MEETING MATERIAL

Municipal Employees' Retirement System of Louisiana

March 15, 2018

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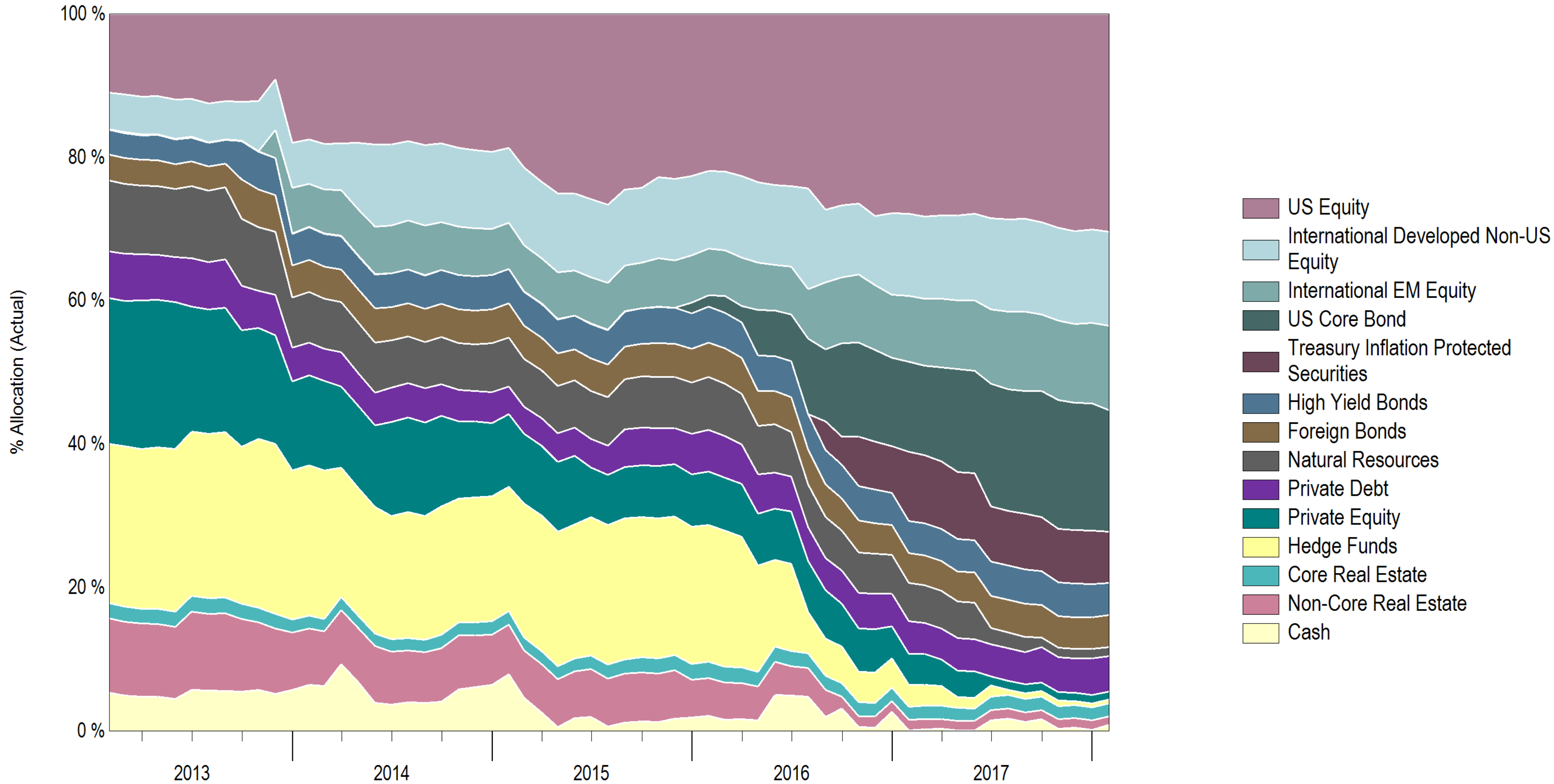
Preliminary Performance As of January 31, 2018

Allocation vs. Targets and Policy

	Current Balance	Current Allocation	Policy	Policy Range	Within IPS Range?
US Equity	$264,268,195	30%	28%	18% - 38%	Yes
International Developed Non-US Equity	$114,401,681	13%	12%	7% - 17%	Yes
International EM Equity	$102,772,992	12%	10%	5% - 15%	Yes
US Core Bond	$147,386,860	17%	18%	8% - 28%	Yes
Treasury Inflation Protected Securities	$62,267,291	7%	7%	2% - 12%	Yes
High Yield Bonds	$39,200,152	5%	5%	0% - 10%	Yes
Foreign Bonds	$38,488,999	4%	5%	0% - 10%	Yes
Natural Resources	$11,308,445	1%	3%	0% - 6%	Yes
Private Debt	$43,063,058	5%	3%	0% - 6%	Yes
Infrastructure	--	--	3%	0% - 6%	Yes
Private Equity	$9,748,752	1%	2%	0% - 4%	Yes
Hedge Funds	$4,553,912	1%	0%	0% - 5%	Yes
Core Real Estate	$15,444,138	2%	4%	0% - 8%	Yes
Non-Core Real Estate	$10,839,038	1%	0%	0% - 5%	Yes
Cash	$7,286,414	1%	0%	0% - 5%	Yes
Total	**$871,029,927**	**100%**	**100%**		

