

INVESTMENT REVIEW

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Public Pension Oversight Board

October 25th, 2022

INVESTMENT REVIEW

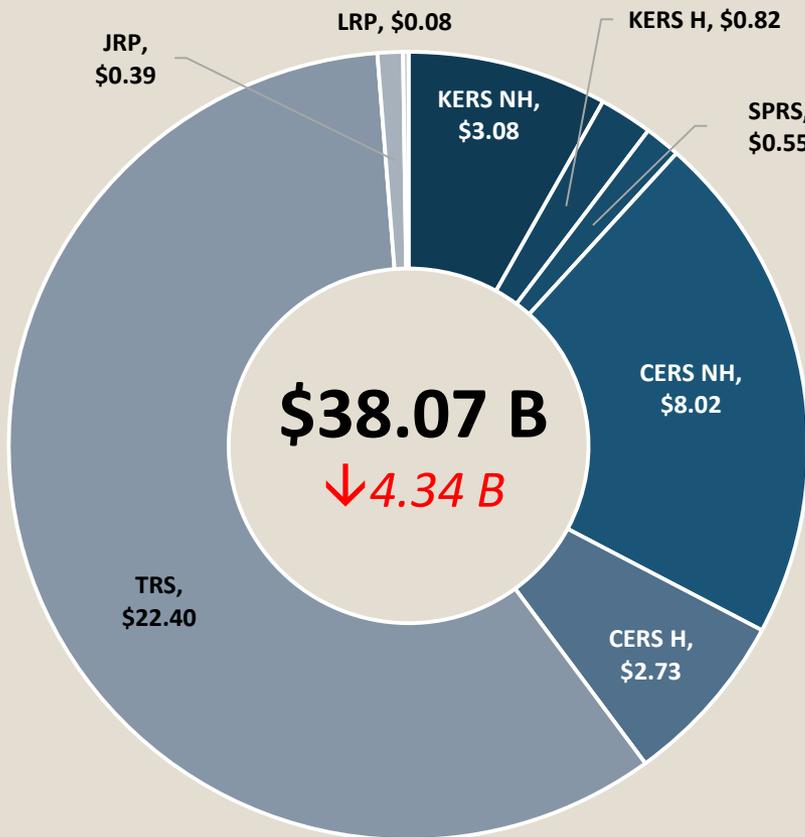
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- Review of Total Assets
- Performance Review and Peer Comparisons
- Allocation Review and Peer Comparisons
- Investment Fees and Expenses
- Net Cash Flow Update
- Special Topics
- Other Required Review Topics (benchmarks, policies, etc.)

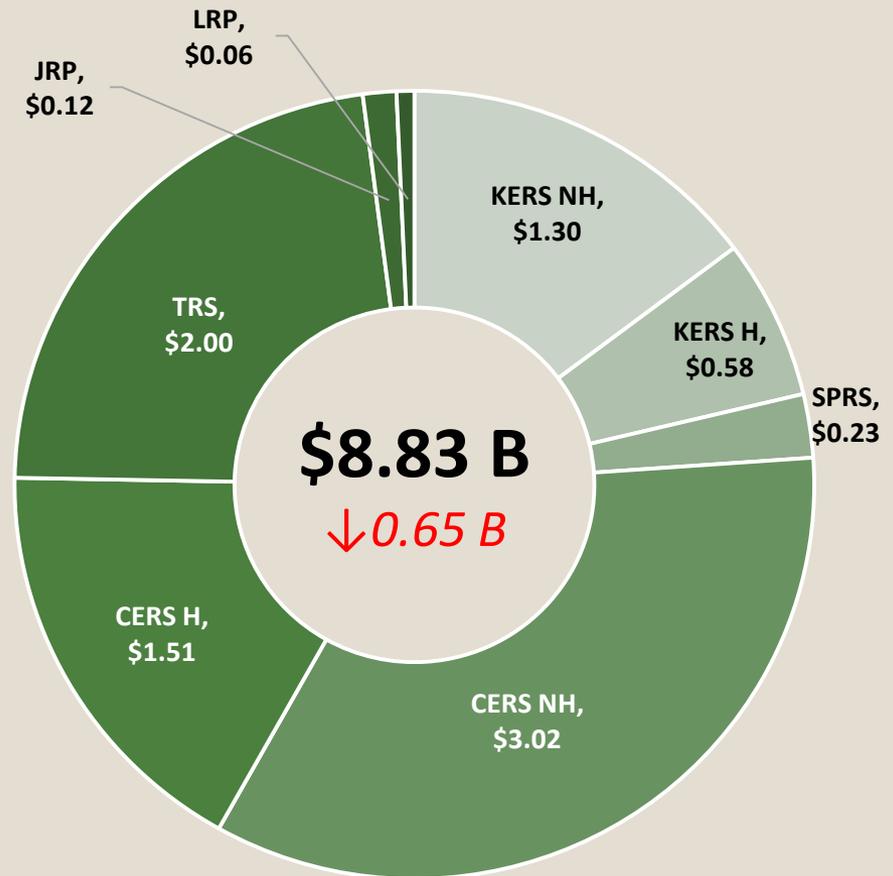
ASSETS UNDER MANAGEMENT → *FY 22 Ended*

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Pension Fund Assets By System/Plan
(6/30/2022)



R. Health Fund Assets By System/Plan
(6/30/2022)



For Reference: FY 21 ended, pension fund & retiree health fund assets ↑\$8.4 B and ↑\$2.2 B respectively.

