 covered the same 4 funds
- Actuarial Data Sources are the 2014 valuations for each plan
 - Projected 2015 liabilities reflect the 2014 liabilities rolled forward based on the actuarial assumptions in the 2014 valuations .
 - The 2015 valuations reflect the impact from a later experience study without offsetting changes, thus not used in the study
 - The emphasis of the evaluation is focused on the relative impact of alternative asset mixes on the overall financial health of the consolidated plans
- To model consolidated future liabilities, each plan was modeled individually based is own benefit structure, population and actuarial assumptions
 - One consolidated cash flow stream was created (contributions and benefit payments)
 - Liabilities for each plan grew through time based on own characteristics and were summed

* Includes productivity and merit increases

From 2014 Valuations	Total
Initial Actuarial Values	
Actuarial Liabilities	\$75.5 B
Market Value of Assets	\$56.5 B
Actuarial Value of Assets	\$50.7 B
Market Value Funded Status	74.8%
Actuarial Value Funded Status	67.1%
Actuarial Assumptions	
Discount Rate	8.00%
Price Inflation	3.00%
Salary Growth Rate*	3.75%
Cost of Living Adjustments	1%-2%

Phase 1: Methodology and Assumptions

Long-Term Capital Market Projections (2016 – 2025)

Asset Class	Index	PROJECTED RETURN			PROJECTED RISK	
		1-Year Arithmetic	10-Year Geometric*	Real	Standard Deviation	
Equities						
US Broad Equity	Russell 3000	8.85%	7.35%	5.10%	18.70%	
International Equity	MSCI ACWI ex USA	9.55%	7.55%	5.30%	21.30%	
Fixed Income						
Domestic Fixed	Barclays Aggregate	3.05%	3.00%	0.75%	3.75%	
Other						
Private Equity	TR Post Venture Capital	13.15%	8.15%	5.90%	32.80%	
Cash Equivalents	90-Day T-Bill	2.25%	2.25%	0.00%	0.90%	
Inflation	CPI-U		2.25%		1.50%	

* Geometric returns are derived from arithmetic returns and the associated risk (standard deviation).

Phase 1: Methodology and Assumptions

2016 Capital Market Expectations: Summary Themes

- **Broad market bond returns held at 3.0%**

- We expect interest rates to rise, especially if the economy continues to expand and the Fed executes on its stated monetary policy. Bonds will suffer capital loss before higher yields kick in. We expect cash yields to move toward 2.5% and 10-year Treasury yields to reach 3.3% over the ten-year projection – a reversion to mean, but lower than the long run averages.
- Project an upward sloping yield curve, but a very slim risk premium for bonds over cash (0.75%).
- Cash returns held at 2.25%, reflecting an expected rise in Fed Funds rate.
- Longer duration returns raised, reflecting sharp reduction in yields in 2014.

- **Domestic Equity reduced to 7.35%, Non-U.S. Equity to 7.55%, both 25 bps reductions**

- U.S. markets went sideways in 2015, but the U.S. economic outlook is more muted; fundamentals remain reasonable.
- Building equity returns from long-term fundamentals, we can build an expectation to just shy of 7.5%:
 - 2.5-3.0% real GDP growth, which means roughly 4.75-5.25% nominal earnings growth,
 - 2.5 % dividend yield,
 - Expect something more from return on free cash flow, besides dividends (*The “buyback yield” has been exceptional, one good use of all that cash*), perhaps 50-100 bps,
 - Small premium for Non-U.S. over Domestic, largely due to *Emerging Markets*.

- **Private Equity**

- Callan's return of 8.15% assumes a portfolio that can be implemented by a broad range of institutional investors including smaller investors and those making their first commitments to private equity

Phase 1: Methodology and Assumptions

2016 Correlation Matrix

	1	2	3	4	5	6
1	Broad Domestic Equity	1.000				
2	International Equity	0.882	1.000			
3	Domestic Fixed	-0.108	-0.123	1.000		
4	Private Equity	0.948	0.934	-0.190	1.000	
5	Cash Equivalents	-0.043	-0.040	0.100	0.000	1.000
6	Inflation	-0.011	0.010	-0.280	0.000	1.000

- Relationships between asset classes is as important as standard deviation.
- To determine portfolio mixes, Callan employs mean-variance optimization.
- Return, standard deviation and correlation determine the composition of efficient asset mixes.

