

TMRS Investment Staff Report

Q1 2016



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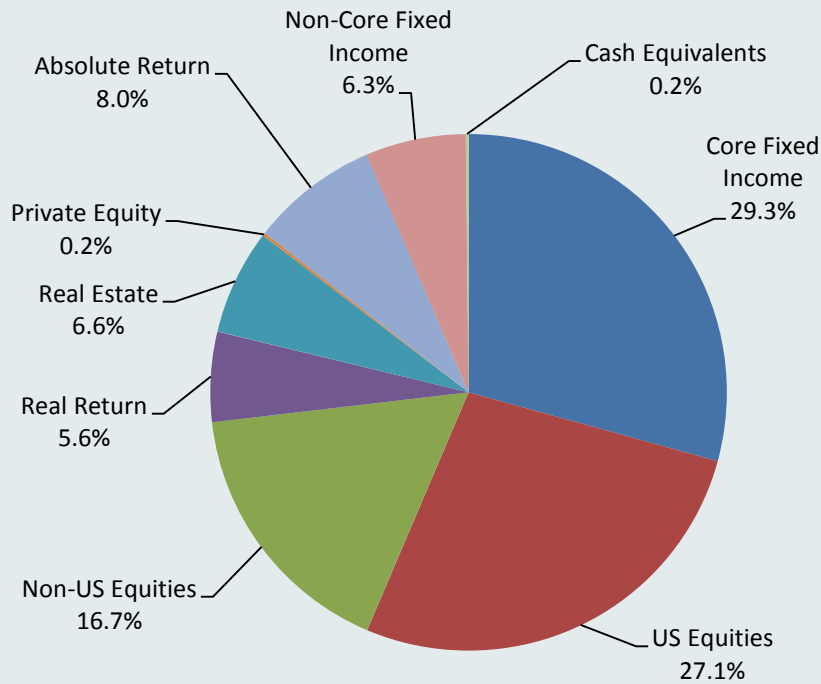
I. Performance and Asset Allocation



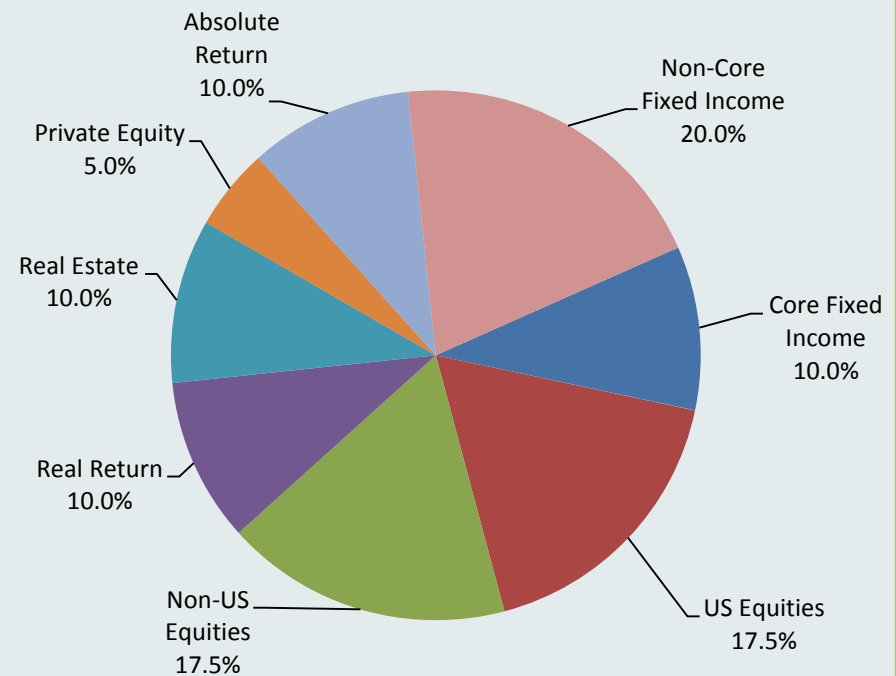
TMRS INVESTMENT PORTFOLIO

Asset Allocation

Allocation as of 3/31/16



Target Allocation



Total Market Value: \$23.9 Billion

*Cash equivalents allocation represents unallocated invested cash equivalent instruments.

NOTE: The sum of individual asset class allocations may not add up to 100% due to rounding.

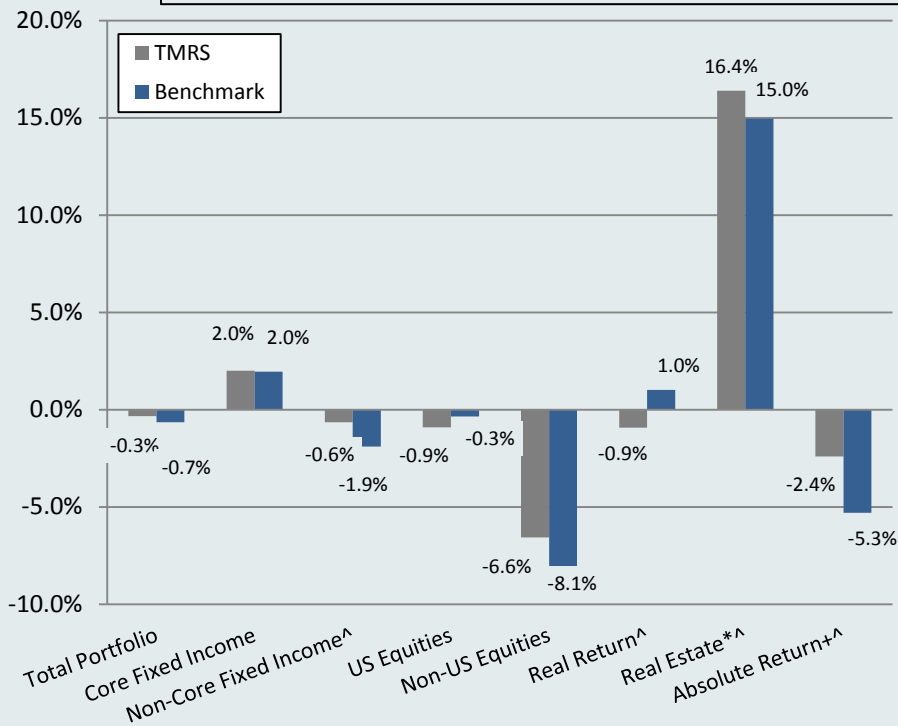
Source: State Street Investment Analytics

TMRS INVESTMENT PORTFOLIO

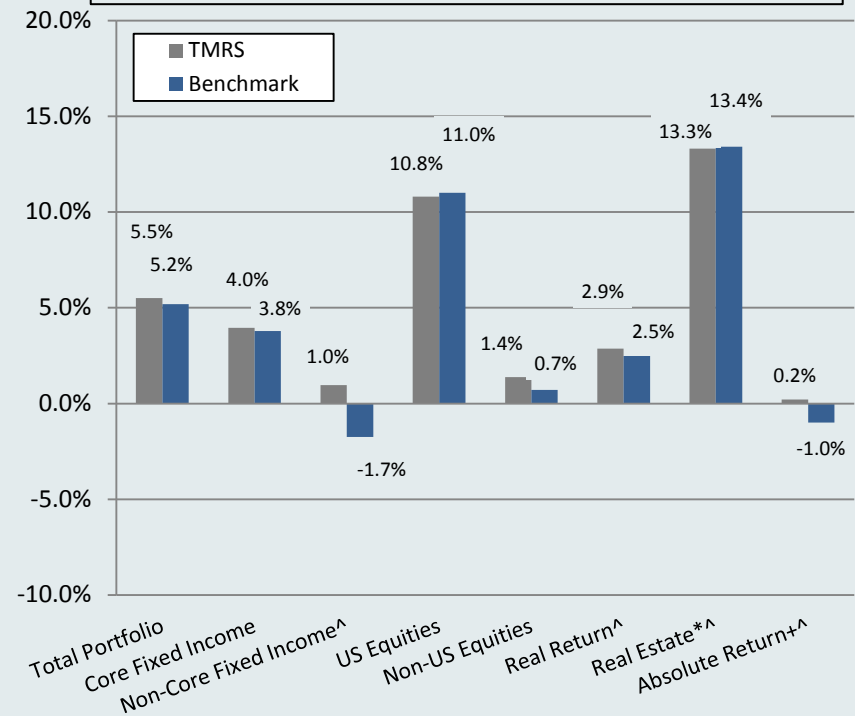
Gross Performance By Asset Class

March 2016

1 Year Performance



5 Year Performance



Gross returns

*Real Estate return as of prior quarter end (real estate returns are available on a quarterly basis only)

+Absolute Return returns are a mix of gross and net.

[^]Non-Core Fixed Income, Real Return, Real Estate, Absolute Return performance are the annualized return since inception, given their performance history are less than 5 years

Source: State Street Investment Analytics

II. Public Equities



Public Equities

Asset Class Overview

US Equity

- Objective
 - Intended to provide capital appreciation and is structured using a Core-Satellite Approach with the overall objective of exceeding its benchmark performance net of fees over rolling five year periods.
 - Satellite strategies (Active and Rules-Based strategies with an active component) are expected to add excess return within established tracking error limits and will meet quality, diversification, and liquidity guidelines as specified in the Managers' contracts.

International Equity

- Objective
 - Intended to provide capital appreciation and diversification, and is structured using a Core-Satellite Approach with the overall objective of exceeding its benchmark performance net of fees over rolling five year periods.
 - Satellite strategies (Active and Rules-Based strategies with an active component) are expected to add excess return within established tracking error limits and will meet quality, diversification, and liquidity guidelines as specified in the Managers' contracts or otherwise agreed to in writing between TMRS and the Investment Manager.

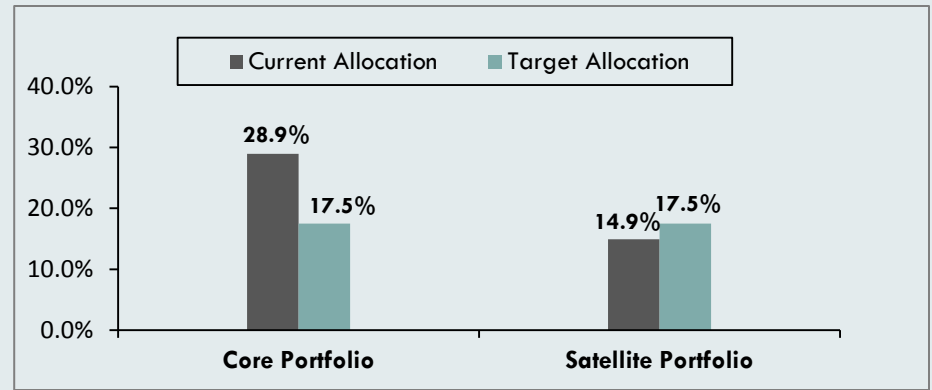
Public Equities -Portfolio Management Structure

