

Board of Trustees



Handout Book

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**Louisiana State Employees' Retirement System
Investment Committee Meeting
June 27, 2019**

The Investment Committee of the Louisiana State Employees' Retirement System met on Thursday, June 27, 2019, in the fourth floor Board Room of the Retirement Systems building, 8401 United Plaza Boulevard, Baton Rouge, Louisiana.

Ms. Beverly Hodges, Committee Chair, called the meeting to order at 1:24 p.m. Ms. Jennifer Adams, recording secretary, conducted roll call.

ROLL CALL

Members present: Mr. Thomas Bickham; Ms. Virginia Burton; Ms. Beverly Hodges; Judge William Kleinpeter; Ms. Amy Mathews, Designee – Louisiana State Treasurer; Mr. Rick McGimsey, Designee – Commissioner of Administration; Ms. Janice Lansing; Ms. Lorry Trotter; Ms. Shannon Templet; Ms. Lori Pierce and *State Treasurer John Schroder

Members absent: Ms. Barbara McManus; Senator Barrow Peacock; and Representative Kevin Pearson

Staff present: Ms. Cindy Rougeou, Executive Director; Ms. Maris LeBlanc, Deputy Director & Chief Operating Officer; Mr. Trey Boudreaux, Chief Administrative Officer; Mr. Bobby Beale, Chief Investment Officer; Ms. Jennifer Adams, recording secretary; Investment Staff: Ms. Laney Sanders, Mr. Darren Fournier, Ms. Celeste Funderburk, Ms. Alisa Lacombe; Mr. Jacques Brousseau; Mr. Reeves Pearce; and Mr. Sam Chastain

Also Present: Mr. Rhett Humphreys, NEPC LLC; Mr. David Barnes, NEPC LLC; Ms. Margaret Corley, Louisiana Senate Retirement Committee

*Ms. Margaret Corley joined the meeting at 1:36 p.m.

*Mr. John Schroder joined the meeting at 1:51 p.m.

PUBLIC COMMENT

Ms. Mathews introduced Philip Qualls with the Department of Treasury.

REGULAR BUSINESS

The committee considered the minutes of the May 16, 2019, Investment Committee meeting. **Judge Kleinpeter moved seconded by Mr. Bickham, to approve the minutes of the May 16, 2019, Investment Committee meeting. With no further discussion, and no objections, the motion carried.**

NEW BUSINESS

Annual Custodial Review

Mr. William Claxton and Ms. Jerri Jones, with BYN Mellon, appeared before the committee to present the annual custodian review.

Monthly Performance Review

Mr. Beale presented the monthly performance review, stating that, as of May 31, 2019, the Total Plan return was -0.2% Fiscal-Year-to-Date

Annual Consultant Review with Investment Committee

Mr. Humphreys and Mr. Barnes discussed the annual consultant review with the Board.

OTHER BUSINESS

With no other business brought before the committee, the meeting adjourned at 2:42 p.m.

Fiscal Year-End 2019

Performance Review and Asset Class Discussion

July 25, 2019

Fiscal Year *Preliminary* Return

June 30, 2019



	2019 FYE Return
LASERS Total Plan	4.1%

Final June 30, 2019 returns will be available mid to late August, and will distributed at the August Investment Committee meeting.

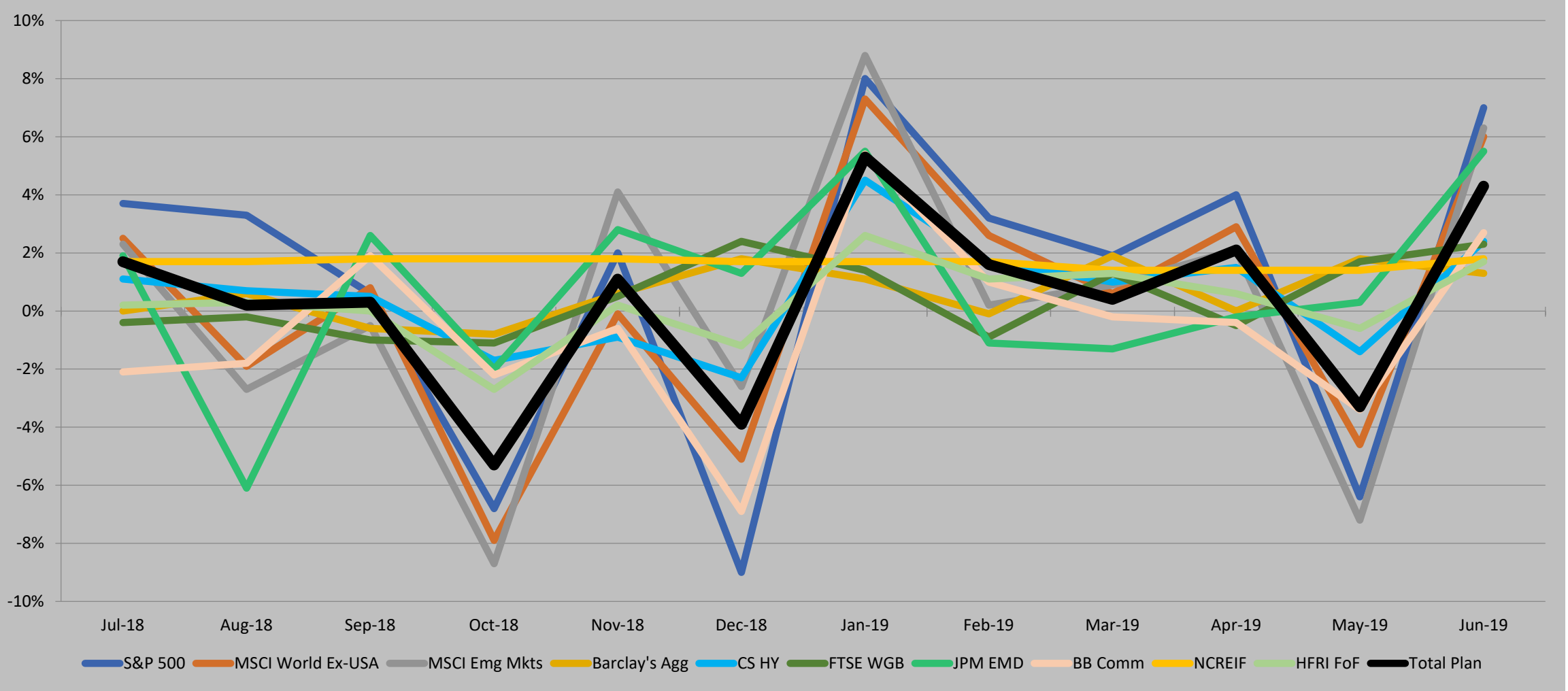
Major Indices Performance

Fiscal Year Returns



Major Indices Performance

Fiscal Year Returns



Major Indices Performance

During Fiscal Year

	July '18	Aug '18	Sep '18	Oct '18	Nov '18	Dec '18	Jan '19	Feb '18	Mar '19	Apr '19	May '19	June '19*	FYE
LASERS TP	1.7	0.2	0.3	-5.3	1.1	-3.9	5.3	1.6	0.4	2.1	-3.3	4.3	4.1
<u>Index</u>													
S&P 500	3.7	3.3	0.6	-6.8	2.0	-9.0	8.0	3.2	1.9	4.0	-6.4	7.0	10.4
MSCI Wrld Ex-USA	2.5	-1.9	0.8	-7.9	-0.1	-5.1	7.2	2.6	0.6	2.9	-4.6	6.0	1.8
MSCI Emg	2.3	-2.7	-0.5	-8.7	4.1	-2.6	8.8	0.2	0.9	2.1	-7.2	6.3	1.6
BC Agg	0.0	0.6	-0.6	-0.8	0.6	1.8	1.1	-0.1	1.9	0.0	1.8	1.3	7.9
CS HY	1.1	0.7	0.5	-1.7	-0.9	-2.3	4.5	1.7	1.0	1.5	-1.4	2.4	7.1
FTSE Wrld GB	-0.4	-0.2	-1.0	-1.1	0.5	2.4	1.4	-0.9	1.3	-0.5	1.7	2.3	5.5
JPM EMD	1.9	-6.1	2.6	-2.0	2.8	1.3	5.5	-1.1	-1.3	-0.2	0.3	5.5	9.0
BB Comm	-2.1	-1.8	1.9	-2.2	-0.6	-6.9	5.4	1.0	-0.2	-0.4	-3.4	2.7	-6.8
NCREIF~	1.7	1.7	1.8	1.8	1.8	1.7	1.7	1.7	1.4	1.4	1.4	1.8	6.8
HFRI FoF	0.2	0.3	0.0	-2.7	0.2	-1.2	2.6	1.1	1.3	0.6	-0.6	1.7	3.4

*LASERS TP Return shown for June '19 and FYE is preliminary.