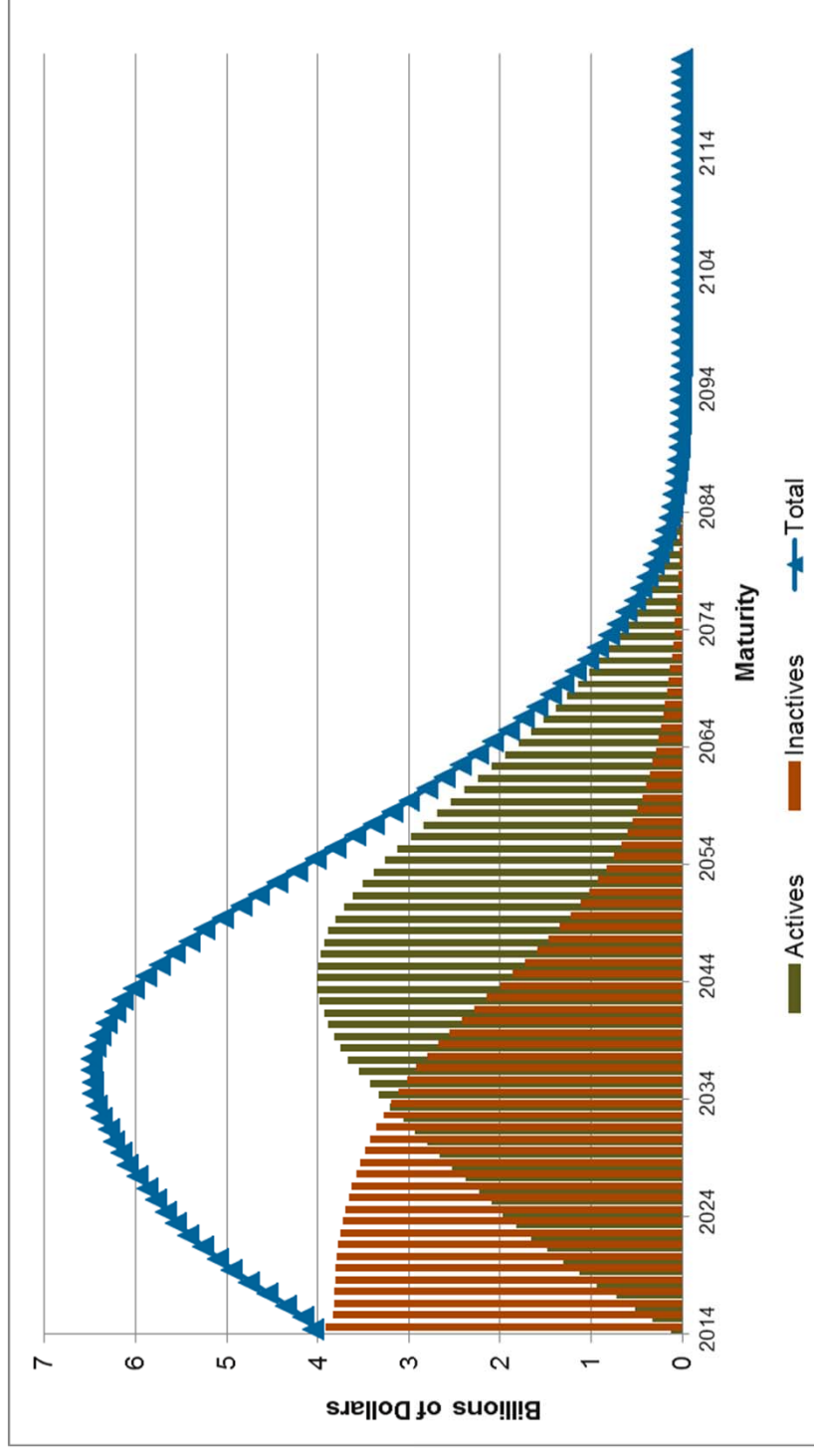
Source: Callan Associates



Phase II –Build Liability Model,
Create Asset Mixes, Simulate
Financial Conditions, Define Risk
Tolerance

