

**Kentucky Retirement Systems Board of Trustees  
Quarterly Board Meeting  
June 5, 2023, 10:00 a.m. ET  
Live Video Conference/Facebook Live  
AGENDA**

- |   |  |
|---|--|
| 1. Call to Order  | Lynn Hampton                           |
| 2. Legal Public Statement   | Office of Legal Services               |
| 3. Roll Call/Public Comment                                       | Sherry Rankin                          |
| 4. Approval of Minutes – April 6, 2023 and April 11, 2023*        | Lynn Hampton                           |
| 5. Review and Approve Actuarial Assumptions*                      | Danny White<br>Janie Shaw              |
| 6. Joint Audit Committee Report and Recommendations*              | Lynn Hampton<br>Kristen Coffey         |
| 7. Joint Retiree Health Plan Committee Report                     | Dr. Crystal Miller<br>Connie Pettyjohn |
| 8. Hazardous Duty Requests*                                       | D’Juan Surratt                         |
| 9. Quarterly Financial Reports                                    | Michael Lamb                           |
| 10. Administrative Budget – Hybrid Percentage and KRS Allocation* | Michael Lamb                           |
| 11. Investment Committee Report                                   | Prewitt Lane<br>Steve Willer           |
| 12. Bylaw Amendment*  | Michael Board                          |
| 13. KRS CEO Contract Renewal*                                     | Lynn Hampton                           |
| 14. KPPA Update   | David Eager                            |
| 15. CEO Report  | John Chilton                           |
| 16. New Business  | Lynn Hampton                           |
| 17. Closed Session** - Litigation                                 | Lynn Hampton                           |
| 18. Adjourn*  | Lynn Hampton                           |

*\*Board Action Required*

*\*\*Board Action May Be Required*

**MINUTES OF MEETING  
COUNTY EMPLOYEES RETIREMENT SYSTEM  
AND  
KENTUCKY RETIREMENT SYSTEMS  
BOARD OF TRUSTEES SPECIAL CALLED MEETING  
HEALTHCARE EDUCATION  
APRIL 6, 2023, AT 10:00 A.M. ET  
VIA LIVE VIDEO TELECONFERENCE**

At the Special Called meeting of the County Employees Retirement System (CERS) Board of Trustees and the Kentucky Retirement Systems (KRS) Board of Trustees held on April 6, 2023, the following CERS Trustees were present: Betty Pendergrass (Chair), Dr. Patricia Carver, George Cheatham, Michael Foster, JT Fulkerson, Dr. Merl Hackbart, Dr. Martin Milkman, William O'Mara, and Jerry Powell. The following KRS Trustees were present: Lynn Hampton (Chair), Ramsey Bova, Dr. Crystal Miller. Staff members present were CERS CEO Ed Owens, III, KRS CEO John Chilton, David Eager, Rebecca Adkins, Erin Surratt, Michael Lamb, Victoria Hale, Carrie Bass, Connie Pettyjohn, Abby Sutherland, Katie Park, Glenna Frasher and Sherry Rankin. Others present included Tracey Garrison, Larry Loew, and Dr. Rae Godsey with Humana.

Ms. Pendergrass called to order the Special Called Meeting of the CERS Board of Trustees.

Ms. Hampton called to order the Special Called Meeting of the KRS Board of Trustees.

Ms. Bass read the Legal Public Statement.

Ms. Rankin called Roll for the CERS and KRS Boards of Trustees. No quorum was present for the KRS Board of Trustees.

There being no **Public Comment** submitted, Ms. Pendergrass introduced agenda item **Group Medicare 101 - Trustee Education Session** (Video 00:11:25 to 01:02:15). Ms. Tracey Garrison and Mr. Larry Loew with Humana provided an in-depth informational presentation covering Group Medicare and the services that Humana provides to KPPA and its Members.

Ms. Pendergrass introduced agenda item **KPPA Staff Healthcare Education Session** (Video 01:02:16 to 01:48:10). Ms. Connie Pettyjohn presented information on the Kentucky Employee Health Plan (KEHP), Medicare Advantage (MA), KEHP (non-Medicare eligible), and MA

(Medicare eligible) plans. Ms. Pettyjohn briefly explained the process in which a vendor and plans are selected. Lastly, she presented a detailed Q&A document which answers common benefit questions and provides notable benefit information. Ms. Pettyjohn answered several questions asked by the CERS and KRS Boards of Trustees

Ms. Pendergrass opened the floor for a motion to **adjourn** the Special Called Meeting of the CERS Board of Trustees. Mr. Powell made a motion to adjourn the meeting and was seconded by Dr. Carver. The motion passed unanimously.

There being no quorum, Ms. Hampton **adjourned** the Special Called Meeting of the KRS Board of Trustees.

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## CERTIFICATION

I do certify that I was present at this meeting, and I have recorded the above actions of the Trustees on the various items considered by it at this meeting. Further, I certify that all requirements of KRS 61.805-61.850 were met in conjunction with this meeting.

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Recording Secretary

I, the Chair of the Board of Trustees of the County Employees Retirement System, do certify that the Minutes of Meeting held on April 6, 2023, were approved on June 5, 2023.

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Chair of the Board of Trustees

I have reviewed the Minutes of the April 6, 2023, Board of Trustees Meeting for content, form, and legality.

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Executive Director  
Office of Legal Services

**MINUTES OF MEETING  
KENTUCKY RETIREMENT SYSTEMS  
BOARD OF TRUSTEES ANNUAL MEETING  
APRIL 11, 2023, AT 10:00 AM ET  
VIA LIVE VIDEO TELECONFERENCE**

At the Annual Meeting of the Kentucky Retirement Systems Board of Trustees held on April 11, 2023 the following members were present: Lynn Hampton (Chair), David Adkins, Ramsey Bova, John Cheshire, Prewitt Lane, Dr. Crystal Miller, Keith Percy, Pamela Thompson and William Summers, V. Staff members present were KRS CEO John Chilton, David Eager, Rebecca Adkins, Erin Surratt, Michael Board, Victoria Hale, Leigh Ann Davis, Michael Lamb, Connie Davis, D’Juan Surratt, Steve Willer, Ann Case, Jared Crawford, Brian Caldwell, Kristen Coffey, Madeline Perry, Ashley Gabbard, Katie Park, Glenna Frasher, and Sherry Rankin. Others present included Chris Tessman and Craig Morton with Wilshire Advisors, and David Palay and Ryan Stippich with Reinhart.

Ms. Hampton called the meeting to order.

Mr. Board read the Legal Public Statement.

Ms. Rankin called roll.

Ms. Hampton requested a moment of silence to honor the victims, first responders, and all affected by the April 10, 2023, mass shooting at the Old National Bank in Louisville, Kentucky.

There being no *Public Comment* submitted, Ms. Hampton introduced agenda item *Approval of Minutes – March 1, 2023 (Video 00:09:12 to 00:10:04)*. A motion was made by Mr. Summers and seconded by Mr. Lane to approve the minutes as presented. The motion passed unanimously.

Ms. Hampton introduced agenda item *Results of 2023 SPRS Trustee Election (Video 00:10:05 to 00:12:10)*. Ms. Madeline Perry announced that Mr. Keith Percy had been reelected. She requested that the KRS Board of Trustees accept the certification letter and declare the election final. Mr. Adkins made a motion to accept the results of the 2023 SPRS Election and declare the election final. The motion was seconded by Mr. Cheshire and passed unanimously. Ms. Hampton

congratulated Mr. Peercy on his third term as a member of the Board. Mr. Eager added that 317 of the 359 valid ballots received were electronic. Ms. Hampton asked if the reported 12.23% turnout percentage was considered successful. Ms. Adkins stated that this turnout percentage is high in comparison to past KRS and CERS elections.

Ms. Hampton introduced agenda item ***Election of Chair*** (Video 00:12:11 to 00:15:54). Due to technical issues, KRS Vice-Chair Prewitt Lane, led the Elections of Chair and Vice-Chair. Mr. Lane requested nominations for KRS Chair. Mr. Adkins nominated Ms. Lynn Hampton for Chair. Mr. Summers seconded the nomination. Mr. Adkins made a motion to close nominations and to declare Ms. Lynn Hampton the Chair of KRS by acclamation. There were no objections; therefore, Ms. Hampton was approved as the KRS Chair for the next year. Ms. Hampton thanked the KRS Board of Trustees.

Ms. Hampton introduced the ***Election of Vice-Chair*** and requested nominations. Mr. Adkins nominated Mr. Prewitt Lane for Vice-Chair. Mr. Cheshire seconded the nomination. Mr. Adkins made a motion to close nominations and to declare Mr. Prewitt Lane the Vice-Chair of KRS by acclamation. There were no objections; therefore, Mr. Lane was approved as the KRS Chair for the next year. Mr. Lane thanked the KRS Board of Trustees.

Ms. Hampton introduced agenda item ***KRS Board Chair's Appointments to KPPA Board, KRS Investment Committee Chair, and Committees*** (Video 00:15:55 to 00:17:10). Ms. Hampton advised that there were no requested changes to the current KRS Board and Committee assignments; therefore, there would be no action taken.

Ms. Hampton introduced agenda item ***PPW Board of Directors Election*** (Video 00:17:11 to 00:20:00). Ms. Hampton stated that she would like to nominate Mr. Peercy to be submitted as the SPRS Representative for the upcoming PPW Board of Directors election. Mr. Adkins made a motion to submit Mr. Keith Peercy as the SPRS Representative for the upcoming PPW Board of Directors election. The motion was seconded by Mr. Cheshire and passed unanimously.

Mr. Lane nominated Ms. Hampton to be submitted as the KERS Representative for the upcoming PPW Board of Directors election. The motion was seconded by Mr. Adkins and passed unanimously.

Ms. Adkins clarified that these nominated representatives will be submitted to the PPW Chairs to be placed on the ballot for the upcoming PPW Board of Directors election. Then, the KRS Board will vote by proxy.

Mr. Adkins made a motion to authorize Steve Willer, as CIO, to vote the PPW proxy for KRS as authorized in the KRS Investment Policy Statement and as set forth in the KRS Investment Proxy Voting Policy. Mr. Summers seconded the motion and the motion passed unanimously.

Ms. Hampton introduced agenda item ***KPPA Update*** (Video 00:20:01 to 00:21:26). Mr. Eager advised that a written report was included in the Meeting Material. Mr. Eager asked if there were any questions regarding the written KPPA Update. There being no questions, Ms. Hampton noted that Ms. Pamela Thompson and Mr. Prewitt Lane have agreed to extend their terms which expire on June 17, 2023; however, Mr. John Cheshire does not wish to extend his term.

Ms. Hampton introduced agenda item ***KRS Update*** (Video 00:21:27 to 00:26:40). KRS CEO John Chilton provided an overview of the past 90 days. He reported that all Trustees who were appointed in the last year were confirmed by the Senate. Mr. Chilton provided an update on legislation. He advised that the KPPA Housekeeping Bill was not voted on in the Senate; therefore, was not approved. Lastly, Mr. Chilton reminded the KRS Trustees that the Ethics Disclosure is due by April 15, 2023.

Ms. Hampton introduced agenda item ***Implementation of HB 587*** (Video 00:26:41 to 00:42:57). Mr. Board presented an informational memo outlining the ways in which HB 587 changes current law, the requirements of the KPPA Board of Trustees, and the requirements and reporting structure of the Internal Auditor. There was discussion surrounding the importance and the reporting structure of the Internal Auditor.

Ms. Hampton introduced agenda item ***Closed Session*** and requested a motion to enter closed session to discuss pending litigation pursuant to KRS 61.810(c). A motion was made by Mr. Cheshire and seconded by Ms. Thompson. The motion passed unanimously.

Ms. Victoria Hale read the following statement and the meeting moved into closed session: A motion having been made in open session to move into a closed session for a specific purpose, and

such motion having carried by majority vote in open, public session, the Board shall now enter closed session to consider litigation, pursuant to KRS 61.810(1)(c), because of the necessity of protecting the confidentiality of the Systems' litigation strategy and preserving any available attorney-client privilege. All public attendees exited the meeting.

Ms. Hampton called the meeting back to open session and stated that there was no reportable action.

Ms. Hampton requested a motion to adjourn. Mr. Adkins made a motion and was seconded by Mr. Peercy to adjourn the meeting. The motion passed unanimously.

Copies of all documents presented are incorporated as part of the Minutes of the Board of Trustees held April 11, 2023, except documents provided during a closed session conducted pursuant to the open meetings act and exempt under the open records act.

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## CERTIFICATION

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Recording Secretary

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Chair of the Board of Trustees

I have reviewed the Minutes of the April 11, 2023, Board of Trustees Meeting for content, form, and legality.

