

# INVESTMENT REVIEW

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**Public Pension Oversight Board**

September 24, 2018

# INVESTMENT REVIEW

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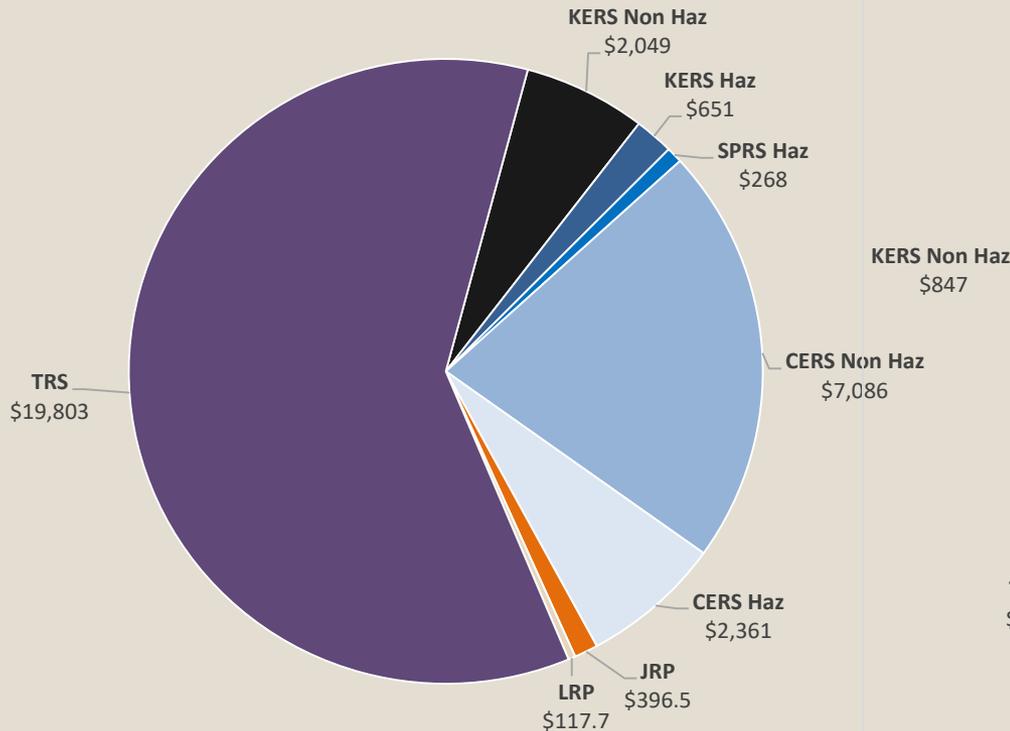
- Review of Total Assets
- Fiscal Year 2018 Market and Index Review
- Performance Review and Peer Comparison
- Allocation Review and Peer Comparison
- Investment Fees, Expense, and Carried Interest Review
- Other Required Review Topics (benchmarks, policies, etc.)

# ASSETS UNDER MANAGEMENT → All KY Plans

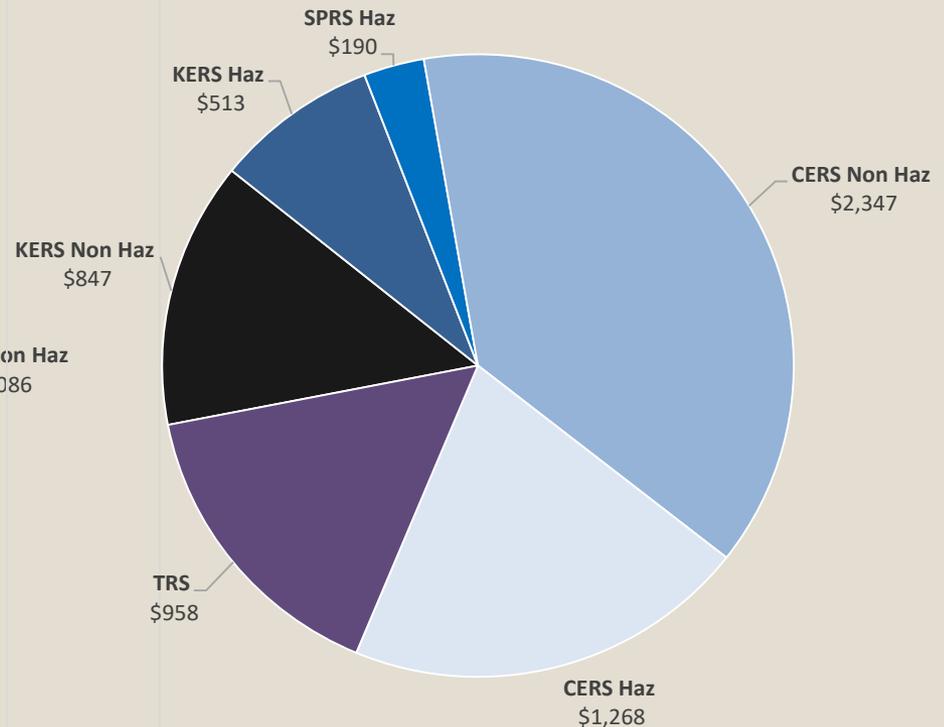
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## Total Assets Under Management - \$38.9 Billion By Retirement Plan As of June 30, 2018

### Pension – \$32.7B



### Insurance - \$6.2B



\* Includes both JRP/LRP pension and insurance assets

# PERFORMANCE → *Market Review*

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Fiscal Year 2018 Returns	
18.3	Private Equity
17.6	US Small Cap
14.3	US Large Cap
12.4	Non-US Small Cap
8.4	Private Real Estate
8.2	Emerging Markets
7.3	Commodities
6.8	Developed Non-US
5.5	Public Real Estate
5.1	Absolute Return/FOF
3.2	Non-US Fixed Income
2.6	US High Yield Bonds
1.4	T-Bill
(0.6)	US Gov/Credit