Notes: Lump-sum payments were made in FY 22 to the SPRS and TRS pension funds totaling \$215 M and \$479.2 M respectively.

PERFORMANCE → *FY 21 vs. 22 Ended*

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FY 21

RECORD RETURNS

Average pension fund returns of around 27%.

ACTUARIAL GAINS

Returns above the AROR positively impact fund health.

REDUCED COSTS

Reduced contributions or offset to other negative actuarial experience.

Avg. AROR of roughly 7%

FY 22

NEGATIVE RETURNS

Average pension fund returns of around -7%.

ACTUARIAL LOSSES

Returns below the AROR negatively impact fund health.

INCREASED COSTS

Increases future costs as compared to previous projections.

PERFORMANCE → FY 22 Ended

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Asset Class Performance FY 22

Commentary

Fiscal Year 2022 Returns		
Return	Class	Type
29.5%	Private Real Estate	Alternative
24.3%	Commodities	Alternative
14.9%	Private Equity*	Alternative
0.2%	Cash: T-Bill	Cash
-5.2%	Hedge Funds	Alternative
-6.7%	Public Real Estate	Alternative
-10.6%	US Large Cap	Equity
-12.8%	US High Yield	Fixed Income
-17.8%	Non-US Developed	Equity
-19.7%	Non-US	Fixed Income
-20.1%	US Gov/Credit	Fixed Income
-22.1%	Non-US Small Cap	Equity
-25.2%	US Small Cap	Equity
-25.3%	Non-US Emerging Market	Equity

- General
 - Inflation at 40 year high (9.1% in June)
 - Growing Int. Rates—rate hike of 75 bp in June
 - Geopolitical issues/consumer sentiment drop
- Market drop in last quarter of FY 22.
 - S&P down ↓16.1% for quarter
- Alternatives returns positive for FY 22
 - Commodities up, primarily in energy/petroleum
 - Private assets values, like private real estate and private equity, typically lag by a quarter (or more). Likely to see a write down in value to reflect what has happened in public markets.

*KPPA benchmark for private equity (PE). Reported returns for PE were actually higher (i.e. KERS NH 22.7%, TRS 25.6%).

PERFORMANCE → Pension FY 22 Ended

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As of June 30, 2022	1 –Year	3-Year	5-Year	10-Year	20-Year	30-Year	AROR
KERS-Nonhaz Pension (N)	-5.2%	6.0%	6.2%	7.0%	6.5%	7.7%	5.25%
Policy Benchmark	-4.8%	5.1%	5.7%	6.9%	6.5%	7.6%	
KERS-Haz Pension (N)	-6.0%	5.9%	6.4%	7.3%	6.6%	7.8%	6.25%
Policy Benchmark	-5.2%	6.1%	6.3%	7.2%	6.7%	7.7%	
SPRS Pension (N)	-4.6%	5.9%	6.2%	6.9%	6.4%	7.6%	5.25%
Policy Benchmark	-4.8%	5.1%	5.7%	6.8%	6.5%	7.6%	
CERS-Nonhaz Pension (N)	-5.9%	6.1%	6.5%	7.3%	6.6%	7.8%	6.25%
Policy Benchmark	-6.4%	5.6%	6.1%	7.1%	6.6%	7.7%	
CERS-Haz Pension (N)	-6.1%	5.9%	6.5%	7.3%	6.6%	7.8%	6.25%
Policy Benchmark	-6.4%	5.6%	6.1%	7.1%	6.6%	7.7%	
TRS Pension (N)¹	-10.9%	6.8%	7.3%	8.6%	7.0%	7.8%	7.10%
Policy Benchmark ¹	-9.2%	6.8%	7.4%	8.6%	See Note	See Note	
LRP Pension (N*)	-9.9%	9.4%	10.0%	11.2%	7.9%	See Note	6.50%
Policy Benchmark	-9.4%	7.6%	8.5%	9.6%	7.6%	See Note	
JRP Pension (N*)	-9.9%	9.4%	10.1%	11.2%	7.9%	See Note	6.50%
Policy Benchmark	-9.4%	7.6%	8.5%	9.6%	7.6%	See Note	
Peer Groups Median Returns							
LRC Peer	-4.9%	7.8%	7.7%	8.4%	-	-	
Callan Public Fds. V. Large > 10 B Median	-5.6%	7.3%	7.6%	8.2%			
Metrics Universe > \$1 B	-7.1%	6.1%	6.4%	7.5%	6.8%	7.6%	

(N) Net of Fee Return * JFRS 1-, 3-, 5-, and 10- year returns are net of fee, longer term are gross