Phase II: Build Actuarial Valuation Model

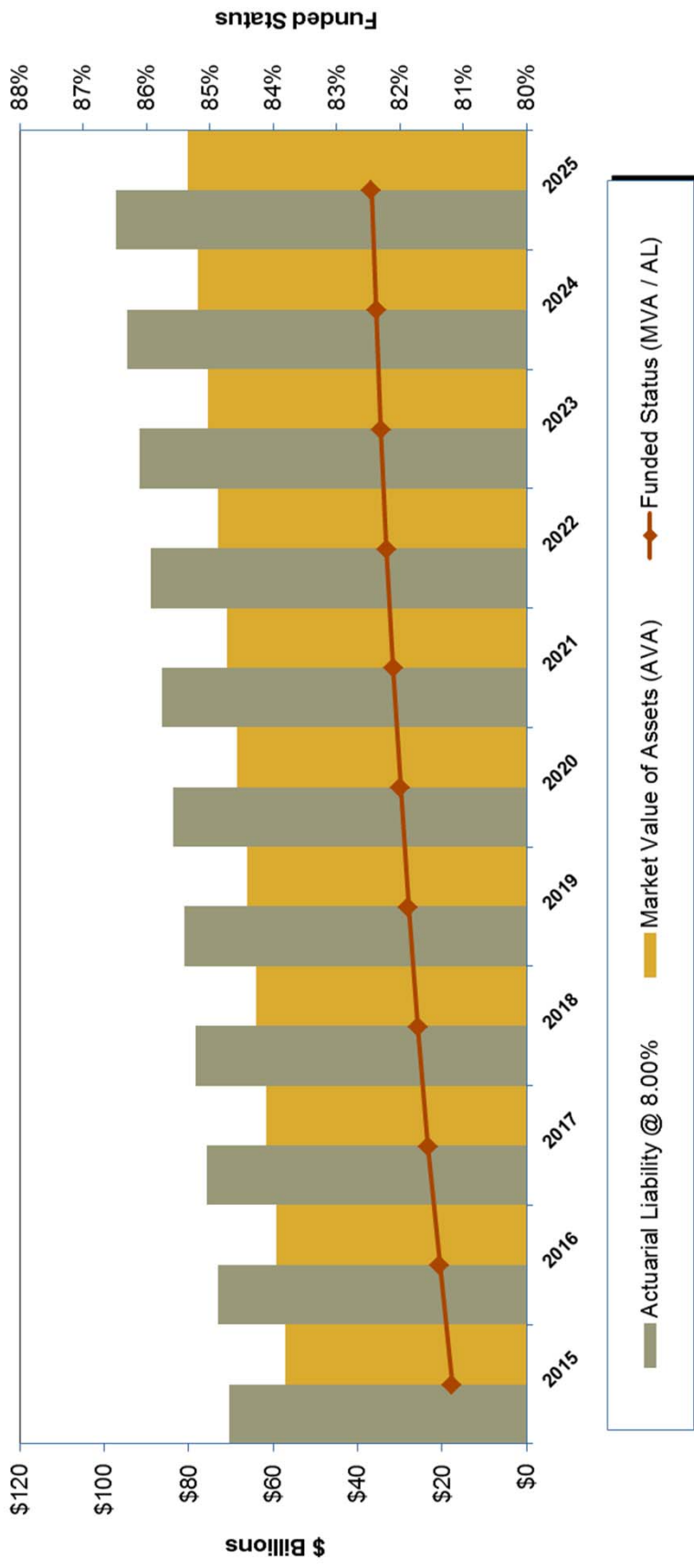
Projected Cash Flows (Accrued)