Asset Allocation History
5 Years Ending January 31, 2018



Asset Class Net Performance Summary

	Market Value ($)	% of Portfolio	1 Mo (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Return (%)	Since
Total Retirement System Aggregate	**871,029,927**	**100.0**	**2.8**	**9.4**	**8.2**	**3.3**	**4.0**	**3.1**	**4.2**	**Jan-06**
Policy Benchmark			*3.0*	*11.0*	*17.5*	*8.4*	*8.1*	*6.2*	*7.2*	*Jan-06*
60% MSCI ACWI & 40% Barclays Universal			*3.0*	*10.4*	*17.0*	*7.9*	*7.6*	*5.6*	*6.2*	*Jan-06*
Domestic Equity	**264,268,195**	**30.3**	**4.4**	**16.5**	**22.3**	**13.4**	**13.9**	**9.9**	**8.7**	**Feb-06**
Russell 3000			*5.3*	*17.1*	*25.2*	*14.1*	*15.5*	*9.8*	*9.1*	*Feb-06*
Developed Equity	**114,401,681**	**13.1**	**4.4**	**13.0**	**23.5**	**10.3**	**--**	**--**	**7.4**	**May-14**
MSCI EAFE			*5.0*	*15.4*	*27.6*	*9.4*	*7.8*	*3.4*	*5.2*	*May-14*
Emerging Market Equity	**102,772,992**	**11.8**	**8.6**	**24.8**	**38.9**	**12.7**	**--**	**--**	**9.8**	**Dec-13**
MSCI Emerging Markets			*8.3*	*25.6*	*41.0*	*11.8*	*5.7*	*3.9*	*8.1*	*Dec-13*
U.S. Core Bond Assets	**147,386,860**	**16.9**	**-1.2**	**0.0**	**2.0**	**2.6**	**--**	**--**	**0.9**	**Apr-13**
BBgBarc US Aggregate TR			*-1.2*	*0.1*	*2.1*	*1.1*	*2.0*	*3.7*	*1.8*	*Apr-13*
Treasury Inflation Protected Securities	**62,267,291**	**7.1**	**-0.9**	**1.3**	**1.4**	**--**	**--**	**--**	**-0.1**	**Jul-16**
BBgBarc US TIPS TR			*-0.9*	*1.3*	*1.3*	*0.7*	*0.1*	*3.0*	*-0.2*	*Jul-16*
Foreign Bond Assets	**38,488,999**	**4.4**	**4.4**	**7.2**	**15.2**	**3.8**	**--**	**--**	**2.4**	**Apr-13**
BBgBarc Global Aggregate TR			*1.2*	*4.1*	*7.5*	*2.5*	*1.2*	*2.9*	*1.2*	*Apr-13*
High Yield Bonds	**39,200,152**	**4.5**	**0.3**	**3.2**	**7.4**	**4.0**	**--**	**--**	**5.0**	**Apr-13**
BBgBarc US High Yield TR			*0.6*	*3.1*	*6.6*	*6.3*	*5.6*	*8.2*	*5.2*	*Apr-13*

Total Retirement System Aggregate

As of January 31, 2018

	Market Value ($)	% of Portfolio	1 Mo (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Return (%)	Since
Core Real Estate	**15,444,138**	**1.8**	**0.0**	**2.0**	**5.4**	**8.8**	**10.1**	**5.8**	**7.4**	**Mar-06**
NCREIF ODCE Equal Weighted (Net)			*0.0*	*3.7*	*6.9*	*9.8*	*10.6*	*3.9*	*5.5*	*Mar-06*
Natural Resources	**11,308,445**	**1.3**	**0.0**	**-11.3**	**-62.6**	**-30.3**	**--**	**--**	**-19.5**	**Apr-13**
S&P Global Natural Resources Index TR USD			*5.2*	*26.6*	*23.6*	*10.0*	*2.8*	*1.1*	*4.4*	*Apr-13*
Private Debt	**43,063,058**	**4.9**	**-0.3**	**2.5**	**-1.6**	**3.7**	**--**	**--**	**5.4**	**Apr-13**
BBgBarc High Yield+2%			*0.8*	*4.3*	*8.7*	*8.4*	*7.7*	*10.4*	*7.3*	*Apr-13*
Private Equity	**9,748,752**	**1.1**	**0.0**	**-0.7**	**-54.1**	**-28.8**	**-18.8**	**-8.0**	**-8.0**	**Feb-08**
S&P 500 +3%			*6.0*	*19.8*	*30.1*	*18.1*	*19.3*	*13.0*	*13.0*	*Feb-08*
Non-Core Real Estate	**10,839,038**	**1.2**	**0.0**	**0.0**	**-2.8**	**-4.7**	**-0.7**	**-0.4**	**1.3**	**Feb-06**
NCREIF Property (1-quarter lagged)			*0.0*	*3.5*	*6.9*	*9.8*	*10.4*	*6.2*	*8.0*	*Feb-06*
Hedge Funds	**4,553,912**	**0.5**								
Cash	**7,286,414**	**0.8**								