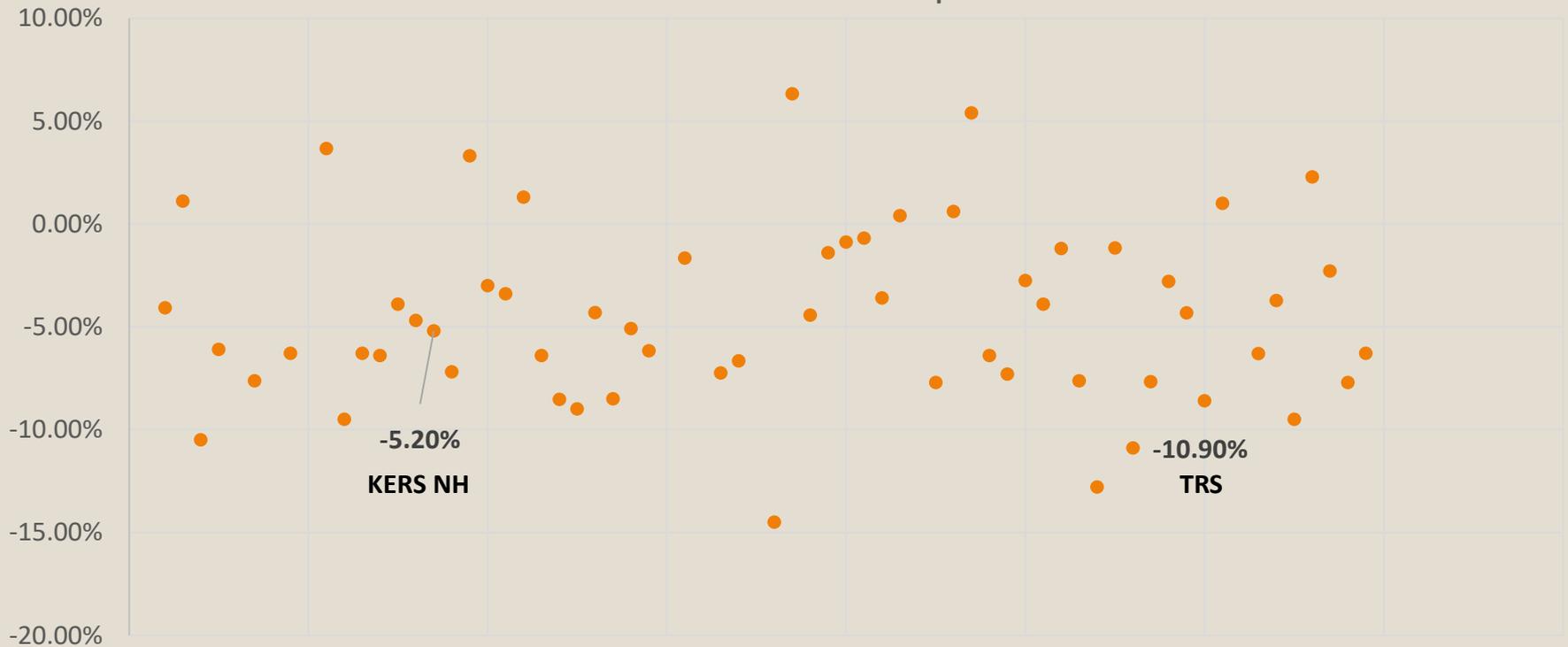
¹ 30 year returns are gross. TRS did not benchmark overall performance prior to July 1, 2008.

PERFORMANCE → *LRC Peer Group FY 22*

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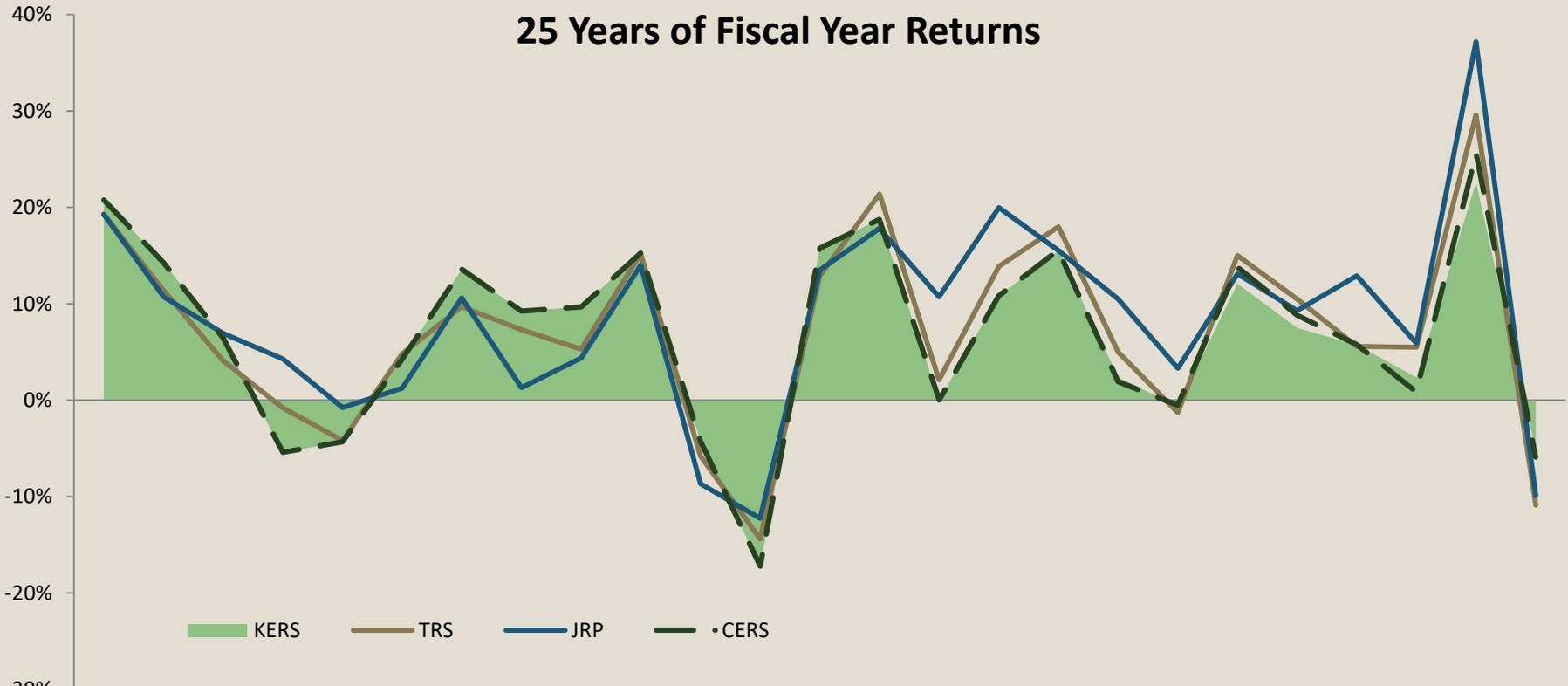
- High level of variability in FY 22 among state funds.