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Executive Director  
Office of Legal Services



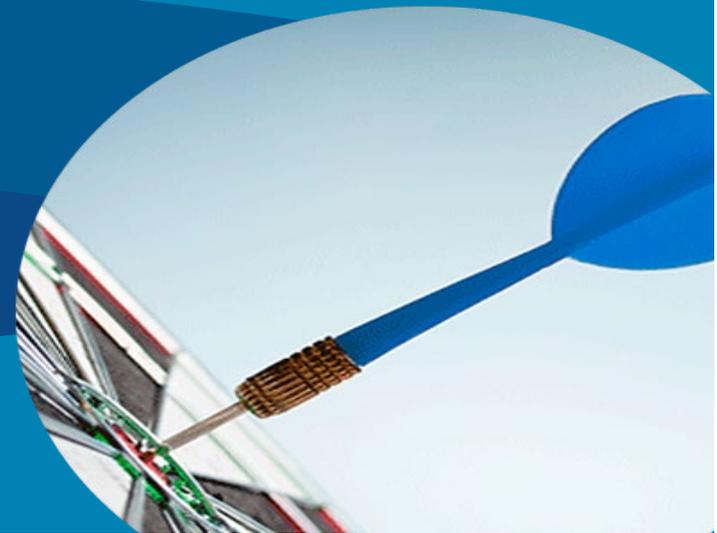
# Kentucky Retirement Systems

2022 Experience Study Summary  
June 5, 2023

Janie Shaw, ASA, EA, MAAA

Danny White, FSA, EA, MAAA

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## Experience Study Process

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- Assumptions are not static; they should occasionally change to reflect
  - New information
  - Mortality improvement
  - Changing patterns of retirements, terminations, etc.
  - Changing knowledge
  - Changes in best practices
- Recent experience provides strong guidance for some assumptions (for example, mortality) and weak guidance for others (for example, the investment return rate)

## Experience Study Process

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- Compare actual experience to current actuarial assumptions and recommend changes to assumptions if necessary to better align with future expectations
- Reviewed past experience over a given timeframe
  - Reviewed experience separately for non-hazardous and hazardous
  - Identified how many members retired, terminated, became disabled, or died, including their age/service
  - Identified salary increases received by active members
  - Greater emphasis on forward-looking expectations for economic assumptions

## Summary of Recommendations

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- This is the second experience study performed by GRS for the Kentucky Retirement Systems. While there were some material changes in the actuarial assumptions adopted by the Board in the prior experience study conducted in 2018, the Board will find our recommendations to be significantly subtler in this report.
  - Full detail in the report

## Economic Assumption Recommendations

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- Price inflation: Increase the inflation assumption from 2.3% to 2.5%.
- Investment return: We believe it is prudent for the Board to maintain the 5.25% return assumption for the KERS non-hazardous and SPRS retirement funds and the 6.25% assumption for the KERS hazardous retirement fund. We recommend a 0.25% increase in the return assumption to 6.50% for all insurance funds.
- Cash Balance Interest Credit: Increase to 5.90% for KERS non-hazardous and SPRS funds and to 6.75% for KERS hazardous fund.
- Individual salary increases: No recommended changes
- Payroll growth: No change to the 0% payroll growth assumption

## Demographic Assumption Recommendations

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- Mortality: Update the base mortality assumption to reflect recent experience (data dependent). Update the improvement assumption based on more recent published report (anticipated trend).
  - Increase disability mortality. No change to pre-retirement mortality.
- Termination/Withdrawal: Increase the rates of termination prior to retirement age for both KERS funds and SPRS.
- Disability incidence: Decrease the rate of disability incidence for the KERS non-hazardous fund and no change for the KERS hazardous and SPRS funds.
- Retirement: No change to the retirement assumption.
- Participation in Retiree Health Insurance Plan: increase percentage of members in SPRS fund assumed to cover spouses at retirement. No other changes.

## Investment Return Assumption

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- Used to discount future benefit payments to determine liabilities
  - Most important and most subjective assumption used in the valuation.
- Decreased in 2017 to 5.25% for KERS non-hazardous and SPRS funds and 6.25% for KERS hazardous fund all insurance funds
- Because of economic changes, investment consultants have noticeably increased their forward-looking expectations in 2023.
  - We compared return expectations based on the 2022 and 2023 capital market assumptions for decision making purposes.

# Investment Return Assumption

## KERS Non-Hazardous and SPRS

	Investment Consultant	50th Percentile		Probability of Exceeding 5.25%	
		Expected Return (Geometric)		2023	2022
		2023	2022	2023	2022
7 to 10 Year Expectations	(1)	(2)	(3)	(4)	(5)
	1	5.9%	4.4%	55%	34%
	2	6.0%	4.8%	56%	38%
	3	6.2%	5.0%	59%	41%
	4	6.6%	5.2%	63%	43%
	5	6.7%	4.9%	65%	40%
	6	6.8%	4.9%	65%	40%
	7	7.0%	4.9%	69%	38%
	8	7.0%	5.6%	69%	47%
	9	7.2%	5.2%	69%	44%
10	7.3%	5.7%	70%	50%	
20 to 30 Year Expectations	1	5.7%	4.8%	53%	40%
	2	6.5%	5.8%	62%	51%
	3	6.6%	5.8%	64%	50%
	4	7.1%	6.0%	70%	53%
	5	7.6%	6.4%	73%	58%
	6	7.7%	6.2%	75%	55%
7-10 Year Expectation Avg:		6.7%	5.1%	64%	42%
20-30 Year Expectation Avg:		6.9%	5.8%	66%	51%

It would be prudent for the Board to maintain the 5.25% investment return assumption for the KERS non-hazardous and SPRS retirement funds



Source: GRS



# Investment Return Assumption

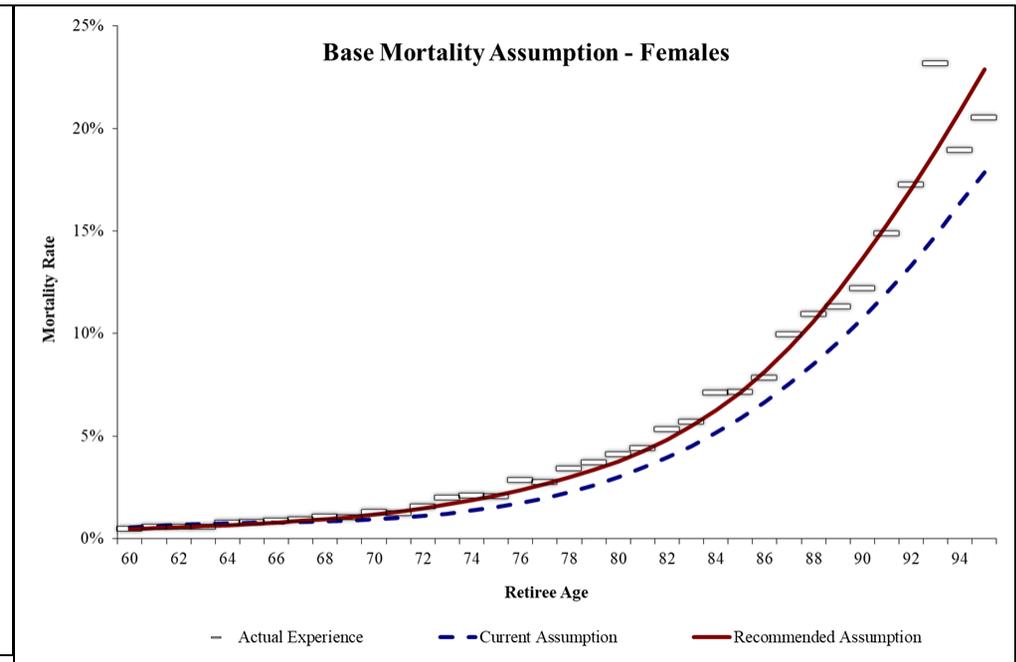
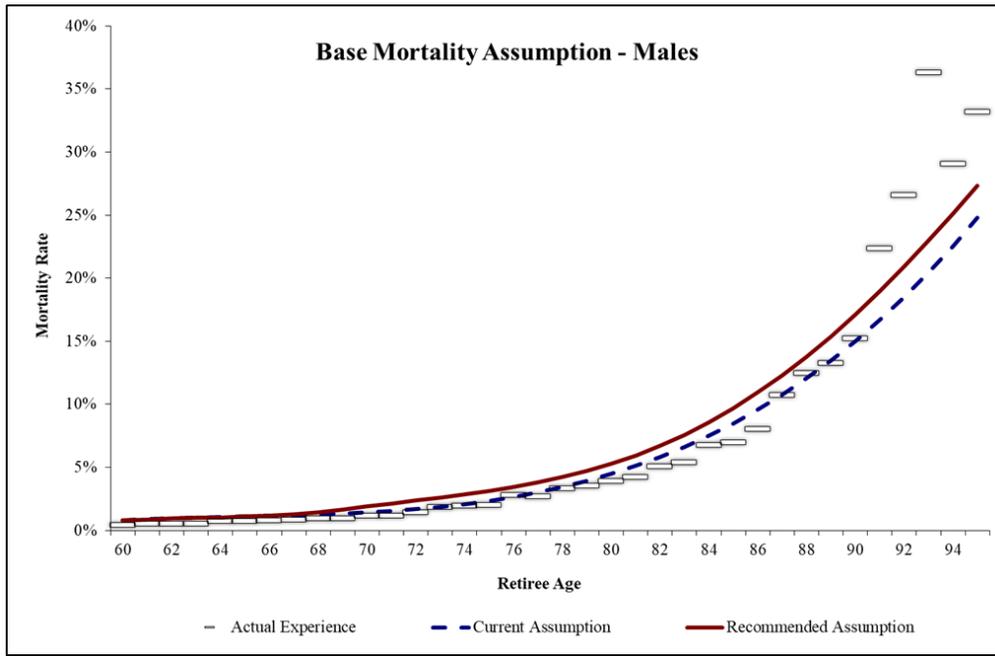
## KERS Hazardous and Insurance Funds

	Investment Consultant	50th Percentile Expected Return (Geometric)		Probability of Exceeding 6.25%	
		2023	2022	2023	2022
		(1)	(2)	(3)	(4)
7 to 10 Year Expectations	1	6.2%	4.9%	49%	38%
	2	6.4%	5.4%	51%	42%
	3	6.9%	5.9%	56%	47%
	4	7.1%	5.8%	58%	46%
	5	7.5%	6.0%	59%	43%
	6	7.3%	5.8%	60%	45%
	7	7.4%	6.2%	61%	50%
	8	7.5%	6.2%	62%	50%
	9	7.8%	5.3%	66%	40%
	10	7.9%	5.8%	65%	46%
20 to 30 Year Expectations	1	6.2%	5.3%	49%	40%
	2	7.1%	6.4%	58%	52%
	3	7.3%	6.5%	60%	53%
	4	7.8%	6.8%	65%	55%
	5	7.8%	6.6%	65%	54%
	6	8.6%	6.9%	71%	56%
7-10 Year Expectation Avg:		7.2%	5.7%	59%	45%
20-30 Year Expectation Avg:		7.5%	6.4%	61%	52%

GRS recommends maintaining the 6.25% investment return assumption for the KERS hazardous retirement fund and increasing the investment return assumption to 6.50% for all insurance funds



# 2023 Public Retirees of Kentucky Mortality Table



# 2023 Public Retirees of Kentucky Mortality Table

Life Expectancy for an Age 65 Retiree in Years					
Assumption	Year of Retirement				
	2025	2030	2035	2040	2045
Current Assumption – Male	21.4	21.8	22.2	22.6	23.0
Recommended Assumption – Male	19.8	20.2	20.6	21.0	21.3
Current Assumption – Female	24.4	24.8	25.2	25.6	25.9
Recommended Assumption – Female	22.4	22.7	23.1	23.4	23.7

# Fiscal Impact – KERS Non-Hazardous (\$ in thousands)

	Current Assumptions	Proposed Demographic Assumptions	Proposed Demographic with 5.5% Discount Rate
<b>Liability and Assets - Pension Fund</b>			
4. Unfunded Liability	\$ 13,511,368	\$ 12,860,257	\$ 12,446,408
5. Funded Ratio	18.5%	19.2%	19.8%
<b>Liability and Assets - Insurance Fund</b>			
8. Unfunded Liability	\$ 372,833	\$ 316,380	\$ 269,403
9. Funded Ratio	79.1%	81.7%	84.0%
<b>Actuarially Determined Employer Contribution - Pension Fund</b>			
10. Normal Cost Rate	7.74%	7.32%	6.73%
11. Amortization Cost	N/A	N/A	N/A
12. Pension Employer Contribution Rate	7.74%	7.32%	6.73%
13. Amortization Cost	\$ 900,701	\$ 844,296	\$ 830,924
<b>Actuarially Determined Employer Contribution - Insurance Fund</b>			
14. Normal Cost Rate	1.86%	1.71%	1.58%
15. Amortization Cost	N/A	N/A	N/A
16. Insurance Employer Contribution Rate	1.86%	1.71%	1.58%
17. Amortization Cost	\$ 5,192	\$ (125)	\$ (3,993)
18. Total Employer Contribution Rate	9.60%	9.03%	8.31%
19. Change in Contribution Rate		-0.57%	-1.29%
20. Total Amortization Cost <sup>1</sup>	\$ 905,893	\$ 844,296	\$ 830,924
21. Change in Amortization Cost		(61,597)	(74,969)
22. Estimated Contributions	\$ 1,035,999	\$ 966,677	\$ 943,547
23. Change in Contributions		\$ (69,322)	\$ (92,452)

<sup>1</sup> Amortization cost for the insurance fund will not be less than \$0.

# Fiscal Impact – KERS Hazardous (\$ in thousands)

	Current Assumptions	Proposed Demographic Assumptions	Proposed Demographic with 6.5% Discount Rate
<b>Liability and Assets - Pension Fund</b>			
4. Unfunded Liability	\$ 484,389	\$ 462,420	\$ 428,338
5. Funded Ratio	63.2%	64.3%	66.0%
<b>Liability and Assets - Insurance Fund</b>			
8. Unfunded Liability	\$ (250,657)	\$ (254,932)	\$ (264,020)
9. Funded Ratio	172.2%	174.4%	179.1%
<b>Actuarially Determined Employer Contribution - Pension Fund</b>			
10. Normal Cost Rate	8.60%	8.10%	7.52%
11. Amortization Cost	21.52%	20.22%	18.73%
12. Pension Employer Contribution Rate	30.12%	28.32%	26.25%
<b>Actuarially Determined Employer Contribution - Insurance Fund</b>			
13. Normal Cost Rate	3.45%	2.83%	2.62%
14. Amortization Cost	-13.39%	-13.69%	-14.54%
15. Insurance Employer Contribution Rate	0.00%	0.00%	0.00%
16. Total Employer Contribution Rate	30.12%	28.32%	26.25%
17. Change in Contribution Rate		-1.80%	-3.87%
18. Estimated Contributions	\$ 49,890	\$ 46,908	\$ 43,480
19. Change in Contributions		\$ (2,982)	\$ (6,410)



# Fiscal Impact – SPRS (\$ in thousands)

	Current Assumptions	Proposed Demographic Assumptions	Proposed Demographic with 5.5% Discount Rate
<b>Liability and Assets - Pension Fund</b>			
4. Unfunded Liability	\$ 507,474	\$ 477,624	\$ 449,248
5. Funded Ratio	52.5%	54.0%	55.5%
<b>Liability and Assets - Insurance Fund</b>			
8. Unfunded Liability	\$ (1,441)	\$ (1,500)	\$ (7,128)
9. Funded Ratio	100.6%	100.6%	103.1%
<b>Actuarially Determined Employer Contribution - Pension Fund</b>			
10. Normal Cost Rate	19.49%	19.82%	18.39%
11. Amortization Cost	65.90%	60.53%	57.05%
12. Pension Employer Contribution Rate	85.39%	80.35%	75.44%
<b>Actuarially Determined Employer Contribution - Insurance Fund</b>			
13. Normal Cost Rate	6.66%	6.78%	6.36%
14. Amortization Cost	-2.98%	-2.98%	-4.15%
15. Insurance Employer Contribution Rate	3.68%	3.80%	2.21%
16. Total Employer Contribution Rate	89.07%	84.15%	77.65%
<b>17. Change in Contribution Rate</b>		<b>-4.92%</b>	<b>-11.42%</b>
18. Estimated Contributions	\$ 42,651	\$ 40,295	\$ 37,183
<b>19. Change in Contributions</b>		<b>\$ (2,356)</b>	<b>\$ (5,468)</b>



## Closing Comments

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- Full Listing of Recommendations in Section II of Experience Study Report
  - Includes Detailed information and Rationale for each assumption
- New assumptions will be first used in the June 30, 2023 actuarial valuation
  - Determines the contribution requirement for the FYE 2025 and FYE 2026 fiscal years.