- The graph shows cash flows for benefits that members have already earned
 - The discounted value of these cash flows is the liability
 - Cash flows peak in 2035
 - 60% of Cash flows are beyond 20 years
 - The duration of the consolidated liabilities is 11 years which indicates long investment time horizon is appropriate

Phase II: Build Actuarial Valuation Model

Funded Status (Actuarial Projections)



- The graph shows the future liabilities and assets of the plans
 - Liabilities grow in line with actuarial assumptions (decrements, 8% discount rate, 3.75% salary growth)
 - Assets are assumed to grow at a constant 8%
- Asset growth keeps pace with liability growth if the actuarial assumptions are realized
 - Funded status grows to more than 82% in 2025 based on actual contributions

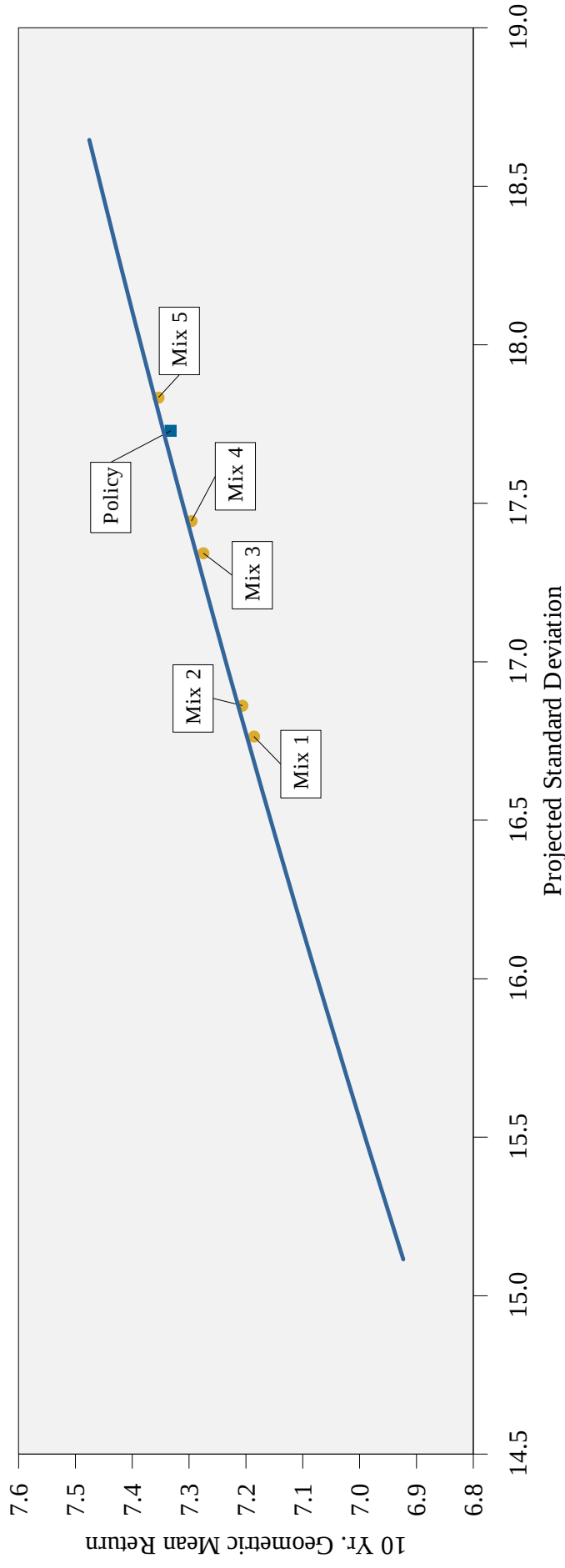
Phase II: Create Alternative Asset Mixes