FY 22 LRC Peer Group Returns



PERFORMANCE → *FY Returns By System*

25 Years of Fiscal Year Returns



	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22
KERS	20.8%	14.3%	6.4%	-5.4%	-4.3%	4.3%	13.6%	9.3%	9.7%	15.3%	-4.2%	-17.2%	15.8%	18.8%	0.0%	10.8%	15.5%	2.4%	-0.7%	12.1%	7.5%	5.7%	2.4%	22.6%	-5.2%
TRS	19.3%	11.4%	4.1%	-0.8%	-4.2%	4.8%	9.7%	7.3%	5.3%	15.2%	-5.8%	-14.4%	12.9%	21.4%	2.1%	13.9%	18.0%	5.0%	-1.3%	15.0%	10.5%	5.6%	5.5%	29.6%	-10.9%
JRP	19.3%	10.7%	6.9%	4.3%	-0.8%	1.2%	10.6%	1.3%	4.4%	14.0%	-8.7%	-12.3%	13.5%	17.8%	10.7%	20.0%	15.5%	10.5%	3.3%	13.1%	9.3%	12.9%	5.9%	37.2%	-9.9%
CERS	20.8%	14.3%	6.4%	-5.4%	-4.3%	4.3%	13.6%	9.3%	9.7%	15.3%	-4.2%	-17.2%	15.8%	18.8%	0.0%	10.8%	15.6%	1.9%	-0.5%	13.8%	8.8%	5.8%	0.8%	25.6%	-5.9%

NOTE: Returns beginning in FY2015 are Net of Fee, while returns prior are Gross of Fee.

ASSET ALLOCATION → *Drives 90% of Returns*

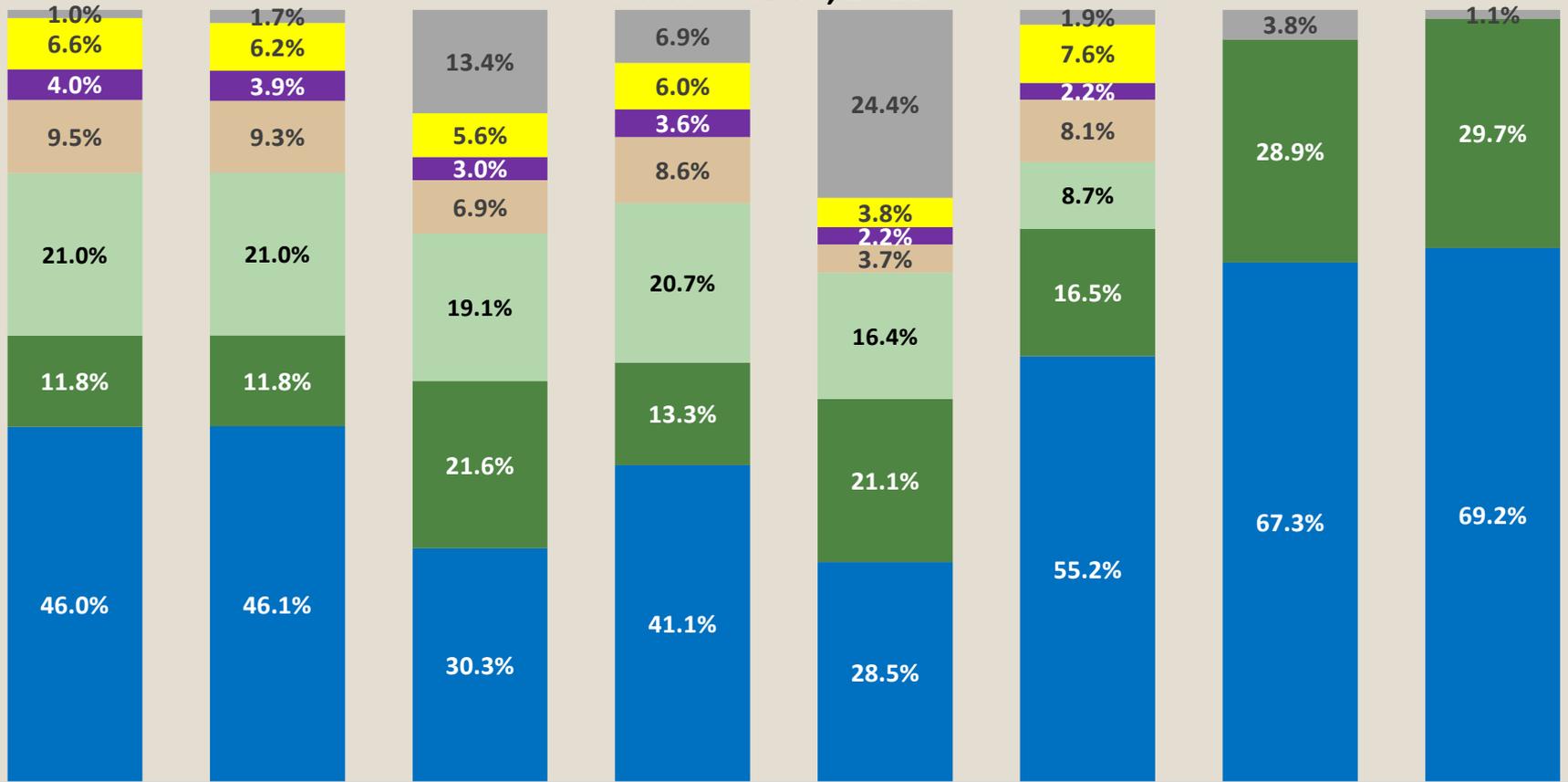
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	Asset Class	Description	NASRA Peer
Traditional Assets	Public Equity	<p>U.S. Equity: Publicly traded stocks listed on U.S. exchange. Includes Large, Middle, and Small Capitalization companies. Very liquid, but tend to have higher volatility.</p> <p>Non-U.S. Equity: Public stocks listed outside U.S. in local currency. Includes developed and emerging countries. Liquid, have higher return & risk expectation than U.S.</p>	47.0%
	Fixed Income	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.	21.2%
	Cash	Cash Investments.	2.5%
Alternative Assets	Real Estate	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.	29.4%
	Private Equity/Credit	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.	
	Real Return	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.	
	Absolute Return	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 ALLOCATION → *Ky. Systems FY 22*