~NCREIF returns are quarterly.

LASERS Monthly Returns

During Fiscal Year



	July '18	Aug '18	Sept '18	Oct '18	Nov '18	Dec '18	Jan '19	Feb '19	Mar '19	Apr '19	May '19	June '19*	FYE
Total Equity	2.7	0.5	-0.1	-8.2	1.5	-6.6	8.3	2.4	-.01	3.2	-6.2	6.4	2.4
Total Fixed Income	1.0	-0.7	0.7	-1.2	-0.1	-0.6	2.9	0.8	0.9	0.8	0.2	2.1	6.8
Total Alts	.04	-.03	0.9	-0.8	1.1	-0.1	1.1	0.3	1.1	0.8	0.2	1.8	6.7
Total Plan	1.7	0.2	0.3	-5.3	1.1	-3.9	5.3	1.6	0.4	2.1	-3.3	4.3	4.1
Total Plan FYTD	1.7	2.0	2.3	-3.1	-2.0	-5.8	-0.8	0.7	1.2	3.3	-0.2	4.1	4.1

*LASERS Total Plan Return shown for June '19 and FYE is preliminary.

LASERS Historical Returns

Preliminary - As of June 30, 2019



	1 Year	2 Years	3 Years	5 Years	7 Years	10 Years
Total Plan	4.1	6.8	9.7	5.6	8.3	9.7
Total Equity	2.4	6.2	10.9	5.6	9.8	11.0
Total Fixed Income	6.8	4.7	5.9	3.8	5.0	7.3
Total Alternatives	6.7	9.3	9.4	6.2	7.4	8.5

Major Indices Historical Returns

As of June 30, 2019

	1 Year	2 Years	3 Years	5 Years	7 Years	10 Years
LASERS Total Plan <i>(preliminary)</i>	4.1	6.8	9.7	5.6	8.3	9.7
<u>Index</u>						
S&P 500	10.4	12.4	14.2	10.7	14.0	14.7
MSCI World Ex-USA	1.8	4.7	9.6	2.6	7.5	7.3
MSCI Emerging Mkts	1.6	5.0	11.1	2.9	4.5	6.2
Bloomberg Barclay's Aggregate	7.9	3.7	2.3	2.9	2.6	3.9
Credit Suisse HY	7.1	4.9	7.6	4.5	6.2	9.0
FTSE World Govt Bond	5.5	3.7	1.0	0.8	0.9	2.2
JPM GBI-EM Global Diversified	9.0	3.2	4.2	-0.5	0.4	3.4
HFRI FoF Composite	3.4	4.8	5.0	2.7	4.0	3.4
Bloomberg Commodity	-6.8	0.0	-2.2	-9.1	-6.7	-3.7

LASERS 10-year Annualized Returns

Each Year Over Last Decade



As of June 30,	10-yr Return	10-yr % Ranking	Market Value (\$millions)
2010	3.8%	30	\$7,686.2
2011	6.7%	18	\$9,252.1
2012	7.4%	14	\$9,004.1
2013	8.2%	19	\$9,783.1
2014	8.2%	17	\$10,995.7
2015	7.4%	21	\$10,745.9
2016	5.9%	52	\$10,047.4
2017	5.6%	50	\$11,012.2
2018	7.0%	40	\$11,490.9
2019*	9.7%	n/a	\$11,527.8

*Data listed for 2019 is preliminary.

July 2019 Update

July MTD Performance as of July 22nd was approximately 0.4%

LASERS
SUMMARY OF MANAGER PERFORMANCE
RATES OF RETURN
TOTAL GROSS OF FEES
(For Period Ending June 30, 2019)
****PRELIMINARY****

	Contract Exp. Date	Approx. Mgt. Fees	Curr. Mkt. Value (\$M)	Month	3 mos	YTD	Fiscal YTD	1 Year	2 Years	3 Years	4 Years	5 Years	6 Years
U.S. EQUITY													
LARGE CAP VALUE													
AJO, LP	03/31/22	22.2 bps	\$ 234.2	8.1	4.1	16.7	4.0	4.0	8.3	12.2	7.6	7.6	10.3
S&P 500 VALUE INDEX				8.1	4.0	16.7	8.7	8.7	8.1	10.6	8.8	7.9	10.1
S&P 500 INDEX				7.0	4.3	18.5	10.4	10.4	12.4	14.2	11.5	10.7	12.9
TOTAL LARGE VALUE		22.2 bps	\$ 234.2	8.1	4.1	16.7	4.0	4.0	8.3	12.2	7.6	7.6	10.3
LARGE CAP INDEX FUNDS													
LASERS S&P 500 INDEX FUND		1.3 bps	\$ 1,238.6	7.1	4.4	18.6	10.5	10.5	12.4	14.2	11.5	10.7	12.9
S&P 500 INDEX				7.0	4.3	18.5	10.4	10.4	12.4	14.2	11.5	10.7	12.9
TOTAL DOMESTIC LARGE CAP		4.6 bps	\$ 1,472.8	7.2	4.3	18.3	9.1	9.1	11.6	13.8	10.8	10.1	12.5
MID CAP INDEX FUNDS													
LASERS S&P 400 INDEX FUND		1.3 bps	\$ 451.0	7.7	3.1	18.0	1.3	1.3	7.3	10.9	8.5	8.1	10.8
S&P MIDCAP 400 INDEX				7.6	3.0	18.0	1.4	1.4	7.3	10.9	8.4	8.0	10.7
TOTAL DOMESTIC MID CAP INDEX		1.3 bps	\$ 451.0	7.7	3.1	18.0	1.3	1.3	7.3	10.9	8.5	8.1	10.8
SMALL CAP GROWTH													
RICE HALL JAMES	07/31/20	0.0bps	\$ 202.9	6.5	3.5	16.7	-3.5	-3.5	5.2	9.2	3.4	5.5	7.9
S&P 600 GROWTH INDEX				7.1	2.5	13.6	-2.3	-2.3	9.4	13.7	9.9	9.9	12.3
S&P SMALLCAP 600 INDEX				7.4	1.9	13.7	-4.9	-4.9	7.1	12.0	8.8	8.4	11.1
TOTAL SMALL GROWTH		0.0bps	\$ 202.9	6.5	3.5	16.7	-3.5	-3.5	5.2	9.2	3.4	5.5	7.9
SMALL CAP VALUE													
LSV	05/31/21	55.9 bps	\$ 201.6	8.7	0.3	11.2	-9.7	-9.7	0.4	7.5	5.6	6.0	9.9
S&P 600 VALUE INDEX				7.8	1.3	13.9	-7.2	-7.2	4.9	10.2	7.8	7.0	9.8
S&P SMALLCAP 600 INDEX				7.4	1.9	13.7	-4.9	-4.9	7.1	12.0	8.8	8.4	11.1
TOTAL SMALL VALUE		55.9 bps	\$ 201.6	8.7	0.3	11.2	-9.7	-9.7	0.4	7.5	5.3	5.0	8.2
SMALL CAP INDEX FUNDS													
LASERS S&P 600 INDEX FUND		1.3 bps	\$ 282.7	7.4	2.0	13.7	-4.8	-4.8	7.1	12.0	8.8	8.4	11.1
S&P SMALLCAP 600 INDEX				7.4	1.9	13.7	-4.9	-4.9	7.1	12.0	8.8	8.4	11.1
TOTAL DOMESTIC SMALL CAP		16.9 bps	\$ 687.2	7.5	1.9	13.9	-5.8	-5.8	4.4	9.7	5.8	6.2	9.0
TOTAL U.S. EQUITY		7.3 bps	\$ 2,611.0	7.4	3.5	17.1	3.5	3.5	8.9	12.2	9.0	8.7	11.2

LASERS
SUMMARY OF MANAGER PERFORMANCE
RATES OF RETURN
TOTAL GROSS OF FEES
(For Period Ending June 30, 2019)
****PRELIMINARY****