- **Another Positive Year for Markets**

- August 22 – Longest bull market in US history -  
↑ 320% since March 2009

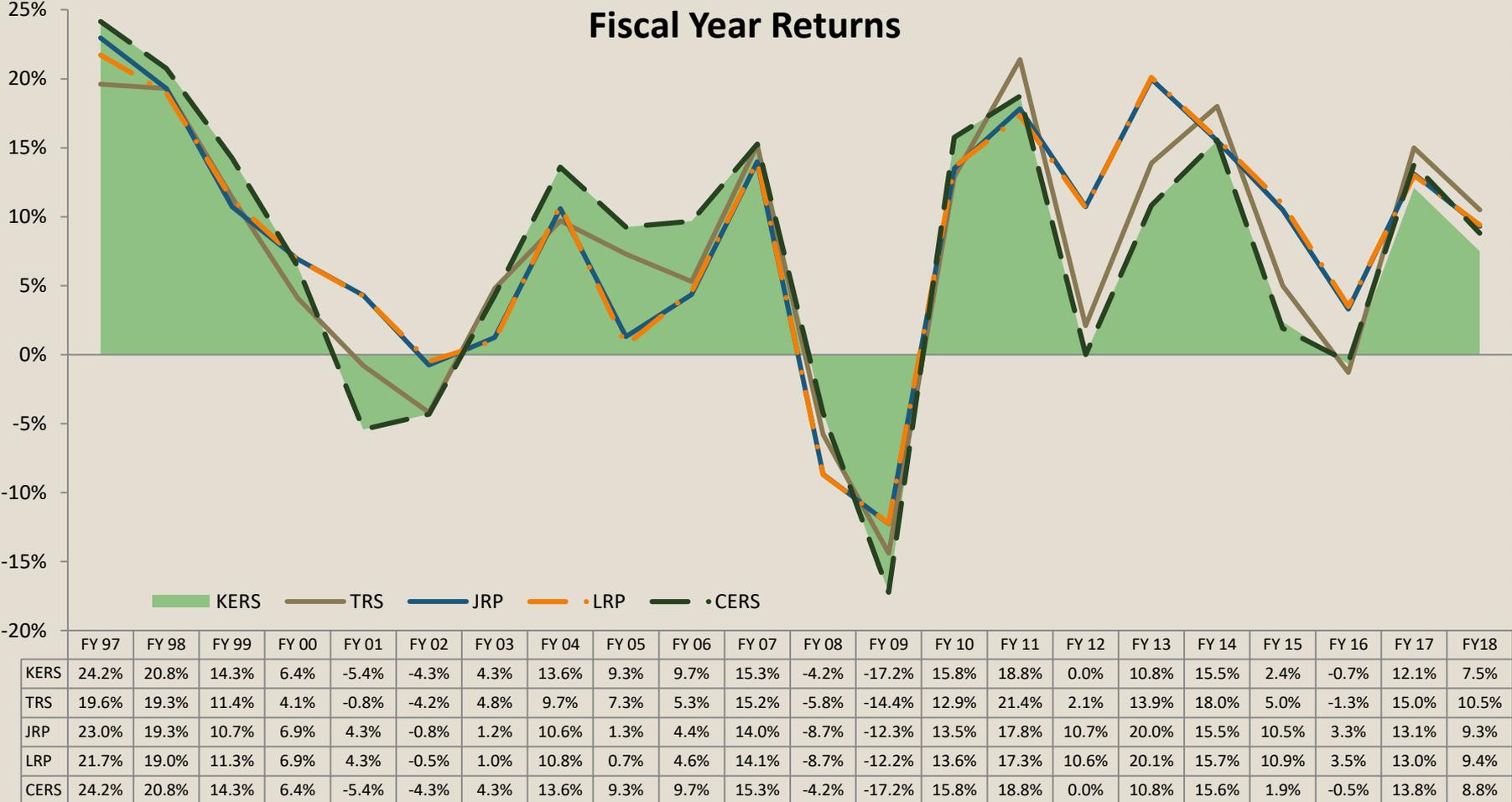
- **Broadly Based Positive Performance**

- Strong year for public and private equity
- Non-US lagged US, but provided strong results
- Below Investment grade (higher yield) assets outpaced stronger credits, but minimal return
- Investment grade bonds have struggled recently, only negative return for fiscal year

# PERFORMANCE → *FY Returns By System*

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**Fiscal Year Returns**



NOTE: FY2015-2017 Returns are Net of Fee, longer term are gross, or before fees.

# INVESTMENTS → Pension

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<i>As of June 30, 2018</i>	<b>MV</b>	<b>1 –Year</b>	<b>3-Year</b>	<b>5-Year</b>	<b>10-Year</b>	<b>20-Year</b>	<b>AROR</b>
<b>KERS Pension (N)</b>	\$2.0B	<b>7.5%</b>	<b>6.2%</b>	<b>7.2%</b>	<b>6.0%</b>	<b>5.8%</b>	5.25%
Policy Benchmark		7.2%	6.5%	7.2%	6.3%	5.9%	
<b>KERS-Haz Pension (N)</b>	\$651.2M	<b>8.7%</b>	<b>7.1%</b>	<b>7.7%</b>	<b>6.2%</b>	<b>5.9%</b>	6.25%
Policy Benchmark		8.2%	6.9%	7.5%	6.5%	6.0%	
<b>SPRS Pension (N)</b>	\$268.4M	<b>7.7%</b>	<b>6.1%</b>	<b>7.0%</b>	<b>5.9%</b>	<b>5.8%</b>	5.25%
Policy Benchmark		7.7%	6.5%	7.3%	6.3%	5.9%	
<b>CERS Pension (N)</b>	\$7.1B	<b>8.8%</b>	<b>7.2%</b>	<b>7.7%</b>	<b>6.2%</b>	<b>5.9%</b>	6.25%
Policy Benchmark		8.2%	6.9%	7.5%	6.5%	6.0%	
<b>CERS-Haz Pension (N)</b>	\$2.4B	<b>8.8%</b>	<b>7.2%</b>	<b>7.7%</b>	<b>6.2%</b>	<b>5.9%</b>	6.25%
Policy Benchmark		8.2%	6.9%	7.5%	6.5%	6.0%	
<b>TRS Pension (N)</b>	\$19.8B	<b>10.5%</b>	<b>7.9%</b>	<b>9.2%</b>	<b>7.8%</b>	<b>6.1%</b>	7.50%
Policy Benchmark <sup>1</sup>		9.3%	8.2%	9.0%	7.5%	-	
<b>LRP (N*)</b>	\$117.7M	<b>9.4%</b>	<b>8.6%</b>	<b>10.4%</b>	<b>9.8%</b>	<b>7.0%</b>	6.50%
Policy Benchmark		9.8%	8.7%	9.9%	8.3%	6.1%	
<b>JRP (N*)</b>	\$396.5M	<b>9.4%</b>	<b>8.6%</b>	<b>10.3%</b>	<b>9.8%</b>	<b>7.0%</b>	6.50%
Policy Benchmark		9.8%	8.7%	9.9%	8.3%	6.1%	

## Peer Groups Median Returns

LRC Calculated 39 plans	8.9%	7.4%	8.3%	6.3%	-
Wilshire TUCS (G)	8.6%	7.3%	8.4%	7.0%	-
BNY Mellon (G)	8.6%		8.2%	6.7%	-

(G) Gross of fee return, (N) Net of Fee Return \* JFRS 1- year returns are net of fee, longer term are gross