Trailing Net Performance

	Market Value ($)	% of Portfolio	% of Sector	1 Mo (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Return (%)	Since
Total Retirement System Aggregate	**871,029,927**	**100.0**	**--**	**2.8**	**9.4**	**8.2**	**3.3**	**4.0**	**3.1**	**4.2**	**Jan-06**
Policy Benchmark				*3.0*	*11.0*	*17.5*	*8.4*	*8.1*	*6.2*	*7.2*	*Jan-06*
60% MSCI ACWI & 40% Barclays Universal				*3.0*	*10.4*	*17.0*	*7.9*	*7.6*	*5.6*	*6.2*	*Jan-06*
Domestic Equity	**264,268,195**	**30.3**	**30.3**	**4.4**	**16.5**	**22.3**	**13.4**	**13.9**	**9.9**	**8.7**	**Feb-06**
Russell 3000				*5.3*	*17.1*	*25.2*	*14.1*	*15.5*	*9.8*	*9.1*	*Feb-06*
Northern Trust S&P 500 Index	146,246,706	16.8	55.3	5.7	17.8	26.4	14.6	--	--	13.6	Dec-13
S&P 500				*5.7*	*17.8*	*26.4*	*14.7*	*15.9*	*9.8*	*13.7*	*Dec-13*
Large Cap MStar MF Median				*5.5*	*17.4*	*25.3*	*13.3*	*14.8*	*9.4*	*12.2*	*Dec-13*
Large Cap MStar MF Rank				*41*	*43*	*41*	*26*	*--*	*--*	*25*	*Dec-13*
Northern Trust S&P 400 MidCap Index	61,454,603	7.1	23.3	2.9	12.8	17.6	12.6	--	--	11.9	Dec-13
S&P 400 MidCap				*2.9*	*12.8*	*17.6*	*12.6*	*14.1*	*11.0*	*11.9*	*Dec-13*
Mid Cap MStar MF Median				*3.9*	*14.2*	*19.7*	*11.8*	*13.5*	*9.6*	*10.7*	*Dec-13*
Mid Cap MStar MF Rank				*74*	*63*	*62*	*32*	*--*	*--*	*22*	*Dec-13*
Barrow Hanley Small Cap Value Equity	56,566,886	6.5	21.4	2.6	17.4	17.2	13.3	13.0	12.3	11.0	Jan-06
Russell 2000 Value				*1.2*	*8.6*	*10.0*	*11.6*	*12.0*	*8.8*	*7.8*	*Jan-06*
Small Value MStar MF Median				*1.4*	*10.7*	*11.4*	*10.9*	*12.2*	*9.4*	*8.4*	*Jan-06*
Small Value MStar MF Rank				*18*	*1*	*3*	*14*	*33*	*1*	*1*	*Jan-06*
Developed Equity	**114,401,681**	**13.1**	**13.1**	**4.4**	**12.9**	**23.4**	**10.2**	**--**	**--**	**7.4**	**May-14**
MSCI EAFE				*5.0*	*15.4*	*27.6*	*9.4*	*7.8*	*3.4*	*5.2*	*May-14*
First Eagle International Value	35,557,385	4.1	31.1	3.0	8.0	13.8	7.1	--	--	5.0	May-14
MSCI EAFE				*5.0*	*15.4*	*27.6*	*9.4*	*7.8*	*3.4*	*5.2*	*May-14*
Foreign MStar MF Median				*5.3*	*16.6*	*29.6*	*10.4*	*8.5*	*4.1*	*6.3*	*May-14*
Foreign MStar MF Rank				*98*	*98*	*99*	*94*	*--*	*--*	*77*	*May-14*