## Disclaimers

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- This presentation is intended to be used in conjunction with the 2022 Actuarial Experience Study. This presentation should not be relied on for any purpose other than the purpose described in the report.
- Readers are cautioned to examine original source materials and to consult with subject matter experts before making decisions related to the subject matter of this presentation.
- This presentation shall not be construed to provide tax advice, legal advice or investment advice.

# Kentucky Retirement Systems

2022 Actuarial Experience Study  
for the Period Ending June 30, 2022

DRAFT





May 31, 2023

Board of Trustees  
Kentucky Retirement Systems  
Perimeter Park West  
1260 Louisville Road  
Frankfort, KY 40601

Dear Members of the Board:

**Subject: Results of 2022 Experience Study**

We are pleased to present our report of the 2022 Experience Investigation Study for the Kentucky Retirement Systems (i.e. Kentucky Employees Retirement System and the State Police Retirement System) for the period ending June 30, 2022. This report includes summaries and analysis of the experience data. Based on this analysis, we have recommendations for updates to certain actuarial assumptions and methods for use in the actuarial valuation, which will be first used in the June 30, 2023 actuarial valuation.

In addition, the report provides the estimated effect on the actuarial liabilities and the contribution requirements if these recommendations are adopted by the Board. This is the second experience study performed by GRS for the Kentucky Retirement Systems. While there were some material changes in the actuarial assumptions adopted by the Board in the prior experience study conducted in 2018, the Board will find our recommendations to be significantly subtler in this report. Further to this point, the analysis in this experience study confirms that the demographic assumptions currently used in the actuarial valuation remain applicable best estimates of the future experience of the plan.

This experience investigation study was conducted in accordance with generally accepted actuarial principles and practices, and in full compliance with the Actuarial Standards of Practice as issued by the Actuarial Standards Board. All of the undersigned are members of and meet the Qualification Standards of the American Academy of Actuaries and have experience with large public sector retirement systems.

We wish to thank the KPPA staff for their assistance in this project.

Sincerely,

A handwritten signature in blue ink that reads "Janie Shaw".

Janie Shaw, ASA, EA, MAAA  
Consultant

A handwritten signature in blue ink that reads "Daniel J. White".

Daniel J. White, FSA, EA, MAAA  
Senior Consultant

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DRAFT



## Summary of Process

A periodic review and selection of the actuarial assumptions is one of many important components of understanding and managing the financial aspects of the Kentucky Employees Retirement System and the State Police Retirement System. Use of outdated or inappropriate assumptions can result in understated costs which will lead to higher future contribution requirements or perhaps an inability to pay benefits when due. Also, a single set of assumptions is typically not expected to be suitable forever. As the actual experience of the plan changes, the assumptions should be reviewed and adjusted accordingly.

It is important to recognize that the impact from various outcomes and the ability to adjust from experience deviating from the assumption are not symmetric. Due to compounding economic forces, legal limitations, and moral obligations, outcomes from underestimating future liabilities are much more difficult to manage than outcomes of overestimates, and that un-symmetric risk should be considered when the assumption set, investment policy, and funding policy are created. As such, the assumption set used in the valuation process needs to represent the best estimate of the future experience of each fund and be at least as likely, if not more than likely, to overestimate the future liabilities versus underestimate them.

Changes in certain assumptions and methods are suggested upon this comparison to remove any bias that may exist, except to perhaps include some margin for future adverse experience where appropriate. Next, the assumption set as a whole was analyzed for consistency and to ensure that the projection of liabilities was reasonable and consistent.

The following report provides our recommended changes to the current actuarial assumptions.

## **SECTION I**

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### **INTRODUCTION**

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## Introduction

In determining liabilities, contribution rates and funding periods for retirement plans, actuaries must make assumptions about the future. Among the assumptions that must be made are:

- Investment return rate
- Salary increase rates
- Inflation rate
- Cash balance interest credit rate
- Mortality rates
- Retirement rates
- Termination rates
- Disability rates

For some of these assumptions, such as the mortality rates, past experience provides important evidence about the future. For other assumptions, such as the investment return rate, the link between past and future results is much weaker. In either case, though, actuaries should review their assumptions periodically and determine whether these assumptions are consistent with actual past experience and with anticipated future experience.

In conducting experience studies, actuaries generally use data over a period of several years. This is necessary in order to gather enough data so that the results are statistically significant. In addition, if the study period is too short, the impact of the current economic conditions may lead to misleading results. It is known, for example, that the health of the general economy can impact salary increase rates and termination rates. Using results gathered during a short-term economic expansion or contraction will not be representative of the long-term trends in these assumptions. Also, the adoption of legislation, plan improvements or changes in salary schedules will sometimes cause a short-term distortion in the experience. For example, if an early retirement window was opened during the study period, we would usually see a short-term spike in the number of retirements. Using a longer period prevents giving too much weight to such short-term effects. On the other hand, using a much longer period can increase the difficulty of identifying changes in behavior that may be occurring, such as a change in the ages at which members retire. In our view, using a five-year period ending June 30, 2022 is generally reasonable for some assumptions, however we used seven and nine years of experience for developing recommended salary, termination, and mortality assumptions. More detail is provided in each applicable section.

In the review of the demographic assumptions, we first determine the number of deaths, retirements, etc. that occurred during the period. Then we determine the number expected to occur, based on the current actuarial assumptions. The number "expected" is determined by multiplying the probability of the occurrence at the given age, by the "exposures" at that same age. For example, let's assume there is a rate of retirement of 30% at age 55. The number of exposures can only be those members who are age 55 and eligible for retirement at that time. Thus, they are considered "exposed" to that assumption. Finally, we calculate the A/E ratio, where "A" is the actual number (of retirements, for example) and "E" is the expected number. If the current assumptions were "perfect", the A/E ratio would be 100%. When it varies significantly from this figure, it is a sign that a new assumption may be needed. (However, in some cases we prefer to set our assumptions to produce an A/E ratio a little above or below 100%, in order to



introduce some conservatism.) Of course, we not only look at the assumptions as a whole, but we also review how well they fit the actual results by gender, by age, and by service.

In some instances, we will compare the actual and expected experience based on headcount. However, there are other instances it is more appropriate to “weigh” the experience by benefit amount, liability, or salary, with the intention that our review and recommendations provide a better fit to the actual experience on a benefit basis which should result in smaller liability gains and losses prospectively.

Finally, if the data leads the actuary to conclude that new tables are needed, we will take into consideration the statistical credibility of the assumption as well as “graduate” or smooth the recommended assumption in instances where the experience has material variation age to age or from service year to service year. Please bear in mind that, while the recommended assumption set represents our best estimate, there are other reasonable assumption sets that could be supported. Some reasonable assumption sets would show higher or lower liabilities or costs.

## ORGANIZATION OF REPORT

Section II of this report summarizes our recommended changes and the fiscal impact if those assumptions are adopted. Section III contains our findings and a more detailed analysis of our recommendation for each actuarial assumption. Sections IV and V show a summary of the recommended assumptions for each System (e.g. KERS and SPRS). Finally, Section VI presents detailed summaries of the data and comparisons of the A/E ratios.

## SECTION VI EXHIBITS

The exhibits in Section VI should generally be self-explanatory. For example, on page 63, we show the exhibit analyzing the service-based termination rates. The second column shows the total number of members who terminated during the study period. This excludes members who became disabled or retired. Column (3) shows the total exposures. This is the number of members who could have terminated during any of the years. In this exhibit, the exposures exclude anyone eligible for retirement. A member is counted in each year they could have terminated, so the total shown is the total exposures for the study period. Column (4) shows the probability of termination based on the raw data. That is, it is the result of dividing the actual number of terminations (col. 2) by the number exposed (col. 3). Column (5) shows the current termination rate and column (6) shows the new recommended termination rate. Columns (7) and (8) show the expected numbers of terminations based on the current and proposed termination assumptions. Columns (9) and (10) show the Actual-to-Expected ratios under the current and proposed termination assumptions.



## **SECTION II**

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### **SUMMARY OF RECOMMENDATIONS AND FISCAL IMPACTS**

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## Summary of Recommendations KRS and SPRS

Our recommendations for the actuarial assumptions to be used in the future actuarial valuations for the KERS and SPRS funds may be summarized as follows:

### *Economic Assumptions*

1. **Inflation Assumption:** Given the current inflationary environment, we recommend increasing the price inflation assumption to 2.50% (i.e. a 0.20% increase from the current assumption). Changing this assumption has no impact on projected benefits, liability, and cost.
2. **Investment Return Assumption:** The forward-looking analysis supports an increase in the investment return assumption to 5.50% for the KERS non-hazardous and SPRS retirement fund. Similarly, this analysis supports an increase in the investment return assumption to 6.50% for the KERS hazardous retirement fund and all three health insurance funds. This is a 0.25% increase in the investment return assumption for all funds. This is our recommendation as it complies with the Actuarial Standards of Practice regarding selection of an investment return assumption. However, while this Standard of Practice allows an actuary to consider the nonsymmetrical investment risk (i.e. there is greater risk of downside returns compared to upside returns), it is not explicit with regard to the consideration of the current financial condition of the retirement system. Since the funded status of the KERS non-hazardous pension fund was 18.5% (i.e. \$3.1 billion in assets compared to \$16.6 billion in liability) as of the last actuarial valuation, it would be prudent for the Board to maintain the assumed rate of return for this retirement fund as it will result in more employer contributions each year. Similarly, the funded status of the KERS hazardous retirement fund and SPRS fund was 63.2% and 52.5%, respectively, as of June 30, 2022. It would also be reasonable if the Board elected to maintain the assumed rate of return for these funds.

On the other hand, each of the three insurance funds are smaller in liability and significantly better funded with the funded ratios of the KERS Hazardous and SPRS insurance funds being in excess of 100%. Therefore, we believe it is reasonable for the Board to increase the investment return assumption for each of these insurance funds by 0.25% to 6.50%.

3. **Salary Increases for Individual Members:** We recommend no changes to the rate of salary increase assumption for the KERS or SPRS funds.
4. **Tier 3 Cash Balance Interest Credit Assumption:** As a result of stochastic analysis performed on the investment returns and volatility and how it relates to the Tier 3 cash balance interest crediting rate, we recommend increasing the interest crediting assumption to 5.90% for both the KERS non-hazardous and SPRS funds, and to 6.75% for the KERS hazardous fund.
5. **Payroll growth rate (used for amortizing the UAAL):** We recommend no change to the 0% payroll growth rate assumption for the KERS Hazardous System and the State Police Retirement System.



A payroll growth assumption is currently irrelevant for the KERS Non-Hazardous System. The enactment of HB 8 during the 2021 legislative session modified how employer contributions are allocated and collected from the participating employers. This legislation strengthened the financial condition of the pension fund by de-linking the collection of contributions and employer payroll, eliminating the risk of a continual decline in active membership and payroll.

*Demographic Assumptions:*

6. **Mortality:** We recommend replacing the base retiree mortality tables with an updated mortality table developed using the actual mortality experience of non-disabled retirees in KERS, CERS, and SPRS through June 30, 2022. We also recommend using a more recently released generational mortality improvement assumption based on the ultimate rates of the published MP-200 improvement scales (“2020MP-Ultimate”) to explicitly project future improvement in life expectancy.

We also recommend making an adjustment to the current mortality tables for disabled retirees. We do not recommend any change to the mortality assumption for active members, which is one of the least material assumptions used in the actuarial valuation.

7. **Termination/Withdrawal:** We recommend increasing the rates of termination prior to retirement for the KERS non-hazardous and hazardous funds and SPRS.
8. **Disability Incidence:** We recommend decreasing the rates of disability incidence for the KERS non-hazardous fund. We recommend no change to the rates of disability incidence for the KERS hazardous or SPRS funds.
9. **Retirement:** Expected retirement patterns continue to follow actual experience. We are not recommending any changes to the retirement assumption for the KERS non-hazardous, KERS hazardous, or SPRS funds. The rates of retirement used in the valuation will continue to differentiate anticipated retirement behaviors for Tier 1, Tier 2, and Tier 3 members.
10. **Participation in the Retiree Health Insurance Plan:** We recommend increasing the percentage of members in the SPRS fund assumed to cover spouses at retirement. We recommend no other changes the current assumptions regarding participation in the retiree health insurance plan.

*Actuarial Methods and Policies*

11. **Asset Valuation Method:** We recommend continued use of the five-year asset smoothing method with each year’s investment losses based on the expected and actual investment earning determined on a market value of asset basis.
12. **Actuarial Cost Method:** We recommended the continued use of the individual Entry Age Normal cost method (EAN) used to determine the actuarial accrued liability.