<sup>1</sup> TRS did not benchmark overall performance prior to July 1, 2008

# ASSET ALLOCATION → *Drives 90% of Returns*

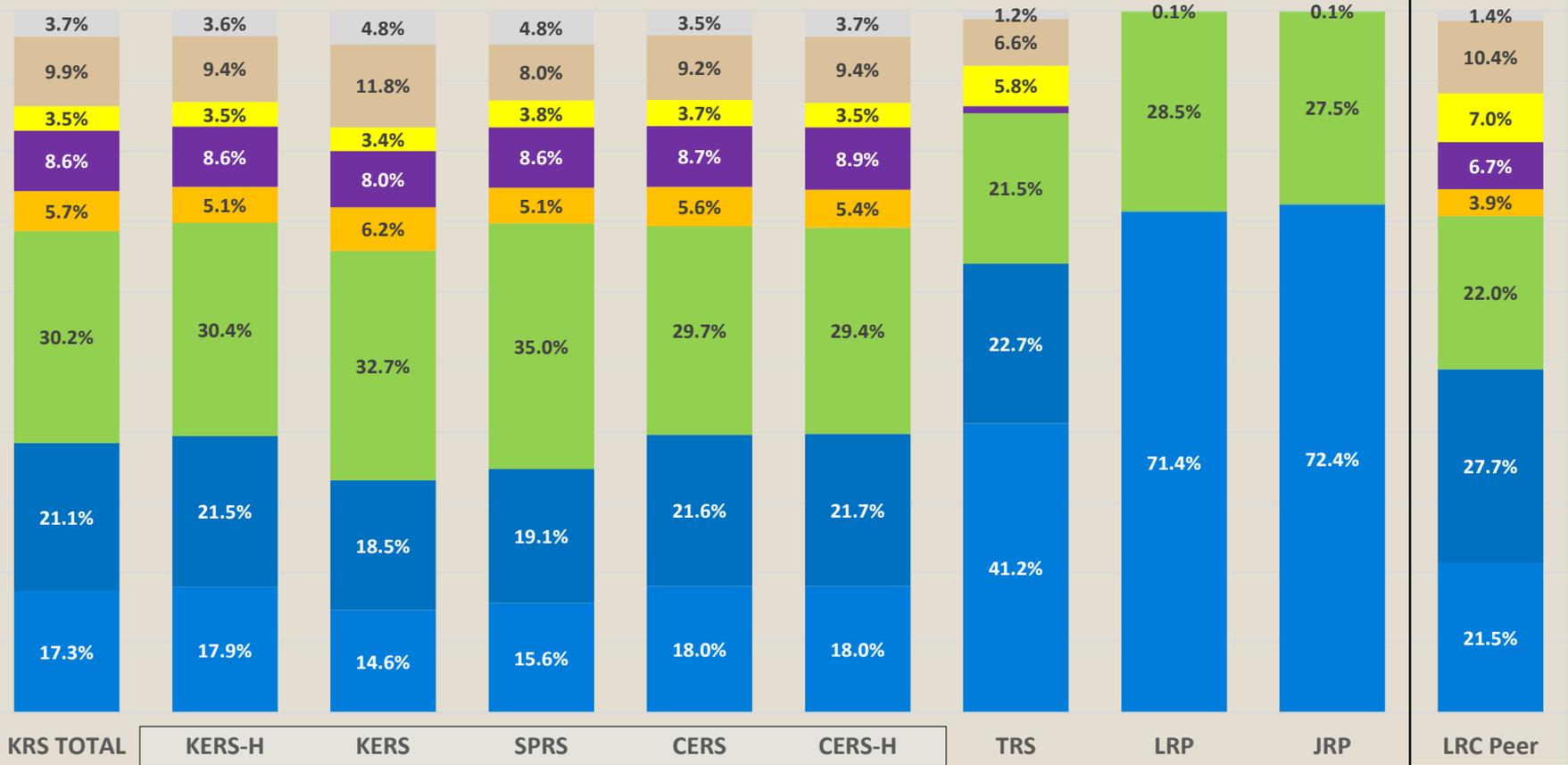
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	Asset Class	Description	Avg Peer %
Traditional Assets	<b>U.S. Equity</b>	Publicly traded stocks listed on U.S. exchange. Includes Large, Middle, and Small Capitalization companies. Very liquid, but tend to have higher volatility.	50%
	<b>Non-U.S. Equity</b>	Public stocks listed outside U.S. in local currency. Includes developed and emerging countries. Liquid, have higher return & risk expectation than U.S.	
	<b>Fixed Income</b>	Bonds and other assets with yield component. Includes investment grade (high quality), sovereign debt (global), and high yield (riskier) assets. Have lower expected return than equity, but less volatility given income component.	25%
Alternative Assets	<b>Real Estate</b>	Includes both private and public real estate investment trusts (REITs). Larger plans tend to invest in more private real estate, which consists of both core & non-core holdings. Illiquid in nature, but has provided stable returns over time.	25%
	<b>Private Equity/Credit</b>	Includes private equity, venture capital, distressed or other private debt strategies. Generally in form of limited partnership agreements. Illiquid in nature and have long investment horizon (7-12 years). Have higher expected return, but also can exhibit higher levels of risk.	
	<b>Real Return</b>	Includes real assets, such as commodities or timber, as well as inflation-linked securities, such as Treasury Inflation Protected Securities (TIPS). Tend to have low correlation to stocks and bonds. Can be less liquid than traditional assets.	
	<b>Absolute Return</b>	Funds that seek positive return regardless of market condition. Can include equity, fixed income, real estate, commodities, or other assets. Can include buying or "shorting" underlying securities. Expected to provide less volatile stream of positive returns over long term.	