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As of June 30, 2022

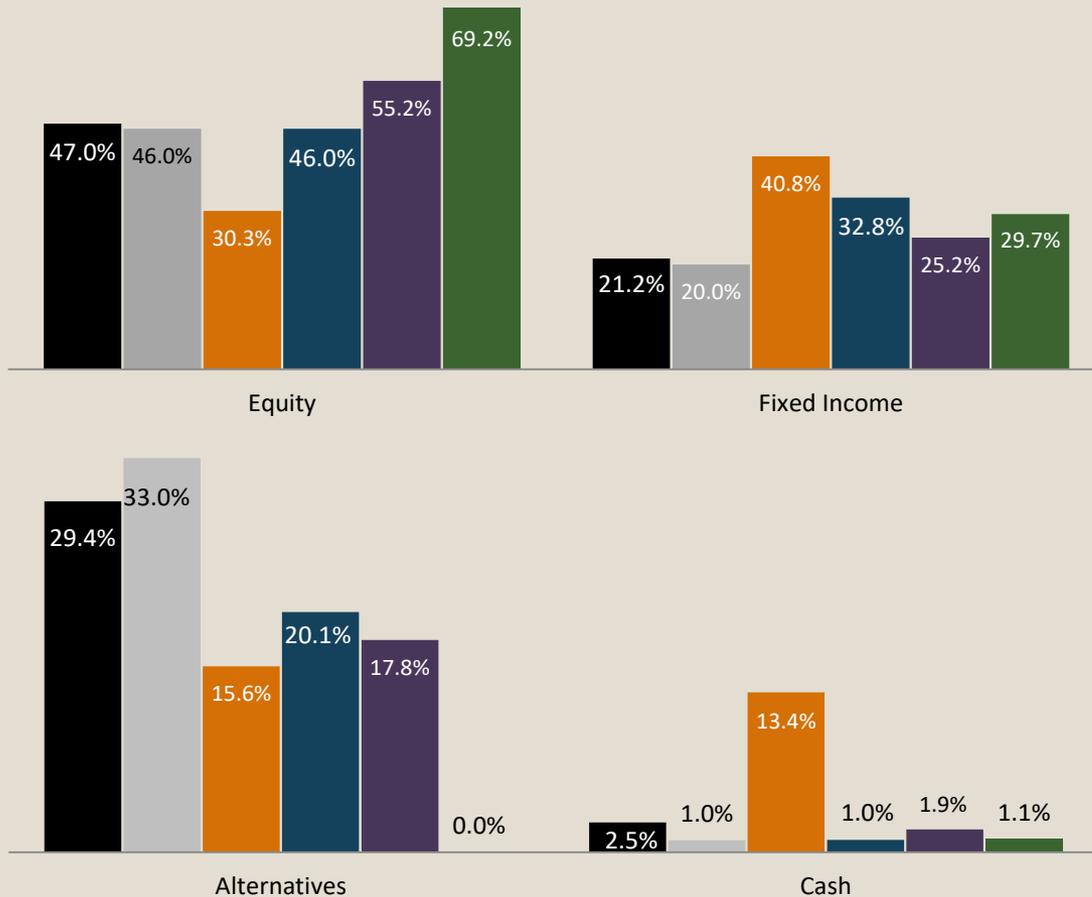


■ Public Equity
 ■ Public Fixed
 ■ Private Fixed
 ■ Private Equity
 ■ Real Return
 ■ Real Estate
 ■ Cash

ASSET ALLOCATION → Allocation Vs. Peers

Peer Comparison

■ NASRA Peer ■ Cliffwater ■ KERS ■ CERS ■ TRS ■ JRP



KERS NH

- Below avg. allocation to equities and alternatives
- Above avg. allocation to fixed income & cash

CERS NH

- More closely resembles avg. public pension plan but above avg. allocation to fixed income and below avg. allocation to alternatives.