	Contract Exp. Date	Approx. Mgt. Fees	Curr. Mkt. Value (\$M)	Month	3 mos	YTD	Fiscal YTD	1 Year	2 Years	3 Years	4 Years	5 Years	6 Years
NON-U.S. EQUITY													
LARGE CAP VALUE													
MONDRIAN INVESTMENT PARTNERS	12/31/20	28.3 bps	\$ 227.0	6.1	1.6	12.1	4.2	4.2	4.6	8.2	4.7	3.0	6.8
MSCI WORLD EX-USA VALUE INDEX				5.4	2.1	10.9	-1.1	-1.1	2.1	9.2	2.9	0.6	4.7
MSCI WORLD EX-USA INDEX				6.0	4.1	15.1	1.8	1.8	4.7	9.6	4.5	2.6	5.9
TOTAL INT'L LARGE VALUE		28.3 bps	\$ 227.0	6.1	1.6	12.1	4.2	4.2	4.6	8.2	4.7	3.0	6.8
LARGE CAP CORE													
LASERS MSCI WORLD EX-USA INDEX FUND		1.3 bps	\$ 1,502.8	5.9	3.8	14.6	1.8	1.8	4.3	9.2	4.2	2.3	5.6
MSCI WORLD EX-USA INDEX				6.0	4.1	15.1	1.8	1.8	4.7	9.6	4.5	2.6	5.9
TOTAL INT'L LARGE CORE		1.3 bps	\$ 1,502.8	5.9	3.8	14.6	1.8	1.8	4.3	9.2	4.2	2.3	5.6
LASERS TERROR-FREE INT'L FUND		1.3 bps	\$ 29.1	5.9	4.2	15.0	2.9	2.9	4.4	10.0	4.7	2.9	6.2
MSCI WORLD EX-USA INDEX				6.0	4.1	15.1	1.8	1.8	4.7	9.6	4.5	2.6	5.9
TOTAL INT'L LARGE CAP		4.8 bps	\$ 1,758.9	5.9	3.5	14.2	2.2	2.2	4.4	9.0	4.3	2.4	5.8
INT'L SMALL CAP													
MONDRIAN INVESTMENT PARTNERS	02/14/21	70.2 bps	\$ 238.4	5.8	4.5	15.0	-1.7	-1.7	5.6	10.0	6.7	5.0	7.6
GOLDMAN SACHS	02/17/21	51.1 bps	\$ 344.7	5.4	1.9	13.4	-6.3	-6.3	3.4	9.9			
MSCI WORLD EX-USA SMALL CAP INDEX				4.6	2.0	13.2	-5.8	-5.8	2.9	8.8	5.7	3.8	7.8
TOTAL INT'L SMALL CAP		58.9 bps	\$ 583.1	5.6	2.9	14.0	-4.6	-4.6	4.2	9.9	6.8	5.0	7.7
EMERGING MARKETS													
CITY OF LONDON	08/31/24	93.0 bps	\$ 418.5	6.4	2.5	13.3	5.5	5.5	5.4	11.6	6.2	4.7	7.0
WESTWOOD GLOBAL EMERGING MKTS	OPEN	88.8 bps	\$ 284.3	4.7	0.9	3.1	-2.1	-2.1	2.5	10.2	5.7	3.3	5.8
LSV CUSTOM EMERGING MARKETS	08/22/23	50.0 bps	\$ 676.5	5.4	0.6	8.6	4.4	4.4	3.3	10.6	3.9	1.9	4.5
MSCI EMERGING MARKETS INDEX				6.3	0.7	10.8	1.6	1.6	5.0	11.1	4.9	2.9	4.7
TOTAL EMERGING MARKETS		71.0 bps	\$ 1,379.3	5.6	1.3	8.8	3.4	3.4	3.8	10.8	4.8	2.9	5.5
TOTAL NON-U.S. EQUITY													
		37.8 bps	\$ 3,721.3	5.7	2.6	12.1	1.5	1.5	4.1	9.8	4.7	2.8	5.8
TOTAL EQUITY													
		25.2 bps	\$ 6,332.3	6.4	2.9	14.1	2.4	2.4	6.2	10.9	6.7	5.6	8.4

LASERS
SUMMARY OF MANAGER PERFORMANCE
RATES OF RETURN
TOTAL GROSS OF FEES
(For Period Ending June 30, 2019)
****PRELIMINARY****

	Contract Exp. Date	Approx. Mgt. Fees	Curr. Mkt. Value (\$M)	Month	3 mos	YTD	Fiscal YTD	1 Year	2 Years	3 Years	4 Years	5 Years	6 Years
US FIXED INCOME													
INVESTMENT GRADE													
LOOMIS SAYLES & CO	12/31/19	17.5 bps	\$ 200.3	1.3	3.2	7.0	7.7	7.7	4.5	4.1	4.2	3.4	4.4
ORLEANS CAPITAL MGT	12/31/19	12.0 bps	\$ 145.2	1.6	3.2	6.9	8.1	8.1	3.8	2.7	3.6	2.8	3.3
BB BC US AGGREGATE BOND INDEX				1.3	3.1	6.1	7.9	7.9	3.7	2.3	3.2	2.9	3.2
TOTAL INVESTMENT GRADE		15.2 bps	\$ 345.5	1.4	3.2	6.9	7.8	7.8	4.1	3.5	3.9	3.1	3.9
HIGH YIELD													
JPMORGAN	06/30/22	27.0 bps	\$ 169.5	2.1	2.1	9.8	6.8	6.8	4.9	6.9	5.5	4.6	5.6
NOMURA	06/30/22	45.0 bps	\$ 165.3	1.8	2.0	8.8	4.3	4.3	4.8	8.0	6.6	5.2	6.9
CREDIT SUISSE HY INDEX				2.4	2.5	9.9	7.1	7.1	4.9	7.6	5.9	4.5	5.7
TOTAL HIGH YIELD		35.9 bps	\$ 334.8	1.9	2.0	9.3	5.7	5.7	4.9	7.5	6.1	4.9	6.3
TOTAL U.S. FIXED INCOME		25.4 bps	\$ 680.3	1.7	2.6	8.1	6.9	6.9	4.6	5.7	5.0	4.3	5.3
EMERGING MARKET DEBT (+)													
STONE HARBOR	10/02/22	52.5 bps	\$ 207.2	5.6	6.0	9.6	7.3	7.3	1.9	3.6	3.0	-1.2	-0.5
GRAMERCY*	OPEN	85.0 bps	\$ 100.7	0.6	1.3	5.7							
J.P. MORGAN GBI-EM GLOBAL DIVERSIFIED INDEX				5.5	5.6	8.7	9.0	9.0	3.2	4.2	3.7	-0.5	0.3
TOTAL EMERGING MARKET DEBT (+)		63.1 bps	\$ 307.9	4.0	4.4	8.2	6.1	6.1	1.3	3.2	2.7	-1.4	-0.7
GLOBAL MULTI-SECTOR (+)													
DOUBLELINE	05/05/21	60.0 bps	\$ 248.1	1.0	2.7	6.4	6.8	6.8	5.7				
GOLDENTREE	05/01/21	75.0 bps	\$ 251.5	1.5	2.9	9.0	7.1	7.1	7.0				
PIMCO*	OPEN	95.0 bps	\$ 173.8	3.9	3.9	7.2							
BLACKSTONE*	OPEN	78.1 bps	\$ 94.5	1.1	1.7	1.4							
ZAIS GROUP*	OPEN	62.5 bps	\$ 57.9	0.5									
50/50 BB BARCLAYS GLOBAL AGG/CS HY INDEX				2.3	2.9	7.8	6.5	6.5	4.3				
TOTAL GLOBAL MULTI-SECTOR (+)		65.2 bps	\$ 825.8	1.7	2.8	7.4	6.8	6.8	6.3				
TOTAL FIXED INCOME (+)		49.9 bps	\$ 1,814.1	2.1	3.0	7.8	6.8	6.8	4.7	5.9	5.1	3.8	4.7

LASERS
SUMMARY OF MANAGER PERFORMANCE
RATES OF RETURN
TOTAL GROSS OF FEES
(For Period Ending June 30, 2019)
****PRELIMINARY****