# ASSET CLASSES → *Current Allocations*

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As of June 30, 2018

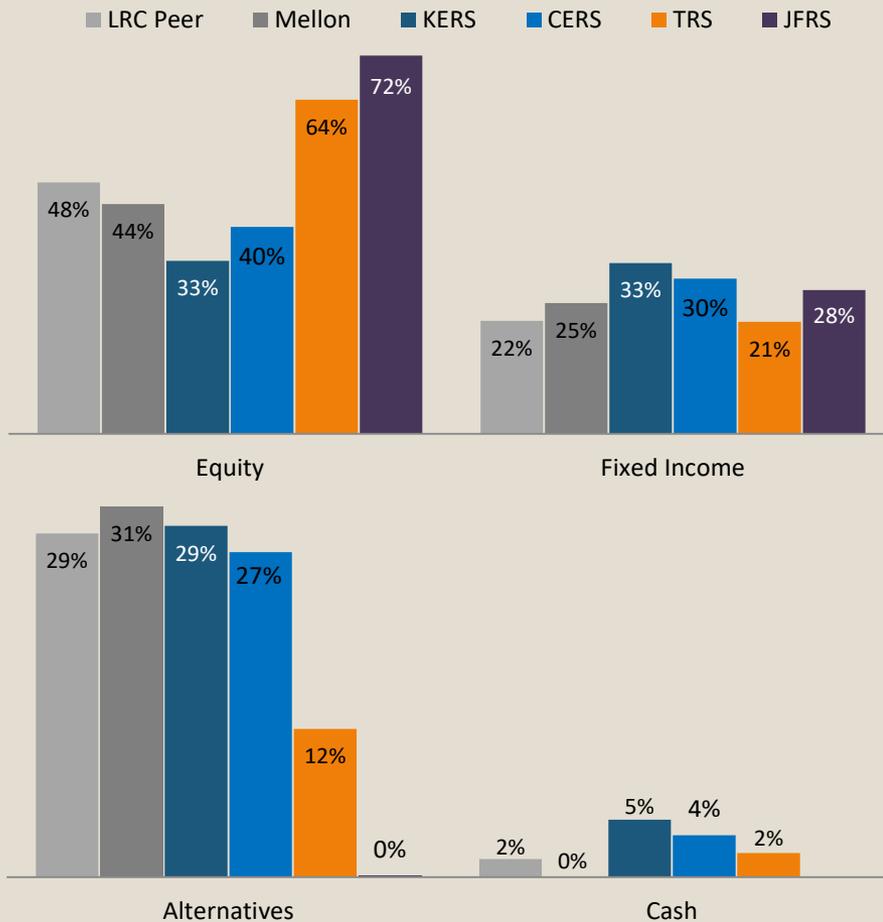


■ U.S. Equity  
 ■ Non-U.S. Equity  
 ■ Fixed Income  
 ■ Absolute Return  
 ■ Real Return  
 ■ Real Estate  
 ■ Private Equity  
 ■ Cash

# ASSET ALLOCATION → KY Pension Comparisons

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## Peer Comparison



## KERS/CERS

- ↓ Less Equity than peers
- ↑ Slightly more Fixed income exposure
- ▨ Alts similar to peer group, has reduced recently

## TRS

- ↑ Above average equity exposure
- ↓ Growing alternatives, but below peers

## LRP & JRP

- ↑ Above average equity allocation
- Only equity & fixed Income
- 🚫 No alternative exposure

NOTE: LRC and Mellon Peer Groups are averages while KRS, TRS, LRP, and LRP are actual as of 6/30/2018

# FEES → Kentucky Plans\*

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## Pension Fund Investment Fees and Expenses

As of June 30, 2018 (In thousands)

	KRS			TRS			JFRS		
	MV	Fees	BPS	MV	Fees	BPS	MV	Mgmt Fees	BPS
Global Equity	\$4,699,763	\$8,785	22.2	\$12,667,986	\$14,693	11.6	\$371,105	\$287.8	7.8
Private Assets	\$1,214,464	\$5,211	72.3	\$1,311,888	\$18,502	141.0	-	-	-
Real Return	\$1,057,017	\$5,511	52.1	\$187,541	\$1,688	90.0	-	-	-
Real Estate	\$428,490	\$6,646	121.6	\$1,150,694	\$10,107	87.8	-	-	-
Fixed Income	\$3,714,668	\$10,446	33.3	\$4,248,542	\$6,560	15.4	\$142,702	\$110.7	7.8
Absolute Return	\$701,705	\$12,355	94.7	\$0	\$0	-	-	-	-
Cash/Custody/Consultant	\$453,519	\$2,684	-	\$236,645	\$3,966 <sup>1</sup>	-	\$399	\$9.8	-
<b>Total Mgmt Fees</b>	<b>\$12,269,626</b>	<b>\$51,639</b>	<b>42.1</b>	<b>\$19,803,296</b>	<b>\$55,516</b>	<b>28.0</b>	<b>\$514,206</b>	<b>\$408.3</b>	<b>7.9</b>
<b>Other Fees or Incentives:</b> <i>Includes Carried Interest, Profit Sharing</i>	\$12,269,626	\$40,958 <sup>2</sup>	33.4	\$19,803,296	See Footnote <sup>3</sup>		N/A – Does not utilize alternatives		
<b>Total Mgmt Fees &amp; Other</b>	<b>\$12,269,626</b>	<b>\$92,597</b>	<b>75.5</b>	<b>\$19,803,296</b>	<b>\$55,516</b>	<b>28.0</b>	<b>\$514,206</b>	<b>\$408.3</b>	<b>7.9</b>

## Insurance Fund Investment Fees and Expenses

	KRS			TRS			JFRS		
	MV	Fees	BPS	MV	Fees	BPS	MV	Mgmt Fees	BPS
<b>Total Mgmt Fees and Other</b>	<b>\$5,127,644</b>	<b>\$45,917<sup>4</sup></b>	<b>89.6</b>	<b>\$1,061,293</b>	<b>\$3,603<sup>3</sup></b>	<b>33.9</b>	<i>Assets managed with Pension Funds</i>		
<b>COMBINED PEN/INS</b>	<b>\$17,397,270</b>	<b>\$138,514</b>	<b>79.6</b>	<b>\$20,864,589</b>	<b>\$59,119</b>	<b>28.3</b>	<b>\$514,206</b>	<b>\$408.3</b>	<b>7.9</b>

<sup>1</sup> Includes \$2.9m internal staffing, operational, and legal expenses. KRS treats similar costs as administrative expenses.

<sup>2</sup> Includes \$22.3m (Private Equity), \$2.6m (Real Estate), \$0.7m (Real Return), \$6.4m (Absolute Return), \$1.3m (Fixed Income) and \$7.6m (other partnership expenses)

<sup>3</sup> TRS requested other fees and incentive information from managers, but have been notified by managers the information can not be reported.

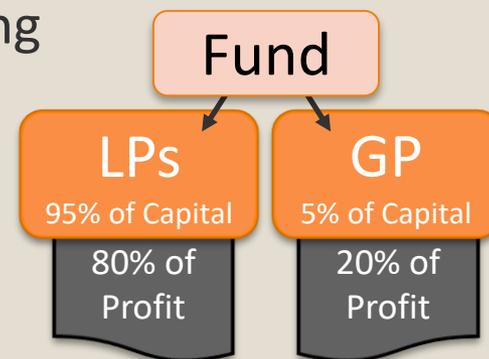
<sup>4</sup> Includes 23.8 million, or 46.5 bps of performance or partnership agreements. Base management fees before incentive expenses = 43.5 basis points

# FEES → Carried Interest

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- Carried Interest, or Carry, is method of compensating General Partners (GPs) for fund performance.