## Summary of Recommendations

Our recommendations to the actuarial assumptions for use in the actuarial valuation may be summarized as follows:

Assumption (1)	KERS Non-Haz (2)	KERS Haz (3)	SPRS (4)
<b><i>Economic Assumptions</i></b>			
1. Inflation	Increase	Increase	Increase
2. Investment Return (Pension / Insurance)	Board Discussion	Board Discussion	Board Discussion
3. Short-Service Salary Increase	No Change	No Change	No Change
4. Long-Service Salary Increase	No Change	No Change	No Change
5. Payroll Growth Assumption	No Change	No Change	No Change
6. Cash Balance Interest Credit Assumption	Increase	Increase	Increase
<b><i>Demographic Assumptions</i></b>			
7. Retiree Mortality	Increase (KPPA Specific)	Increase (KPPA Specific)	Increase (KPPA Specific)
8. Termination	Increase	Increase	Increase
9. Retirement	No Change	No Change	No Change
10. Disability incidence	Decrease	No Change	No Change
11. Health Insurance Participation	No Change	No Change	Increase
<b><i>Other Assumptions and Methods</i></b>			
12. Asset Method	No Change	No Change	No Change
13. Entry Age Normal Cost Method	No Change	No Change	No Change



## Summary of Financial Impact of Recommendations

The following pages provide the actuarial impact of the recommended assumptions for each fund based on the June 30, 2022 actuarial valuation. In actuality, these recommended assumptions will be first used when preparing the June 30, 2023 actuarial valuation, which identifies the employer contribution requirements for the bi-annual fiscal period beginning July 1, 2024 and ending June 30, 2026. For informational purposes, the tables show the changes in the contribution requirement, unfunded actuarial accrued liability, and the funded ratio due to the recommended assumption changes. The exhibits identify the financial effect due to the change in the demographic assumptions and the change in the investment return assumption. We believe the Board's decision about whether or not to adopt our recommendations should be based on the collective effect on the contribution rate or the actuarial liabilities and not changes in individual assumptions.

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**Fiscal Impact of Proposed Assumptions**  
**KERS Non-Hazardous**  
(\$ in Thousands)

	Current Assumptions	Proposed Demographic Assumptions	Proposed Assumptions incl Discount Rate
1. Covered Payroll	\$ 1,355,267	\$ 1,355,267	\$ 1,355,267
<b>Liability and Assets - Pension Fund</b>			
2. Actuarial Accrued Liability	\$ 16,576,631	\$ 15,925,520	\$ 15,511,671
3. Actuarial Value of Assets	3,065,263	3,065,263	3,065,263
4. Unfunded Liability	\$ 13,511,368	\$ 12,860,257	\$ 12,446,408
5. Funded Ratio	18.5%	19.2%	19.8%
<b>Liability and Assets - Insurance Fund</b>			
6. Actuarial Accrued Liability	\$ 1,782,386	\$ 1,725,933	\$ 1,678,956
7. Actuarial Value of Assets	1,409,553	1,409,553	1,409,553
8. Unfunded Liability	\$ 372,833	\$ 316,380	\$ 269,403
9. Funded Ratio	79.1%	81.7%	84.0%
<b>Actuarially Determined Employer Contribution - Pension Fund</b>			
10. Normal Cost Rate	7.74%	7.32%	6.73%
11. Amortization Cost	N/A	N/A	N/A
12. Pension Employer Contribution Rate	7.74%	7.32%	6.73%
13. Amortization Cost	\$ 900,701	\$ 844,296	\$ 830,924
<b>Actuarially Determined Employer Contribution - Insurance Fund</b>			
14. Normal Cost Rate	1.86%	1.71%	1.58%
15. Amortization Cost	N/A	N/A	N/A
16. Insurance Employer Contribution Rate	1.86%	1.71%	1.58%
17. Amortization Cost	\$ 5,192	\$ (125)	\$ (3,993)
18. Total Employer Contribution Rate	9.60%	9.03%	8.31%
<b>19. Change in Contribution Rate</b>		<b>-0.57%</b>	<b>-1.29%</b>
20. Total Amortization Cost <sup>1</sup>	\$ 905,893	\$ 844,296	\$ 830,924
<b>21. Change in Amortization Cost</b>		<b>(61,597)</b>	<b>(74,969)</b>
22. Estimated Contributions	\$ 1,035,999	\$ 966,677	\$ 943,547
<b>23. Change in Contributions</b>		<b>(69,322)</b>	<b>(92,452)</b>

<sup>1</sup> Amortization cost for the insurance fund will not be less than \$0.



**Fiscal Impact of Proposed Assumptions**  
**KERS Hazardous**  
(\$ in Thousands)

	Current Assumptions	Proposed Demographic Assumptions	Proposed Assumptions incl Discount Rate
1. Covered Payroll	\$ 165,637	\$ 165,637	\$ 165,637
<b>Liability and Assets - Pension Fund</b>			
2. Actuarial Accrued Liability	\$ 1,316,825	\$ 1,294,856	\$ 1,260,774
3. Actuarial Value of Assets	832,436	832,436	832,436
4. Unfunded Liability	\$ 484,389	\$ 462,420	\$ 428,338
5. Funded Ratio	63.2%	64.3%	66.0%
<b>Liability and Assets - Insurance Fund</b>			
6. Actuarial Accrued Liability	\$ 347,044	\$ 342,769	\$ 333,681
7. Actuarial Value of Assets	597,701	597,701	597,701
8. Unfunded Liability	\$ (250,657)	\$ (254,932)	\$ (264,020)
9. Funded Ratio	172.2%	174.4%	179.1%
<b>Actuarially Determined Employer Contribution - Pension Fund</b>			
10. Normal Cost Rate	8.60%	8.10%	7.52%
11. Amortization Cost	21.52%	20.22%	18.73%
12. Pension Employer Contribution Rate	30.12%	28.32%	26.25%
<b>Actuarially Determined Employer Contribution - Insurance Fund</b>			
13. Normal Cost Rate	3.45%	2.83%	2.62%
14. Amortization Cost	-13.39%	-13.69%	-14.54%
15. Insurance Employer Contribution Rate	0.00%	0.00%	0.00%
16. Total Employer Contribution Rate	30.12%	28.32%	26.25%
<b>17. Change in Contribution Rate</b>		<b>-1.80%</b>	<b>-3.87%</b>
18. Estimated Contributions	\$ 49,890	\$ 46,908	\$ 43,480
<b>19. Change in Contributions</b>		<b>\$ (2,982)</b>	<b>\$ (6,410)</b>



## Fiscal Impact of Proposed Assumptions

### SPRS

(\$ in Thousands)

	Current Assumptions	Proposed Demographic Assumptions	Proposed Assumptions incl Discount Rate
1. Covered Payroll	\$ 47,885	\$ 47,885	\$ 47,885
<b>Liability and Assets - Pension Fund</b>			
2. Actuarial Accrued Liability	\$ 1,067,447	\$ 1,037,597	\$ 1,009,221
3. Actuarial Value of Assets	559,973	559,973	559,973
4. Unfunded Liability	\$ 507,474	\$ 477,624	\$ 449,248
5. Funded Ratio	52.5%	54.0%	55.5%
<b>Liability and Assets - Insurance Fund</b>			
6. Actuarial Accrued Liability	\$ 232,798	\$ 232,739	\$ 227,111
7. Actuarial Value of Assets	234,239	234,239	234,239
8. Unfunded Liability	\$ (1,441)	\$ (1,500)	\$ (7,128)
9. Funded Ratio	100.6%	100.6%	103.1%
<b>Actuarially Determined Employer Contribution - Pension Fund</b>			
10. Normal Cost Rate	19.49%	19.82%	18.39%
11. Amortization Cost	65.90%	60.53%	57.05%
12. Pension Employer Contribution Rate	85.39%	80.35%	75.44%
<b>Actuarially Determined Employer Contribution - Insurance Fund</b>			
13. Normal Cost Rate	6.66%	6.78%	6.36%
14. Amortization Cost	-2.98%	-2.98%	-4.15%
15. Insurance Employer Contribution Rate	3.68%	3.80%	2.21%
16. Total Employer Contribution Rate	89.07%	84.15%	77.65%
<b>17. Change in Contribution Rate</b>		<b>-4.92%</b>	<b>-11.42%</b>
18. Estimated Contributions	\$ 42,651	\$ 40,295	\$ 37,183
<b>19. Change in Contributions</b>		<b>\$ (2,356)</b>	<b>\$ (5,468)</b>



## **SECTION III**

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### **ANALYSIS OF EXPERIENCE AND RECOMMENDATIONS**

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## Analysis of Experience and Recommendations

We will begin by discussing the economic assumptions: inflation, expenses, investment return rate, cash balance interest credit rate, the salary increase assumption, and the rate of payroll growth. Next are the demographic assumptions: mortality, disability, termination and retirement. Finally, we will discuss all of the actuarial methods used.

### ECONOMIC ASSUMPTIONS

As no one knows what the future holds, the best an actuary can do is to use professional judgment to estimate possible future economic outcomes. These estimates are based on a mixture of past experience, future expectations, and professional judgment. The economic assumptions are much more subjective in nature than the demographic assumptions. The actuary should consider a number of factors, including the purpose and nature of the measurement, and appropriate historical and forward-looking information.

Also, actuaries are guided by the Actuarial Standards of Practice (ASOP) adopted by the Actuarial Standards Board (ASB) and one of these standards is ASOP No. 27, Selection of Economic Assumptions for Measuring Pension Obligations, which provides guidance to actuaries giving advice on selecting economic assumptions for measuring obligations under defined benefit plans.

Each economic assumption should individually satisfy this standard. Furthermore, with respect to any particular valuation, each economic assumption should be consistent with every other economic assumption over the measurement period. Nevertheless, the economic assumptions are much more subjective in nature than the demographic assumptions, which in itself can still create a difference in opinion among individuals in the actuarial profession and possibly stakeholders of the Retirement Systems.

### INFLATION ASSUMPTION

By “inflation,” we mean price inflation as measured by annual increases in the Consumer Price Index (CPI). Benefits provided to members in KERS and SPRS are not explicitly impacted by the actual change in price inflation. As a result, this is a relatively insignificant assumption in the valuation, but underlies most of the other economic assumptions (e.g. the investment return assumption). The current annual inflation assumption is 2.30% and has remained unchanged since the June 30, 2017 actuarial valuation.

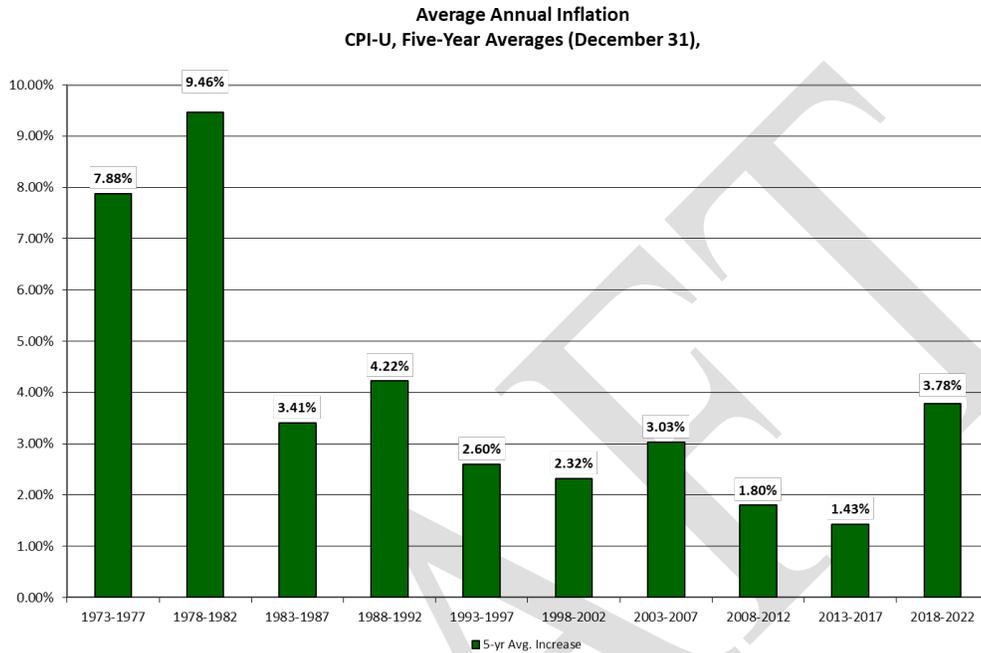
We recognize that actual inflation as measured by CPI has been much higher than the current 2.30% assumption during the last 24 months, however the Federal Reserve has broadcasted repeatedly the Committee seeks to achieve maximum employment and an inflation rate of 2% over the longer run.

Please see the following exhibits and forward-looking sources of inflation expectations.

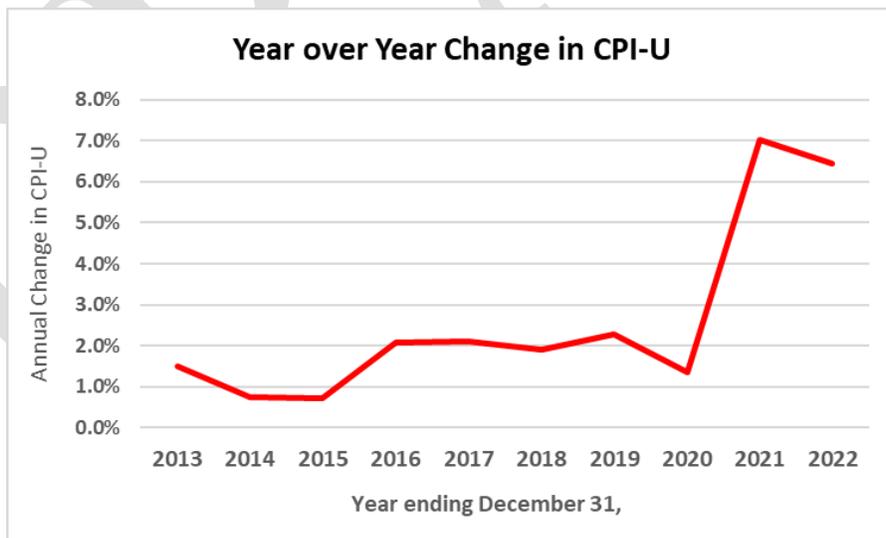


Actual Change in CPI-U

The chart below shows the average annual inflation in each of the ten consecutive five-year periods over the last fifty years:



The following chart shows the year over year change in CPI-U over the last 10 years ending December 31, 2022:



Source: Bureau of Labor Statistics, CPI-U, all items, not seasonally adjusted.