ASSET CLASS	MANAGER	STRATEGY	PORTFOLIO BENCHMARK
Domestic Equities US Core/Passive	Northern Trust Asset Management	Passive Broad Market Index	Russell 3000 Index
US Rules-Based	State Street Global Advisors	Passive Fundamental Index	Russell US Fundamental Index
US Rules-Based	UBS Global Asset Management	Passive Minimum Volatility	MSCI US Min Vol Index
US Satellite/Active	Epoch Investment Partners, Inc.	US Traditional All Cap	Russell 3000 Index
US Satellite/Active	Sasco Capital, Inc.	US Opportunistic All Cap	Russell Mid Cap Value Index
US Satellite/Active	The Boston Company	US Mid Cap Opportunistic	Russell Mid Cap Index
US Satellite/Active	Champlain Investment Partners	US Mid Cap Core	Russell Mid Cap Index
US Satellite/Active	The Boston Company	US Small Cap Opportunistic	Russell 2000 Index
US Satellite/Active	Wellington Management	US Small Cap Opportunities	Russell 2000 Index
International Equities Non-US Core/Passive	Northern Trust Asset Management	Passive Broad Market Index	All Country World (ACW) ex US Investable Market Index (IMI)
Non-US Rules-Based	State Street Global Advisors	Passive Fundamental Index	Russell Fundamental Global ex US
Non-US Rules-Based	UBS Global Asset Management	Passive Minimum Volatility	MSCI World ex US Min Vol Index
Non-US Satellite/Active	Wellington Management	Non-US Opportunistic Relative Value	MSCI ACWI ex US Index
Non-US Satellite/Active	Lazard Asset Management	Non-US Opportunistic Core	MSCI ACWI ex US Index
Non-US Satellite/Active	Acadian Asset Management	Non-US Emerging Markets	MSCI Emerging Markets (EM) Index
Non-US Satellite/Active	William Blair & Company	Non-US Emerging Markets	MSCI Emerging Markets (EM) Index
Non-US Satellite/Active	Wellington Management	Non-US Small Cap Opportunities	MSCI EAFE Small Cap Index
Non-US Satellite/Active	Wasatch Advisors	Non-US Small Cap Growth	MSCI AC World ex. US Small Cap Index

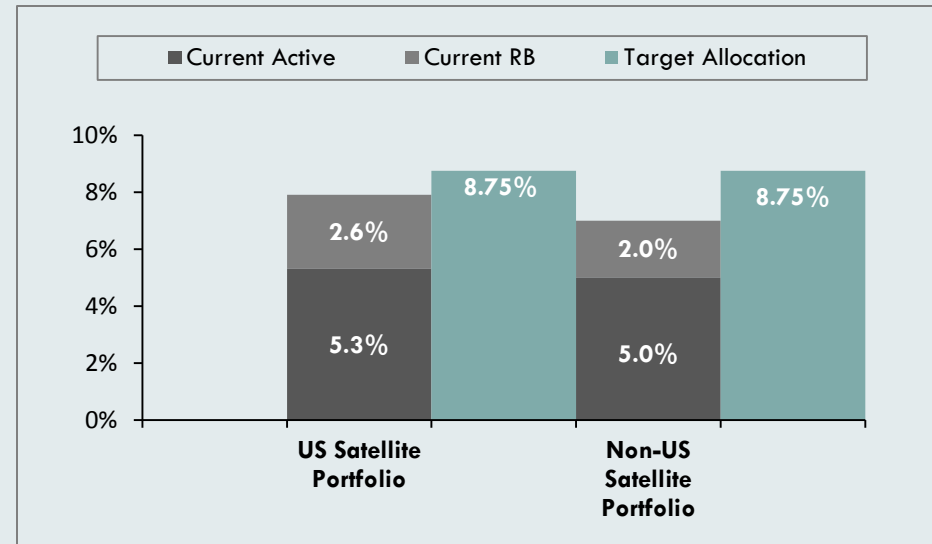
Core/Satellite Structure Allocation

% of Total Fund as of 3/31/2016

CORE Portfolio Managers	Market Value	% of Total Portfolio
US CORE EQUITY: NTGI Russell 3000	4,581,842,521	19.2%
NON-US CORE EQUITY: NTGI ACW ex. US IMI	2,322,463,465	9.7%
TOTAL:	6,904,305,986	28.9%



SATELLITE Portfolio Managers	Market Value	% of Total Portfolio
US RULES-BASED EQUITY:	617,489,949	2.6%
US ACTIVE EQUITY:	1,270,897,195	5.3%
NON-US RULES-BASED EQUITY:	476,022,157	2.0%
NON-US ACTIVE EQUITY:	1,195,367,424	5.0%
TOTAL:	3,559,776,726	14.9%



NOTE: Percentages may not be exact due to rounding

Public Equities

Performance - Domestic

Period ending March 31st, 2016(Net All)

	MKT VAL	% of Plan	1 Mo.	QTR	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	ITD	Incept Date
TMRS - TOTAL DOMESTIC EQUITY	6,470,244,004.09	27.12	7.27	1.08	1.08	-1.01	10.69	10.75	16.89		6.94	1/1/2008
TMRS - RUSSELL 3000 DAILY			7.04	0.97	0.97	-0.34	11.15	11.01	17.09		7.09	
EXCESS			0.23	0.11	0.11	-0.66	-0.46	-0.26	-0.20		-0.16	
TMRS - RUSSELL 3000 INDEX FUND (NL)	4,581,842,521.30	19.21	7.04	0.97	0.97	-0.34	11.12	10.99	17.06		14.74	12/1/2008
RUSSELL 3000 (DAILY)			7.04	0.97	0.97	-0.34	11.15	11.01	17.09		14.76	
EXCESS			0.00	0.01	0.01	0.00	-0.02	-0.03	-0.03		-0.02	
SSGA RUSSELL FUNDAMENTAL US	293,729,860.90	1.23	7.52	3.43	3.43	0.13	10.49				12.04	2/1/2013
Russell Fundamental US Index			7.58	3.51	3.51	0.24	10.65				12.21	
EXCESS			-0.06	-0.08	-0.08	-0.11	-0.16				-0.17	
UBS US EQUITY MIN VOL FUND NL	323,760,087.63	1.36	6.01	5.59	5.59	8.83	12.70				16.09	1/1/2013
MSCI USA Minimum Volatility Index-Net			5.91	5.46	5.46	8.20	12.05				15.42	
EXCESS			0.10	0.14	0.14	0.62	0.65				0.67	
EPOCH U.S. CHOICE	229,287,431.16	0.96	6.87	-2.60	-2.60	-3.81					4.92	1/1/2014
RUSSELL 3000 (DAILY)			7.04	0.97	0.97	-0.34					6.09	
EXCESS			-0.17	-3.57	-3.57	-3.47					-1.16	
SASCO U.S. CONTRARIAN VALUE	200,216,758.74	0.84	10.15	5.01	5.01	-9.12					-1.36	1/1/2014
Russell Midcap Value Total Return Index			9.23	3.92	3.92	-3.39					5.82	
EXCESS			0.91	1.09	1.09	-5.73					-7.18	
THE BOSTON COMPANY OPP VALUE	188,556,264.26	0.79	7.58	1.10	1.10	-9.87					-5.46	12/1/2014
RUSSELL MIDCAP (DAILY)			8.19	2.24	2.24	-4.04					-0.03	
EXCESS			-0.61	-1.15	-1.15	-5.83					-5.43	
CHAMPLAIN MID-CAP CORE	209,240,247.25	0.88	8.91	2.60	2.60	0.57					2.54	12/1/2014
RUSSELL MIDCAP (DAILY)			8.19	2.24	2.24	-4.04					-0.03	
EXCESS			0.72	0.35	0.35	4.61					2.57	
WELLINGTON US SMALL CAP OPP	222,697,647.25	0.93	7.58	-1.44	-1.44						-5.81	12/1/2015
RUSSELL 2000 (DAILY)			7.98	-1.52	-1.52						-6.46	
EXCESS			-0.40	0.08	0.08						0.65	
BOSTON CO US SM CAP OPPORTUNISTIC VALUE	220,898,846.46	0.93	9.51	-4.13	-4.13						-6.05	9/1/2015
RUSSELL 2000 (DAILY)			7.98	-1.52	-1.52						-2.98	
EXCESS			1.53	-2.61	-2.61						-3.06	

Source: State Street Investment Analytics

Public Equities

Performance - International

Period ending March 31st, 2016(Net All)

	MKT VAL	% of Plan	1 Mo.	QTR	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	ITD	Incept Date
TMRS - TOTAL INTERNATIONAL EQUITY	3,993,853,047.12	16.74	8.30	0.15	0.15	-6.69	1.63	1.32	9.09		-1.05	1/1/2008
INTL EQ ACTIVE WEIGHTED INDEX(DAILY)			8.21	-0.23	-0.23	-8.08	0.76	0.71	8.56		-1.50	
EXCESS			0.09	0.38	0.38	1.39	0.87	0.60	0.54		0.45	
NTGI ACWI ex. US IMI (NL)	2,322,463,465.17	9.74	8.26	-0.21	-0.21	-7.94	0.97	0.77			4.42	9/1/2010
TMRS MSCI ACWI ex-US IMI NET (DAILY)			8.21	-0.23	-0.23	-8.08	0.76	0.58			4.24	
EXCESS			0.05	0.02	0.02	0.14	0.22	0.19			0.18	
SSGA RUSSELL FUND GLOBAL EX-US	210,315,468.70	0.88	8.97	1.57	1.57	-7.96	1.87				1.10	2/1/2013
Russell Fundamental Glb Ex-US Index NET			9.07	1.74	1.74	-7.80	1.98				1.18	
EXCESS			-0.10	-0.17	-0.17	-0.16	-0.10				-0.07	
UBS WORLD EX US MIN VOL FD NL	265,706,688.77	1.11	5.83	3.89	3.89	3.86	6.64				9.00	1/1/2013
MSCI world ex USA Minimum Volatility-Net			5.79	3.87	3.87	3.88	6.48				9.01	
EXCESS			0.04	0.02	0.02	-0.02	0.15				-0.01	
LAZARD INT'L EQUITY PLUS	187,813,101.66	0.79	7.65	0.05	0.05	-5.28					-4.98	9/1/2014
MSCI AC WORLD ex US (NET)			8.13	-0.38	-0.38	-9.19					-9.13	
EXCESS			-0.48	0.43	0.43	3.91					4.15	
WILLIAM BLAIR EMERGING MARKETS	175,451,921.14	0.74	12.26	3.65	3.65						4.55	9/1/2015
MSCI EMERGING MARKETS			13.23	5.71	5.71						3.21	
EXCESS			-0.97	-2.07	-2.07						1.34	
ACADIAN EMERGING MARKETS	172,793,070.64	0.72	12.05	6.07	6.07						2.29	9/1/2015
MSCI EMERGING MARKETS			12.78	5.04	5.04						3.35	
EXCESS			-0.73	1.03	1.03						-1.06	
WASATCH INT'L SMALL CAP GROWTH	231,841,107.98	0.97	7.44	-2.01	-2.01						-2.01	12/1/2015
MSCI ACWI Ex US Small Cap (DAILY)			8.68	0.68	0.68						0.68	
EXCESS			-1.24	-2.69	-2.69						-2.69	
WELLINGTON INT'L SMALL CAP OPP	229,224,413.05	0.96	8.16	-2.75	-2.75						-2.75	12/1/2015
MSCI EAFE SMALL CAP NET			8.02	-0.60	-0.60						-0.60	
EXCESS			0.14	-2.15	-2.15						-2.15	
WELLINGTON INT'L HORIZONS	198,243,810.00	0.83	6.73	-3.50	-3.50	-1.86					-1.66	9/1/2014
MSCI AC WORLD ex US (NET)			8.13	-0.38	-0.38	-9.19					-9.13	
EXCESS			-1.40	-3.12	-3.12	7.32					7.47	

Source: State Street Investment Analytics

Public Equities

Pacing Plan Update

Year	Pacing Plan Update
2016	<ul style="list-style-type: none">• All Board approved active recommendations have been completed and funded as of year-end 2015;• Q2 2016 search project Tax Consultant/Tax Advisor to assist with remaining emerging markets sub-custodian setup;• 2016 Phase IV Equity Core/Satellite Target Allocation – remaining target satellite allocation of 2.5%-3%;• 2016 Equity Asset Class Review – December 2016 Board meeting;• 2017 Equity Pacing Plan – December 2016 Board meeting;• Public Equity will continue to fund Real Estate and Private Equity allocations from the core portfolio;• 43.8 allocation to equities as of Mar.2016; 28.9% core (passive), 14.9% satellite (active) strategies.