- Agreement of LPs to allocate a portion of fund's net profit to the GP *in excess* of the amount GP contributes to the partnership.
- GPs prefer Carry due to tax treatment
- If carry did not exist, management fees would increase



- SB2 Required Plans to request data and report if received

- KRS 61.645/161.250 requires *plans to request and disclose dollar value of any profit sharing, carried interest, or any other partnership incentive arrangements, partnership agreements, or any other partnership expenses received by or paid to each manager or partnership;*

- Amount dependent on performance, can account for significant dollars

Private Equity <sup>1</sup>	Mgmt. Fees	BPS <sup>2</sup>	Perf. Fees <sup>3</sup>	BPS <sup>2</sup>	Total Fees	BPS <sup>2</sup>
KRS	\$9,434,943	0.81%	\$16,343,440	1.40%	\$25,778,383	2.20%
South Carolina	\$27,060,000	1.18%	\$42,537,000	1.86%	\$69,597,000	3.04%
CalPERS	\$233,789,000	0.86%	\$455,126,000	1.68%	\$688,915,000	2.54%

<sup>1</sup> Fiscal Year 2017 <sup>2</sup> BPS calculated at asset class level <sup>3</sup> Includes Carried Interest and/or Profit Share Paid

# STATUTORY REVIEW → *Other Topics*

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- To meet statutory requirements, staff has reviewed the following:
  - Total Fund Objectives
    - ✦ Desire to meet Actuarial Return target of 5.25% (KERS and SPRS), 6.25% (CERS, KERSH), 6.5% (LRP/JRP), or 7.5% (TRS)
    - ✦ Desire to exceed Policy Benchmarks over market cycle (5 and 10 year periods)
  - Policies and Oversight
    - ✦ KRS –Policies available online
    - ✦ TRS – Investment Policy recorded as Administrative Regulation (102 KAR 1:175). Board Governance manual, which includes several policies, available online
    - ✦ LRP/JRP - Policy available online
  - Securities Litigation and Annual Recoveries
    - ✦ KRS – Filed 74 claims. \$2,247,966 proceeds received
    - ✦ TRS – Filed 16 claims. \$286,055 proceeds received
    - ✦ LRP/JRP – No claims filed. No proceeds received

# INVESTMENT REVIEW → *Benchmarks*

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- Asset Class and Total Fund Benchmarks

- All plans using recognized and industry known indices
- Alternative indices limited, most plans using a public index + model

TRS	BM%	Benchmark
US Equity	40.0%	87.5% S&P500 +7.5% S&P400 +5.0% S&P600
Non US Equity	22.0%	MSCI ACWI Ex US
Fixed Income	15.0%	Barclays Government/Credit
Real Estate	6.0%	50.00% CPI + 2% +33.3% NCREIF ODCE +16.7% NCREIF
Timberland	1.0%	NCREIF Timberland
Private Equity	6.0%	66.7% Actual Perf (< 5Yrs) +33.3% S&P500 + 3% (>5+ Yrs)
Additional Categories	8.0%	Merrill Lynch High Yield
Cash	2.0%	90 Day T-Bill

JFRS	BM%	Benchmark
US Equity	70%	S&P 500
Fixed Income	30%	Barclays Intermediate Gov't/Credit

KRS Non-Haz Plans			
Asset Class	KERS BM%	CERS BM%	Benchmark
US Equity	15.75%	18.75%	Russell 3000
Non US Equity	15.75%	18.75%	MSCI ACWI Ex US IMI
Private Equity	7.00%	7.00%	Actual Performance (< 5Yrs) or Russell 3000 + 300 bps (5+ Yrs)
High Yield/ Specialty Credit	15.00%	15.00%	Barclays US Corporate High Yield
Core Fixed	20.50%	13.50%	Barclays US Universal
Cash	3.00%	1.00%	Citigroup 3-Mo Treasury Bill
Real Estate	5.00%	5.00%	NCREIF ODCE <sup>^</sup>
Absolute Return	3.00%	3.00%	HRFI Diversified FOF
Real Return	15.0%	15.0%	Custom - Allocation Specific

<sup>^</sup>1 Quarter in Arrears Index

# INVESTMENT REVIEW → Allocation & Targets

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- Current Asset Allocation, Targets, and allowable ranges
  - Additional Categories from TRS primarily high yield credit, non-investment grade fixed income and/or specialty credit
  - KERS and CERS continue to transition to recently revised targets
    - ✦ Reducing Equity and adding to Fixed Income

KRS Non-Hazardous Plans					
	KERS		CERS		Range
	Actual	Target	Actual	Target	
<b>GROWTH</b>	<b>62.2%</b>	<b>53.50%</b>	<b>62.4%</b>	<b>62.50%</b>	
US Equity	14.6%	15.75%	18.0%	18.75%	10%-25%
Non US Equity	18.5%	15.75%	21.6%	18.75%	10%-25%
Private Equity	11.8%	7.00%	9.2%	10.00%	5%-15%
HY/Credit	17.3%	15.00%	13.6%	15.00%	10%-25%
<b>CREDIT</b>	<b>20.2%</b>	<b>23.50%</b>	<b>19.5%</b>	<b>23.50%</b>	
Core Fixed	15.4%	15.00%	16.1%	13.50%	15%-36%
Cash	4.8%	3.00%	3.5%	1.00%	0%-5%
<b>DIVERSIFYING</b>	<b>17.6%</b>	<b>23.00%</b>	<b>18.0%</b>	<b>23.00%</b>	
Real Return	8.0%	15.00%	8.7%	15.00%	5%-20%
Real Estate	3.4%	5.00%	3.7%	5.00%	0%-10%
Absolute Return	6.2%	3.00%	5.6%	3.00%	0%-10%

TRS			
	Actual	Target	Range
US Equity	41.2%	40.0%	34%-48%
Non US Equity	22.8%	22.0%	18%-25%
Fixed Income	15.3%	15.0%	12%-19%
Real Estate	5.8%	6.0%	4%-8%
Alternative Investments <sup>1</sup>	6.5%	6.0%	4%-10%
Additional Categories	7.2%	8.0%	5%-11%
Cash	1.2%	2.0%	1%-3%

<sup>1</sup> Includes PE, Venture Capitol, Timber, and Infrastructure Investment

JFRS Plans					
	JRP		LRP		Range
	Actual	Target	Actual	Target	
US Equity	72.4%	70.0%	71.4%	70.0%	60%-80%
Fixed Income	27.5%	30.0%	28.5%	30.0%	20%-40%
Cash	0.1%	0.0%	0.1%	0.0%	

# INVESTMENT REVIEW

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Questions?