As the charts show, with the exception of the last two years, inflation has been benign for the prior thirty years. The following is a discussion of the various sources of forward-looking inflation expectations.

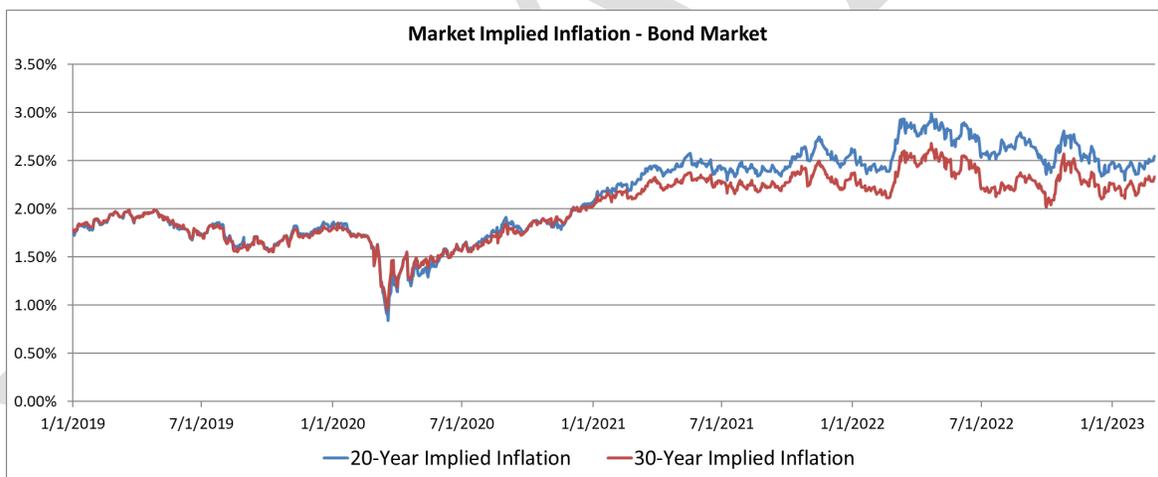


Forward-Looking Expectations Developed by Investment Consulting Firms

Most investment consulting firms, in setting their capital market assumptions, make a price inflation assumption as a building block for developing forward-looking return expectations. Based on a survey of 2023 capital market assumptions of nine investment consulting firms, the average expected price inflation for the next ten years is 2.40%. Of these nine, the minimum expectation was 2.0% (one of the nine firms) and the maximum was 2.50% (five of the nine firms).

Expectations Implied in the Bond Market

Another source of information about future inflation is the market for US Treasury bonds. For example, the March 1, 2023 yield for 20-year inflation indexed Treasury bonds was 1.58% plus actual inflation. The yield for 20-year non-indexed US Treasury bonds was 4.17%. Simplistically, this means that on that day the bond market was predicting that inflation over the next twenty years would average 2.55%  $[(1 + 4.17\%) / (1 + 1.58\%) - 1]$  per year. The difference in yield for 30-year bonds implies 2.33% inflation over the next 30 years. This is consistent with most forecasts that inflation is expected to be higher for the next few years before settling down near the Federal Reserve’s 2.0% target. Below is a chart with the history of the implied inflation for 20-year and 30-year Treasury securities from January 2019 through February 2023. However, this analysis is known to be imperfect as it ignores the inflation risk premium that buyers of US Treasury bonds often demand as well as possible differences in liquidity between US Treasury bonds and TIPS.



Forecasts from Social Security Administration

In the Social Security Administration’s 2023 Trustees Report, the Office of the Chief Actuary is projecting a long-term average annual inflation rate of 2.4% under the intermediate cost assumption and low cost and high cost scenarios are 1.8% and 3.0%, respectively. The Chief Actuary for the Social Security Administration has kept this assumption unchanged for the last three years.

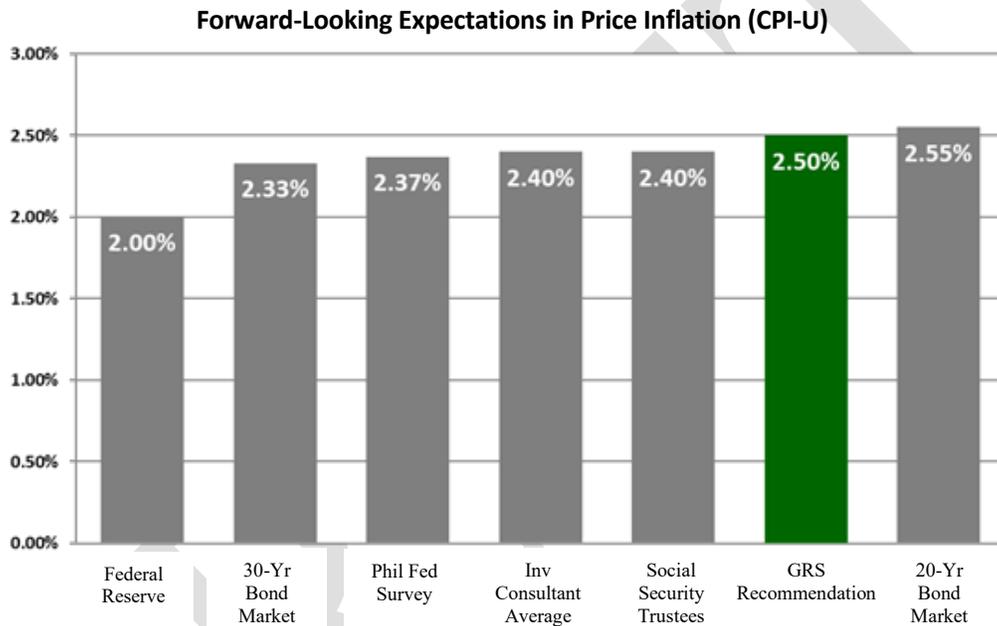


### Survey of Professional Forecasters

The Philadelphia Federal Reserve conducts a quarterly survey of the Society of Professional Forecasters. Their forecast for the first quarter of 2023 was for inflation over the next ten years (2023 to 2032) to average 2.37%. This survey average was a decrease from 2.80% and 2.95% in their third quarter 2022 and fourth quarter 2022 surveys, respectively.

### Recommendation

The following is a chart to summarize the various forward-looking expectations.



Using these sources, we recommend the use of a 2.50% assumption, which is a 0.20% increase from the current assumption in recognition that near term inflation will remain elevated compared to historical levels.

### **INVESTMENT RETURN ASSUMPTION**

The investment return assumption is one of the principal assumptions used in any actuarial valuation of a retirement plan. It is used to discount future expected benefit payments to the valuation date in order to determine the liabilities of the plans. Even a small change to this assumption can produce significant changes to the liabilities and contribution rates.

The KRS Board oversees three retirement and three health insurance funds. Due to differences in external liquidity requirements of the systems, there are differences in how plan assets are invested. Furthermore, the differences in the investment policies have been material enough to warrant the use of different investment return assumptions. Specifically, the current investment return assumption is 6.25% for the



KERS hazardous retirement fund and the health insurance funds. On the other hand, the investment return assumption for the KERS non-hazardous and SPRS retirement fund is 5.25%.

#### Investment and Administrative Expenses

The trust fund pays expenses in addition to member benefits and refunds; we must make some assumption about these. Currently an explicit administrative expense assumption is included in the normal cost rate. This assumption is updated on an annual basis and is equal to the prior year's administrative expense divided by covered payroll. We recommend no change to this process.

Additionally, the analysis below develops an investment return assumption net of any investment related expenses.

#### Actual Investment Performance

Below are tables with the actual annualized investment return performance on a market value of asset basis.

	<b>Historical Average Annual Return – Retirement Funds</b>			
<b>Fund</b>	<b>FY 2022</b>	<b>3-Year</b>	<b>5-Year</b>	<b>10-Year</b>
KERS Non-Hazardous	-5.2%	6.0%	6.2%	7.0%
KERS Hazardous	-6.0%	5.9%	6.4%	7.3%
SPRS	-4.6%	5.9%	6.2%	6.9%

Source: 2022 KPPA Summary Annual Report

	<b>Historical Average Annual Return – Insurance Funds</b>			
<b>Fund</b>	<b>FY 2022</b>	<b>3-Year</b>	<b>5-Year</b>	<b>10-Year</b>
KERS Non-Hazardous	-6.2%	5.9%	6.1%	6.9%
KERS Hazardous	-4.5%	6.1%	6.6%	7.3%
SPRS	-4.5%	6.4%	6.9%	7.4%

Source: 2022 KPPA Summary Annual Report

However, past performance is not a reliable indicator of future investment performance, even when returns are averaged over a long time. The actual asset allocation of the trust fund will significantly impact the overall performance, so returns achieved under a different allocation are not meaningful.

#### Forward-Looking Return Expectations

We believe the most appropriate approach to identifying an appropriate investment return assumption is to identify expected returns developed by mapping the asset allocation policy to forward-looking capital market assumptions that are developed by professional investment consulting firms.

Wilshire Associates (KRS's Investment Consultant) provided a recommended asset allocation policy in their February 14, 2023 Board material that had the following objectives. The following table provides a summary of these two asset allocation policies which were used in our analysis of the investment return assumption.



Asset Class	Non-Hazardous and SPRS Retirement Funds	Hazardous and Insurance Funds
Public Equity	32.5%	43.5%
Private Equity	7.0%	10.0%
Core Fixed Income	20.5%	10.0%
Specialty Credit	15.0%	15.0%
Real Estate	10.0%	10.0%
Real Return	10.0%	10.0%
Cash	5.0%	1.5%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>

GRS is a benefits consulting firm and does not provide investment consulting advice. We also do not develop or maintain our own forecasts of capital market expectations. Instead, we utilized 2023 forward-looking capital market return expectations developed by KRS's investment consultant, Wilshire Associates, as well as other investment consulting firms that are listed below. The primary purpose of performing this analysis using multiple investment consulting firms is to quantify possible differences in forward looking return expectations within the professional investment community.

- Aon (10-Year and 30-Year)
- Callan
- Cambridge (10-Year and 30-Year)
- NEPC (7-Year and 30-Year)
- RV Kuhns (20-Year)
- Wilshire (KRS's Investment Consultant)
- BNY Mellon
- Meketa (10-Year and 30-Year)
- JP Morgan
- Mercer (10-Year and 20-Year)
- Verus

Each of these investment consultants provided forward-looking return expectations for the next 7 to 10 years. Additionally, six of these firms (Aon, Cambridge, Meketa, Mercer, and NEPC and RV Kuhns) develop return expectations over a longer, 20- to 30-year period.

KERS and SPRS theoretically have an indefinite life span which may result in some stakeholders believing that emphasis should be placed solely on long-term expectations, even if short-term expectations are materially different. While these funds are expected to have an indefinite life span, these funds are relatively mature with material shorter-term liability attributable to current retirees. We believe it is important for decision makers to also consider return expectations over the next seven to ten years.

Throughout the 2022 calendar year, the capital markets and economic assumptions have vastly changed. The S&P 500 return during the calendar year were -18%. Actual inflation has been at a 40-year high and the year to year change continues to be over 6%. Also, the current yield on 10-year Treasuries have increased from 1.8% in January 2022 to 3.8% at the end of the calendar year. Because of these market changes, investment consultants have noticeably increased their forward-looking expectations in 2023. As a result, we believe it is prudent to view and compare the return expectations based on the 2022 and 2023 capital market assumptions for decision making purposes.



**KERS Non-Hazardous and SPRS Investment Analysis  
Expected Annual Geometric Returns and Return Probabilities**

	Investment Consultant	50th Percentile Expected Return (Geometric)		Probability of Exceeding 5.25%	
		2023	2022	2023	2022
		(2)	(3)	(4)	(5)
<b>7 to 10 Year Expectations</b>	(1)				
	1	5.9%	4.4%	55%	34%
	2	6.0%	4.8%	56%	38%
	3	6.2%	5.0%	59%	41%
	4	6.6%	5.2%	63%	43%
	5	6.7%	4.9%	65%	40%
	6	6.8%	4.9%	65%	40%
	7	7.0%	4.9%	69%	38%
	8	7.0%	5.6%	69%	47%
	9	7.2%	5.2%	69%	44%
	10	7.3%	5.7%	70%	50%
<b>20 to 30 Year Expectations</b>	1	5.7%	4.8%	53%	40%
	2	6.5%	5.8%	62%	51%
	3	6.6%	5.8%	64%	50%
	4	7.1%	6.0%	70%	53%
	5	7.6%	6.4%	73%	58%
	6	7.7%	6.2%	75%	55%
	7-10 Year Expectation Avg:	6.7%	5.1%	64%	42%
	20-30 Year Expectation Avg:	6.9%	5.8%	66%	51%

Source: GRS

**Recommendation: KERS Non-Hazardous and SPRS Retirement Funds**

Investment return expectations increased significantly compared to the prior year. Based on our broader survey, the average of the 50th percentile return expectations is 6.7% based on the 10-year assumptions and 6.9% based on the longer 30-year assumptions. The probability of exceeding the current investment return assumption of 5.25% is greater than 50% for each 2023 assumption set. However, we do not recommend the Board put undue weight in one particular investment consultant or one particular year’s survey of return expectations.

Given the last two years of return expectations, we believe this analysis supports a 0.25% increase in the investment return assumption to 5.50% for the KERS non-hazardous SPRS retirement funds. This is our recommendation as it complies with the Actuarial Standards of Practice regarding the selection of an



investment return assumption. However, while this Standard of Practice allows an actuary to consider the nonsymmetrical investment risk (i.e. there is greater risk of downside returns compared to upside returns), it is not explicit with regard to the consideration of the current financial condition of the retirement system. Since the funded status of the KERS non-hazardous pension fund was 18.5% and the SPRS retirement fund was 52.5% as of the last actuarial valuation, it would be prudent for the Board to maintain the assumed rate of return for these funds as it will result in more employer contributions each year.