III. Fixed Income



Core Fixed Income Asset Class Overview

- US Core Fixed Income
 - Objective
 - Purpose is to diversify the risk of the overall investment portfolio with a secondary goal of capital preservation.
 - Performance objective is to exceed the Barclay's US Aggregate Bond Index net of fees over rolling five-year periods and within tracking errors as specified in the Manager contracts, determined according to the specific strategies employed.
 - Investment Philosophy- BlackRock
 - Top down determination of investment themes are based on bottom-up inputs. Investment themes establish parameters for sector, sub-sector and security selection. Macro overlays for duration and volatility are viewed as a separate sector and used opportunistically.
 - Investment Philosophy- PIMCO
 - PIMCO's investment philosophy is driven by diversifying strategies and focuses on longer term secular (3-5 year) trends.
 - Seek to add value through top down strategies including interest rate exposures, duration, volatility, yield curve positioning and sector rotation.
 - Employ "bottom-up" strategies through in depth credit analysis and specific security selection.

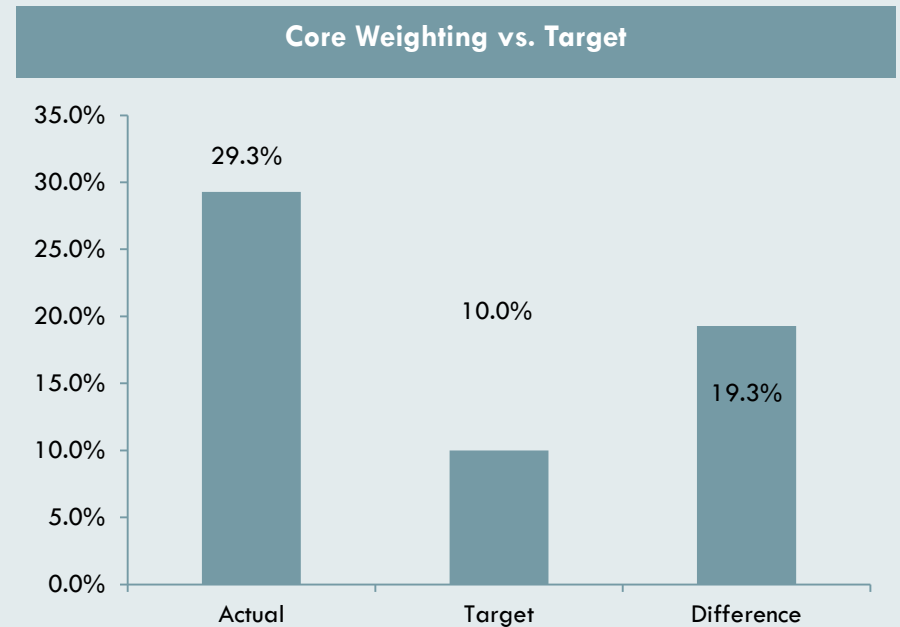
Core Fixed Income Portfolio Management Structure

MANAGER	STRATEGY	PORTFOLIO BENCHMARK
BlackRock	US Core (enhanced index)	Barclays US Aggregate Bond Index
PIMCO	Active Core Plus	Barclays US Aggregate Bond Index

Core Fixed Income Allocation

As of March 31, 2016

Mandate	Market Value	% of Total Fund
CORE FIXED INCOME		
BlackRock	\$4,888,541,473	20.49%
PIMCO	\$2,099,419,635	8.80%
TOTAL	\$6,987,961,108	29.29%



Core Fixed Income Performance

Period ending March 31, 2016 (Net All)

	MKT VAL	% of Plan	1 Mo.	QTR	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	ITD	Incept Date
TMRS - TOTAL CORE FIXED INCOME	6,987,961,107.94	29.29	1.02	2.95	2.95	1.92	2.41	3.89	4.97	4.9	8.05	01/01/89
TMRS - Total Fixed Income Index (Daily)			0.92	3.03	3.03	1.96	2.5	3.78	4.67	4.73	7.49	
EXCESS			0.10	-0.08	-0.08	-0.04	-0.09	0.11	0.31	0.17	0.56	
TMRS - BLACKROCK CORE FIXED INCOME	4,888,541,473.07	20.49	1.00	3.03	3.03	2.13	2.62	3.94			4.09	10/01/09
TMRS-Custom Core Fixed Income Index (Dai			0.92	3.03	3.03	1.96	2.5	3.78			4.00	
EXCESS			0.08	0.00	0.00	0.17	0.12	0.16			0.08	
TMRS PIMCO CORE PLUS FIXED INC	2,099,419,634.86	8.80	1.07	2.74	2.74	1.39	1.65	3.78			4.09	02/01/10
Barclays Aggregate (Daily)			0.92	3.03	3.03	1.96	2.5	3.78			3.94	
EXCESS			0.15	-0.29	-0.29	-0.57	-0.84	0.00			0.16	

Core Fixed Income Pacing Plan Update

Year	Pacing Plan Update
2016	<ul style="list-style-type: none">• February – New Fixed Income Director joined TMRS• February – The Board decided to discontinue securities lending program due to a credit rating agency downgrade of the lending agent.• April – Securities Lending Legacy Assets were sold and the program was completely terminated• Core Fixed Income continues to fund diversification of the total plan

Non-Core Fixed Income Asset Class Overview

- Objective
 - The purpose is to enhance total return through income and capital appreciation and provide diversification to the total investment portfolio. This allocation may be managed actively and/or passively through multiple managers in consideration of manager concentration risk.
 - The Performance Objectives is to exceed the returns of a blended benchmark comprised of the Barclays US Corporate High Yield Index 50%, the JPM GBI-EM Global Diversified Index (USD Unhedged) 25%, and JPM CEMBI Broad Diversified Index 25%, net of fees over rolling five-year periods and within tracking errors as specified in the manager contracts or otherwise agreed to in writing, determined according to the specific strategies employed.

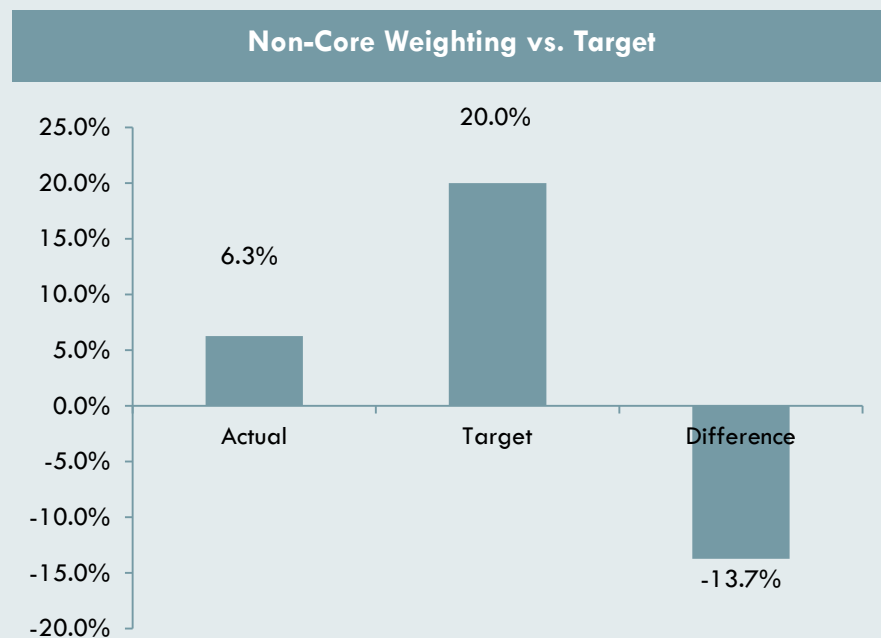
Non-Core Fixed Income Portfolio Management Structure

MANAGER	STRATEGY	PORTFOLIO BENCHMARK
Highland Capital	Bank Loan/CLO Debt	Credit Suisse Leveraged Loan Index
Guggenheim	Bank Loan/CLO Debt	Credit Suisse Leveraged Loan Index
Voya Investment Management (formerly ING Investment Mgmt)	RMBS/CMBS	33% Barclays US Agg Corp Index and 67% Barclays US Corp High Yield Index
Ellington Management Group	RMBS/CMBS	33% Barclays US Agg Corp Index and 67% Barclays US Corp High Yield Index

Non-Core Fixed Income Allocation

As of March 31, 2016

Mandate	Market Value	% of Total Fund
NON-CORE FIXED INCOME		
Guggenheim	\$377,419,305	1.58%
Highland	\$359,913,996	1.51%
Voya Investment Management	\$378,607,605	1.59%
Ellington Management Group	\$380,656,223	1.60%
TOTAL	\$1,496,597,129	6.27%



Non-Core Fixed Income Performance

Period Ending March 31, 2016 (Net All)

	MKT VAL	% of Plan	1 Mo.	QTR	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	ITD	Incept Date
TOTAL NON-CORE FIXED INCOME	1,496,597,129.46	6.27	1.99	-0.34	-0.34	-1.16					0.50	10/01/14
TOT NON-CORE FIXED INCOME INDEX			5.29	5.38	5.38	-1.89					-1.74	
EXCESS			-3.29	-5.72	-5.72	0.72					2.24	
BANDERA II - GUGGENHEIM	377,419,304.70	1.58	2.30	0.28	0.28	0.33					1.10	10/01/14
CS Leveraged Loan Index			2.64	1.33	1.33	-0.72					0.38	
EXCESS			-0.34	-1.05	-1.05	1.05					0.72	
BANDERA I - HIGHLAND	359,913,996.48	1.51	5.15	-0.89	-0.89	-4.92					-1.84	10/01/14
CS Leveraged Loan Index			2.64	1.33	1.33	-0.72					0.38	
EXCESS			2.51	-2.22	-2.22	-4.21					-2.22	
VOYA NON CORE FIXED INCOME	378,607,605.47	1.59	0.19	-1.12	-1.12	-0.48					1.07	01/01/15
Non Agency RMBS/CMBS Strategy Index			3.89	3.56	3.56	-2.15					0.21	
EXCESS			-3.70	-4.69	-4.69	1.67					0.85	
ELLINGTON NON CORE FIXED INC	380,656,222.81	1.6	0.63	0.36	0.36	0.64					1.54	01/01/15
Non Agency RMBS/CMBS Strategy Index			3.89	3.56	3.56	-2.15					0.21	
EXCESS			-3.27	-3.20	-3.20	2.79					1.33	

Source: State Street Investment Analytics

Non-Core Fixed Income Pacing Plan Update

Year	Pacing Plan Update
2016	<ul style="list-style-type: none">• June – 1st recommendation: Opportunistic Credit Managers for \$700 million• September – Expected to make 2nd search process recommendation• December – Expected to make 3rd search process recommendation