TRS

- Above average allocation to equities, below avg. allocation to alternatives

JRP

- Above avg. allocation to equities, no alternatives.

FEES → Trend of Kentucky Plans (FY 22 Ended)

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- **KPPA – Management Fees have continue to decline historically on bps, incentive fees variable**

- Management fees tied to market value, so as fund assets increase = more fee dollars
- Incentive fees tied to return or performance of asset

- **TRS – Management Fees remain low, 2020/2021 financial reports included carried interest Information**

- Management fees tied to market value, so as fund assets increase = more fee dollars
- TRS started reporting carried interest in 2020.

- **JFRS – Lowest fee structure**

- **Retiree Health Fund Expenses 2022:**

- KPPA: \$74.5 M total fees or 107.3 bps (mgt. fee: \$23.9 M or 34.4 bps, incentive fee: \$50.6 M or 72.9 bps)
- TRS: \$19.1 M total fees or 94.0 bps (mgt. fee: \$6.5 M or 32.0 bps, incentive fee: \$12.6 M or 62.0 bps)
- JFRS: Included in above chart

KPPA - PENSION						
FY	Total Fees		Management Fees		Incentive Fees/CI	
	Dollars	bps ¹	Dollars	bps ¹	Dollars	bps ¹
2019	\$94.4 M	74.1	\$60.3 M	47.3	\$34.1 M	26.8
2020	\$56.5 M	44.4	\$54.1 M	42.5	\$2.4 M	1.9
2021	\$139.5 M	88.4	\$62.1 M	39.3	\$77.5 M	49.1
2022	\$149.7 M	94.8	\$50.5 M	32.0	\$99.2 M	62.8

TRS - PENSION						
FY	Total Fees		Management Fees		Incentive Fees/CI	
	Dollars	bps ¹	Dollars	bps ¹	Dollars	bps ¹
2019	\$61.2 M	30.2	\$61.2 M	30.2	See Note	
2020	\$62.6 M	30.5	\$64.1 M	31.2	-\$1.5 M	-0.7
2021	\$147.0 M	57.1	\$71.3 M	27.7	\$75.7 M	29.4
2022	\$149.2 M	66.5	\$64.0 M	28.5	\$85.2 M	38.0

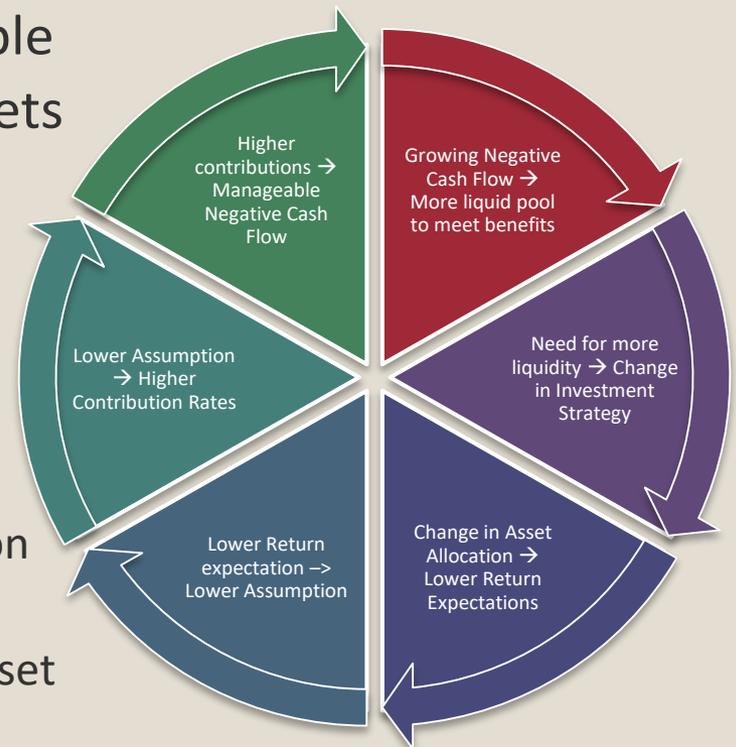
JFRS		
FY	Total Fees	
	Dollars	bps ¹
2019	\$445 K	8.0
2020	\$442 K	8.2
2021	\$658 K	8.8
2022	\$618 K	9.7

¹ Calculated using End Year Balance of Fair Market Value of Assets

CASH FLOW → Summary

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- Net Cash Flow = **C**ontributions – **B**enefits - **E**xpenses
- More plans having to manage Negative Net Cash Flow
 - Plans are maturing, retirees and benefit amounts increasing
- Negative CF not necessarily implying trouble
- Measuring negative CF as a percent of assets can serve as warning
 - As funding declines, assets decline
 - Negative CF becomes larger %
- At what level is negative CF okay?
 - No specific standard, depends on plan/actuary
 - Research indicates range of 3-5%, but depends on funding plan, health, and market experience
 - Portfolio income should offset majority, allow asset growth/funding to remain stable