**KERS Hazardous and Insurance Funds  
Expected Annual Geometric Returns and Return Probabilities**

	Investment Consultant	50th Percentile Expected Return (Geometric)		Probability of Exceeding 6.25%	
		2023	2022	2023	2022
		(1)	(2)	(3)	(4)
<b>7 to 10 Year Expectations</b>	1	6.1%	4.9%	46%	32%
	2	6.4%	5.5%	49%	37%
	3	6.7%	5.7%	52%	40%
	4	7.1%	5.6%	56%	38%
	5	7.1%	5.8%	56%	41%
	6	7.2%	5.5%	57%	37%
	7	7.5%	6.2%	60%	44%
	8	7.6%	5.3%	62%	35%
	9	7.6%	6.3%	60%	46%
	10	7.8%	5.9%	62%	42%
<b>20 to 30 Year Expectations</b>	1	6.1%	5.3%	46%	40%
	2	6.9%	6.4%	54%	46%
	3	7.1%	6.4%	57%	46%
	4	7.7%	6.7%	62%	50%
	5	7.9%	6.8%	64%	50%
	6	8.5%	6.9%	68%	51%
	7-10 Year Expectation Avg:	7.1%	5.7%	56%	39%
	20-30 Year Expectation Avg:	7.4%	6.4%	59%	47%

Source: GRS

**Recommendation: KERS Hazardous Retirement and All Insurance Funds**

Similarly, the probability of exceeding the current 6.25% is greater than 50% for all but two of the 2023 assumptions with a significant increase in return expectations compared to the prior year. For the same reasons noted for the other funds, a 0.25% increase in the investment return assumption to 6.50% for the KERS hazardous retirement fund would comply with the Actuarial Standards of Practice and is our



recommendation. However, again, it would be prudent for the Board to consider the 63.2% funded status of the KERS hazardous fund and maintain the assumed rate of return at 6.25% to maintain higher contributions which will result in a slightly more accelerated funding to that retirement fund.

On the other hand, each of the three insurance funds are smaller in liability and significantly better funded with the funded ratios of the KERS Hazardous and SPRS insurance funds being in excess of 100%. Therefore, we believe it is reasonable for the Board to increase the investment return assumption for each of these insurance funds by 0.25% to 6.50%.

## CASH BALANCE INTEREST CREDIT RATE ASSUMPTION

Members who become participants in the plan after January 1, 2014 earn benefits in the Tier 3 cash balance plan, where their hypothetical account balance increases with member and employer pay credits and an interest credit based on the System's actual investment performance. Specifically, each year's interest credit is equal to a minimum of 4.0% plus 75% of the five-year geometric average actual return in excess of 4.0% (if any).

With the incorporation of a 4% minimum interest credit rate, it is possible for the interest credit rate to exceed the actual five-year geometric return. The use of a five-year average period greatly reduces likelihood the 4% minimum interest credit would apply as well as the year-to-year volatility in the interest credit rate. The 4% minimum interest credit rate has never exceeded the five-year average return since the Tier 3 plan has been in place, but this plan has only been in place since 2014, which is not a sufficient time for analysis purposes.

Rather, we believe it is more relevant to model a projected average compound interest credit rate stochastically based on the mean and variance expectations for the fund. We also look at the average compound interest credit to better reflect the anticipated accumulation of a members' account balance with interest over their career. In the case of the KERS non-hazardous fund and State Police Retirement System, our stochastic model using a 50<sup>th</sup> percentile return of 5.50% and a 10% standard deviation produced an average compound interest crediting rate of 5.90%. In the case of the KERS hazardous fund, we recommend the use of a 6.75% cash balance interest credit rate, based on a 50<sup>th</sup> percentile return of 6.50% and a 13% standard deviation.

## SALARY INCREASE RATES

In order to project future benefits, the actuary must project future salary increases. Salaries may increase for a variety of reasons:

- Across-the-board increases for all employees;
- Across-the-board increases for a given group of employees;
- Increases to a minimum salary schedule;
- Additional pay for additional duties;
- Step or service-related increases;
- Increases for acquisition of advanced degrees or specialized training;
- Promotions; or
- Merit increases, if available.



Our salary increase assumption is meant to reflect all of these types of increases, since all of these affect the salaries used in benefit calculations and upon which contributions are made.

An actuary should not look at the overall increase in payroll when setting this assumption, because total payroll can increase at a rate different from the average pay increase for individual members. There are two reasons for this. First, when older, longer-service employees terminate, retire or die, they are generally replaced with new employees who have a lower salary. This causes the growth in total payroll to be smaller than the average pay increase for individual employees. Second, total payroll can change due to an increase or decrease in the size of the employee group. Rather we examine the actual compensation increases on an individual basis.

We analyzed the salary increases based on the change in each member's reported pay from one year to the next. That is, we looked at each member who appeared as an active member in two consecutive valuations—these are called continuing active members—and measured his/her salary increase.

Below is a table showing the average increase given to continuing members by year for members in various groups:

Fiscal Year Ending	Non-Hazardous	Hazardous	SPRS
2014	2.9%	3.1%	3.3%
2015	4.0%	6.5%	3.0%
2016	4.9%	18.3%*	6.4%
2017	4.4%	11.1%	9.8%
2018	4.5%	6.1%	7.0%
2019	4.1%	5.2%	5.8%
2020	4.2%	8.1%	6.7%
2021	3.6%	4.5%	3.2%
2022	6.0%	12.6%	7.0%
Average	4.3%	8.3%	5.8%

\* Includes a one-time payroll adjustment.

It is typical to assume larger pay increases for younger or shorter-service employees as promotions and productivity increases tend to be greater in the first few years of a career, even if the new employee is older than the average new hire.

The current assumptions follow this pattern for all employee groups. Therefore, we divide the task of setting the salary increase into two pieces:

1. Determining the assumption for long-service employees
2. Determining the additional increases to be applied to shorter-service employees

The next two subsections will discuss these components of the salary assumption.



Salary Increase Assumptions for Long-Service Employees

Many of the sources of pay increases have diminished importance for longer-service employees. Step or service-related increases are usually smaller and promotions occur with less frequency. Additional training or acquisition of advanced degrees usually occurs early in the career. Thus, our salary increase assumption has an ultimate level when members are assumed to receive increases equal to wage inflation plus smaller increases for merit, promotion, and longevity.

The data suggests the patterns level off after around 10-11 years of service for a member to be considered a long-service employee for the purposes of this analysis.

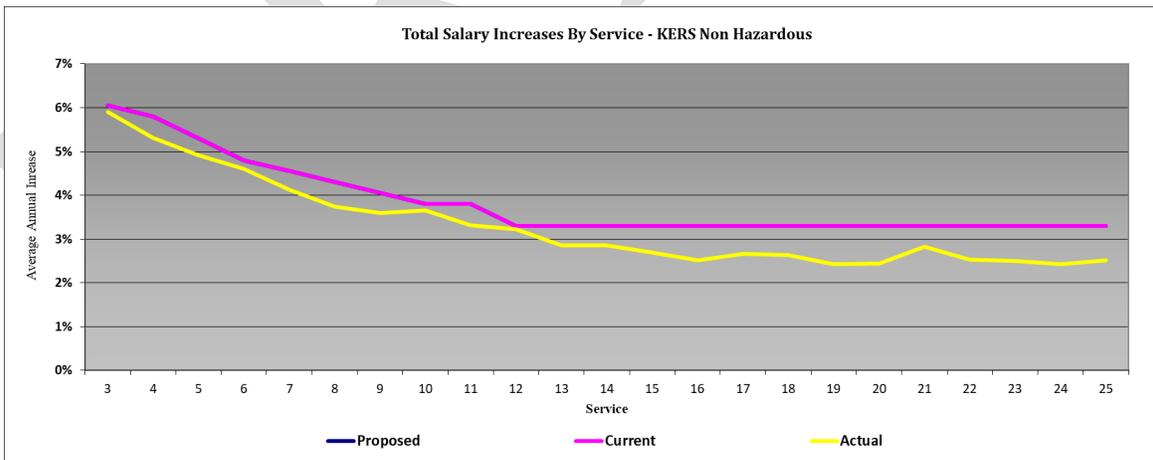
Given our analysis, we are not recommending any changes to the current salary increase assumption for long-service employees, which is 3.30% per year for members in the KERS non-hazardous fund and 3.55% per year for members in the KERS hazardous and SPRS funds.

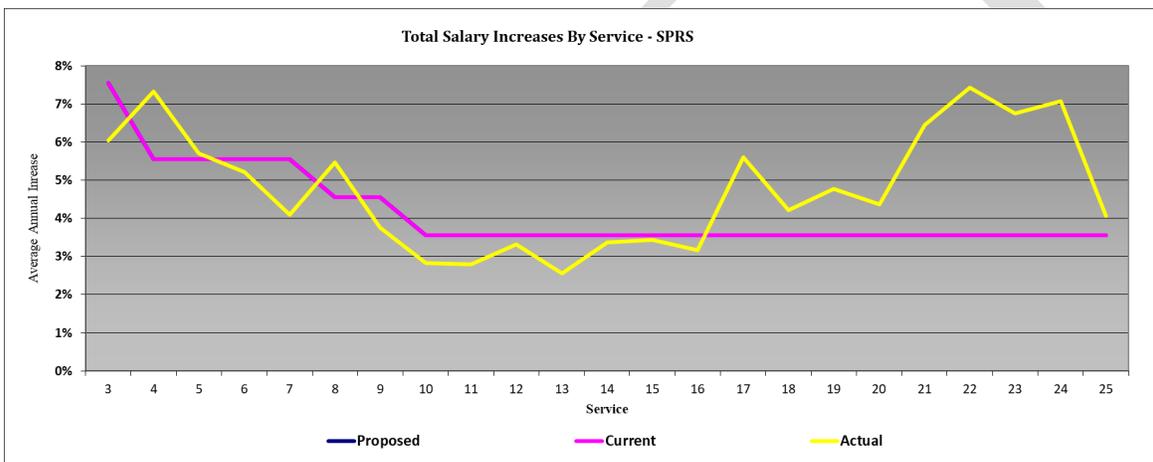
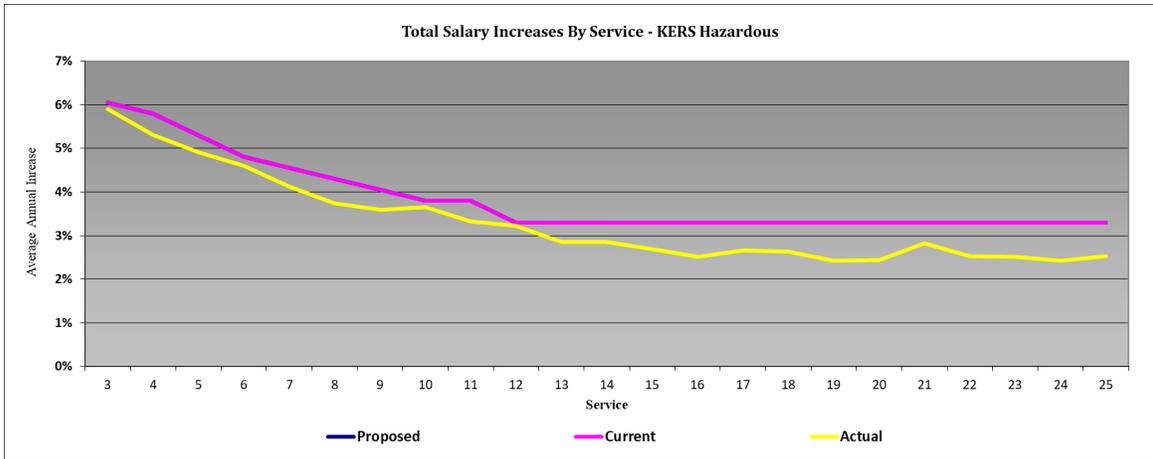
Salary Increase Assumption for Shorter-Service Employees

To analyze the service-related salary assumption, we looked at the excess in the average increases for shorter service employees over the average for longer-service employees. For example, KERS non-hazardous members with four years of service received an average increase of 4.98%, which was 2.39% more than the average increase of 2.59% for the same type of employee with eleven or more years of service. This component of the salary scale assumption behaves more like a demographic assumption than an economic assumption, and therefore, the historical experience has a high level of creditability for purposes of establishing future expectations. We are not proposing any changes to the current step-rate salary assumptions for each of the funds. Details of our analysis are shown in Section VI beginning on page 56.

Salary Increases – Combined Effect

The following charts provide a comparison of the salary increase rates applied to individuals discussed above for the service period of three years to twenty-five years.





Note, the appearance of greater volatility for SPRS in the above table is primarily due to this fund having far fewer members compared to the other two funds.

### PAYROLL GROWTH RATE

The rate of salary increases discussed above are assumptions applied to individuals and are used in projecting future benefits.

HB 8, enacted in 2021, changed the method for the allocation and collection of contributions from the participating employers in the KERS non-hazardous fund so that the collection of contributions was no longer tied to an employer’s payroll. As a result, a payroll growth assumption is currently irrelevant for that fund. On the other hand, statutes still require that participating employers in the KERS hazardous fund and the State Police Retirement System make contributions to the system as a percentage of covered payroll. Therefore, it is necessary to make a reasonable assumption regarding the anticipated overall change in covered payroll to develop the amortization rate to finance the unfunded actuarial accrued liability over the specified funding period.

The change in total covered payroll is dependent on the salary increases provided to individual members as well as the change in active membership. Given the historical change in covered payroll and



membership, it is appropriate to review the change in total payroll and membership in developing this assumption.