	Contract Exp. Date	Approx. Mgt. Fees	Curr. Mkt. Value (\$M)	Month	3 mos	YTD	Fiscal YTD	1 Year	2 Years	3 Years	4 Years	5 Years	6 Years
ALTERNATIVE ASSETS*													
PRIVATE MARKETS* (for breakout see pages 5-6)													
TOTAL PRIVATE MARKETS*		88.1 bps	\$ 1,754.2	1.2	3.9	3.7	10.1	10.1	15.1	14.5	12.3	11.7	12.9
ABSOLUTE RETURN STRATEGIES*													
BRIDGEWATER PURE ALPHA		191.3 bps	\$ 181.8	1.3	0.9	-2.9	2.6	2.6	4.8	6.3	1.8	2.3	3.5
PRISMA CAPITAL PARTNERS		65.0 bps	\$ 264.9	0.8	0.3	5.7	1.0	1.0	3.2	4.4	1.1	1.8	2.7
ENTRUST CAPITAL PARTNERS		108.8 bps	\$ 265.9	3.2	-0.4	4.9	-1.0	-1.0	-0.6	2.4	2.3	2.0	6.7
HFRI FUND OF FUNDS COMPOSITE INDEX				1.7	1.6	6.8	3.4	3.4	4.8	5.0	2.4	2.7	3.4
ABSOLUTE RETURN STRATEGIES*~		112.4 bps	\$ 719.9	-0.3	-0.9	1.5	-0.2	-0.2	1.8	3.7	0.9	1.2	2.9
~includes assets being liquidated: PAAMCO \$4.9m; Stark \$2.3m													
RISK PARITY*													
BRIDGEWATER CUSTOM		63.3 bps	\$ 430.5	3.6	2.9	8.9	5.3	5.3					
AQR CAPITAL MANAGEMENT		110.0 bps	\$ 404.4	6.4	4.8	17.8	7.5	7.5					
LASERS 8% NOMINAL BENCHMARK				0.6	1.9	3.9	8.0	8.0	8.0	8.0	8.0	8.0	8.0
TOTAL RISK PARITY*		85.9 bps	\$ 834.9	4.9	3.8	13.1	6.4	6.4	6.1	5.9	4.5	3.4	5.2
TOTAL ALTERNATIVE ASSETS*		92.8 bps	\$ 3,309.0	1.8	2.8	5.4	6.7	6.7	9.3	9.4	7.0	6.2	7.6
CASH EQUIVALENTS													
HOLDING ACCOUNT			\$ 72.4										
EB TEMPORARY INVESTMENT FUND		9.0 bps		0.21	0.65	1.30	2.49	2.49	2.05	1.64	1.33	1.10	0.94
90 DAY T-BILL INDEX				0.20	0.61	1.21	2.30	2.30	1.81	1.36	1.05	0.84	0.71
TOTAL PLAN													
FINANCIAL COMPOSITE		30.5 bps	\$ 8,218.8	5.4	3.0	12.7	3.2	3.2	5.9	9.9	6.4	5.3	7.7
FINANCIAL ALLOCATION INDEX				5.6	3.0	13.4	3.2	3.2	6.4	10.2	6.8	5.5	7.8
FINANCIAL POLICY INDEX				5.7	3.1	13.5	3.6	3.6	6.7	10.3	6.9	5.6	7.9
TOTAL PLAN		48.4 bps	\$ 11,527.8	4.3	2.9	10.5	4.1	4.1	6.8	9.7	6.5	5.6	7.6
TOTAL PLAN ALLOCATION INDEX				4.3	3.0	10.7	4.5	4.5	7.5	10.1	7.1	6.0	7.9
TOTAL PLAN POLICY INDEX				4.4	3.1	10.9	5.0	5.0	7.9	10.4	7.3	6.2	8.0
<p>Cells highlighted in green represent performance above the benchmark. Cells highlighted in yellow represent manager performance below the benchmark. Cells highlighted in red represent asset class performance below the benchmark. Royal blue lines represent specific benchmarks. Light blue lines represent broad benchmarks. *Net of fee information is reported. (+) Composite is mixed, containing both gross-of-fee and net-of-fee portfolios.</p>										LONG TERM RETURNS FOR TOTAL PLAN			
										7 Years	8 Years	9 Years	10 Years
										8.3	7.3	9.1	9.7

LASERS
SUMMARY OF MANAGER PERFORMANCE
RATES OF RETURN
TOTAL NET OF FEES
(For Period Ending June 30, 2019)
****PRELIMINARY****

	Vintage Year	Contract Exp. Date	Commit. Amount	Approx. Mgt. Fees	Curr. Mkt. Value (\$M)	Month	3 mos	YTD	Fiscal YTD	1 Year	2 Years	3 Years	4 Years	5 Years	6 Years
PRIVATE MARKETS BREAKOUT															
ADAMS STREET 2005 NON-US	2005	12/31/20	\$ 15.0	18.6 bps	\$ 3.3	3.3	3.3	-1.0	-2.1	-2.1	5.2	7.8	6.1	3.5	5.3
ADAMS STREET PARTNERSHIP 2002 US	2002	12/31/19	\$ 15.0	0.0 bps	\$ 1.5	4.4	4.4	-2.7	3.3	3.3	6.2	9.4	6.9	6.8	9.1
ADAMS STREET PARTNERSHIP 2005 US	2005	12/31/20	\$ 35.0	18.6 bps	\$ 7.4	6.5	6.5	-0.1	7.4	7.4	8.7	10.2	7.8	8.5	10.4
ADAMS STREET 2007 US FUND	2007	12/31/19	\$ 27.5	30.0 bps	\$ 14.6	12.7	12.7	12.7	16.2	16.2	16.1	16.9	14.2	15.0	16.4
ADAMS STREET 2007 NON-US	2007	12/31/19	\$ 17.5	30.0 bps	\$ 8.1	8.5	8.5	1.6	12.9	12.9	13.4	13.9	12.4	10.8	12.3
ADAMS STREET 2007 DIRECT	2007	12/31/19	\$ 5.0	60.0 bps	\$ 3.2	26.0	26.0	5.8	37.3	37.3	34.1	28.5	21.4	25.4	27.8
ADAMS STREET 2009 US FUND	2009	12/31/20	\$ 25.0	50.0 bps	\$ 21.0	6.3	6.3	8.6	14.6	14.6	15.9	15.7	13.0	13.9	14.6
ADAMS STREET 2009 NON-US DEV	2009	12/31/20	\$ 15.0	50.0 bps	\$ 9.5	4.0	4.0	6.0	17.5	17.5	18.5	19.7	17.6	14.0	13.9
ADAMS STREET 2009 NON-US EMG	2009	12/31/20	\$ 5.0	50.0 bps	\$ 5.8	7.1	7.1	7.2	6.5	6.5	12.3	12.0	11.4	13.2	12.6
ADAMS STREET 2009 DIRECT	2009	12/31/20	\$ 5.0	100.0 bps	\$ 3.1	3.4	3.4	-8.1	7.8	7.8	15.7	12.9	10.6	9.9	14.1
AEA INVESTORS FUND VI	2015	05/31/25	\$ 50.0	175.0 bps	\$ 45.6	0.0	-0.3	8.9	8.5	8.5	8.4	4.7			
BARING PE ASIA FUND VII	2018	08/08/28	\$ 100.0	175.0 bps	\$ 10.3	0.0									
BCP ENERGY SERVICES FUND A	2015	09/23/25	\$ 50.0	200.0 bps	\$ 44.6	-0.8	-3.7	-0.3	2.8	2.8	21.0	16.6			
BCP FUND II A	2017	12/31/27	\$ 75.0	200.0 bps	\$ 3.7	0.0	4.4								
BRINSON (ϕ)	'97-'03	termed out	\$ 202.8	0.0 bps	\$ 3.5	3.4	3.4	-2.9	5.8	5.8	5.2	4.9	3.6	0.9	2.8
BROOKFIELD CAPITAL IV	2015	05/31/25	\$ 50.0	175.0 bps	\$ 44.2	-0.5	11.2	29.8	23.8	23.8	90.1	64.5			
ADAMS STREET V	2003	08/08/19	\$ 15.0	0.0 bps	\$ 4.3	1.5	1.4	5.3	6.8	6.8	2.4	0.3	0.5	1.9	8.2
APOLLO INV FUND VII	2008	12/17/19	\$ 60.0	0.0 bps	\$ 10.5	-0.4	3.3	-11.9	-15.4	-15.4	-4.5	-2.1	-4.2	-2.5	5.4
APOLLO INV FUND VIII	2013	06/30/23	\$ 70.0	150.0 bps	\$ 60.5	0.0	3.6	-5.5	-3.2	-3.2	6.9	10.6	11.8	12.3	
APOLLO EUROPEAN FUND II	2011	12/31/19	\$ 100.0	175.0 bps	\$ 29.2	0.0	-1.1	-0.3	-5.5	-5.5	2.4	6.1	8.5	8.5	9.7
APOLLO INV FUND IX	2017	06/01/27	\$ 85.0	130.0 bps	\$ 6.8	0.0	49.1								
ARCLIGHT ENERGY FUND VI	2015	07/28/25	\$ 75.0	150.0 bps	\$ 67.6	-0.3	3.1	1.3	11.9	11.9	16.5	14.5			
CCMP CAPITAL III	2013	12/31/23	\$ 60.0	150.0 bps	\$ 63.0	0.0	2.8	-3.8	0.5	0.5	5.3	7.3	10.6	10.7	
CERBERUS VI	2016	08/31/26	\$ 125.0	150.0 bps	\$ 113.0	0.0	7.7	3.7	7.0	7.0	-3.7				
COLLER INTERNATIONAL PTNRS VI	2012	06/15/22	\$ 100.0	81.0 bps	\$ 33.8	0.0	3.4	7.0	17.6	17.6	22.8	18.4	17.8	15.1	17.2
COLLER INTERNATIONAL PTNRS VII	2015	12/31/25	\$ 75.0	150.0 bps	\$ 58.2	0.0	-3.2	-2.0	6.6	6.6	22.9	41.2			
DOUBLELINE MORTGAGE OPP FUND	2018	10/31/20	\$ 125.0	100.0 bps	\$ 96.4	0.0	1.6	7.8							
DRUG ROYALTY FUND III	2013	06/30/23	\$ 50.0	150.0 bps	\$ 7.5	0.1	4.0	17.0	20.9	20.9	39.8	30.2	28.1	21.8	
EIG ENERGY FUND XIV	2007	11/07/19	\$ 50.0	0.0 bps	\$ 5.4	-0.1	-4.3	-19.4	-18.4	-18.4	-1.6	4.2	-21.5	-21.8	-19.3
EIG ENERGY FUND XV	2010	06/06/20	\$ 40.0	125.0 bps	\$ 18.7	2.2	2.3	-1.1	4.4	4.4	1.6	6.3	2.3	0.5	1.2
EIG ENERGY FUND XVI	2013	05/13/23	\$ 70.0	125.0 bps	\$ 48.9	0.3	0.7	-1.5	-1.0	-1.0	8.2	18.3	12.9	-4.2	
ENERGY SPECTRUM FUND V	2007	04/01/20	\$ 30.0	0.0 bps	\$ 0.1	-0.2	-0.4	-69.5	-75.1	-75.1	-57.0	-37.1	-43.8	-43.4	30.9
ENERGY SPECTRUM FUND VI	2010	12/31/20	\$ 40.0	175.0 bps	\$ 9.7	-0.6	3.1	4.2	74.6	74.6	47.6	49.4	29.9	27.2	24.5
GTCR FUND XI	2014	05/21/23	\$ 50.0	135.0 bps	\$ 47.1	12.2	22.5	27.8	39.0	39.0	35.5	34.1	27.7		
GTCR Fund XII	2017	09/14/27	\$ 60.0	150.0 bps	\$ 11.9	11.3	20.5	6.3							
LOUISIANA GROWTH FUND	2004	11/13/19	\$ 50.0	50.0 bps	\$ 0.1	0.0	0.0	20.6	15.3	15.3	29.5	-6.9	-5.8	-0.8	0.1
LOUISIANA GROWTH FUND II	2007	06/26/20	\$ 73.5	50.0 bps	\$ 5.1	0.0	0.0	-0.3	12.8	12.8	42.3	36.9	26.0	22.5	26.4
GAMUT FUND I	2016	07/28/26	\$ 50.0	200.0 bps	\$ 17.1	1.6	1.4	10.1	13.9	13.9	-44.6				
GOLDMAN SACHS PEP IX	2007	12/31/19	\$ 100.0	10.7 bps	\$ 23.7	-0.9	-5.2	-5.2	2.9	2.9	10.2	14.0	13.4	12.7	13.9
GOLDENTREE DISTRESSED FUND III	2018	01/31/23	\$ 75.0	125.0 bps	\$ 6.9	0.0	7.6	4.7							
JOHN HANCOCK*	multiple	OPEN	\$ 55.5	0.0 bps	\$ 0.4	-0.3	52.9	52.9	51.1	51.1	-2.0	-3.2	-0.1	2.5	2.6
HIPEP PARTNERSHIP III	1997	12/31/19	\$ 60.0	0.0 bps	\$ 0.1	0.0	-0.3	-0.3	-7.2	-7.2	-5.6	-0.7	-4.0	-2.4	1.4