# APPENDIX A

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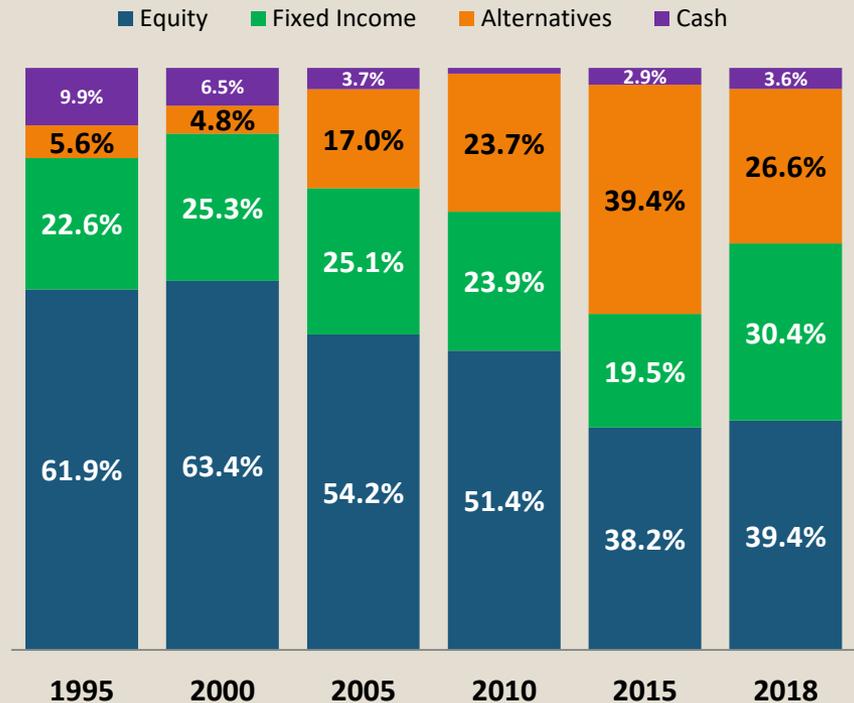
## Historical Asset Allocation by Plan

# ASSET ALLOCATION TREND → *KERS*

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- **Cash Flow Situation has limited**
  - No new PE investments since 2012
  - Higher allocation to Fixed Income
  - Reducing Absolute Return
  - Reducing Public Equity exposure
- **Alternative Allocation includes**
  - 5.1% Absolute Return/Hedge Funds
  - 9.4% Private Equity
  - 3.5% Real Estate
  - 8.6% Real Return

**Kentucky Employees Retirement System**  
Non-Hazardous  
*Historical Asset Allocation*



# ASSET ALLOCATION TREND → CERS

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- **CERS similar to peer group**

- Have reduced equity exposure
- Added significantly to fixed income
- Reducing some alternatives
  - Absolute Return
  - Real Return

- **Alternative Allocation includes**

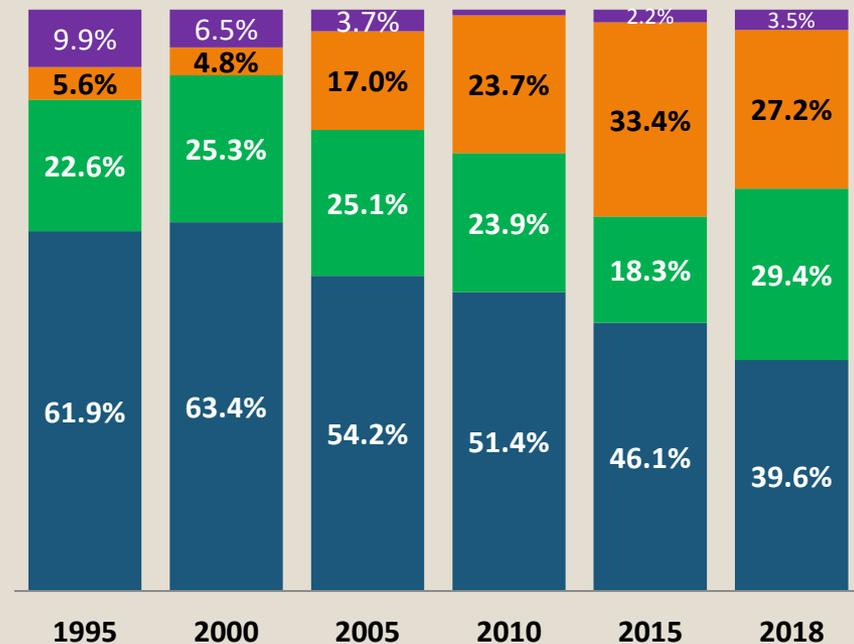
- 5.6% Absolute Return/Hedge Funds
- 9.2% Private Equity
- 3.7% Real Estate
- 8.7% Real Return

## County Employees Retirement System

Non-Hazardous

*Historical Asset Allocation*

■ Equity ■ Fixed Income ■ Alternatives ■ Cash

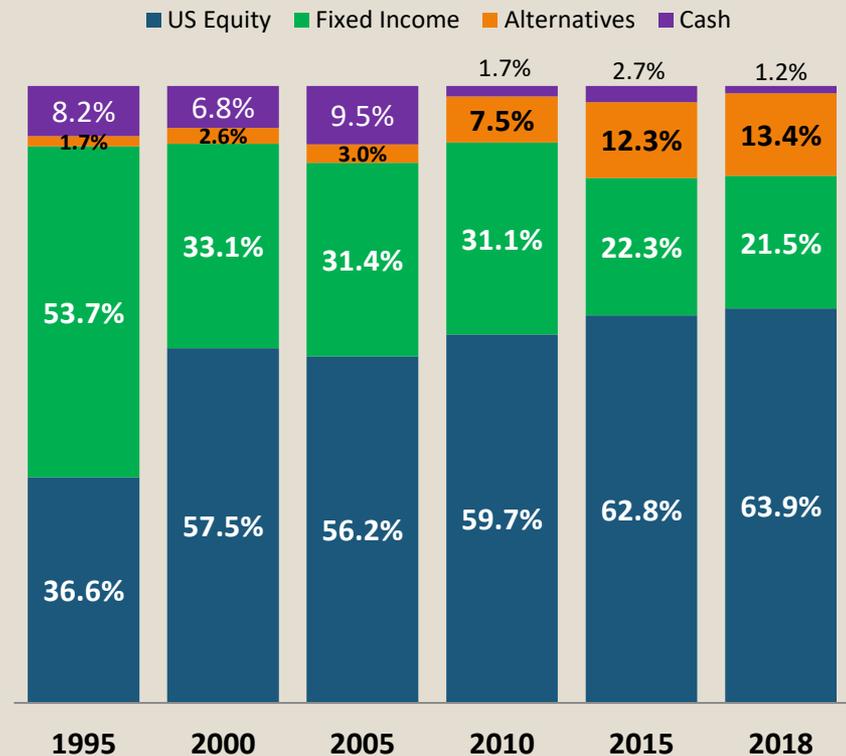


# ASSET ALLOCATION TREND → TRS

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- **TRS similar, but slower trend**
  - Continue to add alternatives
    - Private equity, credit, and real estate
  - Fixed income includes investment/non-investment grade
  - Above average public equity
- **Alternative Allocation includes**
  - 6.6% Private Equity/Credit
  - 5.8% Real Estate
  - 1.0% Real Return
  - No Absolute Return/Hedge Funds