Asset Classes	Policy	Constraints		Optimal Mixes				
		Min	Max	Mix 1	Mix 2	Mix 3	Mix 4	Mix 5
US Broad Equity	45	0	100	41	37	44	39	40
International Equity	15	0	100	14	18	15	19	20
Domestic Fixed	18	0	100	23	23	20	20	18
Private Equity	20	0	100	20	20	20	20	20
Cash Equivalents	2	2	100	2	2	2	2	2
Totals	100			100	100	100	100	100
Arithmetic Return	8.65			8.35	8.39	8.53	8.57	8.69
Compound Expected Return	7.34			7.19	7.21	7.27	7.30	7.35
Risk (Standard Deviation)	17.73			16.76	16.86	17.34	17.44	17.83
Public Equity	60.00			55.00	55.00	58.00	58.00	60.00
Public Fixed	20.00			25.00	25.00	22.00	22.00	20.00

- The alternative mixes were created by staff to compare allocations to fixed income and public equity US vs Non US ratio
 - All mixes hold allocations to private equity constant at the current policy weight of 20%
 - Cash equivalents are held constant at 2% to accommodate cash flows
- Mixes 1 and 2 have 23% in domestic fixed income
 - Mix 1 reflects current US vs Non US ratio of 75/25
 - Mix 2 reflects US vs Non US ratio of 67/33
- Mixes 3 and 4 have 20% in domestic fixed income
 - Mix 3 reflects current US vs NonUS ratio (75/25)
 - Mix 4 reflects US vs Non US ratio of 67/33
- Mix 5 has 18% in domestic fixed with US vs Non US ratio of 67/33

Phase II: Create Alternative Asset Mixes

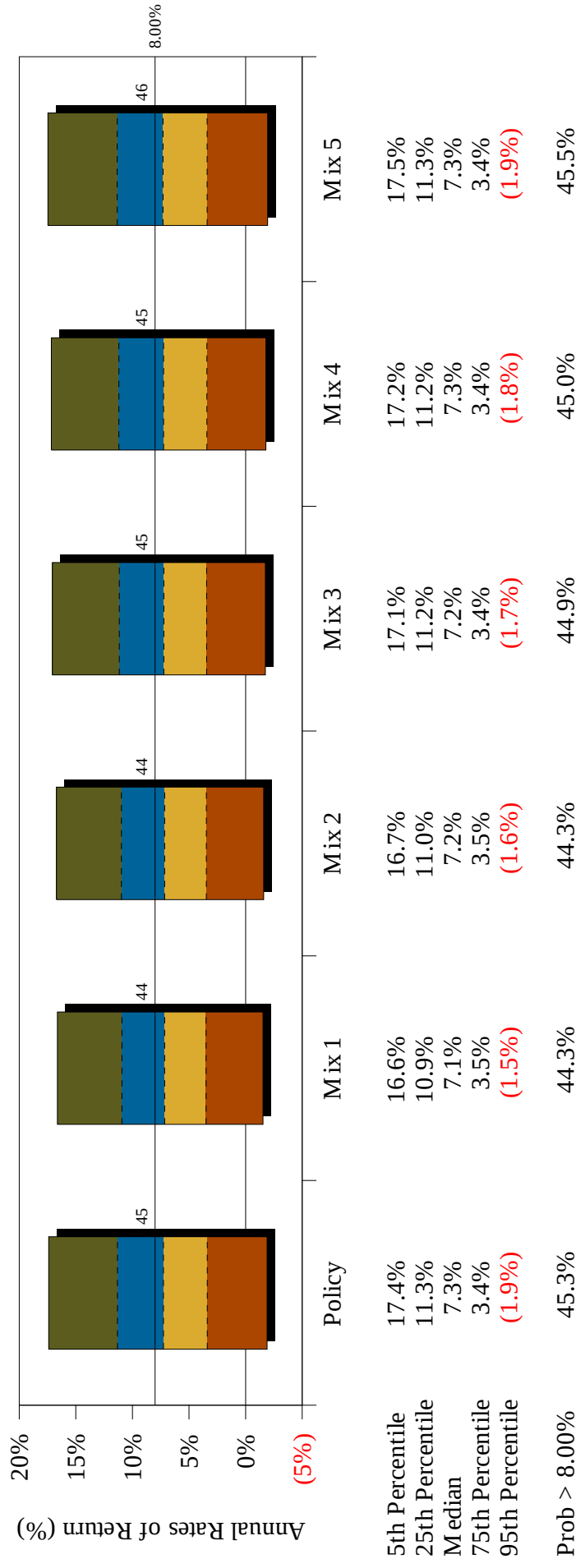
Efficient Frontier



- All of the asset mixes lie close to the efficient frontier
 - Mixes 1 and 3 lie slightly below the frontier
- When all mixes under consideration are essentially efficient, the mix with the maximum acceptable risk is often chosen