LASERS
SUMMARY OF MANAGER PERFORMANCE
RATES OF RETURN
TOTAL NET OF FEES
(For Period Ending June 30, 2019)
****PRELIMINARY****

	Vintage Year	Contract Exp. Date	Commit. Amount	Approx. Mgt. Fees	Curr. Mkt. Value (\$M)	Month	3 mos	YTD	Fiscal YTD	1 Year	2 Years	3 Years	4 Years	5 Years	6 Years
HARBOURVEST VI - BUYOUT	1999	termed out	\$ 25.0	0.0 bps	\$ 0.0	0.0	-0.2	-6.3	-4.0	-4.0	-6.7	-1.5	-2.3	-0.9	2.6
HARBOURVEST VI - DIRECT	1999	termed out	\$ 25.0	0.0 bps	\$ 1.8	12.6	22.7	22.7	27.9	27.9	-1.8	-4.9	-9.2	-3.5	-1.2
HARBOURVEST VI - PTNR	1999	termed out	\$ 150.0	0.0 bps	\$ 1.2	0.0	-5.1	-5.1	7.7	7.7	0.3	3.8	1.0	1.7	3.5
HIPEP DIRECT IV	2000	12/31/19	\$ 10.0	0.0 bps	\$ 0.3	13.0	10.9	10.9	-8.6	-8.6	41.3	39.7	17.6	8.0	24.6
HUFF ALTERNATIVE FUND	2001	10/15/19	\$ 32.5	0.0 bps	\$ 10.2	0.0	0.0	0.0	-2.4	-2.4	-1.5	4.1	3.0	3.5	3.0
INSIGHT VENTURE PARTNERS X	2017	07/14/27	\$ 50.0	175.0 bps	\$ 37.9	0.0	6.7	7.7	12.5	12.5					
KKR ASIAN FUND III	2017	05/31/28	\$ 50.0	125.0 bps	\$ 19.1	0.0	7.8	11.3	34.7	34.7					
MARATHON EUROPEAN CREDIT OPP	2012	12/31/19	\$ 100.0	0.0 bps	\$ 7.4	0.3	-0.1	6.7	14.2	14.2	19.5	14.9	13.5	11.1	10.9
MESIROW III	2005	04/06/20	\$ 23.0	40.0 bps	\$ 4.5	4.4	-2.7	-2.7	-1.4	-1.4	4.5	3.0	2.7	5.6	8.9
MESIROW IV	2006	11/21/19	\$ 60.0	37.2 bps	\$ 27.6	4.1	5.2	5.2	13.0	13.0	11.8	13.6	11.8	12.6	14.5
MESIROW V	2008	11/05/20	\$ 60.0	45.9 bps	\$ 48.1	4.7	8.1	8.1	17.6	17.6	17.4	19.3	17.4	17.2	18.4
NEWSTONE MEZZANINE II	2010	03/05/20	\$ 40.0	100.0 bps	\$ 5.8	0.0	3.2	14.5	17.5	17.5	15.6	13.1	11.3	14.8	13.9
OHA STRATEGIC CREDIT FUND II	2017	07/14/27	\$ 50.0	175.0 bps	\$ 8.7	0.8	3.9	7.5	14.3	14.3					
OAKTREE EUROPEAN FUND III	2011	03/31/22	\$ 45.1	175.0 bps	\$ 32.0	2.2	2.3	-0.9	6.2	6.2	9.0	12.2	10.5	8.7	10.3
PANTHEON EUROPE VI	2008	12/19/20	\$ 44.9	60.8 bps	\$ 16.5	8.6	8.5	7.3	25.1	25.1	19.2	19.6	17.4	13.8	14.8
PANTHEON VI	2004	07/12/19	\$ 50.0	38.4 bps	\$ 11.1	5.3	2.8	0.6	6.2	6.2	7.2	7.9	5.0	5.4	7.4
PANTHEON VII	2006	04/28/20	\$ 50.0	54.7 bps	\$ 19.9	4.9	2.9	-1.2	7.2	7.2	10.6	11.8	9.9	11.3	12.9
STEPSTONE FUND II	2006	05/12/20	\$ 50.0	37.5 bps	\$ 12.0	-16.2	-19.7	-19.7	2.3	2.3	12.3	13.4	11.4	13.3	16.2
STEPSTONE EUROPE FUND II	2010	12/15/22	\$ 25.9	50.0 bps	\$ 17.7	7.6	6.6	4.6	4.8	4.8	8.9	10.1	9.1	7.0	9.1
PRIVATE ADVISORS IV	2011	12/15/26	\$ 35.0	60.8 bps	\$ 19.5	2.9	2.9	2.2	19.4	19.4	22.0	21.2	17.0	16.7	16.0
PRIVATE ADVISORS V	2012	06/30/25	\$ 40.0	81.0 bps	\$ 37.6	9.2	9.2	8.6	24.4	24.4	21.0	18.1	17.4	16.2	11.9
PRIVATE ADVISORS VI	2014	06/30/26	\$ 40.0	90.0 bps	\$ 28.6	4.8	4.8	4.5	11.2	11.2	14.5	11.7	9.9	2.9	
Q-BLK II	2005	12/04/19	\$ 50.0	45.9 bps	\$ 14.5	0.5	0.5	11.8	12.7	12.7	14.1	10.5	6.8	8.4	10.2
Q-BLK III	2007	12/29/19	\$ 60.0	0.0 bps	\$ 24.9	1.5	1.5	11.9	16.0	16.0	16.6	12.8	10.9	11.3	13.2
SIGULER GUFF DOF III	2008	12/31/19	\$ 200.0	16.0 bps	\$ 30.5	0.0	-2.2	-2.3	0.9	0.9	5.9	8.2	6.1	6.4	7.8
SIGULER GUFF FUND IV	2011	09/03/23	\$ 40.0	45.4 bps	\$ 16.1	0.0	-0.8	1.5	2.3	2.3	5.0	6.8	7.2	7.6	8.8
SIGULER GUFF PELICAN GEM	2016	10/10/28	\$ 100.0	75.0 bps	\$ 60.4	1.0	1.8	3.2	6.0	6.0	11.1				
STERLING PARTNERS	2011	09/30/23	\$ 35.0	200.0 bps	\$ 17.5	0.0	-2.3	-10.9	-19.8	-19.8	-8.8	-11.6	-6.3	-4.0	-3.7
VISTA EQUITY PARTNERS IV	2011	03/31/22	\$ 35.0	150.0 bps	\$ 25.5	0.0	9.2	0.3	11.9	11.9	13.0	11.7	15.7	20.7	19.5
VISTA EQUITY PARTNERS V	2014	10/15/24	\$ 75.0	150.0 bps	\$ 86.4	0.0	5.1	4.1	20.2	20.2	36.0	28.9	25.4	21.4	
VISTA EQUITY PARTNERS VI	2015	03/11/26	\$ 100.0	150.0 bps	\$ 116.8	0.0	9.3	11.0	33.7	33.7	24.1	16.1			
VISTA EQUITY PARTNERS VII	2018	02/28/28	\$ 125.0	150.0 bps	\$ 17.0	0.1	4.7								
WARBURG PINCUS	2018	02/28/29	\$ 100.0	140.0 bps	\$ 0.5	-46.9	-61.1								
WILLIAMS CAPITAL	2004	termed out	\$ 30.0	0.0 bps	\$ 1.3	0.0	-0.2	-0.2	133.0	133.0	230.0	1.0	-6.0	-4.9	-2.5
TOTAL PRIVATE MARKETS*			\$ 4,443.2	88.1 bps	\$ 1,754.2	1.2	3.9	3.7	10.1	10.1	15.1	14.5	12.3	11.7	12.9
<small>(*) Brinson consists of five limited partnerships Private Markets fees are based on commitment amounts rather than market value.</small>															