**Kentucky Teachers Retirement**  
Historic Asset Allocation



# ASSET ALLOCATION TREND → JFRS

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- **Plans allocated in traditional assets**

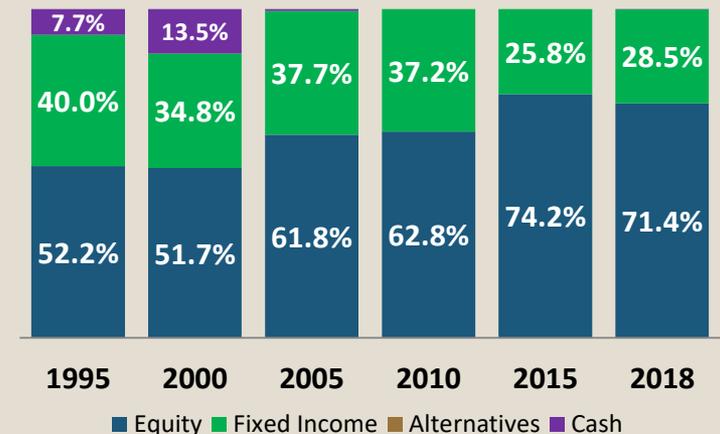
- Only U.S. Equity, primarily Large Cap
- Shorter term bonds, investment grade
- 70/30 allocation

- **Peer Comparison**

- High Equity allocation
- Limited diversification by size, geography
- No alternatives

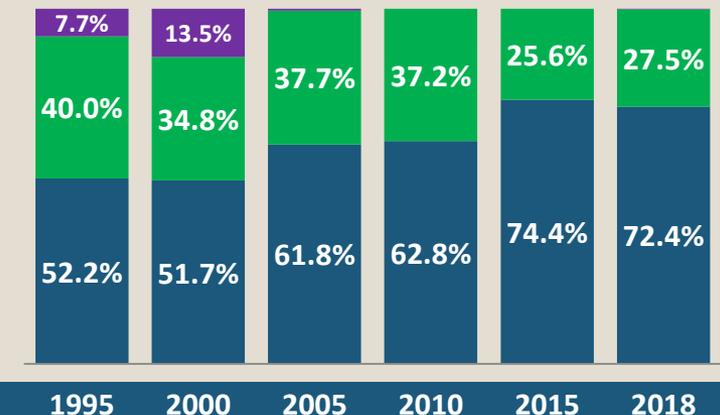
## Legislative Retirement

*Historic Asset Allocation*



## Judicial Retirement

*Historic Asset Allocation*



# APPENDIX B

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## Insurance Portfolio Performance

# INVESTMENT PERFORMANCE → Insurance

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<i>As of June 30, 2018</i>	<b>MV</b>	<b>1 –Year</b>	<b>3-Year</b>	<b>5-Year</b>	<b>10-Year</b>	<b>AROR<sup>2</sup></b>
<b>KERS</b>	\$834.4M	<b>7.9%</b>	<b>6.9%</b>	<b>7.2%</b>	<b>5.3%</b>	7.5%
Policy Benchmark		8.1%	7.2%	8.0%	6.1%	
<b>KERS – H</b>	\$512.7M	<b>8.9%</b>	<b>7.3%</b>	<b>7.7%</b>	<b>5.5%</b>	7.5%
Policy Benchmark		8.5%	7.4%	8.0%	6.1%	
<b>CERS</b>	\$2.33B	<b>9.2%</b>	<b>7.5%</b>	<b>7.8%</b>	<b>5.6%</b>	7.5%
Policy Benchmark		8.6%	7.4%	8.1%	6.1%	
<b>CERS – H</b>	\$1.26B	<b>9.3%</b>	<b>7.6%</b>	<b>7.8%</b>	<b>5.6%</b>	7.5%
Policy Benchmark		8.6%	7.4%	8.1%	6.1%	
<b>SPRS</b>	\$189.1M	<b>9.3%</b>	<b>7.5%</b>	<b>7.8%</b>	<b>5.6%</b>	7.5%
Policy Benchmark		8.5%	7.4%	8.1%	6.1%	
<b>TRS Insurance</b>		<b>8.5%</b>	<b>6.7%</b>	<b>7.3%</b>	-	8.0%
Policy Benchmark <sup>1</sup>		<b>8.7%</b>	<b>7.6%</b>	-	-	

Net of Fee Returns <sup>1</sup> TRS did not have target asset allocation prior to June 30, 2014, thus no benchmark return was calculated

<sup>2</sup> KRS has reduced AROR moving forward. See Slide 7 for additional information

# APPENDIX C

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## LRC Staff Calculated Peer Group