IV. Securities Lending



Securities Lending

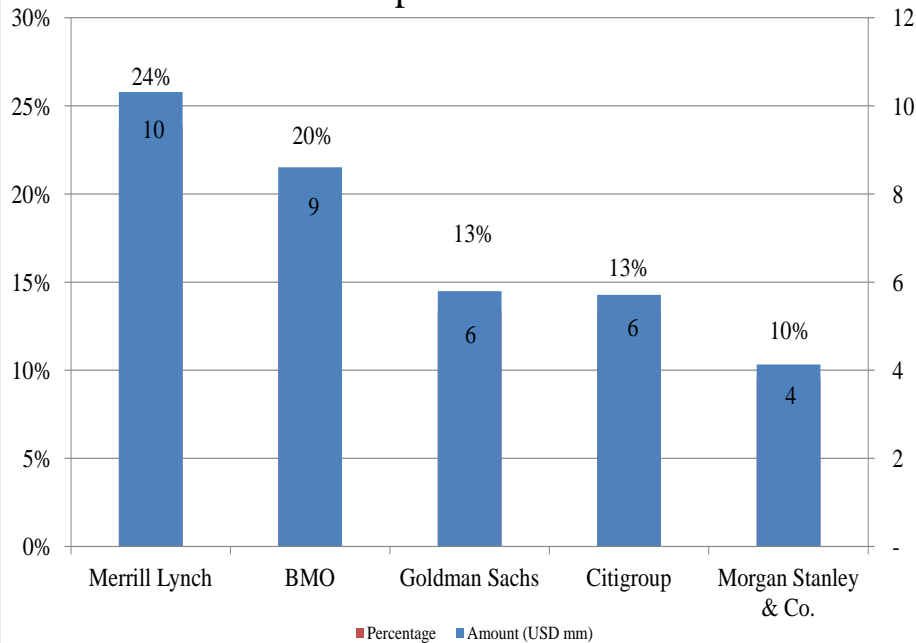
Asset Class Overview

- Objective
 - To generate incremental income from overnight and certain term loans of securities held, subject to guidelines described in the Investment Policy Statement, utilizing a high-quality and reasonably conservative cash collateral re-investment program that safeguards the return of principal and maintains adequate daily liquidity to support trade settlement activity and portfolio restructuring activities.
- Guidelines*
 - TMRS investment staff will work with the securities lending agent to create and maintain a custom approved borrower list. TMRS investment staff will review the custom borrower list with the lending agent on at least a semi-annual basis to make revisions as agreed upon by TMRS and the lending agent.
 - The market value of TMRS' securities loans outstanding to an approved borrower at the end of each business day should be no greater than 25% of the total market value of TMRS' securities on loan. Market price volatility and fluctuating demand for securities may cause the market value of TMRS' securities lent to an approved borrower to temporarily exceed these limitations. If such an event occurs, the securities lending agent will reduce the amount of loans outstanding to that borrower to comply with the stated limits.
 - Because the securities lending agent provides borrower default indemnification, the securities lending agent has the ability to reduce the amount of loans it makes to borrowers on TMRS' behalf, without approval from TMRS staff.
 - The Securities Lending Agent will collect and maintain proper overcollateralization as follows:
 - Domestic (United States domiciled and Non-US domiciled issued in US dollars) securities: Initial Margin of 102%
 - International (non-United States domiciled) securities: Initial Margin of 105%
 - Eligible Collateral: Cash (US dollars) and US Government Securities

* The Board decided at the February 18, 2016 meeting to discontinue the securities lending program due to a credit rating agency downgrade of the lending agent. By the end of March, the Securities Lending Portfolio was still in the process of winding down.

Securities Lending Portfolio Update March 2016

Top Borrowers



Portfolio Statistics

Total Cash Collateral	\$44,337,487
Overnight Assets	\$1,784,109
Term Legacy Assets	\$42,553,378
Non-Cash Govt Security Collateral	\$0.00
Overnight Liquidity	4%
Total Loan Portfolio MV	\$43,304,134
Number of Loans	34
Collateralization	102.39%
Lendable Base	\$9,038,926,047
Utilization of Lendable Base	0.48%
Asset DTM - to reset	43.53
Liability DTM - to reset	1.00
Average Rebate (bps) MTD	0.04
Average Reinvest (bps) MTD	0.47
Average Spread (bps) MTD	0.43
Revenue Earned MTD	\$68,826
Revenue Earned Fiscal YTD	\$328,258

V. Real Estate



Real Estate Asset Class Overview

- **Objective**
 - To enhance total return and provide diversification to the overall investment portfolio.
 - Due to the illiquid and cyclical nature of the real estate asset class, Staff and the Real Estate Investment Consultant recommend that the target allocation be invested over a multi-year period in order to avoid considerable vintage year risks.
- **Performance Objective**
 - Long term performance objective is a real rate of return (adjusted for inflation) of five percent (5%) net of investment management fees.
 - The real estate portfolio is expected to generate returns net of all fees and expenses, in excess of their respective indices, over rolling five year investment time horizons.

Real Estate Portfolio Management Structure

Manager	Strategy	Allocated/Committed	Drawn / Invested (Quarterly)
Abacus Core Income Fund I	Core	\$ 75,000,000	\$ 49,365,441
Harrison Street Core Property Fund	Core	\$ 150,000,000	\$ 150,000,000
Invesco US Core Income Fund	Core	\$ 150,000,000	\$ 150,000,000
Smart Markets Fund	Core	\$ 200,000,000	\$ 200,000,000
Walton Street Debt Fund	Core Debt	\$ 100,000,000	\$ 16,263,447
Tristan EPISO 4	Opportunistic	\$ 32,599,590	\$ 2,997,475
Abacus Multi-Family Fund II	Value Add	\$ 50,000,000	\$ 47,155,082
Abacus Multi-Family Fund III	Value Add	\$ 75,000,000	\$ 16,903,791
Greenfield Acquisition Partners VI	Value Add	\$ 75,000,000	\$ 64,448,697
Greenfield Acquisition Partners VII	Value Add	\$ 100,000,000	\$ 57,262,866

Real Estate

Portfolio Management Structure, Cont.

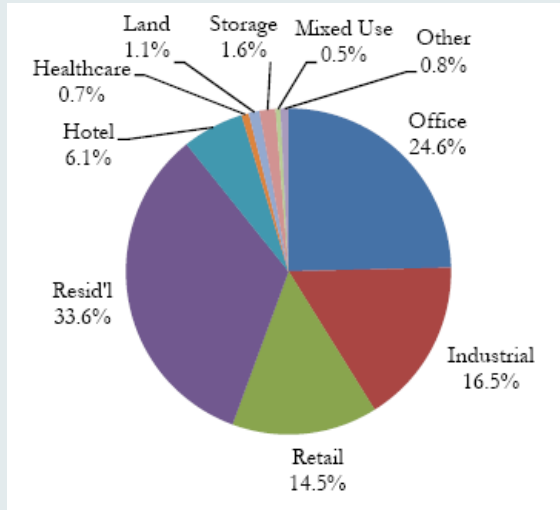
Manager	Strategy	Allocated/Committed	Drawn / Invested (Quarterly)
Miller Global	Value Add	\$ 75,000,000	\$ 56,521,761
Rubenstein Properties II	Value Add	\$ 75,000,000	\$ 62,990,553
Rubenstein Properties III	Value Add	\$ 75,000,000	\$ -
Stockbridge Value Fund I	Value Add	\$ 75,000,000	\$ 58,983,571
Stockbridge Value Fund II	Value Add	\$ 75,000,000	\$ 39,781,591
Lubert-Adler Fund VII	Opportunistic	\$ 100,000,000	\$ 50,000,000
Moorfield Real Estate Fund III	Opportunistic	\$ 73,816,850	\$ 12,433,143
H/2 CP	Core	\$ 125,000,000	\$ 125,000,000
H/2 Core RE Debt	Core	\$ 75,000,000	\$ 50,000,000
Walton Street	Opportunistic	\$ 75,000,000	\$ 49,794,859
Alcion	Value Add	\$ 50,000,000	\$ 9,699,226

Real Estate Portfolio Management Structure, Cont.

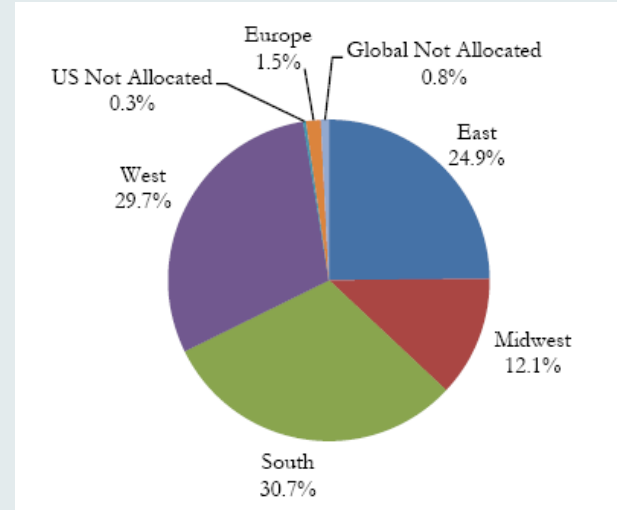
Manager	Strategy	Allocated/Committed	Drawn / Invested (Quarterly)
Torchlight Debt Fund V	Value Add	\$ 75,000,000	\$ 11,250,000
TPG Real Estate Partners II	Opportunistic	\$ 100,000,000	\$ 11,088,849
USAA Eagle Fund	Core	\$ 250,000,000	\$ 156,739,368
TOTAL		\$ 2,306,000,000	\$ 1,444,429,164

Real Estate Portfolio Diversification

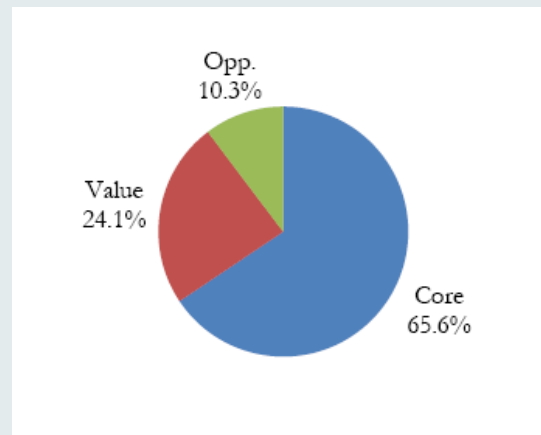
Property Type Diversification Based on Market Value



Geographic Diversification Based on Market Value



Sector Diversification Based on Market Value



Real Estate Performance

Period Ending March 31, 2016 (Net All)