Average Annual Change in Membership and Payroll				
	Change in Membership		Change in Payroll	
Averaging Period	5 Years	10 Years	5 Years	10 Years
KERS Hazardous	-2.2%	-1.2%	0.4%	2.3%
SPRS	-1.3%	-0.7%	-0.3%	-0.1%

Our recommendation is for the Board to maintain the current 0% payroll growth assumption for the KERS hazardous fund and SPRS for use in developing the actuarial contribution rate in the June 30, 2023 actuarial valuation.

## DEMOGRAPHIC ASSUMPTIONS

Actuaries are guided by the Actuarial Standards of Practice (ASOP) adopted by the Actuarial Standards Board (ASB). One of these standards is ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*. This standard provides guidance to actuaries giving advice on selecting noneconomic assumptions for measuring obligations under defined benefit plans. We believe the recommended assumptions in this report were developed in compliance with this standard.

## POST-RETIREMENT MORTALITY RATES

KERS's and SPRS's actuarial liabilities depend in part on how long retirees live. The longer a retiree lives, the longer the retiree receives benefits from the System resulting in a larger liability to each fund.

The current mortality assumption is a custom table developed in 2018 that was based on the actual retiree experience of KERS and CERS. It is a gender distinct assumption, but there is no distinction between retirees in KERS or CERS, or the non-hazardous and hazardous funds. Separate mortality tables are used for active members and disabled retirees; these assumptions are discussed separately in a following subsection. The current mortality assumption also includes an explicit assumption for future improvement in life expectancy based on a mortality improvement assumption developed by the Society of Actuaries in 2014.

Due to the COVID-19 pandemic, mortality has come to be in the national spotlight. As our analysis will show, the retirees in KERS and SPRS were also affected by the pandemic.

### Analysis of Credibility of the Retirement Systems' Mortality Experience

When selecting an appropriate mortality assumption, actuaries often use standard published mortality tables. Depending on the size, or statistical credibility, of the retiree population, actuaries often also adjust these published mortality tables with multipliers or age setbacks to better reflect characteristics of the covered group and to provide for expectations of future mortality improvement (both up to and after the measurement date). On the other hand, a retirement system with a sufficiently large number of retirees



may be able to better model mortality experience using a mortality table based on their experience. Factors that may be considered in selecting and/or adjusting a mortality table include the demographics of the retiree group and the statistical credibility of its experience.

Studies on mortality consistently show that longevity can vary significantly among industries, ethnicity, education, and geographic location. It has been documented in several sources that residents in Kentucky have a life expectancy well below the national average. A report issued in August 23, 2022 by the National Vital Statistics, states that Kentucky residents ranked 47<sup>th</sup> in life expectancy at age 65 compared to populations in the other US States. However, members in CERS and KERS predominately have formal education beyond high school or have a professional degree, which is also well documented to be an indicator they will have a longer life expectancy than someone in the same geographic location without a formal education beyond high school. Due to these possible variances, it is even more important to consider the statistical credibility of the system’s experience and provide the appropriate credibility weighting to the observed mortality experience, versus the use of a published table based on national population experience.

In our analysis of the mortality experience for KERS and SPRS, we first measured the credibility of the dataset to determine whether standard published tables should be used or if a statistical analysis of the Retirement Systems’ data was warranted. Generally, we consider 1,000 deaths per gender is the minimum necessary to be considered fully credible, however it is also preferable to develop a base mortality table with larger datasets to increase the statistical credibility that the base mortality assumption is closer to the true mortality experience of the system. The following table gives the number of deaths needed by gender to have a given level of confidence that the data is +/- X% of the actual pattern.

Statistical Confidence by Observed Deaths during the Experience Period

Std Score	Confidence	99%-101%	97%-103%	95%-105%	90%-110%	80%-120%
1.1503	75%	13,233	1,470	529	132	33
1.2816	80%	16,424	1,825	657	164	41
1.6449	90%	27,055	3,006	1,082	271	68
1.9600	95%	38,415	4,268	1,537	384	96
2.5758	99%	66,349	7,372	2,654	663	166

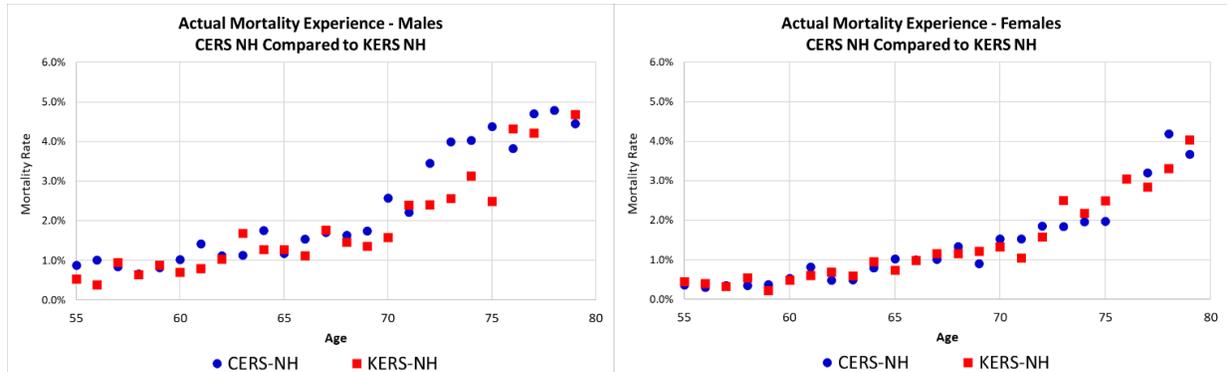
The following table provides the number of male and female deaths for each fund maintained by KPPA over the last five years.

Number of Deaths for Each Fund During the Last Five Fiscal Years

Fund	Male	Female
KERS - NH	2,718	3,142
KERS - HZ	365	94
SPRS	127	-
Sub-total	3,210	3,236
CERS - NH	3,844	4,916
CERS - HZ	675	58
Sub-total	4,519	4,974
Total	7,729	8,210



We also compared the last five years of mortality experience for the KERS non-hazardous and CERS non-hazardous funds to identify how similar the mortality experience is for the two retiree groups. Below are charts that compare the actual mortality experience for the KERS non-hazardous and CERS non-hazardous funds for males and females.



In our professional opinion, the retiree mortality experience for these two funds are very similar and appropriate to combine for developing an updated base mortality assumption to be used by all funds maintained by KPPA. While the CERS and KERS mortality experience may appear to be different for males between the ages 70 and 75, the experience is not sufficiently large enough to conclude there is a difference in the true underlying mortality experience on a forward-looking basis. We also compared the mortality experience of the hazardous funds to the non-hazardous funds and determined it also remains appropriate to use the same base mortality assumption for both non-hazardous and hazardous members. While the Society of Actuaries has developed and published mortality tables that are different for general employees and public safety members, we believe it continues to be appropriate to use the same mortality table for the valuation of all funds maintained by KPPA.

Using a system-specific mortality assumption will reduce the risk of undervaluing or overvaluing liabilities, provide better future estimates of liabilities and projected benefit payments. It will also allow for smaller, more frequent adjustments to the assumption as necessary in future experience studies instead of having to wait for a new, published table.

#### Recommended Base Mortality Assumption

We performed our analysis using a benefit-weighted approach, where we measure the exposures and actual deaths weighted by the retiree's benefit amount, rather than a headcount approach that applies an equal weighting to all retirees. Developing a base table using a benefit-weighted approach is preferable because: (1) research studies have consistently shown that higher wage earners generally have a longer life expectancy than lower wage earners and (2) this approach should better model the actual liability that is released when retirees die. A benefit-weighted approach is the same method used by the Society of Actuaries' Retirement Plans Experience Committee when they develop published mortality tables.



We also used nine years of experience in developing the table, as we believe it will result in a more appropriate table for modeling the mortality experience after the COVID-19 pandemic period. To provide a perspective of the impact of COVID-19 on the mortality experience, below is a table with the mortality experience for each fund for the last six years with the first three years being prior to the pandemic. As the table shows, the crude mortality experience for the last three years is noticeably higher than the in the first three years of the table. However, we anticipate the mortality rates will decrease to be closer, but not less than the pre-2020 mortality rates in the near-term future.

**Crude Mortality Rate for Non-Disabled Retirees by Fiscal Year Ending June 30,**

FY Ending	Males					Females				
	K-NH	K-HZ	SPRS	C-NH	C-HZ	K-NH	K-HZ	SPRS <sup>1</sup>	C-NH	C-HZ
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2017	2.1%	1.8%	1.0%	2.3%	1.1%	1.5%	1.4%	--	1.8%	1.1%
2018	2.1%	1.9%	0.9%	2.5%	1.5%	1.6%	0.2%	--	1.8%	0.6%
2019	2.3%	1.5%	2.1%	2.4%	1.4%	1.5%	0.8%	--	1.8%	1.0%
2020	3.7%	2.8%	2.4%	3.7%	1.8%	2.6%	1.9%	--	2.7%	0.6%
2021	3.0%	2.3%	2.4%	3.0%	1.4%	1.9%	1.4%	--	2.2%	0.3%
2022	3.2%	2.4%	1.7%	3.2%	1.5%	2.0%	1.6%	--	2.4%	1.5%

<sup>1</sup> Experience for female retirees for SPRS has been excluded since there are very few female retirees in this fund.

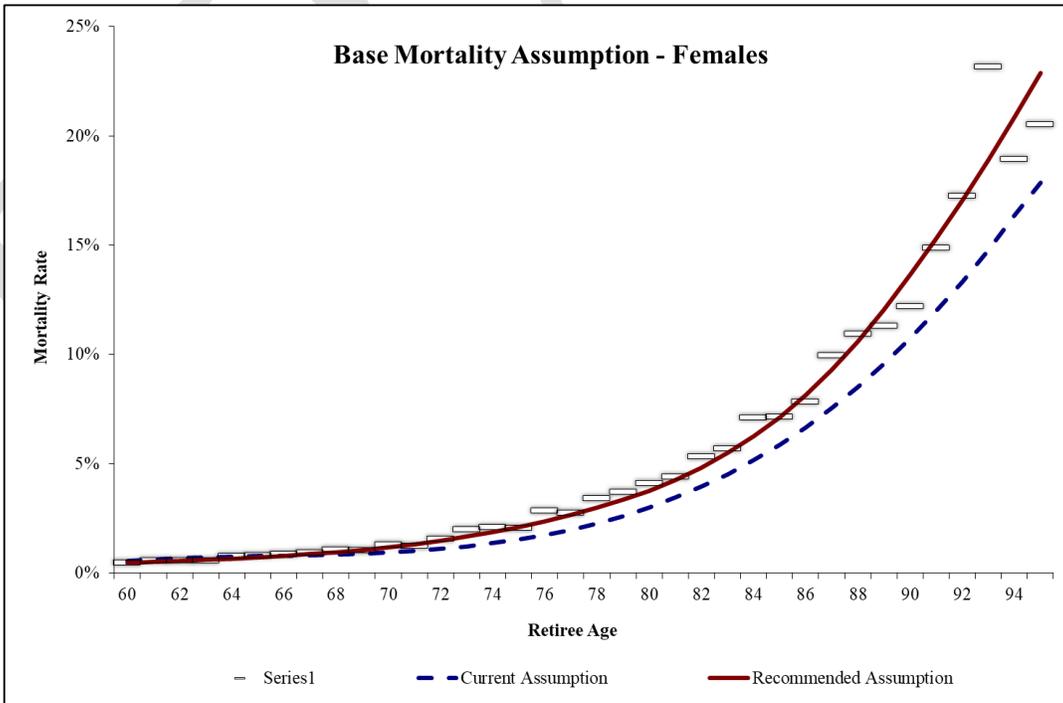
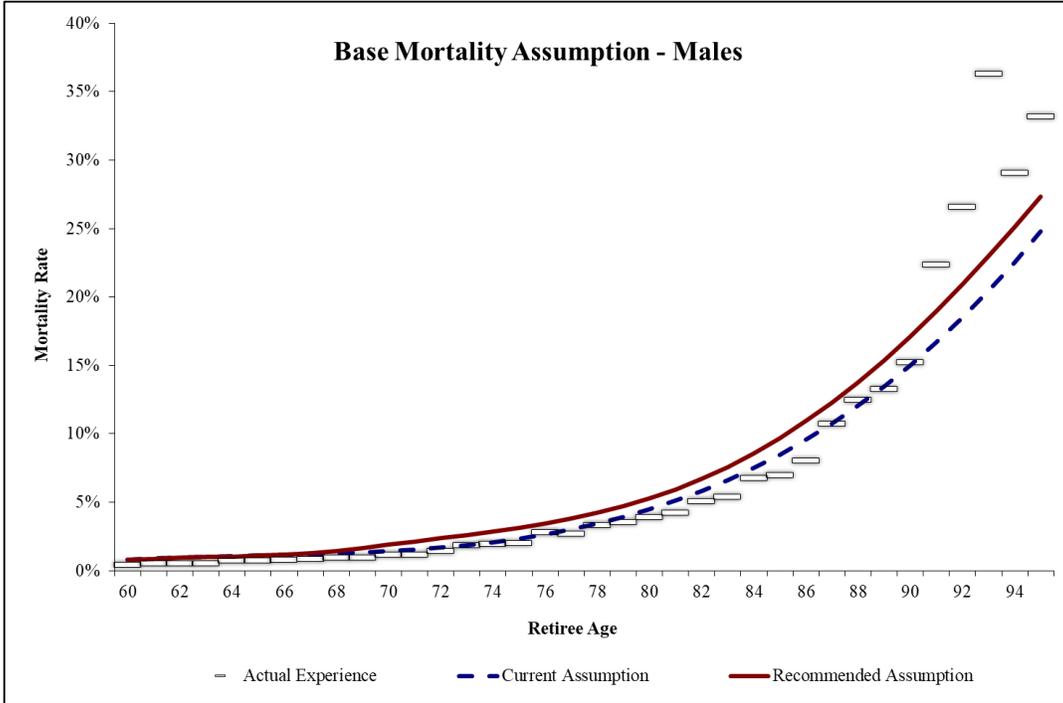
Note, comparing the crude rates from fund to fund does not provide any type of meaningful conclusion since the retiree demographics are different for each group. For instance, a higher average age for a retiree group is generally expected to result in a slightly higher crude rate.