Total Retirement System Aggregate

As of January 31, 2018

	Market Value ($)	% of Portfolio	% of Sector	1 Mo (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Return (%)	Since
WCM Focused International Growth Fund	34,068,473	3.9	29.8	5.1	15.5	31.6	13.8	--	--	10.0	Jun-14
MSCI ACWI ex USA				*5.6*	*17.7*	*29.7*	*9.9*	*7.1*	*3.4*	*5.7*	*Jun-14*
Foreign MStar MF Median				*5.3*	*16.6*	*29.6*	*10.4*	*8.5*	*4.1*	*6.3*	*Jun-14*
Foreign MStar MF Rank				*61*	*62*	*35*	*14*	--	--	*10*	*Jun-14*
Northern Trust MSCI EAFE Index	44,775,823	5.1	39.1	5.1	15.2	27.7	--	--	--	28.7	Jan-17
MSCI EAFE				*5.0*	*15.4*	*27.6*	*9.4*	*7.8*	*3.4*	*28.6*	*Jan-17*
Foreign MStar MF Median				*5.3*	*16.6*	*29.6*	*10.4*	*8.5*	*4.1*	*31.3*	*Jan-17*
Foreign MStar MF Rank				*60*	*66*	*68*	--	--	--	*76*	*Jan-17*
Emerging Market Equity	**102,772,992**	**11.8**	**11.8**	**8.6**	**24.8**	**38.9**	**12.7**	**--**	**--**	**9.8**	**Dec-13**
MSCI Emerging Markets				*8.3*	*25.6*	*41.0*	*11.8*	*5.7*	*3.9*	*8.1*	*Dec-13*
Dimensional Emerging Markets Value	47,338,323	5.4	46.1	8.8	23.9	36.9	12.6	--	--	7.7	Dec-13
MSCI Emerging Markets Value NR USD				*8.7*	*22.5*	*33.2*	*9.4*	*3.1*	*3.0*	*5.6*	*Dec-13*
MSCI Emerging Markets				*8.3*	*25.6*	*41.0*	*11.8*	*5.7*	*3.9*	*8.1*	*Dec-13*
Diversified Emerging Mkts MStar MF Median				*7.1*	*23.0*	*38.5*	*11.3*	*5.9*	*4.0*	*7.7*	*Dec-13*
Diversified Emerging Mkts MStar MF Rank				*12*	*45*	*62*	*29*	--	--	*51*	*Dec-13*
Northern Trust Emerging Markets Index	55,434,669	6.4	53.9	8.4	25.5	40.7	--	--	--	31.9	Jun-16
MSCI Emerging Markets				*8.3*	*25.6*	*41.0*	*11.8*	*5.7*	*3.9*	*32.1*	*Jun-16*
Diversified Emerging Mkts MStar MF Median				*7.1*	*23.0*	*38.5*	*11.3*	*5.9*	*4.0*	*28.9*	*Jun-16*
Diversified Emerging Mkts MStar MF Rank				*17*	*32*	*35*	--	--	--	*28*	*Jun-16*
U.S. Core Bond Assets	**147,386,860**	**16.9**	**16.9**	**-1.2**	**0.0**	**2.0**	**2.6**	**--**	**--**	**0.9**	**Apr-13**
BBgBarc US Aggregate TR				*-1.2*	*0.1*	*2.1*	*1.1*	*2.0*	*3.7*	*1.8*	*Apr-13*
Northern Trust Barclays Aggregate Index	147,386,860	16.9	100.0	-1.2	0.0	2.1	--	--	--	2.3	Dec-15
BBgBarc US Aggregate TR				*-1.2*	*0.1*	*2.1*	*1.1*	*2.0*	*3.7*	*2.4*	*Dec-15*
Intermediate-Term Bond MStar MF Median				*-0.9*	*0.4*	*2.6*	*1.5*	*2.2*	*4.2*	*3.1*	*Dec-15*
Intermediate-Term Bond MStar MF Rank				*87*	*75*	*70*	--	--	--	*78*	*Dec-15*