	MKT VAL	% of Plan	1 Mo.	QTR	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	ITD	Incept Date
NGROA09 - TMRS - TOTAL REAL ESTATE ^[7]	1,571,376,664.26	6.59	4.23	4.00	4.00	13.59	13.34				11.42	11/01/11
<i>TOTAL REAL ESTATE INDEX</i>			3.25	3.25	3.25	14.96	13.80				13.41	11/01/11
<i>Excess</i>			0.97	0.75	0.75	-1.37	-0.46				-1.99	
NGROA10 - PRIVATE REAL ESTATE EX LIQUID FUNDS	1,446,471,789.25	6.06	4.24	4.24	4.24	15.38	14.59				12.14	11/01/11
<i>NCREIF ODCE 1 QTR LAG</i>			3.34	3.34	3.34	15.02	13.81				13.42	11/01/11
<i>Excess</i>			0.90	0.90	0.90	0.37	0.77				-1.28	
NGTD - SMART MARKETS FUND LP	285,409,806.14	1.20	2.92	2.92	2.92	12.87	12.57				11.45	01/01/12
<i>NCREIF ODCE 1 QTR LAG</i>			3.34	3.34	3.34	15.02	13.81				13.06	01/01/12
<i>Excess</i>			-0.42	-0.42	-0.42	-2.14	-1.25				-1.61	
NGTE - HARRISON ST REAL ESTATE - CORE OPEN END	208,117,961.31	0.87	1.82	1.82	1.82	9.75	9.75				9.24	01/01/12
<i>NCREIF ODCE 1 QTR LAG</i>			3.34	3.34	3.34	15.02	13.81				13.06	01/01/12
<i>Excess</i>			-1.52	-1.52	-1.52	-5.27	-4.06				-3.82	
NGTF - GREENFIELD ACQUISITION PTRS VI	47,485,012.01	0.20	2.98	2.98	2.98	11.99	14.88				14.55	07/01/12
<i>NCREIF ODCE 1 QTR LAG</i>			3.34	3.34	3.34	15.02	13.81				13.18	07/01/12
<i>Excess</i>			-0.36	-0.36	-0.36	-3.02	1.06				1.37	
NGTG - STOCKBRIDGE VALUE FUND	32,495,494.39	0.14	8.77	8.77	8.77	29.42	22.31				25.32	10/01/12
<i>NCREIF ODCE 1 QTR LAG</i>			3.34	3.34	3.34	15.02	13.81				13.36	10/01/12
<i>Excess</i>			5.43	5.43	5.43	14.40	8.50				11.96	
NGTH - WALTON ST REAL ESTATE FUND VII	65,869,845.79	0.28	3.91	3.91	3.91	15.91					20.02	07/01/13
<i>NCREIF ODCE 1 QTR LAG</i>			3.34	3.34	3.34	15.02					14.06	07/01/13
<i>Excess</i>			0.57	0.57	0.57	0.90					5.96	
NGTI - ABACUS MULTI-FAMILY PTRS II	40,614,824.29	0.17	16.76	16.76	16.76	34.74	32.03				26.96	08/01/12
<i>NCREIF ODCE 1 QTR LAG</i>			3.34	3.34	3.34	15.02	13.81				13.50	08/01/12
<i>Excess</i>			13.42	13.42	13.42	19.72	18.22				13.46	
NGTJ - RUBENSTEIN PROPERTIES FUND II	61,797,645.91	0.26	-3.46	-3.46	-3.46	0.14	16.40				16.40	04/01/13
<i>NCREIF ODCE 1 QTR LAG</i>			3.34	3.34	3.34	15.02	13.81				13.81	04/01/13
<i>Excess</i>			-6.80	-6.80	-6.80	-14.87	2.59				2.59	

Real Estate Performance

Period Ending March 31, 2016 (Net All)

	MKT VAL	% of Plan	1 Mo.	QTR	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	ITD	Incept Date
NGTL - MILLER GLOBAL FUND VII	26,703,932.91	0.11	2.06	2.06	2.06	13.44	17.77				13.50	10/01/12
NCREIF ODCE 1 QTR LAG			3.34	3.34	3.34	15.02	13.81				13.36	10/01/12
Excess			-1.28	-1.28	-1.28	-1.57	3.96				0.14	
NGTV - LUBERT-ADLER FUND VII	48,182,961.22	0.20	1.85	1.85	1.85	0.99					0.47	01/01/14
NCREIF ODCE 1 QTR LAG			3.34	3.34	3.34	15.02					13.72	01/01/14
Excess			-1.50	-1.50	-1.50	-14.03					-13.26	
NGTX - ABACUS CORE INCOME FUND I LP	55,910,036.79	0.23	11.06	11.06	11.06	13.40					9.80	01/01/14
NCREIF ODCE 1 QTR LAG			3.34	3.34	3.34	15.02					13.72	01/01/14
Excess			7.71	7.71	7.71	-1.62					-3.92	
NGTW - INVESCO ADVISERS, INC.	171,135,927.28	0.72	4.00	4.00	4.00	18.28					11.67	01/01/14
NCREIF ODCE 1 QTR LAG			3.34	3.34	3.34	15.02					13.72	01/01/14
Excess			0.66	0.66	0.66	3.26					-2.05	
NGT3 - GREENFIELD ACQ PART VII LP	67,487,224.61	0.28	7.26	7.26	7.26	17.56					16.39	01/01/15
NCREIF ODCE 1 QTR LAG			3.34	3.34	3.34	15.02					14.80	01/01/15
Excess			3.92	3.92	3.92	2.55					1.59	
NGT4 - STOCKBRIDGE VALUE FD II LP	40,306,592.23	0.17	1.84	1.84	1.84	10.20					8.72	02/01/15
NCREIF ODCE 1 QTR LAG			3.34	3.34	3.34	15.02					15.97	02/01/15
Excess			-1.51	-1.51	-1.51	-4.82					-7.24	
NGUJ - ABACUS MULTI-FAMILY III	17,719,367.58	0.07	16.94	16.94	16.94	0.66					0.57	02/01/15
NCREIF ODCE 1 QTR LAG			3.34	3.34	3.34	15.02					15.97	02/01/15
Excess			13.59	13.59	13.59	-14.35					-15.39	
NGUL - MOORFIELD REAL ESTATE III	16,812,902.47	0.07	38.50	38.50	38.50	40.60					34.10	02/01/15
NCREIF ODCE 1 QTR LAG			3.34	3.34	3.34	15.02					15.97	02/01/15
Excess			35.15	35.15	35.15	25.58					18.14	
NGUH - WALTON STREET REAL ESTATE DEBT FUND	16,197,856.41	0.07	0.00	0.00	0.00						0.00	12/01/15
NCREIF ODCE 1 QTR LAG			3.34	3.34	3.34						7.15	12/01/15
Excess			-3.34	-3.34	-3.34						-7.15	

Real Estate Performance

Period Ending March 31, 2016 (Net All)

	MKT VAL	% of Plan	1 Mo.	QTR	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	ITD	Incept Date
NGAS - TORCHLIGHT DEBT OPP FUND V,LP	10,739,036.25	0.05	0.00	0.00	0.00						0.00	12/01/15
<i>NCREIF ODCE 1 QTR LAG</i>			3.34	3.34	3.34						7.15	12/01/15
<i>Excess</i>			-3.34	-3.34	-3.34						-7.15	
NGAR - TPG REAL ESTATE PART II, LP	15,248,808.52	0.06	0.00	0.00	0.00						0.00	12/01/15
<i>NCREIF ODCE 1 QTR LAG</i>			3.34	3.34	3.34						7.15	12/01/15
<i>Excess</i>			-3.34	-3.34	-3.34						-7.15	
NGAP - ALCION RE PART FD III-B,LP	8,415,436.45	0.04	0.00	0.00	0.00						0.00	11/01/15
<i>NCREIF ODCE 1 QTR LAG</i>			3.34	3.34	3.34						7.15	11/01/15
<i>Excess</i>			-3.34	-3.34	-3.34						-7.15	
NGAM - EUROPEAN PROPERTY INV SPECIAL	3,094,601.29	0.01	0.00	0.00	0.00						0.00	12/01/15
<i>NCREIF ODCE 1 QTR LAG</i>			3.34	3.34	3.34						7.15	12/01/15
<i>Excess</i>			-3.34	-3.34	-3.34						-7.15	
NGAQ - USAA EAGLE REAL ESTATE FD	156,726,515.37	0.66	0.00	0.00	0.00						0.00	12/01/15
<i>NCREIF ODCE 1 QTR LAG</i>			3.34	3.34	3.34						7.15	12/01/15
<i>Excess</i>			-3.34	-3.34	-3.34						-7.15	
NGAV - H/2 CP CORE RE DEBT FUND,LP	50,000,000.00											03/01/16
<i>NCREIF ODCE 1 QTR LAG</i>			3.34									03/01/16
<i>Excess</i>												
NGROA017 - REAL ESTATE LIQUID FUNDS	124,904,875.00		4.06	1.47	1.47						-0.08	11/01/15
NGAU - H/2 CP, LP ^[15]	124,904,875.00	0.52	4.06	1.47	1.47						-0.08	11/01/15
<i>NCREIF OPEN FUND INDEX (DAILY)</i>			2.18	2.18	2.18						5.60	11/01/15
<i>Excess</i>			1.88	-0.71	-0.71						-5.68	

Real Estate Pacing Plan Update

Year	Pacing Plan Update
2016	<ul style="list-style-type: none">• March – Board approved selection of 2 new managers• May – Board approved selection of 1 new manager

VI. Real Return



Real Return Asset Class Overview

- Objective

- Purpose is to enhance total return and provide diversification and hedge against inflation risks to the overall investment portfolio.
- Due to the varied nature of the *Real Return* space the portfolio will include strategies across a variety of real asset types as well as a number of investment vehicle types in order to maintain a diversified approach.

- Performance Objective

- Long term performance objective over a period 5 years or a full market cycle is a real rate of return (adjusted for inflation) of CPI + 400 basis points.
- On a short term basis the real return portfolio is expected to generate returns net of all fees and expenses, in excess of their respective indices individually and in excess of the Barclay's World Government Inflation Linked Bond Index for the portfolio as a whole.

Liquid Real Return Portfolio Management Structure

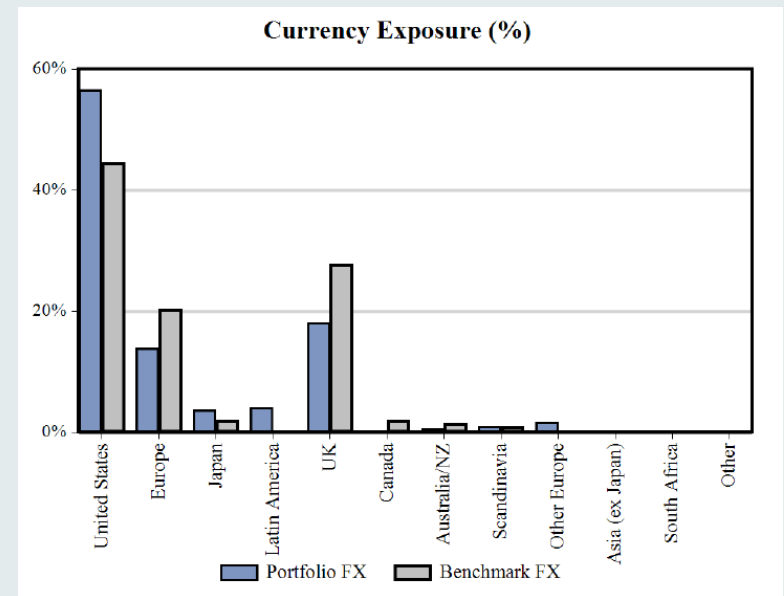
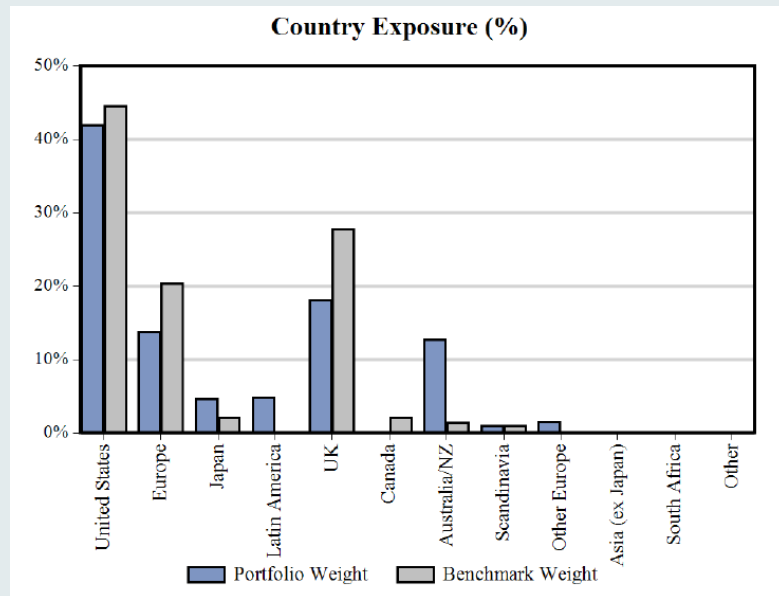
MANAGER	STRATEGY	PORTFOLIO BENCHMARK
Colchester	Active Global Linkers	Barclays World Govt Infl-Linked Bond Index
Nuveen	Real Asset Income – Public Securities	28% S&P Global Infrastructure Index, 21% FTSE EPRA/NAREIT Developed Index, 18% Wells Fargo Hybrid and Preferred Securities REIT Index, 15% Barclays Global Capital Securities Index, 18% Barclays U.S. Corporate High Yield Index