Phase II: Create Alternative Asset Mixes

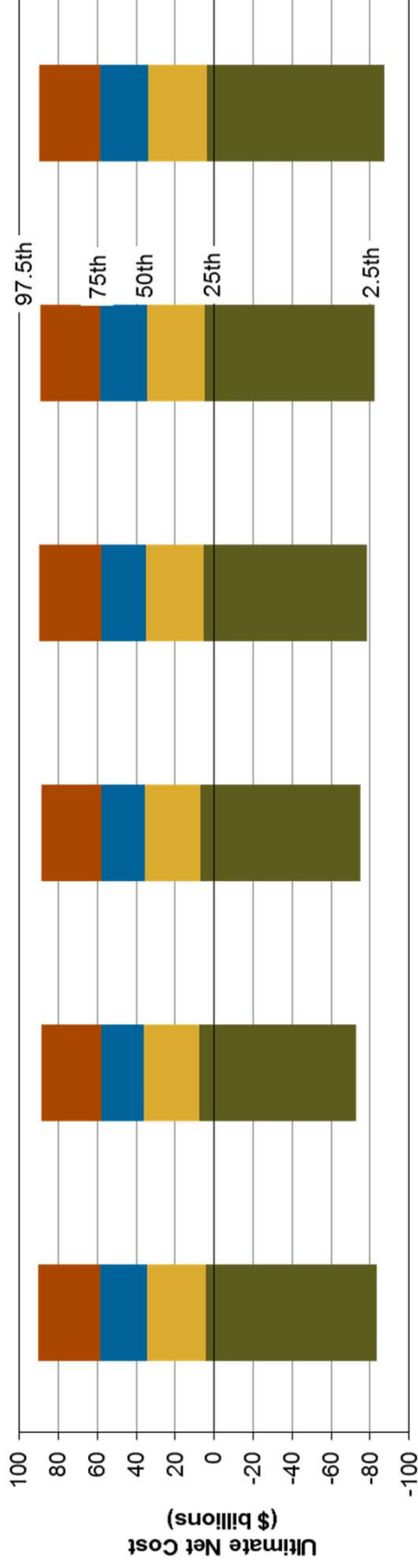
Range of Returns, 10 Years



- All of the mixes have similar return and risk profiles
 - The asset mixes have very similar allocations
- The probability of achieving 8% is near 45%