	Market Value ($)	% of Portfolio	% of Sector	1 Mo (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Return (%)	Since
Treasury Inflation Protected Securities	**62,267,291**	**7.1**	**7.1**	**-0.9**	**1.3**	**1.4**	**--**	**--**	**--**	**-0.1**	**Jul-16**
BBgBarc US TIPS TR				*-0.9*	*1.3*	*1.3*	*0.7*	*0.1*	*3.0*	*-0.2*	*Jul-16*
Northern Trust TIPS	62,267,291	7.1	100.0	-0.9	1.3	1.3	--	--	--	-0.1	Jul-16
BBgBarc US TIPS TR				*-0.9*	*1.3*	*1.3*	*0.7*	*0.1*	*3.0*	*-0.2*	*Jul-16*
Inflation-Protected Bond MStar MF Median				*-0.7*	*1.2*	*1.2*	*0.6*	*-0.1*	*2.7*	*0.2*	*Jul-16*
Inflation-Protected Bond MStar MF Rank				*74*	*50*	*45*	*--*	*--*	*--*	*66*	*Jul-16*
Foreign Bond Assets	**38,488,999**	**4.4**	**4.4**	**4.4**	**7.2**	**15.2**	**3.8**	**--**	**--**	**2.4**	**Apr-13**
BBgBarc Global Aggregate TR				*1.2*	*4.1*	*7.5*	*2.5*	*1.2*	*2.9*	*1.2*	*Apr-13*
Brandywine Global Opportunistic Fixed Income	38,488,999	4.4	100.0	4.4	7.2	15.2	3.7	2.9	5.9	6.5	Jan-06
BBgBarc Global Aggregate TR				*1.2*	*4.1*	*7.5*	*2.5*	*1.2*	*2.9*	*4.0*	*Jan-06*
World Bond MStar MF Median				*1.1*	*3.8*	*7.9*	*2.8*	*1.9*	*4.0*	*4.5*	*Jan-06*
World Bond MStar MF Rank				*5*	*7*	*6*	*28*	*29*	*2*	*1*	*Jan-06*
High Yield Bonds	**39,200,152**	**4.5**	**4.5**	**0.3**	**3.2**	**7.4**	**4.0**	**--**	**--**	**5.0**	**Apr-13**
BBgBarc US High Yield TR				*0.6*	*3.1*	*6.6*	*6.3*	*5.6*	*8.2*	*5.2*	*Apr-13*
Loomis Sayles Multisector Full Discretion	39,200,152	4.5	100.0	0.3	3.2	7.4	4.0	4.3	7.0	7.5	Jan-06
BBgBarc US Govt/Credit TR				*-1.2*	*0.1*	*2.5*	*1.1*	*2.1*	*3.8*	*4.2*	*Jan-06*
BBgBarc US High Yield TR				*0.6*	*3.1*	*6.6*	*6.3*	*5.6*	*8.2*	*7.8*	*Jan-06*
Multisector Bond MStar MF Median				*0.2*	*2.4*	*5.2*	*3.8*	*3.6*	*5.8*	*5.8*	*Jan-06*
Multisector Bond MStar MF Rank				*41*	*26*	*16*	*46*	*23*	*6*	*1*	*Jan-06*

Total Retirement System Aggregate

As of January 31, 2018

	Market Value ($)	% of Portfolio	% of Sector	1 Mo (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Return (%)	Since
Core Real Estate	**15,444,138**	**1.8**	**1.8**	**0.0**	**2.0**	**5.4**	**8.8**	**10.1**	**5.8**	**7.4**	**Mar-06**
NCREIF ODCE Equal Weighted (Net)				*0.0*	*3.7*	*6.9*	*9.8*	*10.6*	*3.9*	*5.5*	*Mar-06*
Sentinel Real Estate Fund	15,444,138	1.8	100.0	0.0	2.0	5.4	8.8	10.1	5.8	7.4	Mar-06
NCREIF ODCE Equal Weighted (Net)				*0.0*	*3.7*	*6.9*	*9.8*	*10.6*	*3.9*	*5.5*	*Mar-06*
Natural Resources	**11,308,445**	**1.3**	**1.3**	**0.0**	**-11.3**	**-62.6**	**-30.3**	**--**	**--**	**-19.5**	**Apr-13**
S&P Global Natural Resources Index TR USD				*5.2*	*26.6*	*23.6*	*10.0*	*2.8*	*1.1*	*4.4*	*Apr-13*
Resource Environmental Solutions	11,308,445	1.3	100.0								
Private Debt	**43,063,058**	**4.9**	**4.9**	**-0.3**	**2.5**	**-1.6**	**3.7**	**--**	**--**	**5.4**	**Apr-13**
BBgBarc High Yield+2%				*0.8*	*4.3*	*8.7*	*8.4*	*7.7*	*10.4*	*7.3*	*Apr-13*
BlueBay Direct Lending Fund II, L.P.	26,673,892	3.1	61.9								
Republic Business Credit	16,120,857	1.9	37.4								
Franchise Equity Capital Partners II	268,309	0.0	0.6								
Private Equity	**9,748,752**	**1.1**	**1.1**	**0.0**	**-0.7**	**-54.1**	**-28.8**	**-18.8**	**-8.0**	**-8.0**	**Feb-08**
S&P 500 +3%				*6.0*	*19.8*	*30.1*	*18.1*	*19.3*	*13.0*	*13.0*	*Feb-08*
Capital Spring Finance Company	7,797,085	0.9	80.0								
Louisiana Fund II	1,534,176	0.2	15.7								
Capital Spring, LLC	417,491	0.0	4.3								

As of January 31, 2018

	Market Value ($)	% of Portfolio	% of Sector	1 Mo (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Return (%)	Since
Non-Core Real Estate	**10,839,038**	**1.2**	**1.2**	**0.0**	**0.0**	**-2.8**	**-4.7**	**-0.7**	**-0.4**	**1.3**	**Feb-06**
NCREIF Property (1-quarter lagged)				*0.0*	*3.5*	*6.9*	*9.8*	*10.4*	*6.2*	*8.0*	*Feb-06*
Bedico Creek Preserve	7,930,238	0.9	73.2								
Gainesville Vision	2,908,800	0.3	26.8								
Hedge Funds	**4,553,912**	**0.5**	**0.5**								
GoldenTree Offshore Fund, Ltd.	3,837,571	0.4	84.3								
Scoggin Worldwide Distressed Fund	716,341	0.1	15.7								
Cash	**7,286,414**	**0.8**	**0.8**								