LASERS FLASH REPORT

The return numbers are expressed¹ as percentages and are listed in columns 5-14

The far left hand column lists the asset class headings, investment managers, benchmarks and composites

The contract expiration date is listed in the second column

The % return for the month

Year to Date (YTD) is the % return since Jan. 1

The 1-6 year columns represent the % return per year for each number of years

	Contract Exp. Date	Mgt. Fees	MKT VAL \$ (Million)	Month	3 mos	YTD	Fiscal YTD	1 Year	2 Years
U.S. EQUITY									
LARGE CAP GROWTH									
GOLDMAN SACHS	01/31/08	44.0 bps	\$ 130.4	-0.5	6.4	10.7	11.5	10.7	7.7
CHICAGO EQUITY PARTNERS	01/31/08	30.0 bps	\$ 136.8	-0.1	5.3	15.0	11.3	15.0	10.4
S&P 500 / CITIGROUP GROWTH				0.4	5.6	11.0	12.1	11.0	6.0
S&P 500				1.4	6.7	15.8	12.7	15.8	10.2
TOTAL LARGE GROWTH		36.8 bps	\$ 267.2	-0.2	5.9	12.9	11.5	12.9	9.0

The broader benchmarks are in light blue and style specific ones in royal blue

The management fees charged are listed third (bps stands for basis points)
"36.8 bps" equals .368%

The market value column tells us the size of each account in millions. For example, \$267.2 equals \$267,200,000

Fiscal YTD is the % return since July 1

Green = manager outperformed style benchmark

Yellow = manager underperformed style benchmark

Red = composite underperformed style benchmark

LASERS FLASH REPORT

WHAT IS IT?

- A snapshot look at the composition and investment returns of LASERS Trust Fund
- Summary of investment manager performance

WHAT INFORMATION DOES IT PROVIDE?

- Asset classes and the investment managers we use to invest the money
- Fees charged by the investment managers who invest our money
- Amount of money we have allocated to each manager
- Investment returns of each investment

HOW CAN I USE THE INFORMATION?

- To evaluate investment manager returns against a set benchmark ⁽¹⁾ return
- To evaluate the return of each asset or asset class
- Analyze LASERS investments gains/losses over time

HOW DO I READ THE REPORT?

Left Side (Asset Classes)

Broken down by each investment manager

Blue lines are benchmarks used to evaluate asset class

Top (contract data & returns):

Management fees in basis points ⁽²⁾

Market value

Returns -

Month	% return that month
3 months	% return from the past 3 months
YTD	Year to date return (since January 1)
Fiscal YTD	Fiscal year to date return (since July 1)
1 year, 2 years, etc.	% return for the specified time period

Colors

Green – performance of asset was above benchmark (think *money*)

Yellow – manager performed below benchmark

Red – asset class as a whole performed below benchmark

Total Plan (last page of Flash Report)

Financial composite – portfolio excluding alternative investments asset class

Total plan – includes alternative investments

Policy index – return of portfolio based on allocation set forth in investment policy

Allocation index – return of portfolio based the actual allocation LASERS maintained
(Investment policy provides a model for allocation; however, small deviations from this model may occur to take advantage of certain market conditions.)

DEFINITIONS:

1. **Benchmark** – an index whose returns can be used to measure investment performance
2. **Basis Point (bps)** – 0.01%, 100 basis points equals 1%, investment managers charge fees as a percentage of the money invested, fees are usually defined in basis points



LOUISIANA STATE EMPLOYEES'
RETIREMENT SYSTEM

Investment Division

As of June 30, 2019

ASSET ALLOCATION

Asset Class	Target Weight	Actual Weight	Over/(Under) Weight
U.S. Equity	23%	22.6%	-0.4%
Non-U.S. Equity	32%	32.3%	0.3%
U.S. Fixed Income	6%	5.9%	-0.1%
Emerging Market Debt	3%	2.7%	-0.3%
Global Multi-Sector	7%	7.2%	0.2%
Private Markets	15%	15.2%	0.2%
Absoulte Return	7%	6.2%	-0.8%
Risk Parity	7%	7.2%	0.2%
Cash	0%	0.6%	0.6%

*Target weights listed above were approved March 2018.