Phase II: Simulate Financial Condition

Range of Ultimate Net Cost (UNC) in 2024

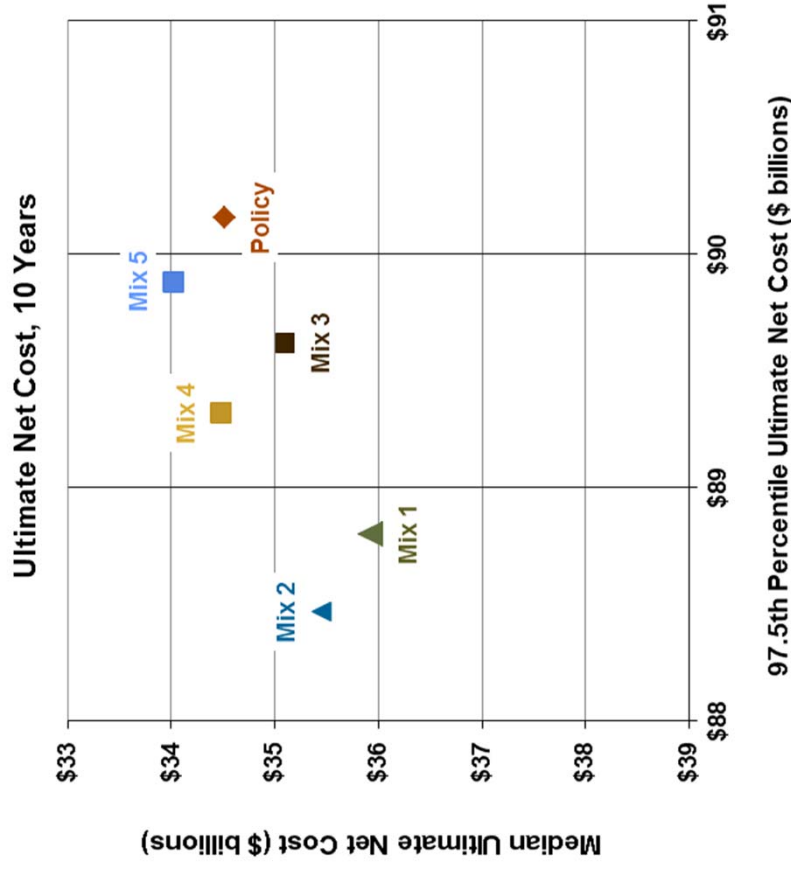


- Projected cumulative contributions (PVCC) and unfunded liabilities (PVUL) for the next 10 years are combined and present-valued back to today for each mix. This the “Ultimate Net Cost” (UNC)
- The UNC across asset mixes differ due to the differences in PVCCs and PVULs
 - More aggressive asset mixes have lower median UNC
 - More aggressive asset mixes have higher 97.5th percentile UNC
 - The differences in the UNC are small because the mixes are similar

Phase II: Define Risk Tolerance

Ultimate Net Cost Reward and Risk

- Mixes 1, 3 and 5 have larger median UNC's than mixes 2, 4 and Policy for comparable UNC's in the 97.5th percentile outcomes
 - Mixes 2, 4 and 5 have more optimal non-US equity weightings
- Mixes 2, 4 or 5 have the same proportionate tradeoff between expected and 97.5th percentile outcomes
- Of the superior mixes, mix 4 represents a balanced tradeoff between reducing UNC in the median outcomes while controlling UNC when investments perform poorly



Summary

Observations and Conclusions

- Cash flows indicate that the fund has a long-term time horizon
 - 60% of the absolute cash flows and 20% of the discounted cash flows are beyond 20 years
 - Net cash out flows are not expected to exceed 5% of fund assets
 - Funds with longer time horizons can invest relatively large allocations in illiquid assets
- Allocations to NonUS equity that are closer to capitalization weights are anticipated to improve median outcomes without increasing risks
 - Ultimate net cost is improved in the median scenarios with minimal differences in the 97.5th outcomes
- Swapping public equity for public fixed income decreases ultimate net cost in the median outcomes proportionately with increases in ultimate net cost in the 97.5th percentile outcomes
 - There are no efficiency gains to be realized by becoming more or less aggressive
 - The selection of asset mix depends on factors such as maximum tolerable ultimate net cost in the 97.5th scenario or maximum acceptable ultimate net cost in the median outcomes
- The current policy to allocate uninvested private equity in fixed income is expected to be costly
- Mix 4 is recommended as it represents modest improvement over the current policy

Summary

Observations and Conclusions

- Comparison of the expected returns used in this study to the 8% assumed return

- Expected Returns:

<u>Nominal</u>	-	<u>Inflation</u>	=	<u>Real</u>
7.30%		2.25%		5.05%
8.00%		2.75%		5.25%

- The study planning period is 10 years versus a longer term time horizon of 50 years used by the actuaries
- Callan's assumption for inflation was 2.25% vs the actuarial inflation rate of 2.75%
- Callan's expected returns reflect beta and do not include active management (alpha)

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MINNESOTA STATE BOARD OF INVESTMENT