Private Real Return Portfolio Management Structure

Manager	Strategy	Allocated/Committed	Drawn / Invested (Quarterly)
Magnetar	Energy Finance	\$100,000,000	\$ 5,498,581.45

Real Return GILB Allocation

March 2016



*Source: Colchester

1. Barclays World Government Inflation-Linked Bond Index USD Unhedged
2. TMRS inception date Feb. 1, 2011
3. Annualized returns since inception

Real Return Performance

Period Ending March 31, 2016 (Net All)

	MKT VAL	% of Plan	1 Mo.	QTR	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	ITD	Incept Date
NGROA08 - TMRS - TOTAL REAL RETURN	1,343,906,438.55	5.63	3.19	4.64	4.64	-1.10	-0.19	2.70			3.02	02/01/11
<i>Barclays World Inflation Linked Bonds TR</i>			3.62	4.79	4.79	1.01	-0.13	2.48			2.98	02/01/11
<i>Excess</i>			-0.44	-0.15	-0.15	-2.10	-0.06	0.22			0.04	
NGTB - COLCHEST GLBL INFLTN-LINK BNDS	984,779,192.99	4.13	3.29	4.76	4.76	-0.99	-0.16	2.72			3.04	02/01/11
<i>Barclays World Inflation Linked Bonds TR</i>			3.62	4.79	4.79	1.01	-0.13	2.48			2.98	02/01/11
<i>Excess</i>			-0.34	-0.03	-0.03	-1.99	-0.03	0.24			0.06	
NGRP - MTP ENERGY OPPORTUNITIES FD II	5,609,023.88	0.02	0.00								0.00	02/01/16
NGRQ - NUVEEN REAL ASSET INCOME	353,518,221.68											03/01/16

Real Return Pacing Plan Update

Year	Pacing Plan Update
2016	<ul style="list-style-type: none">• March – Board approved 2 new manager recommendations• May – Board approved 1 new manager recommendation

VII. Absolute Return



Absolute Return

Asset Class Overview

- Objective

- Purpose is to diversify equity and credit market risk by targeting hedge fund return streams that are independent of the directionality of the broad stock and bond markets. The ARS portfolio will be invested in a wide variety of hedge fund strategies, with specific constraints on overall portfolio risk and individual manager exposure.
- Performance objective is to exceed the benchmark, defined as the HFRI Fund of Funds Diversified Index, net of fees, and to earn in excess of the appropriate long-term benchmark (3-month LIBOR + 500 basis points) on an ongoing rolling 5-year period.

- Investment Philosophy

- Predicated on manager skill in:
 - Rotating (long/short trading) market factors based on valuation
 - Navigating less liquid, non public and opaque markets
 - Navigating special situations
 - Predicting and capturing market trends
- Accordingly, ARS is not an “asset class” (or market sector)

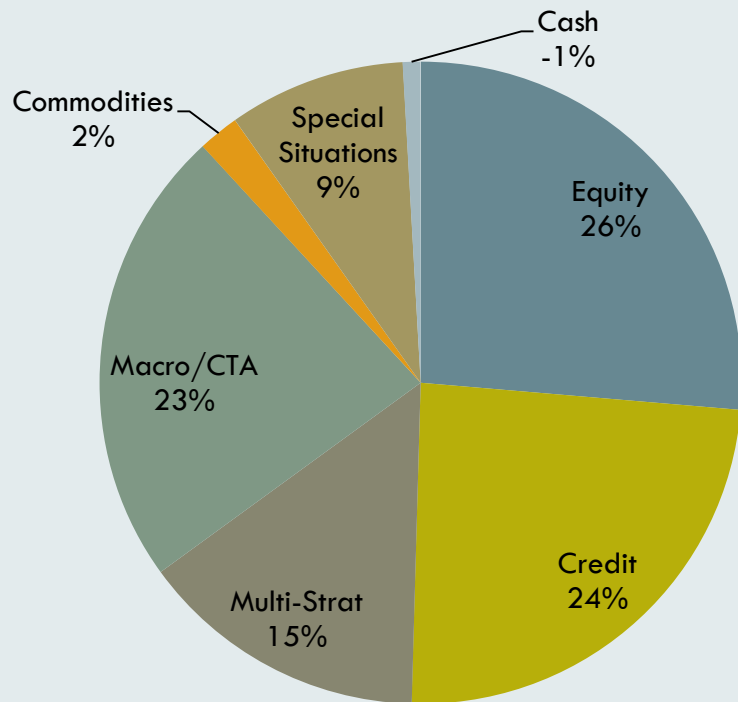
Absolute Return Portfolio Management Structure

Manager	Strategy	Portfolio Benchmark
Blackstone	Customized Fund of One	HFRI Fund of Funds Diversified Index
Alyeska Fund	Direct Manager	
Graticule Asia Macro Fund	Direct Manager	
Varde Investment Partners	Direct Manager	
Myriad Opportunities Fund	Direct Manager	
Roystone Capital Fund	Direct Manager	
Southpoint Fund	Direct Manager	
Man AHL Hydrogen LLC*	Direct Manager	
PDT Mosaic Fund*	Direct Manager	
DSAM Long/Short Equity Fund*	Direct Manager	
East Lodge Capital Credit Opportunities Fund*	Direct Manager	
River Birch Partners*	Direct Manager	
Field Street Partners*	Direct Manager	
Pharo Gaia Fund*	Direct Manager	

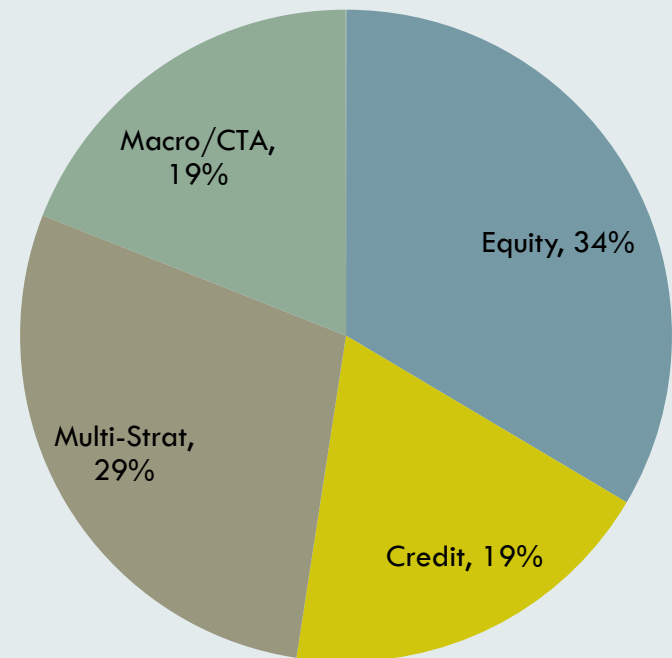
*Indicates manager has been approved, but not funded as of March 31, 2016

Current Allocation (Strategy Exposures)

BAAM Aggregated Manager Exposures



Direct Portfolio Aggregated Manager Exposures



Source: BAAM; State Street

Absolute Return Performance

Period Ending March 31, 2016 (Net All)*

	MKT VAL	% of Plan	1 Mo.	QTR	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	ITD	Incept Date
TMRS - TOTAL ABSOLUTE RETURN	1,907,124,098	7.99	0.18	-3.86	-3.86	-2.71					-0.14	8/1/2014
HFRI FUND OF FUNDS DIVERSIFIED INDEX			0.08	-3.45	-3.45	-5.30					-0.99	8/1/2014
EXCESS			0.10	-0.41	-0.41	2.59					0.84	
TMRS - BLACKSTONE	1,515,426,032	6.35	0.19	-3.83	-3.83	-2.68					-0.12	8/1/2014
HFRI FUND OF FUNDS DIVERSIFIED INDEX			0.08	-3.45	-3.45	-5.30					-0.99	8/1/2014
EXCESS			0.11	-0.37	-0.37	2.63					0.87	
TMRS - ABSOLUTE RETURN DIRECT	391,698,066	1.64	0.16	-4.36	-4.36						-4.36	1/1/2016
HFRI FUND OF FUNDS DIVERSIFIED INDEX			0.08	-3.45	-3.45						-3.45	1/1/2016
EXCESS			0.08	-0.90	-0.90						-0.90	

*Source: State Street Investment Analytics

Absolute Return Pacing Plan Update

Year	Pacing Plan Update
2016	<ul style="list-style-type: none">• January – Executed legal documents and funded 4 of the approved 6 direct hedge fund investments• February – Executed legal documents and funded the remaining 2 of the approved 6 direct hedge fund investments• March – Recommended another 7 direct hedge fund investments for Board approval• May – Executed legal documents and funded 2 of the approved 7 direct hedge funds• June – Expect to fund remaining 5 approved direct hedge funds• September – Recommend 5-7 direct hedge fund investments for Board approval

VIII. Private Equity



Private Equity Asset Class Overview

- Objective

- The primary objective is to enhance the total return of the overall investment portfolio, and secondarily to provide diversification. Private Equity investments are commingled funds structured as limited partnerships with capital commitments that are drawn down over time based on manager discretion. Potential distributions are made as a fund matures and investments are typically realized over an 8-12 year horizon.
- The long term policy objective is to meet or exceed the Russell 3000 + 3.00% over periods of five years or greater.