ASOP 51 Risk Analysis/Disclosures & LASERS Actuarial Valuation

July 25, 2019

*Shelley Johnson, ASA, MAAA
Consulting Actuary*



FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

- I. What are ASOPs?
- II. New ASOP 51
- III. Current Proposed ASOP Revisions

I. What are ASOPs?

ASOPs = Actuarial Standards of Practice

- Provide guidance to actuaries when performing actuarial services, including guidance on what information should be disclosed
- Assures the public that actuaries are professionally accountable
- Actuarial Standards Board (ASB) reviews and evaluates current and emerging practices, and solicits a wide range of ideas and perspectives, then develops an exposure draft
- Proposed exposure draft is made public, with generally a 60-day comment period
- There may be multiple exposure drafts before draft becomes final

I. What are ASOPs?

General ASOPs:

- ASOP 1 – Introductory ASOP
- ASOP 17 – Expert Testimony
- ASOP 23 – Data Quality
- ASOP 25 – Credibility Procedures
- ASOP 41 – Actuarial Communications

Pension ASOPs:

- ASOP 4 – Pension Costs/Contributions
- ASOP 27 – Economic Assumptions
- ASOP 34 – Domestic Relations Actions
- ASOP 35 – Noneconomic Assumptions
- ASOP 44 – Asset Valuation Methods
- ASOP 51 – Assessment and Disclosure of Pension Plan Risks

I. What Are ASOPs?

- Recent increase in attention to disclosures regarding risk
- Long-standing ASOP language: “the actuary should consider what cautions regarding uncertainty or risk in any results should be included in the actuarial report.”
- ASOP 4 strengthened risk disclosure by requiring actuaries to:
 - Disclose that future measurements may differ significantly from current measurements
 - Provide potential range of future measurements, or disclose that limited scope of the assignment did not require this analysis
 - “Consider the uncertainty or risk inherent in the measurement assumptions and methods and how the actuary’s measurement treats such uncertainty or risk.”
- ASOP 51 significantly expands on recent ASOP 4 risk disclosures.

II. New ASOP 51:

Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions

- Actuarial funding valuations, determinations of contribution requirements, pricing of proposed plan changes, etc. require the use of assumptions regarding future economic and demographic experience.
- Those who rely on the results may not understand the effects of assumptions not matching actual future events.
- ASOP 51 was developed to help plan sponsors better understand plan risks
- Provides guidance to actuaries in assessing and disclosing risks that the actual cost of a pension plan may differ from expected cost

II. New ASOP 51

- Effective for actuarial work products with measurement dates beginning Nov. 1, 2018.
- Applies to funding valuations, projections and pricing of proposed plan changes, and risk assessments unrelated to funding or pricing
- Defines risk as potential of actual future measurements (such as pension obligations, actuarially determined contributions, and funded status) deviating from expected results due to actual experience that differs from the actuarial assumptions
- ASOP 51 recommended practices:
 - Identify and assess risks which may be anticipated to significantly affect plan's future financial condition
 - Recommend additional assessment if significantly beneficial
 - Calculate plan maturity measures which are significant to understanding risks
 - Identify historical measures which are significant to understanding risks

II. ASOP 51 - Examples of Risks

ASOP 51 examples of risk pertaining to public pension plans:

- Investment risk – the potential that long-term investment returns will differ from expected returns
- Longevity and other demographic risks – the potential that plan demographic experience (mortality, disability, retirement, etc.) will differ from expected experience
- Contribution risk – potential of future contributions deviating from expected future contributions. Examples:
 - Actual contributions are not made in accordance with plan's funding policy
 - Withdrawal liability assessments or other anticipated payments to the plan are not made
 - Other material changes occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base

II. ASOP 51 - Assessment of Risk

- Analysis can be qualitative or quantitative. Actuary, in discussions with system, will decide on most valuable analysis.
- Additional costs will likely result, particularly with quantitative assessments.
- In selecting the method to use, the actuary should use professional judgement and should consider:
 - The degree to which the methods and models reflect the nature, scale, and complexity of the plan, and
 - Practical considerations such as usefulness, reliability, timeliness, and cost efficiency.
 - One size does not fit all!

II. ASOP 51 - LASERS Initial Risk Assessment

Actuarial valuation report will now include a “Discussion of Risk” section which will include comments regarding the following risks:

- Investment risk
 - Investment risk is LASERS’s greatest risk, due to market volatility.
 - June 30, 2019 liabilities and funding status will be determined using a discount rate of 7.60%, which is based on an assumed long-term return of 8.00% with an average expected allocation to the experience account of 0.40% to fund future permanent benefit increases.
 - Prolonged periods of investment performance below the assumed rate of return (8.00%) can result in a decrease in funded status (i.e. increase in unfunded liabilities) and an increase in contributions required in future years.
 - Of course, the opposite is also true.

II. ASOP 51 - LASERS Initial Risk Assessment

- Longevity and other demographic risks
 - Demographic experience is less volatile, presents less risk for LASERS.
 - Assumptions are generally based on recent plan experience observed in the Experience Study, with consideration for expected future changes where appropriate.
 - Recent implementation of generational mortality improvement lessens risk of contribution increases due to future mortality improvement.
 - These assumptions are applied to large groups of individuals to reasonably estimate total plan liabilities. Experience on an individual basis may differ significantly from the assumptions resulting in future experience gains and losses.

II. ASOP 51 – LASERS Initial Risk Assessment

- Contribution risk

- Very little risk that actuarially required contribution will not be paid due to Louisiana statutory requirements
- Louisiana constitutional requirements further reduce this risk.
- Risk of small variance remains resulting from payroll volatility.
 - Since actual payroll will always differ from expected payroll, employer contribution rate times actual payroll will not exactly equal the actuarially determined contribution.
 - The result is a contribution variance deficit or surplus.
 - Deficits are amortized over a 5-year period; surpluses are credited to an existing amortization base.
 - Result is relatively small contribution volatility risk

II. ASOP 51 - Qualitative Assessment of Risk (Non-Numerical)

- Have actuarially required contributions been paid over the last 10 years? **Yes**
- Is funded ratio higher than it was 10 years ago? **No, just getting back to the pre-“great recession” level. 2008: 67.02%, 2018: 64.7%. However, the funded ratio has significantly increased over the last six years (from a low of 55.9% in 2012).**
- Based on current assumptions/methods, is UAL expected to be lower in 10 years? **Yes, significantly so, assuming actuarial assumptions are realized.**
- Does amortization method result in negative amortization (payment < interest due), open amortization, or back-loaded schedules? **No, legislation within last 10 years has eliminated back-loaded payment schedule and has accelerated pay-off of UAL, combined with level or near level payments.**

II. ASOP 51 - Qualitative Assessment of Risk (Non-Numerical)

- Likelihood of meeting/exceeding the expected return assumption
 - Greater than 50%, since this assumption includes some degree of conservatism.
 - The discount rate to be used in the June 30, 2019 actuarial valuation is 7.60%.
 - 0.40% is expected to be transferred to the experience account (long-term average)
 - Therefore, the expected return needed to fund plan benefits and expected transfers to the experience account is 8.00%.
 - This is less than LASERS's expected return provided by NEPC (LASERS' investment consultant) and less than the expected return for LASERS' target portfolio based on capital market assumptions reported in the most recent (2018) Horizon Actuarial Services survey of capital market assumptions.

II. ASOP 51 - Qualitative Assessment of Risk (Non-Numerical)

- Any change in active and/or inactive population in the last 10 years?
The LASERS active population has decreased from 10 years ago as a result of state layoffs, but has remained relatively stable in recent years, while the retiree population has increased (see slide 25). As a result, experience gains/losses may have a greater cost impact as a percentage of active member payroll.
- Any liabilities contingent on future experience? Are these accounted for in the assumptions and/or liabilities?
Future investment gains allocated to experience account to fund potential future permanent benefit increases. Liability is created upon legislative approval of the increase. By using a reduced discount rate, current liability anticipates that investment gains will be allocated to experience account rather than fund future plan benefits (in accordance with ASOP 27, paragraph 3.5.1).

II. ASOP 51 – Additional Assessment of Risk

When considering whether to recommend a more detailed study, the actuary should consider certain factors, including but not limited to:

- Findings of the actuary's risk assessment
- Size of plan (including size relative to the size of the plan sponsor)
- Maturity of the plan
- Funded status of the plan
- Plan's asset allocation
- Contribution allocation procedure (e.g. significantly backloaded)
- Extent known by actuary that future recommended contributions may not be made
- Length of time since last assessment
- Significant changes since last assessment

II. ASOP 51-Quantitative Assessment of Risk

- Sensitivity testing – Assesses the impact of an actuarial assumption change
Example: Impact to current normal cost, UAL, funded ratio, and employer contribution rate if discount rate were changed by +/- 1.0%
- Scenario testing – Assesses the impact of future possible event(s)
Example: Project funded ratios, UAL, and/or employer contribution rates under 3 market return scenarios for 2018/2019
 - Scenario 1: Return at 15.0% (2018/19), 7.5% thereafter
 - Scenario 2: Return at 7.5% (2018/19), 7.5% thereafter (baseline)
 - Scenario 3: Return at 0% (2018/19), 7.5% thereafter

II. ASOP 51-Quantitative Assessment of Risk

- Stress testing – Similar to scenario testing but assesses the impact of adverse changes in one or relatively few factors affecting a plan's financial condition.
 - Scenario 1: Return at 7.5% (2018/19), 7.5% thereafter (baseline)
 - Scenario 2: Return at 6% (2018/19 and thereafter)
 - Scenario 3: Return at 0% (2018/19), 6% thereafter
- Stochastic modeling – Generates a more sophisticated (so more costly) distribution of potential outcomes by allowing for random variation in one or more inputs over time; provides a probability of results for both normal and extreme outcomes. Still only as good as the input assumptions.
- Comparison to minimal-risk investments – Comparison using a discount rate derived from minimal-risk investments versus the plan's discount rate.