System	Return Data				Asset Allocation							
	1 Year	3 Year	5 year	10 Year	Global Eq	Global FI	Real Estate	Real Assets	RE/RA	HF	PA	Cash
<b>Public Employee or Consolidated State Plans</b>												
Retirement Systems of Alabama												
Alaska Public Employee Retirement System												
Arizona State Retirement System												
Arkansas Public Retirement System	10.25%	7.49%	8.82%	8.42	65.00	15.00	0.00	15.00	15.00	0.00	5.00	0.00
California Public Employees Retirement System	8.60%	6.70%	8.10%	5.60%	48.80	22.50	9.00	5.10	14.10	0.90	7.70	6.00
Colorado Public Employees Retirement Association												
Connecticut State Employees Retirement System	7.30%	7.14%	7.89%	6.13%	51.50	18.90	6.30	11.40	17.70	0.00	8.10	3.80
Delaware Public Employees Retirement System												
Florida Retirement System	8.98%	7.62%	8.69%	6.85%	56.10	18.70	8.90	0.00	8.90	0.00	15.20	1.10
Georgia Employees Retirement System												
Hawaii Employees Retirement System												
Public Employees Retirement System of Idaho	8.70%	7.70%	8.60%		58.30	17.80	8.70	8.90	17.60	0.00	6.20	0.10
Illinois State Employees Retirement System					51.20	32.70	8.70	2.20	10.90	0.40	4.80	0.00
Indiana Public Employment Retirement Fund	9.33%	6.11%	6.31%	4.62%	22.10	19.80	6.10	16.50	22.60	10.20	24.30	1.00
Iowa Public Employees Retirement System	7.97%	7.20%	8.22%	6.84%								
Kansas Public Employees Retirement System												
Kentucky Employee Retirement Systems	8.57%	7.01%	7.63%	6.18%	38.40	30.20	3.50	8.60	12.10	5.70	9.90	3.70
Louisiana State Employees' Retirement System	9.50%	7.40%	8.40%	7.00%	59.30	13.10	0.00	6.80	6.80	6.70	13.60	0.50
Maine Public Employees Retirement System	10.30%	7.70%	8.20%	6.30%	33.30	19.50	8.90	22.70	31.60	0.00	15.10	0.50
Maryland State Retirement and Pension System	8.10%	6.30%	7.20%	5.60%	37.80	23.10	9.00	8.00	17.00	8.50	12.60	1.00
Massachusetts State Employees Retirement System	10.00%	8.40%	9.30%	6.30%	42.00	20.80	9.00	3.40	12.40	13.50	10.80	0.50
Michigan State Employees Retirement System	12.00%	8.70%	10.20%	7.30%	42.50	12.30	11.30	9.00	20.30	5.70	15.60	3.60
Minnesota State Retirement System	10.30%	8.30%	9.50%	7.80%	60.70	24.30	0.00	0.00	0.00	0.00	13.80	1.20
Public Employees' Retirement System of Mississippi	9.48%	8.38%	9.32%	7.45%	61.02	20.32	10.11	0.00	10.11	0.00	7.64	0.91
Missouri State Employees Retirement System	7.40%	3.70%	5.30%	5.00%								
Montana Public Employees Retirement												
Nebraska Public Employees Retirement System												
Nevada Public Employees Retirement System	8.50%	7.50%	8.80%	7.10%	61.40	29.10	4.40	0.00	4.40	0.00	4.90	0.20
New Hampshire Retirement System												
New Jersey Public Employees Retirement System												
New Mexico Public Employees Retirement Association	6.96%	6.09%	7.32%	5.49%	37.15	28.83	6.72	13.67	20.39	3.21	9.10	1.32
New York State Common Retirement Fund					56.40	23.60	7.00	2.00	9.00	2.70	8.30	0.00
North Carolina Retirement Systems	7.30%	6.20%	7.30%	6.10%	40.20	33.90	8.70	6.50	15.20	0.00	7.20	3.50
North Dakota Public Employees Retirement System	9.19%	7.37%	8.33%	5.81%								
Ohio Public Employees Retirement System												
Oklahoma Public Employees Retirement System					69.80	29.80	0.20	0.00	0.20	0.00	0.00	0.20
Oregon Public Employees Retirement System	9.40%	7.47%	8.59%	6.77%	36.80	22.60	10.20	8.00	18.20	0.00	22.30	0.10
Pennsylvania State Employees Retirement System												
Employees' Retirement System of Rhode Island	8.00%	6.30%	7.20%	5.80%	46.20	19.50	7.00	6.10	13.10	6.50	11.30	3.40
South Carolina Retirement System	7.82%	6.31%	7.07%	5.40%								

System	Return Data				Asset Allocation							
	1 Year	3 Year	5 year	10 Year	Global Eq	Global FI	Real Estate	Real Assets	RE/RA	HF	PA	Cash
<b>Public Employee or Consolidated State Plans</b>												
South Dakota Retirement System												
Tennessee Consolidated Retirement System												
Employee Retirement System of Texas	9.90%	7.30%	8.10%	6.70%	45.00	24.60	9.60	2.00	11.60	3.70	13.40	1.70
Utah Retirement System												
Vermont State Employees Retirement System	6.50%	6.00%	6.30%	5.50%	53.00	30.40	5.80	0.00	5.80	7.20	3.50	0.10
Virginia Retirement System	7.50%	7.10%	8.30%	6.10%	41.00	32.30	0.00	13.50	13.50	0.00	12.40	0.80
Washington Public Employees Pension System												
West Viginia Public Employees Retirement System	8.90%	8.00%	9.10%	7.60%	50.60	16.40	10.90	0.00	10.90	11.10	10.80	0.20
Wisconsin Retirement System												
Wyoming Retirement System												

<b>Standalone Teacher/Public School Retirement Plans</b>												
Arkansas Teachers Retirement System												
California State Teachers' Retirement System	9.00%	7.80%	9.10%	6.30%	53.70	12.30	12.80	2.70	15.50	8.90	8.20	1.40
Connecticut Teachers Retirement Board	7.04%	7.07%	7.85%	6.20%	52.00	19.30	6.50	10.40	16.90	0.00	6.70	5.10
Teacher's Retirement System of Georgia												
Teachers Retirement System of Illinois	8.30%	6.80%	8.20%	6.20%	51.70	23.10	0.00	13.10	13.10	0.00	11.40	0.70
Kentucky Teachers Retirement System	10.59%	7.88%	9.23%	7.81%								
Teacher's Retirement of Louisiana	11.56%	9.35%	9.93%	7.08%	51.00	17.00	9.00	4.00	13.00	0.00	19.00	0.00
Public School Retirement System of Missouri	8.90%	7.70%	8.80%	6.90%	46.20	17.40	7.50	3.10	10.60	11.90	10.50	3.40
Montana Teacher's Retirement System												
School Retirement System for Nebraska												
New Mexico Educational Retirement Board	8.30%	7.60%	8.10%	6.80%	33.60	27.20	6.50	18.40	24.90	0.00	13.00	1.30
New York State Teacher's Retirement System												
North Dakota Teacher's Fund for Retirement	9.11%	7.30%	8.31%	5.54%								
State Teachers Retirement System of Ohio	9.57%	8.12%	9.26%	7.04%	53.10	19.40	10.30	8.00	18.30	0.00	7.40	1.80
Oklahoma Teacher's Retirement System												
Public School Employees' Retirement System of Pennsylvania												
Teacher Retirement System of Texas	9.20%	7.70%	8.70%	6.60%	40.00	10.80	11.80	13.30	25.10	13.20	10.50	0.40
Vermont State Teachers' Retirement System	6.50%	6.10%	6.30%	5.30%	52.50	28.90	7.10	0.00	7.10	7.60	3.70	0.20
West Virginia Teachers Retirement System	8.90%	8.00%	9.00%	7.40%	50.00	16.10	10.70	0.00	10.70	11.00	10.70	1.50

<b>LRC State Plan Peer Group Summary</b>												
Count	39	39	39	38	36	36	36	36	36	36	36	36
Average	8.8%	7.3%	8.2%	28.4%	48.59	21.99	7.01	6.73	13.74	3.85	10.41	1.42
Median	8.9%	7.4%	8.3%	6.3%	50.80	20.56	8.10	6.30	13.10	0.65	10.50	0.96

# INVESTMENT REVIEW

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Questions?