Footnote Appendix

Item 1.	Fiscal year begins July 1.
Item 2.	All returns are presented net of management fees.
Item 3.	As of February 1, 2016 the policy benchmark performance is 50% equities (represented by 28% Russell 3000 index, 12% FTSE All World (ex. U.S.) index, 10% MSCI EM index), 35% public fixed income (represented by performance of Barclays Universal) and 15% alternatives (represented by 4% NCREIF Property Index, 3% S&P Global Natural Resources index, 3% Barclays High Yield + 2% index, 2% S&P 500 +3% index, 3% S&P Global Infrastructure index). Prior to February 1, 2016 the policy benchmark performance is 50% equities (represented by 26% Russell 3000 index, 12% MSCI EAFE index, 12% MSCI EM index), 15% public fixed income (represented by performance of Barclays Universal) and 35% alternatives (represented by 7% HFRI Fund WC, 7% NCREIF Property Index, 7% S&P Global Natural Resources index, 7% Barclays High Yield index, 7% S&P 500 +3% index).
Item 4.	Unless otherwise noted the market values for non-public market assets are based on most recent available data from each manager adjusted for subsequent cash flows (where applicable) through the performance date of this report.
Item 5.	The following investments market values are based on the most recent MERS plan level audit valuations prepared by the System's auditor (adjusted for subsequent cash flows where applicable): Resource Environmental Solutions, Republic Business Credit, Capital Springs Finance Company, Bedico Creek Preserve, Gainsville Vision.
Item 6.	Hedge fund investments are in liquidation. The remaining value in the GoldenTree Offshore fund is in an illiquid side-pocket.

Asset Study Comparison: 2018 vs. 2017 Projections

Asset Allocation Review Introduction

- The purpose of this review is to ensure the Retirement System's long-term asset allocation targets are still reasonable and prudent moving forward.
- The backbone of the analysis is based on a modeling technique called Mean Variance Optimization (MVO).
- MVO analysis seeks to predict what the long term expected return will be based on a selected asset mix.
- The inputs into the analysis (asset class return forecasts, asset class risk forecasts, asset class correlation forecasts) are quite important.
- In the first quarter of each year, Meketa Investment Group reviews these inputs as part of its Annual Asset Study.
- These inputs/forecasts are 20-year projections so they typically only change marginally year-over-year.
- Meketa Investment Group will review what impact these new forecasts have on the Retirement System's asset allocation.

Overview of Meketa Investment Group's Annual Asset Study

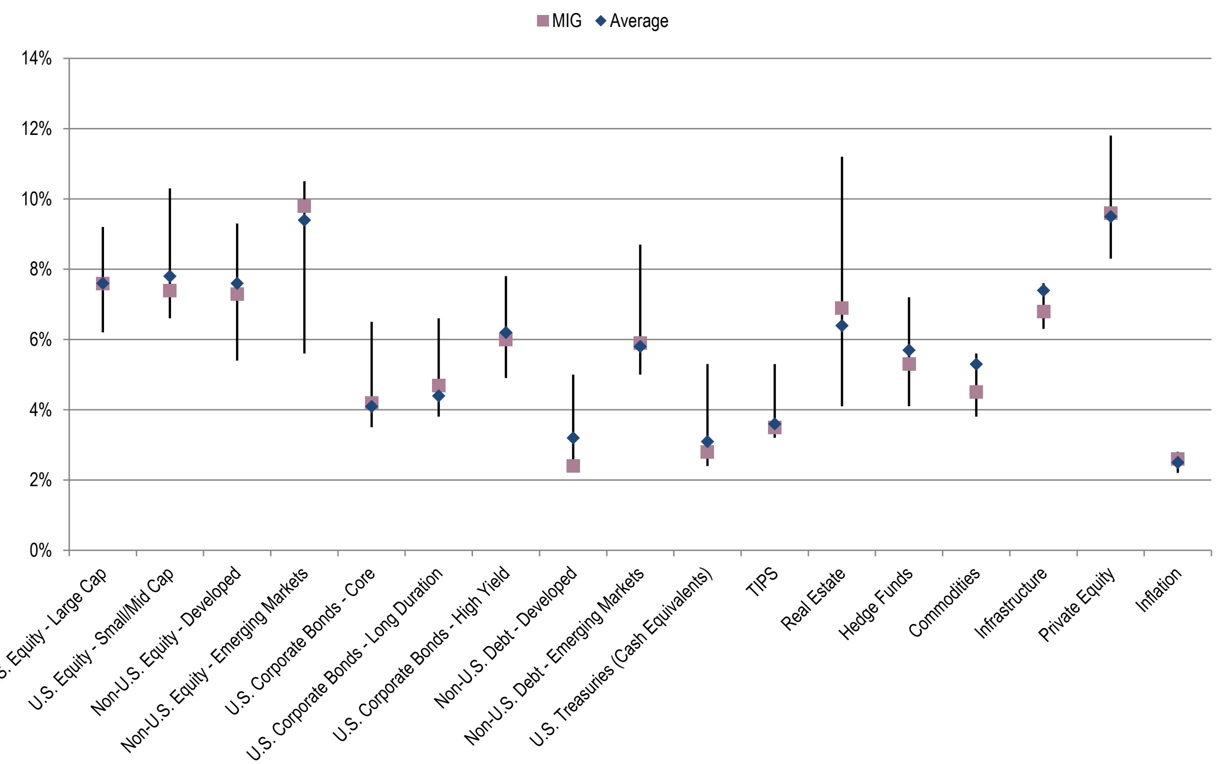
- Each year Meketa Investment Group conducts an Asset Study to attempt to forecast future expected returns, future expected risk and correlation measures for over 65 asset classes and sub-asset classes.
- The process relies on both quantitative and qualitative methodologies.
- First, we employ a large set of quantitative models to arrive at a set of baseline expected ten-year annualized returns for major asset classes.
- These models attempt to forecast a gross "beta" return for each *public market* asset class; that is, we specifically do not model "alpha," nor do we apply an estimate for management fees or other operational expenses[1].
- Our models are fundamentally based (based on some theoretically defined return relationship with current observable factors).
- Some of these models are more predictive than others. For this reason, we next overlay a qualitative analysis, which takes the form of a data-driven deliberation among the research team and our Investment Policy Committee.
- Return assumptions for hard-to-predict asset classes as well as those with limited data will be influenced more heavily by our qualitative analysis.
- As a result of this process, we form our ten-year annualized return expectations, which serve as the primary foundation of our longer-term, twenty-year expectations.
- We form our twenty-year annualized return expectations by systematically considering historical returns on an asset class by asset class level. Qualitative assessments are made on the value of the historical data and the confidence we have (or lack thereof) that the historical average return is representative of future returns.