- Investment Philosophy

- Manager selection is critical, and managers add value through:
 - Reducing agency conflicts and aligning equity holder/executive incentives
 - Investment structuring and balance sheet management
 - Deep sector experience and creating operating efficiencies
 - Navigating non-public information and capturing illiquidity premia
- *Note: Due to the illiquid nature of the Private Equity asset class, the target allocation will be invested over a multi-year period in order to avoid considerable vintage year risks.*

Private Equity Portfolio Management Structure

MANAGER	STRATEGY	PORTFOLIO BENCHMARK
Tritium	Buy-out	Russell 3000 + 3%
Harvest	Buy-out	Russell 3000 + 3%
Searchlight	Buy-out	Russell 3000 + 3%
H.I.G. Bayside	Special Situations	Russell 3000 + 3%
Carlyle	Special Situations	Russell 3000 + 3%
TPG	Special Situations	Russell 3000 + 3%

Private Equity Allocation

Figure 1 : Private Equity Strategy Diversification by Commitment

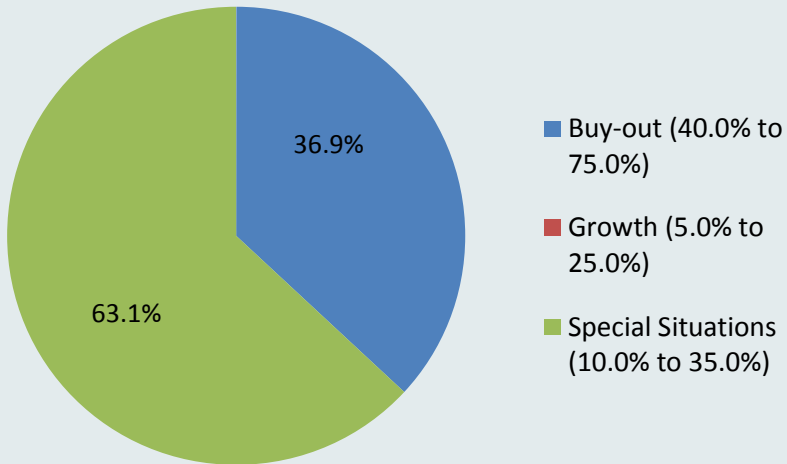
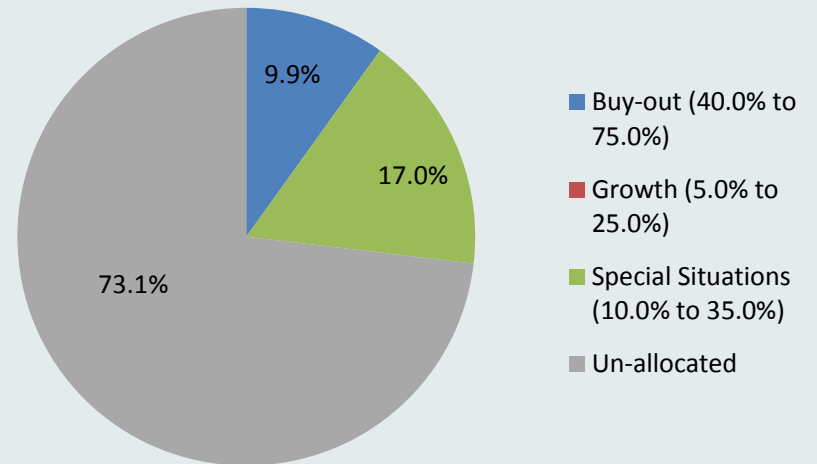


Figure 2 : Private Equity Target Diversification



Policy Strategy Range

Control/Buy-out	40.0% to 75.0%
Venture/Growth/Minority	5.0% to 25.0%
Special Situations/Opportunistic	10.0% to 35.0%

Private Equity Allocation

Figure 3: Private Equity Manager Diversification by Commitment

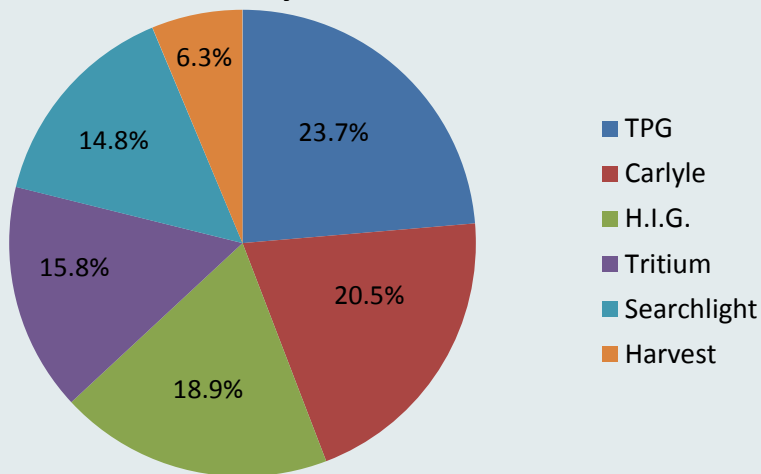
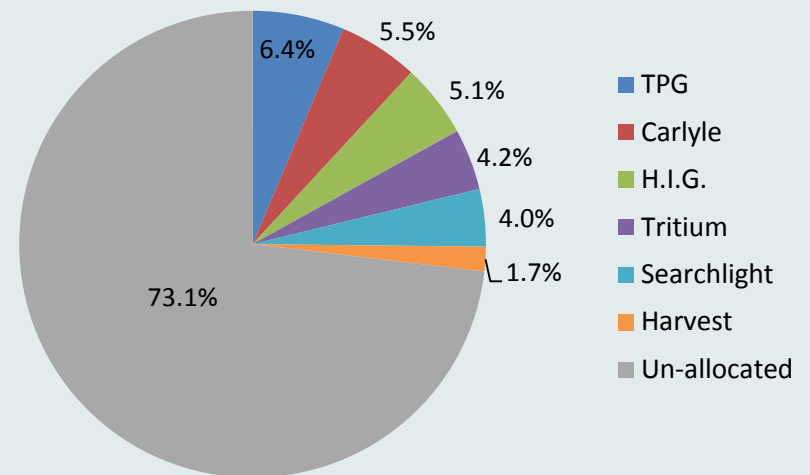


Figure 4 : Private Equity Target Manager Diversification



Policy Guidelines

No more than 35% with any one investment manager
 No more than 25% in any one investment vehicle

Private Equity Performance

Period Ending March 31, 2016 (Net All)*

	MKT VAL	% of Plan	1 Mo.	QTR	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.	ITD	Incept Date
TMRS – TOTAL PRIVATE EQUITY	43,190,974	0.18	4.17	3.42	3.42						3.42	12/1/2015
BUYOUT TOTAL	19,042,528	0.08	12.4	12.14	12.14						12.14	12/1/2015
TRITIUM I	13,805,553	0.06	17.95	17.95	17.95						17.95	12/1/2015
SEARCHLIGHT CAPITAL II	5,236,974	0.02	0.00	0.00	0.00						0.00	2/1/2016
SPECIAL SITUATIONS TOTAL	24,148,446	0.10	-1.51								-1.51	3/1/2016
H.I.G. BAYSIDE FUND IV	8,405,082	0.04	0.00								0.00	3/1/2016
CARLYLE ENERGY MEZZANINE FUND II	4,564,981	0.02	0.00								0.00	3/1/2016
TSSP ADJACENT OPPORTUNITIES FUND III	11,178,383	0.05	-3.24								-3.24	3/1/2016

*Source: State Street Investment Analytics

Private Equity Pacing Plan Update

Year	Pacing Plan Update
2016	<ul style="list-style-type: none">• Q1 2016: Additional private equity allocation<ul style="list-style-type: none">• Board approved GSO COF III for \$75 M on March 23, 2016• Approximately Q2 2016: Additional private equity allocation<ul style="list-style-type: none">• Group of 1-4 managers / approx. \$150 M• Approximately Q3 2016: Additional private equity allocation<ul style="list-style-type: none">• Group of 1-3 managers / approx. \$150 M• Approximately Q4 2016: Additional private equity allocation<ul style="list-style-type: none">• Group of 1-3 managers / approx. \$150 M

IX. Compliance












































Compliance Overview

- **IPS Objectives**

- The primary objective of Compliance is to implement a detailed compliance program which uses a combination of daily, weekly and monthly testing of all testable parameters of the Investment Policy Statement and all Manager guidelines at the Manager, asset class and total fund level, as appropriate.
- Testing may be completed either through systematic resources (automated custodial compliance) or manually if necessary.
- Compliance personnel shall create and present a quarterly report to the Board with the results of the testing performed during each period.

Investment Guideline Compliance

March 2016

Policy Guidelines	Core Fixed Income	Non-Core Fixed Income	Real Return	Domestic Equities	Global Equities
Credit Quality					
Liquidity/Cash Management					
Permissible/Prohibited Investments					
Concentration Risk					
Country/Region & Currency					
Issue/Issuer					
Sector & Asset Type					
Interest Rate Risk				N/A	N/A
Spread Risk				N/A	N/A

- 366 separate compliance tests were run on TMRS portfolios as of March 31, 2016. There were no active violations of TMRS guidelines.

Compliance Pacing Plan Update

Topic	Update
Automate Tests	Running tests from State Street's new compliance system, MIG21, parallel to internal Bloomberg tests and Charles River (old system) for beta testing. Full switch to MIG21 upon three months of clean beta tests.
Total Fund Annual Compliance Audit	Complete audit of guidelines (including internal procedures) & compliance tests for the total fund aggregate in progress as part of MIG21 implementation process. Completion will coincide with successful MIG21 beta test results.
Asset Class Annual Compliance Audit	A complete audit of guidelines & compliance tests for funds & fund aggregates is in progress as part of the MIG21 implementation process. Fund level audit is complete. Fund aggregate level completion will coincide with successful MIG21 beta test results.
TMRS Standards of Excellence	Using fi360's global fiduciary standards as a foundation, develop a formal basis for the TMRS compliance function.

X. Risk Management



Risk Management Overview March 2016

- Objective
 - Identification, evaluation and management of all risks related to investment results.
- Responsibilities:
 - Defining the policy and strategy for investment risk management
 - Building a risk aware culture within the organization
 - Analytical tools for investment risk management
 - Reporting on investment risk to the Board
- Risk Report: Q1 2016
 - One year outlook market volatility has increased from year end but is still a lot lower than long term expectations
 - Forward looking Tracking Error has increased to 1.8% from 1.6%, with 1.1% due to pending policy allocations

We show total fund risk to see what current market risk levels are relative to our long term assumptions.

Total Fund Risk

March 2016

Extreme or persistent differences may cause us to rethink our long term assumptions (RVK makes small adjustments every year) otherwise it just provides background information as to the state of the markets.

	BarraOne – One year outlook			Policy Benchmark			RV Kuhns
	Portfolio						Long Term Assumptions ¹
	Weight (%)	Risk	Contribution to Total Risk	Weight (%)	Risk	Contribution to Total Risk	Benchmark
							Risk
Total	100.0%	7.32	100.0%	100.0%	8.56	100.0%	11.4
Cash Assets	0.2%	0.00	0.0%	0.0%	0.00	0.0%	3.0
Equity - US	27.8%	14.30	51.8%	17.5%	14.19	26.9%	17.8
Equity - Non US	17.1%	16.66	36.7%	17.5%	17.62	34.1%	20.6
Core Fixed Income	30.0%	3.33	1.8%	10.0%	3.72	0.2%	6.0
Non-Core Fixed Income	6.1%	4.51	2.1%	20.0%	7.06	13.8%	11.7
Real Estate	6.0%	5.24	2.2%	10.0%	11.68	8.7%	14.6
Real Return	4.3%	5.89	1.4%	10.0%	6.66	3.3%	8.8 ²
Absolute Return	8.2%	4.01	3.2%	10.0%	4.00	3.2%	9.5
Private Equity	0.4%	18.38	0.8%	5.0%	18.38	9.6%	26.0

- Projected short term (one year) volatility continues to be significantly lower than our strategic (long term) volatility assumptions

NOTES: 1. RVK forward -looking risk assumptions as presented in the July 2015 Asset Allocation Study

2. Assumes a Real Return asset class benchmark of 100% Global Inflation Linked Bonds until the new Policy Benchmark is implemented

Here we are looking at Active Risk (Tracking Error), by asset class and for the total fund

Total Fund Tracking Error March 2016

We break down the Active Risk based on the investment decision it is associated with