- 2016 Proposed Policy Allocation
- Un-invested Allocation to Private Markets and Adjusted Policy Allocation
- Impact of Change in Un-invested Private Allocation
- \$ Impact of change in adjusted policy allocation
- Transition to New Policy Mix
- Recommendations

May 17, 2016

Comparison of Current and Proposed Policy Allocations

		Current Policy Allocation	Proposed Policy Allocation	Impact of Change	
	Public Equity	60%	58%	-2.0 pp	
	Domestic Equity	45%	39%	-6.0 pp	
	International Equity	15%	19%	+4.0 pp	
	Domestic Bonds	18%	20%	+2.0 pp	
	Private Markets	20%	20%		
	Cash	2%	2%		
	Total	100%	100%		

Role of the Un-invested Allocation to Private Markets: Adjusted Policy Allocation

	Current Policy Allocation	Current Policy Allocation Adjusted (1)	Proposed Policy Allocation	Proposed Policy Allocation Adjusted (2)
Public Equity	60.0%	60.0%	58.0%	65.4%
Domestic Equity		45.0%		44.0%
International Equity		15.0%		21.4%
Domestic Bonds	18.0%	25.4%	20.0%	20.0%
Private Markets	20.0%	12.6%	20.0%	12.6%
Cash	2.0%	2.0%	2.0%	2.0%
Total	100.0%	100.0%	100.0%	100.0%
Current Level of Privates = 12.6%				
(1) Un-invested Privates in Bonds				
(2) Un-invested Privates in Public Equity				

Impact of Change in Un-invested Private Allocation

		Current Policy Allocation Adjusted (1)	Proposed Policy Allocation Adjusted (2)	Implementation of Adjusted Proposed Policy
Public Equity		60.0%	65.4%	+5.4 pp
Domestic Equity		45.0%	44.0%	-1.0 pp
International Equity		15.0%	21.4%	+6.4 pp
Domestic Bonds		25.4%	20.0%	-5.4 pp
Private Markets		12.6%	12.6%	
Cash		2.0%	2.0%	
Total		100.0%	100.0%	
(1) Un-invested Privates in Bonds				
(2) Un-invested Privates in Public Equity				

\$ Impact of change in adjusted policy allocation

\$ Billions	Actual Market Value 3/31/16	Current Policy Allocation Adjusted (1)	Proposed Policy Allocation Adjusted (2)	Implementation of Adjusted Proposed Policy
Public Equity	34.5	34.5	37.7	3.2
Domestic Equity	26.3	25.9	25.4	-0.5
International Equity	8.2	8.6	12.3	3.7
Domestic Bonds	14.6	14.7	11.5	-3.2
Private Markets	7.2	7.2	7.2	0.0
Cash	1.2	1.2	1.2	0.0
Total	57.6	57.6	57.6	0.0
(1) Un-invested Privates in Bonds				
(2) Un-invested Privates in Public Equity				

Policy Mix Transition

- ▶ Transition Dollars over course of FY 2017.
- ▶ Will not use a futures overlay.
- ▶ For Performance Measurement – Revise Adjusted Policy Targets at Beginning of Each Quarter.
 - Target to be at New “Adjusted” Policy at Beginning of Year FY 2018.
- ▶ Hiring and termination of managers as part of transition process.
- ▶ Potential additional implementation proposals during the transition period “plus” .

Recommendations

- 1) Adopt the Combined Funds Asset Allocation Policy

	Proposed Policy Allocation for Combined Funds
Public Equity	
Domestic Equity	58%
International Equity	39%
Domestic Bonds	19%
Private Markets	
Cash	20%
	2%
Total	100%

- 2) Allocate the un-invested Private Equity to Public Equities.
- 3) U.S. Equity – Russell 3000 and sub-indices.
- 4) Non-U.S. Equity – MSCI ACWI ex U.S.A. (standard) and sub-indices.
 - Opportunistically in Small Cap segments of MSCI ACWI ex U.S.A. and sub-indices
- 5) Global – MSCI ACWI or MSCI World indices.

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