CASH FLOW → *Current by Plan*

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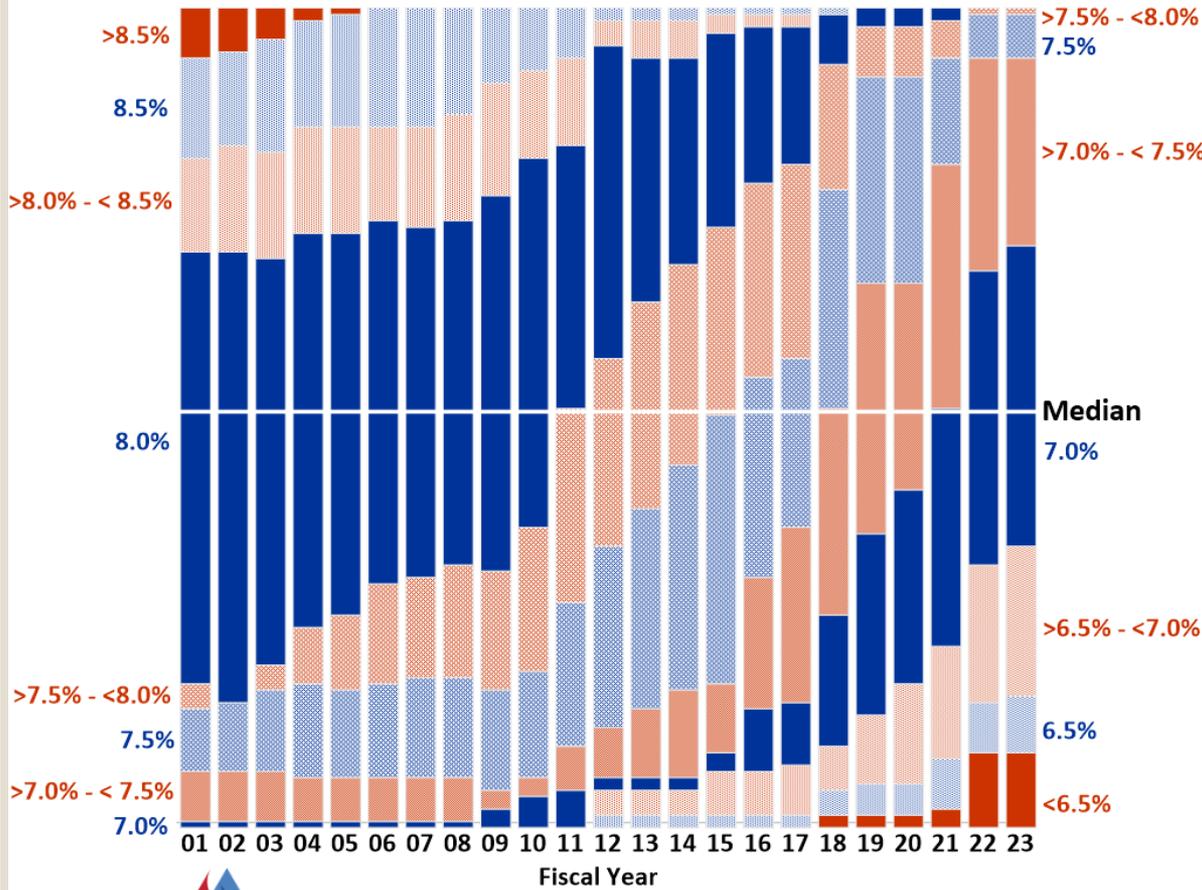
- Mix of negative/positive cash flow, most similar to prior year
 - KERS NH– Continued higher contributions have led to positive CF in recent years and improved in 2022. HB 8 funding creates improved CF stability. Had exceeded 3-5% threshold for several years prior to 2019.
 - CERS NH – Negative cash flow has fallen within range of negative 3-5% since 2009 and is improving.
 - SPRS –\$215 M additional appropriation above ADC improved values significantly for FY 22. Without \$215 M app. in FY 22, CF as a % of Assets would be 0.67%.
 - TRS – Additional contributions since 2009 have helped reduce negative cash flow back within range. Received additional appropriation of \$479.2 M in FY 22 to pay off “Green Box” dollars. Without \$479.2 app. in FY 22, CF as a % of Assets would be -3.02%.
 - LRP/JRP: Near or above 5% threshold. However, both LRP/JRP are near or above 100% funded. Employer contribution to LRP has been \$0 since FY 2019 (budget decision).

<i>Funding Level</i>	16.8%	51.8%	30.7%	57.2%	94.7%	108.9%
<i>As of June 30, 2022</i>	KERS NH	CERS NH	SPRS	TRS	JRP	LRP
Net Plan Assets BOY (M)	\$3,085.00	\$8,670.70	\$357.70	\$25,936.00	\$582.12	\$168.90
Cash Flow (M)	\$94.40	(\$152.60)	\$217.40	(\$303.30)	(\$17.54)	(\$6.10)
CF as % Assets	3.06%	-1.76%	60.78%	-1.17%	-3.01%	-3.61%
Investment Income ¹ (M)	\$52.70	\$139.90	\$6.30	\$354.20	\$10.05	\$2.83
Yield as % of Assets	1.71%	1.61%	1.76%	1.37%	1.73%	1.68%
2021 Cash Flow	\$18.70	(\$224.50)	\$0.60	(\$798.40)	(\$16.10)	(\$5.10)
CF as % Assets	0.80%	-3.20%	0.20%	-3.90%	-4.70%	-6.60%