Asset Class	Policy Benchmark	Strategic Target Allocation (%)	Portfolio Allocation (%)	Allocation Difference (%)	Pending Policy Allocations	Four Sources of Active Risk:			
						Contribution of Pending Policy Decisions ¹	Contribution of Investment Allocation Decisions ²	Contribution of Strategy Benchmark Decisions ³	Contribution of Active Manager Decisions ⁴
Cash Assets	30 Day T- Bill	0.0%	0.2%	0.2%		0.00	0.01	0.00	0.00
Equity - US	Russell 3000	17.5%	27.8%	10.3%	- 10.75%	-0.15	0.01	-0.07	0.03
Equity - Non US	MSCI ACWI ex USA IMI	17.5%	17.1%	-0.4%		0.00	0.02	0.04	0.08
Core Fixed Income	Barclays U.S. Agg	10.0%	30.0%	20.0%	- 19.75%	1.31	0.02	0.00	-0.07
Non-Core Fixed Income	50% Barclay's High Yield 25% JPM EM GD GBI 25% JPM CEMBI	20.0%	6.1%	-13.9%	+ 14%	-0.12	0.00	0.00	0.24
Real Estate	NCREIF ODCE	10.0%	6.0%	-4.0%	+ 4%	0.07	0.00	0.00	0.40
Real Return	Barclays World Govt Inflation Linked Bond Index	10.0%	4.3%	-5.7%	+5.75%	-0.18	0.00	0.00	0.03
Absolute Return	HFRI FOF Diversified Index	10.0%	8.2%	-1.8%	+1.75%	-0.08	0.00	0.00	0.00
Private Equity	Russell 3000 + 3% (risk proxy: Russell 2000)	5.0%	0.4%	-4.6%	+ 5%	0.21	-0.02	0.00	0.00
Active Total Risk		100.0%	100.0%	0.0%		1.06	0.04	-0.03	0.71
						Sum of Contributions to Active Risk = 1.78			

If Active Risk, from investment decisions, gets close to the Active Risk Budget (currently 2%) we must evaluate the reasons and decide if we need to adjust the allocation of the risk budget across asset classes or managers

NOTES: 1. Amount of active risk due to Pending Policy Allocations

2. Amount of active risk due to allocation difference from Policy Benchmark target allocations due to investment decisions

3. Amount of active risk due to the difference between manager benchmarks chosen by Investment Staff and the Policy Benchmark for the Asset Class

4. Amount of active risk due to manager portfolio holdings different from holdings of the Manager Benchmark

Manager and Asset Class Level Tracking Error

(Selection Contribution to Total Fund Tracking Error)

March 2016

Fixed Income-Core	Tracking Error Target	Tracking Error	Allocation (%)	Contribution of Strategy Benchmark Decisions¹	Contribution of Active Manager Decisions²
TMRS PIMCO CORE PLUS FIXED INC	1.50	1.11	30.04%	0.00	0.31
TMRS-BLACKROCK FIXED INCOME	0.50	0.42	69.96%	0.00	0.27
Active Total Risk					0.59

Fixed Income- Non Core	Tracking Error Target	Tracking Error	Allocation (%)	Contribution of Strategy Benchmark Decisions³	Contribution of Active Manager Decisions²
ELLINGTON NON CORE FIXED INC	6.00	6.85	26.71%	0.00	1.73
GGJA - RED RIVER II- GUGGENHEIM	4.50	4.73	23.16%	0.00	0.99
PY4A - RED RIVER STRATEGIC LN PT I	5.00	5.99	23.35%	0.00	1.17
VOYA NON CORE FIXED INCOME	4.50	6.64	26.78%	0.00	1.67
Active Total Risk					5.57

NOTES: 1. Risk Contribution of strategy benchmark decisions relative to the Asset Class only; see Total Fund Tracking Error page for the contribution relative to the total fund
 2. Selection Risk Contribution relative to the Asset Class only; see Total Fund Tracking Error page for the Selection Risk Contribution relative to the total fund
 3. The Non-Core Fixed Income manager benchmarks are not yet included in BarraOne, so their active risk cannot yet be separated into active manager decisions and strategy benchmark decisions.

Here we are showing manager and asset class level Active Risk and checking it against manager Active Risk Targets

Manager and Asset Class Level Tracking Error March 2016

Equity - US	Tracking Error Target	Tracking Error	Allocation (%)	Contribution of Strategy Benchmark Decisions ¹	Contribution of Active Manager Decisions ²	Total Contribution
BOSTON CO US SM CAP OPPORTUNISTIC VALUE	8.00	7.89	3.41%	0.18	0.03	0.21
CHAMPLAIN MID-CAP CORE	4.60	4.24	3.23%	0.08	0.00	0.08
EPOCH U.S. CHOICE	4.00	3.46	3.54%	0.00	0.00	0.00
SASCO U.S. CONTRARIAN VALUE	6.00	7.04	3.09%	0.09	0.04	0.13
THE BOSTON COMPANY OPP VALUE	8.00	5.34	2.91%	0.08	0.03	0.11
SSGA Russell Fundamental US	4.00	2.53	4.54%	0.03	0.00	0.03
TMRS RUSSELL 3000 NON-LENDING	0.00	0.00	70.81%	0.00	0.00	0.00
UBS US EQUITY MIN VOL FUND-NL	10.00	6.03	5.00%	-0.09	0.00	-0.09
WELLINGTON US SMALL CAP OPP	6.00	6.61	3.44%	0.18	0.01	0.18
Active Total Risk				0.55	0.10	0.64
Equity - Non US						
ACADIAN EMERGING MARKETS	7.00	7.46	4.33%	0.09	0.05	0.15
LAZARD INTL EQUITY PLUS	5.00	3.18	4.70%	-0.01	0.11	0.10
NGTI ACWI EX. US IMI-NL	0.00	0.00	58.18%	0.00	0.00	0.00
SSGA Russell Fund Global Ex-US	4.00	3.16	5.27%	-0.12	0.00	-0.12
UBS WORLD EX-US MIN VOL FD NL	10.00	6.39	6.66%	0.32	0.00	0.32
WASATCH INTL SMALL CAP GROWTH	7.00	7.61	5.81%	0.11	0.27	0.38
WELLINGTON INTL HORIZONS	6.00	4.30	4.97%	-0.01	0.11	0.10
WELLINGTON INTL SMALL CAP OPP	6.00	6.92	5.70%	0.10	0.16	0.27
WILLIAM BLAIR EMERGING MARKETS	7.80	7.90	4.40%	0.09	0.07	0.16
Active Total Risk				0.58	0.78	1.36

When manager Active Risk (Tracking Error) exceeds the manager Tracking Error Target we must identify what caused the result and then decide if we need to make corrections, adjustments to guidelines/targets or potentially make manager changes

NOTES: 1. Risk Contribution of strategy benchmark decisions relative to the Asset Class only; see Total Fund Tracking Error page for the contribution relative to the total fund
2. Selection Risk Contribution relative to the Asset Class only; see Total Fund Tracking Error page for the Selection Risk Contribution relative to the total fund

Manager and Asset Class Level Tracking Error

March 2016

Real Estate	Tracking Error Target	Tracking Error	Allocation (%)	Contribution of Strategy Benchmark Decisions ¹	Contribution of Active Manager Decisions ²
ABACUS CORE INCOME FUND I LP	N/A	8.19	4.00%	0.00	0.09
ABACUS MULTI-FAMILY III	N/A	11.68	1.27%	0.00	0.13
Abacus Multi-Family Ptrs II	N/A	12.84	2.90%	0.00	0.35
GREENFIELD ACQ PART VII LP	N/A	11.68	4.83%	0.00	0.50
Greenfield Acquisition Ptrs VI	N/A	13.45	3.40%	0.00	0.41
H-2 CP CORE RE DEBT FUND,LP	N/A	11.68	3.58%	0.00	0.37
H-2 CP, LP	N/A	11.68	8.93%	0.00	0.93
Harrison Real Estate-Core Open	N/A	14.19	14.88%	0.00	1.91
Harrison Street Securities	N/A	11.68	0.00%	0.00	0.00
INVESCO ADVISERS, INC.	N/A	7.45	12.24%	0.00	0.32
LUBERT-ADLER FUND VII	N/A	6.06	3.45%	0.00	0.09
MOORFIELD REAL ESTATE III	N/A	11.68	1.19%	0.00	0.12
Miller Global Fund VII	N/A	17.05	1.90%	0.00	0.24
RUBENSTEIN PROPERTIES FD II	N/A	11.68	4.42%	0.00	0.46
SMART MARKETS FUND LP	N/A	13.08	20.41%	0.00	2.50
STOCKBRIDGE VALUE FD II LP	N/A	11.68	2.88%	0.00	0.30
Stockbridge Value Fund	N/A	13.08	2.32%	0.00	0.28
TORCHLIGHT DEBT OPP FUND V,LP	N/A	11.68	1.54%	0.00	0.16
WALTON ST REAL ESTATE FUND VII	N/A	11.68	4.71%	0.00	0.49
WALTON STREET REAL ESTATE DEPT FUND	N/A	11.68	1.16%	0.00	0.12
Active Total Risk					9.80
Real Return					
COLCHEST GLBL INFLTN-LINK BNDS	3.00	2.04	99%	0.00	2.03
MTP ENERGY OPPORTUNITIES FD II	NA	6.66	1%	0.00	0.02
Active Total Risk					2.04

NOTES: 1. Risk Contribution of strategy benchmark decisions relative to the Asset Class only; see Total Fund Tracking Error page for the contribution relative to the total fund

2. Selection Risk Contribution relative to the Asset Class only; see Total Fund Tracking Error page for the Selection Risk Contribution relative to the total fund

3. Tracking Error Targets are generally not set for Private Real Estate because returns are reported quarterly based on appraised property values.

4. Percent allocations may lag actual allocations due to lagged quarterly reporting

Risk Management Update

March 2016

Topic	Update
Board and Internal Risk Reporting	Providing quarterly Board Risk Reports for the total fund and internal asset class reports analyzing active risk taken by our public market managers.
Specialized Risk Analysis	Applying and further developing specialized risk analysis solutions for Alternative Asset Class investments
Performance Attribution	Performance Attribution allows us to better distinguish manager skill from luck by breaking down (attributing) monthly returns to specific manager decisions. Refining attribution measures, adding new accounts and strategies, and working on summary observations.
Data Management Solution for Account Related information	Narrowly focused Data Warehouse was developed to satisfy detailed portfolio data needs of the Performance Attribution System. Currently expanding Data Warehouse to cover all Account Related reporting needs, converting to more powerful IT platform and shifting Investment Data Analyst position to functionally report to the IS Department.
Performance Reporting	Expanding Performance Reporting procedures and methodology to incorporate new asset types, new investment vehicles, and increased transparency. Adding un-lagged performance reporting which will show returns for all accounts properly aligned with the time periods when they were earned ¹ .
Quantitative Portfolio Analysis	Monitoring advances in quantitative portfolio analysis to ensure that risk and performance analysis remain current at TMRS

1. Private market asset classes, like Real Estate, are priced quarterly with a quarter lag due to use of appraised value pricing in the absence of market prices. For some asset class funds in less liquid public markets this is also true, although to a lesser extent and the lag is only one month

DISCLOSURE

TMRS periodically discloses public information that is not excepted from disclosure under Section 552.0225(b) of the Texas Public Information Act. Information provided by a manager, a general partner or other data provider to TMRS or a TMRS service provider, and contained in these materials, may have been independently produced or modified by TMRS or the TMRS service provider.