II. ASOP 51-Quantitative Assessment of Risk

- Should select “plausible” inputs, using actuary’s professional judgment.
- The purpose is not to feed gentle scenarios into the model to “prove” the System is “sustainable”.
- Likewise, the purpose is not to find an extreme set of scenarios to “prove” System is not sustainable.
- The purpose is to learn where potential stressors to the System are and to optimize policies and procedures (assumptions, funding procedures and methods, and perhaps even benefits) to improve sustainability and educate stakeholders of those potential risks.
- The focus is not on the outcomes, but on the decisions that should be considered based on the outcomes of the test.

II. ASOP 51 - Plan Maturity Measures

- For newer pension plans, most of the participants and associated liabilities are related to active members who have not yet reached retirement age.
- As plans mature, liabilities begin to shift from being primarily related to active members to being shared among active and retired members.
- Plan maturity is a measure of the extent to which this shift has occurred.
- Plan maturity can have an impact on the risk characteristics and risk tolerance of the plan.

II. ASOP 51 - Plan Maturity Measures

- The actuary should calculate and disclose current plan maturity measures that, in the actuary's professional judgment, are significant to understanding the risks associated with the plan, such as:
 - Ratio of market value of assets to payroll (Asset Volatility Ratio)
 - Ratio of a cash flow measure (benefits, or contributions less benefits) to market value of assets
 - Ratio of benefit payments to contributions
 - Ratio of retiree liability to total liability
 - Duration of the actuarial accrued liability
- Actuary should include discussion of the significance of these measures

II. ASOP 51 - Plan Maturity Measures

- Plans with a large amount of liability attributable to retirees
 - Have a shorter time horizon to recover from investment and other experience losses, therefore have less tolerance for risk.
 - May have a small positive or negative net cash flow, so may be more sensitive to near term investment volatility which can result in less assets being available for investment in the market.
 - This is particularly true if the size of the fund is shrinking.

II. ASOP 51 - Other Historical Information

- Historical information (such as 10-year history)
 - Plan maturity measures
 - Funding ratios
 - Actuarially determined contributions
 - Gains/Losses
 - Historical normal cost
 - Participant count
 - Covered payroll
 - Plan settlement liability (if applicable)

II. ASOP 51 - Plan Maturity and Other Measures

Funded Ratio

(dollar values shown in millions)

	Valuation Assets	Total Accrued Liability	Funded Ratio
2010	\$8,512	\$14,764	57.7%
2011	\$8,763	\$15,221	57.6%
2012	\$9,026	\$16,158	55.9%
2013	\$9,741	\$16,182	60.2%
2014	\$10,606	\$17,878	59.3%
2015	\$11,318	\$18,217	62.1%
2016	\$11,631	\$18,576	62.6%
2017	\$11,977	\$18,792	63.7%
2018	\$12,361	\$19,104	64.7%

- This ratio is a measure of valuation assets (determined as the actuarial value of assets less side-funds) in proportion to total accrued liability for all members.
- Generally reflects the financial health of the plan but should not be considered in isolation since changes in methods and assumptions may reduce the funded ratio but reduce future potential losses and contribution rate increases.
- Based on LASERS' funding policy, if all assumptions are realized, the funded ratio is expected to continue to increase.

II. ASOP 51 - Plan Maturity and Other Measures

Support Ratio

	Total Actives	Total Inactives	Actives / Inactives
2010	61,510	41,366	148.7%
2011	57,526	43,267	133.0%
2012	54,929	44,944	122.2%
2013	46,203	49,587	93.2%
2014	42,159	51,498	81.9%
2015	41,876	51,596	81.2%
2016	40,893	52,066	78.5%
2017	40,575	52,473	77.3%
2018	40,691	52,726	77.2%

- The annual reduction in total active membership slowed in 2015 and reversed in 2018.
- The growth in retiree/inactive members has been relatively steady since 2013.
- Ratio of Actives to Inactives has decreased substantially over the last 10 years. Should be monitored to be sure no cash flow/liquidity issues develop.

II. ASOP 51 - Plan Maturity and Other Measures

Asset Volatility Ratio

(dollar values shown in millions)

	MVA	Active Member Payroll	MVA / Active Member Payroll
2010	\$8,065	\$2,546	316.7%
2011	\$9,703	\$2,409	402.8%
2012	\$9,516	\$2,342	406.4%
2013	\$10,328	\$1,952	529.1%
2014	\$11,625	\$1,814	640.9%
2015	\$11,415	\$1,857	614.8%
2016	\$10,724	\$1,842	582.1%
2017	\$11,753	\$1,822	645.1%
2018	\$12,284	\$1,864	659.0%

- This ratio is a measure of the impact of investment volatility on employer contributions which are paid as a percentage of payroll.
- Although MVA growth that exceeds payroll growth may contribute to the financial stability of the plan, the amortization of changes in these higher asset values have a greater impact on contribution volatility as this ratio increases.

II. ASOP 51 - Plan Maturity and Other Measures

Accrued Liability Ratio

(dollar values shown in millions)

	Inactive Accrued Liability	Total Accrued Liability	Inactive AL/ Total AL
2010	\$9,419	\$14,764	63.8%
2011	\$10,158	\$15,221	66.7%
2012	\$11,030	\$16,158	68.3%
2013	\$11,981	\$16,182	74.0%
2014	\$13,073	\$17,878	73.1%
2015	\$13,327	\$18,217	73.2%
2016	\$13,692	\$18,576	73.7%
2017	\$13,978	\$18,792	74.4%
2018	\$14,244	\$19,104	74.6%

- This ratio is a measure of accrued liability for inactive members relative to the total accrued liability of the plan.
- More mature plans with a greater proportion of inactive liability have a shorter time period over which to make-up for investment or other experience losses.

II. ASOP 51 - Plan Maturity and Other Measures

Cash Flow Measures

(dollar values shown in millions)

	Contributions	Benefits	Contributions less Benefits	MVA	Ben / MVA	(Cont-Ben) / MVA
2010	\$709	\$884	(\$175)	\$8,065	11.0%	-2.2%
2011	\$770	\$976	(\$205)	\$9,703	10.1%	-2.1%
2012	\$863	\$1,041	(\$178)	\$9,516	10.9%	-1.9%
2013	\$856	\$1,151	(\$295)	\$10,328	11.1%	-2.9%
2014	\$787	\$1,262	(\$476)	\$11,625	10.9%	-4.1%
2015	\$888	\$1,255	(\$367)	\$11,415	11.0%	-3.2%
2016	\$886	\$1,292	(\$405)	\$10,724	12.0%	-3.8%
2017	\$840	\$1,331	(\$491)	\$11,753	11.3%	-4.2%
2018	\$891	\$1,378	(\$487)	\$12,284	11.2%	-4.0%

- Mature plans paying substantial retirement benefits resulting in small positive or negative cash flows may be more sensitive to near term investment volatility.
- Note investment returns result in significant asset growth despite the negative cash flow.

II. ASOP 51 - Plan Maturity and Other Measures

Experience Gains/(Losses)

(dollar values shown in millions)

	Investment Experience Gain/(Loss)	Other Experience Gain/(Loss)	Total Gain/(Loss)
2010	(\$495)	(\$136)	(\$631)
2011	(\$233)	\$146	(\$87)
2012	(\$255)	(\$40)	(\$294)
2013	\$321	\$429	\$750
2014	\$473	\$61	\$534
2015	\$281	(\$28)	\$254
2016	(\$250)	\$81	(\$169)
2017	(\$14)	\$100	\$85
2018	(\$20)	\$18	(\$2)

- As plan experience differs from actuarial assumptions, experience gains and losses will develop.
- If assumptions are appropriately determined, gains and losses are expected to offset over time. Consistent gains or losses may be an indication that actuarial assumptions need to be re-evaluated.
- LASERS' consistent "other" experience gains result primarily from salary and mortality assumptions. Recent changes following the experience study are expected to more closely mirror actual experience.

Questions?