[1] Our expectations are net of fees where passive management is not available (e.g., private markets and hedge funds).

Peer Industry Review

- Annually the Horizon Actuarial Survey compares asset class assumptions for over 30 investment consulting firms. The analysis is a good "sanity-check" to compare Meketa Investment Group's asset class forecasts to the forecasts of our industry peers.

Meketa 2017 Asset Study vs. Horizon 2017 Survey



Horizon Surrey Participants

- The following firms participated in the 2017 Horizon Survey.

Arthur J. Gallagher & Co.	Morgan Stanley Wealth Management
Alan D. Biller and Associates	New England Pension Consultants (NEPC)
AndCo Consulting, LLC	Pavilion Advisory Group
Aon Hewitt	Pension Consulting Alliance
The Atlanta Consulting Group	Segal Marco Advisors
Bank of New York Mellon	The PFM Group
BlackRock	RVK
Callan Associates	Segal Rogerscasey
CapTrust	SEI
Ellwood Associates	Sellwood Consulting
Envestnet	Summit Strategies Group
Goldman Sachs Asset Management	SunTrust Investment Advisory Group
Graystone Consulting	UBS
Investment Performance Services, LLC (IPS)	Verus
J.P. Morgan Asset Management	Voya Investment Management
Marquette Associates	Wells Fargo Investment Institute
Meketa Investment Group	Willis Towers Watson
Merrill Lynch Global Institutional Consulting	

Annual Asset Study

- The following table illustrates the changes in expected return for each sub asset class that the Retirement System is invested in.

Expected Return Assumptions

	2017 Study Return Assumptions (%)	2018 Study Return Assumptions (%)	Return Difference (%)	Notes
Public Domestic Equity	7.5	7.3	-0.2	More expensive valuations
International Developed Non-U.S. Equity	7.3	7.1	-0.2	More expensive valuations
Emerging Markets Equity	9.8	9.4	-0.4	More expensive valuations
Investment Grade Bonds	3.5	3.6	+0.1	Higher interest rates
TIPS	3.5	3.3	-0.2	Lower real yields
High Yield Bonds	6.0	5.4	-0.6	Tighter spreads
Foreign Bonds/EMD	5.7	5.2	-0.5	Lower yields
Private Natural Resources	8.4	8.8	+0.4	Higher earnings expectations
Private Debt	6.8	6.6	-0.2	Lower coupons
Public Infrastructure	7.4	7.2	-0.2	More expensive valuations
Private Equity	9.6	9.3	-0.3	More expensive valuations
Core Real Estate	5.7	5.5	-0.2	Lower cap rates
Retirement System Expected Return	**7.3**	**7.0**	**-0.3**	

Expected Risk Assumptions

- The following table illustrates the changes in expected standard deviation for each sub asset class that the Retirement System is invested in.