¹ Does not include asset gains or losses

SPECIAL TOPIC → *Assumed Rates of Return*

Distribution of Investment Return Assumptions,
FY 01 to present



- The National Association of State Retirement Administrators (NASRA) collects data on public pension plans including the investment return assumption.
- Since 2000, the median assumed rate of return among pension plans has dropped from 8% to now below 7% (6.94%).
- Ky. AROR (pension):
 - KERS NH/SPRS: 5.25%
 - CERS: 6.25%
 - TRS: 7.1%
 - JFRS/LRP: 6.5%

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-NH and SPRS), 6.25% (CERS, KERS-H), 6.5% (LRP/JRP), or 7.5% (TRS) which is moving to 7.1% this year
 - ✦ Desire to exceed Policy Benchmarks over market cycle (5 and 10 year periods)
 - Policies and Oversight
 - ✦ KRS: Policies available online
 - ✦ CERS: 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 Annual Recoveries (6/30/22)
 - ✦ KPPA – \$616,557 proceeds received
 - ✦ TRS – \$506,498 proceeds received
 - ✦ LRP/JRP – \$1,874 proceeds received

INVESTMENT REVIEW → *Benchmarks*

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- Asset Class and Total Fund Benchmarks (6/30/22)
 - All plans using recognized and industry known indices
 - Alternative indices limited, most plans using a public index + model

KPPA Asset Class	Benchmark
Public Equity	MSCI ACWI
Private Equity	Russell 3000 + 300 bps (lagged)
High Yield/ Specialty Credit	50% S&P Leverage Loan +50% Barclays Corp US High Yield
Core Fixed	Bloomberg Barclays US Aggregate
Cash	Citigroup 3-Mo Treasury Bill
Real Estate	NCREIF ODCE
Real Return	US CPI + 3%

JFRS Asset Class	Benchmark
US Equity	S&P 500
Fixed Income	Barclays US Gov't/ Credit Interm.

TRS Asset Class	Benchmark
US Equity	S&P 1500
Non US Equity	MSCI ACWI Ex US
Fixed Income	Bloomberg Barclays Government/Credit
Real Estate	Inhouse: CPI + 2% Core: NCREIF ODCE Noncore: NCREIF Property
Timberland	NCREIF Timberland
Private Equity	Actual Perf (< 5Yrs) S&P500 + 3% (>5+ Yrs)
Additional Categories	B of A Merrill Lynch US High Yield II
Cash	90 Day T-Bill

REVIEW → Allocation & Targets (FY 22 Ended)

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- Current Asset Allocation, Targets, and Allowable Ranges (6/30/22)
 - TRS: Slight changes to targets/ranges from prior year, within ranges w/slight overweight to alternatives
 - KERS/CERS has made adjustments targets/ranges/asset class names, out of range in cash and inflation protected assets, KERS NH cash allocation grew during FY 22.
 - JFRS: No Change to targets/ranges, within ranges

KPPA Nonhazardous Plans (6/30/22)						
	KERS NH			CERS NH		
	Actual	Target	Range	Actual	Target	Range
EQUITY						
Public Equity	30.3%	32.5%	24-42%	46.0%	50%	35-65%
Private Equity	6.9%	7%	5-9%	9.5%	10%	7-13%
FIXED INCOME						
Specialty Credit	19.1%	15%	10.5-19.5%	21.0%	10%	7-13%
Core Fixed	21.6%	20.5%	16.5-24.5%	11.8%	10%	8-12%
Cash	13.4%	5%	0-10%	1.0%	0%	0-3%
INFLATION PROTECTED						
Real Estate	3.0%	10%	7-13%	4.0%	13%	9-17%
Real Return	5.6%	10%	7-13%	6.6%	7%	5-9%

TRS (6/30/22)			
	Actual	Target	Range
US Equity	37.5%	40%	34-48%
Non US Equity	17.7%	22%	18-25%
Fixed Income	16.5%	15%	8-22%
Real Estate	7.6%	7%	4-10%
Alternative Investments	10.2%	7%	4-10%
Additional Categories	8.7%	7%	4-15%
Cash	1.9%	2%	1-5%

JFRS Plans (6/30/22)					
	JRP		LRP		Range
	Actual	Target	Actual	Target	
US Equity	69.2%	70.0%	67.3%	70.0%	60%-80%
Fixed Income	29.7%	30.0%	28.9%	30.0%	20%-40%
Cash	1.1%	0.0%	3.8%	0.0%	

INVESTMENT REVIEW

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Questions?

APPENDIX A

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Retiree Fund Portfolio Performance

RETIREE HEALTH PERFORMANCE → FY 22

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<i>As of June 30, 2022</i>	1 –Year	3-Year	5-Year	10-Year	AROR
KERS -Nonhaz	-6.2%	5.9%	6.1%	6.9%	6.25%
Policy Benchmark	-4.9%	5.9%	6.2%	7.2%	
KERS – Haz	-4.5%	6.1%	6.6%	7.3%	6.25%
Policy Benchmark	-4.9%	5.7%	6.2%	7.2%	
CERS - Nonhaz	-5.4%	5.8%	6.5%	7.2%	6.25%
Policy Benchmark	-6.2%	5.2%	5.9%	7.0%	
CERS – Haz	-5.0%	6.0%	6.6%	7.3%	6.25%
Policy Benchmark	-6.2%	5.2%	5.9%	7.1%	
SPRS	-4.5%	6.4%	6.9%	7.4%	6.25%
Policy Benchmark	-4.9%	5.7%	6.2%	7.2%	
TRS Insurance	-9.7%	6.6%	6.9%	7.2%	7.1%
Policy Benchmark ¹	-10.1%	6.3%	6.7%	See Note	