	2017 Study Risk Assumptions (%)	2018 Study Risk Assumptions (%)	Return Difference (%)
Public Domestic Equity	18.0	18.0	0.0
International Developed Non-U.S. Equity	20.0	20.0	0.0
Emerging Markets Equity	26.0	25.0	-1.0
Investment Grade Bonds	4.0	4.0	0.0
TIPS	7.5	7.5	0.0
High Yield Bonds	12.5	12.5	0.0
Foreign Bonds/EMD	13.3	13.0	-0.3
Private Natural Resources	23.0	23.0	0.0
Private Debt	20.0	17.0	-3.0
Public Infrastructure	19.0	18.0	-1.0
Private Equity	27.0	27.0	0.0
Core Real Estate	12.5	12.0	-0.5
Retirement System Expected Risk	**12.8**	**12.6**	**-0.2**

Summary

- Most asset class return expectations declined marginally, as a result of a strong 2017 and higher valuations.
- Most of the risk expectations stayed the same or declined marginally.

2017 vs. 2018 Comparison

	Expectations based on 2017 Asset Study (%)	Expectations based on 2018 Asset Study (%)	Difference From Prior Year (%)
Expected Return	7.3	7.0	-0.3
Standard Deviation	12.8	12.6	-0.2

- There is a 99% probability returns will be positive over a 20 year period.
- There is a 73% probability returns will be greater than 5.275% over a 20 year period.
- There is a 46% probability returns will be greater than 7.275%[1] over a 20 year period.
- There is a 21% probability returns will be greater than 9.275% over a 20 year period.

[1] The Retirement System's actuarial target return in fiscal year 2018 is 7.275%. For comparison purposes, we show the probabilities of generating a long term return 2% above and 2% below the target return.

Next Steps

- Based on this analysis, the Retirement System has three choices to consider regarding its asset allocation:

- **Option 1: - Do nothing. Make no changes to asset allocation.**
  - The current asset allocation policy has a long term expected return of 7.0% which exactly matches the long term actuarial target return of 7.0%.[1]

- **Option 2 – Increase risk exposure such that the long term expected return increases to match this fiscal year's actuarial target.**
  - Timing may not be best to increase equity/risk exposure given strong market performance the last 18 months.

- **Option 3 – Consider reducing the actuarial target faster to its long term target of 7.0% to match the current long term expected return projection.**
  - Potentially politically challenging and potentially not advisable based on actuary's calculations.

[1] Effective June 2017,the Retirement System adopted a four year plan to reduce its actuarial return assumption to 7.0%. The actuarial return targets per fiscal year are: 7.4% target in fiscal year 2017, 7.275% target in fiscal year 2018, 7.175% target in fiscal year 2019, and 7.0% target in fiscal year 2020 and beyond.

Disclaimer, Glossary, and Notes

Disclaimer

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Meketa Investment Group has prepared this report on the basis of sources believed to be reliable. The data are based on matters as they are known as of the date of preparation of the report, and not as of any future date, and will not be updated or otherwise revised to reflect information that subsequently becomes available.

In general, the valuation numbers presented in this report are prepared by the custodian bank for listed securities, and by the fund manager or appropriate General Partner in the case of unlisted securities. The data used in the market comparison sections of this report are sourced from various databases. These data are continuously updated and are subject to change.

This report does not contain all the information necessary to fully evaluate the potential risks of any of the investments described herein. Because of inherent uncertainties involved in the valuations of investments that are not publicly traded, any estimated fair values shown in this report may differ significantly from the values that would have been used had a ready market for the underlying securities existed, and the differences could be material. Note that for unlisted securities the valuations may be lagged by one or more calendar quarters, or may reflect original cost.

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In some cases Meketa Investment Group assists the Trustees in handling capital calls or asset transfers among investment managers. In these cases we do not make any representations as to the managers' use of the funds, but do confirm that the capital called or transferred is within the amounts authorized by the Trustees.

Credit Risk: Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security.)

Duration: Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

Information Ratio: This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

Market Capitalization: For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

Market Weighted: Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

Maturity: The date on which a loan, bond, mortgage or other debt/security becomes due and is to be paid off.

Prepayment Risk: The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

Price-Book Value (P/B) Ratio: The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

Price-Earnings (P/E) Ratio: A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about is future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

Quality Rating: The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

Sharpe Ratio: A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

Standard Deviation: A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

STIF Account: Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

Style: The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

Yield to Maturity: The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a "basis book." For example, a 5% bond pays $5 a year interest on each $100 par value. To figure its current yield, divide $5 by $95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay $100 for the bond that can be bought now for $95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

$$\frac{5\%\text{ (discount)}}{5\text{ (yrs. to maturity)}} = 1\%\text{ pro rata, plus } 5.26\%\text{ (current yield)} = 6.26\%\text{ (yield to maturity)}$$

Sources: Investment Terminology, International Foundation of Employee Benefit Plans, 1999.
The Handbook of Fixed Income Securities, Fabozzi, Frank J., 1991.

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Throughout this report, numbers may not sum due to rounding.

Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.