To develop the recommended mortality assumptions, we grouped the data into five-year ages bands. Mortality rates for ages under age 55 are based on the Pub2010 mortality assumption for general employees (adjusted forward to the central point of the experience period). The mortality rates between ages 55 and 60 are equal to a credibility adjusted version of the published table and the Systems' actual experience. The mortality rates on and after age 60 and prior to age 85 are based on the plan's actual crude rate for the midpoint of the quintile and graduated using a cubic spline method to provide a smooth fit to the experience. For the oldest segment of the mortality table, the mortality rates in the table after age 84 are projected from the previous midpoint quintile using the rate of change from the current assumption. The R<sup>2</sup> for the fit of the tables to actual experience in five-year age bands was .987 and .991 for males and females, respectively. The final steps in the creation of the base mortality assumption was to project the preliminary table from the center point of the analysis period (i.e. 2017) to the year 2023 using the recommended projection scale below.

We will refer to this new table as the 2023 Public Retirees of Kentucky Mortality Table (2023 PRK).



The following charts show the actual mortality experience assumption for male and female retirees, along with the current mortality assumption, and the recommended mortality assumption. As the chart shows, the best way to provide a better fit along the entire “curve” is to use an assumption developed using actual experience, which includes ages beyond age 90 for male retirees.



As the charts show, the difference in the base mortality rate for the recommended assumption is not much different than the current base mortality assumption for male retirees. On the other hand, there is a more noticeable difference between the current and recommended base mortality assumption for females. As a result, the cost impact of changing to the updated recommended base table is minor, resulting in between a 1% and 3% decrease in the actuarial liabilities. The KERS non-hazardous fund will have a larger decrease due to its higher concentration of female members.

In the next section, we will discuss the explicit assumption for future improvement in mortality (and life expectancy).

### Recommended Mortality Improvement Assumption

Society of Actuaries' Retirement Plans Experience Committee (RPEC) recognizes that there is a wide range of opinion with respect to future levels of mortality (especially since the COVID-19 pandemic) and that the assumptions underlying mortality improvement reflect some degree of subjectivity. However, there is no disagreement whether mortality will continue to improve.

The current mortality improvement assumption is based on the ultimate rates of improvement (e.g. generally 1%) in the MP-2014 improvement assumption issued by the Society of Actuaries. The Society of Actuaries have subsequently issued mortality improvement assumptions in 2015, 2016, 2017, 2018, and 2019, with reduced improvement assumptions during the selection period (approximately 15 years) but the ultimate improvement assumption has remained unchanged. However, in the Society of Actuaries 2020 report the ultimate mortality improvement rates were modified to be higher at some ages and adjusted to better reflect historical trends for different age groups. Specifically, the pattern is a rate of 1.35% for ages 62 and younger, decreasing linearly to 1.10% at age 80, further decreasing linearly to 0.40% at age 95, and then decreasing linearly to 0.00% at age 115 (and thereafter). In general, the net change in overall liabilities is minimal if a retirement system adopted the ultimate rates of the MP-2020 version because the overall pattern of the improvement over a retiree's lifetime is not much different. However, we give preference to the more recently published report all else being equal as the 2020 report provides several pages of rationale and disclosure of the process used to generate the new long-term rates, including comparing to historical trends, and we find the analysis thorough and reasonable. Thus, we are recommending use of the ultimate rates in the MP-2020 scales, applied for all years. Therefore, we recommend the use of "2020MP-Ultimate" for the mortality improvement assumption.



Below is a table with the life expectancy for an age 65 retiree, in years, under the current and recommended mortality assumption.

Life Expectancy for an Age 65 Retiree in Years					
Assumption	Year of Retirement				
	2025	2030	2035	2040	2045
Current Assumption – Male	21.4	21.8	22.2	22.6	23.0
Recommended Assumption – Male	19.8	20.2	20.6	21.0	21.3
Current Assumption – Female	24.4	24.8	25.2	25.6	25.9
Recommended Assumption – Female	22.4	22.7	23.1	23.4	23.7

As shown, life expectancies under the new assumption have decreased compared to the current assumption. This decrease reflects the actual mortality experience during FY 2020, FY2021, and FY2022. However, the mortality assumption will continue to explicitly build in the assumption that mortality will gradually improve in future years. As the table shows, a 65-year old male in 2040 is assumed to live, on average, 0.8 years longer than a 65-year old in 2030.

## DISABLED RETIREE MORTALITY RATES

This is a less significant assumption than the mortality assumption for non-disabled retirees, because only one out of twenty-eight retirees in KERS is classified as disabled. Because the number of disabled retirees is much smaller, there is not sufficient experience to develop a system-specific assumption and we must continue to rely on using a published table.

The current disability mortality assumption is based on the Pub-2010 Disabled Mortality table, with various adjustments to appropriately fit to the experience.

The analysis shows that the mortality was greater than expected compared to the current assumption. As a result, we recommend adjusting the mortality assumption such that the new assumption is 150% of the base published mortality table without an age set-forward or set-back for both male and female rates. We also recommend applying the “2020MP-Ultimate” mortality improvement assumption to this assumption as well.

Mortality Experience for Disabled Retirees for the Nine-Year Period Ending June 30, 2022 (Amounts are benefit-weighted and scaled)					
Group	Actual	Current		Recommended	
		Expected	A/E	Expected	A/E
Male	174	137	127%	161	108%
Female	135	112	121%	130	103%

Details are provided in Section VI on pages 61-62.



## ACTIVE MORTALITY RATES

This is the least significant of all the mortality assumptions because the mortality rates for active members are considerably lower than mortality rates for retired members (non-disabled and disabled).

The current mortality assumption for employees is the Public Retirement Plan (PUB-2010) Mortality table for employees. The assumption for the non-hazardous funds is the published table for General Employees and the assumption for the hazardous funds is the published table for Public Safety members. The census data that we receive from KPPA does not include a code that consistently identifies the members who died while employed. However, the table below provides the number of active member deaths that occurred during the last five years, which was provided by KPPA.

Fund	Actual Deaths	Expected Deaths
KERS Non-Hazardous	860	545
KERS Hazardous	83	25
SPRS	0	3

The current assumption remains the most recently published mortality table for public employees; therefore, we recommend no change in the current assumption.

Since the death benefit provided to a beneficiary is more generous if an active member’s death is duty related or as a result of an act while in the line of duty, it is relevant for the valuation to include an assumption regarding the number of expected deaths that will occur in the line of duty. The valuation currently assumes that 25% of the active membership deaths are duty related or occur in the line of duty (same assumption for each fund). Over the last five years there were a total of five KERS active duty-related/in-line-of-duty deaths (five non-hazardous and zero hazardous). While the current 25% assumption appears much higher than recent experience, we remain comfortable that this remains a reasonable assumption and do not recommend a change to this assumption.

## DISABILITY INCIDENCE

The disability rates are intended to reflect the probability that a member will retire with a disability retirement allowance. We analyzed the disability experience year by year separately for each fund. Our review includes an investigation to determine if there is a time-lag in the processing of disability retirements that we discuss in more detail below. The following is a table with a summary of the results of the analysis for the five-year period ending June 30, 2022.

Disability Incidence for the Five-Year Period Ending June 30, 2022							
Fund	Census Data	Processing Time-Lag	Actual for Analysis	Current Assumptions		Proposed Assumptions	
				Exp.	A/E	Exp.	A/E
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
KERS Non-Hazardous	158	164	322	372	87%	341	94%
KERS Hazardous	15	22	37	39	95%	39	95%
SPRS	7	4	11	7	157%	7	157%

Note: the actual and expected statistics are headcount based and not benefit-weighted.

Typically, when we review a System's disability experience, our review includes an investigation into whether there is delay in a System's classification of a retiree as a disabled retiree. Often if there is a delay, it is due to a combination of the time of year the member becomes disabled and the time necessary to approve a member's application for a disability retirement benefit. For example, a member who becomes disabled late in the fiscal year may be reported in the census data files as follows: Year 1: "Active", Year 2: "Inactive", Year 3: "Disabled Retiree". The reporting of the member as "Inactive" in year 2 is due to the processing of a member's application for a disability retirement, where in reality the member was actually a "Disabled Retiree" in year 2.

The count in column (2) provides the number of members who are identified as having a year-to-year status change from "Active" to "Disabled Retiree". The count in column (3) is the number of members who were identified as having a status change to "Disabled Retiree" during the five-year period from inactive status. Together, these represent the number of disability retirements that are studied for the purposes of the actuarial assumption. Note, due to the processing delay, this may be different than the number of disability applications processed by the retirement system in any given year.

Based on the analysis above, we recommend a small decrease to the disability rates for both the KERS non-hazardous and hazardous funds. We recommend no change to the disability rates for SPRS. However, we also noticed that over the last five years the number of disabilities has gradually decreased each year. We will watch the annual number of disabilities to identify if the reduced number of disabilities will continue or revert back to historical patterns and if further changes to this assumption are necessary.

### Duty Related and Line of Duty Disability

Since there are minimum benefits provided to members who become disabled in the line of duty or as a result of a duty-related disability, it is important to review the System's experience regarding disability retirements under these circumstances. KPPA provided the disability experience on a fund basis and



separately identified the number of ordinary disabilities, duty related disabilities, and in the line of duty disabilities, as well as the number of total and permanent disabilities since the passing of SB169 in 2021.

The following table provides a summary of the number of disabilities for each fund for the five-year period ending June 30, 2022.

Prevalence of Disability Incidence by Type for the Five-Year Period Ending June 30, 2022			
Fund	Percent of Disabilities Duty Related/ILD	Current Assumption for Duty Related/ILD	Recommended Assumption for Duty Related/ILD
(1)	(2)	(4)	(5)
KERS Non-Hazardous	<0%	2%	2%
KERS Hazardous	19%	10%	10%
SPRS	43%	70%	70%

The current assumption tracked reasonably well for all funds. There were only five and three disabilities classified as in the line of duty for the KERS hazardous and SPRS fund, respectively. Given the small amount of data, we recommend no change to the duty-related or in the line of duty disability incidence assumption at this time.

#### Total and Permanent Disability

Additional benefits are provided to members who become “totally and permanently” disabled in the line of duty or as a result of duty-related disability. The provisions for a non-hazardous duty-related disability have a requirement for “total and permanent” disability so there is no separate assumption for the non-hazardous fund. The provisions for a hazardous disability in the line of duty do not have a “total and permanent” disability requirement; therefore, we do make a separate assumption for this type of disability in the valuation for the hazardous fund.

Since the passing of SB169 in 2021, there has only been one member to qualify as “total and permanently” disabled under the KERS hazardous fund and none in the SPRS fund. Historically, approximately 10% of the in line of duty/duty-related disabilities during the period from 2010-2019 would have classified as “total and permanent”. We recommend no change to the assumption that 10% of disabilities in the line of duty will be total and permanent for the hazardous fund.

## TERMINATION RATES

The termination assumption is used to model the effect of members leaving active membership in the System for any reason other than death, disability, or service retirement. This applies whether the termination is voluntary or involuntary, and whether the member takes a refund or keeps his/her account balance on deposit. However, we only consider a termination to occur if the member changes status in the retirement system to an inactive member. We don’t consider a termination to occur if the member works for a new employer, but remains an active member in the same fund. The valuation uses the same termination assumption for males and females, but different assumptions for each fund. The current assumption is structured as a function of service. No terminations are assumed once a member becomes



retirement eligible (i.e. members who leave active service who are eligible to retire are assumed to commence their retirement benefit).

A higher paid member has a greater liability relative to a lower paid member, and has been shown to have lower turnover. Along those lines the termination pattern for the higher paid members will have more impact on the future liabilities of the plan. Therefore, we have weighted the experience by salary and are counting the payroll and the portion of the payroll that terminates employment (versus headcount) for the last nine years. For this assumption, it is more conservative to have an A/E ratio over 100%.

The analysis indicated that termination experience is still correlated with service. Also, we continue to develop a termination assumption that is applied to both genders for increased statistical credibility. The following table provides a summary of the results for the termination rates by fund:

<b>Summary of Termination Analysis</b> (Hundreds of Thousands of Payroll)					
Fund	Actual Experience	Current Assumption		Recommended Assumption	
		Expected	A/E	Expected	A/E
(1)	(2)	(3)	(4)	(5)	(6)
KERS Non-Hazardous	24,941	17,234	145%	20,183	124%
KERS Hazardous	3,963	2,092	189%	2,757	144%
SPRS	538	272	198%	319	169%

In summary, the rates of termination were higher than expected for all three funds. The higher actual turnover experience was not surprising given the extraordinary economic changes that occurred during the last few years. We are recommending a 10% increase the termination rates for the KERS non-hazardous fund and SPRS. We are also recommending a 30% increase in the termination rates for the KERS hazardous fund.

Details of the termination experience are provided in Section VI on pages 63-65.

#### Refund of Member Contribution Balance

If a member terminates employment with a vested benefit but prior to their retirement age, they may keep their member contributions in the System and receive a monthly annuity when they reach their eligible retirement age or withdrawal their member contributions at any time and forfeit the monthly annuity. Currently, the valuation assumes that members in each fund will refund their contributions if the value of their member contributions exceeds the value of their deferred monthly retirement benefit. We recommend no change to this assumption.

## **RETIREMENT RATES**

The retirement rates are used to model when an employee will commence their retirement allowance. The current retirement assumption is the same for males and females, but vary by fund and benefit tier.



For this analysis we have weighted the experience by the member's benefit. Thus, the retirement pattern for the members with a greater benefit will have a larger impact on the future liabilities of the plan. For this assumption, it is more conservative to have an A/E ratio less 100%, however, it is still reasonable to have an A/E ratio greater than 100% if there is reason to believe that future retirement experience will be different than the experience period reviewed.

We recommend the continued use of an age-based and gender-distinct assumption for the KERS non-hazardous fund. For the KERS hazardous and SPRS funds, the use of a service-based retirement assumption provides a better indicator of the members retirement pattern. And, there is not enough female members in the hazardous funds to create a credible gender-distinct retirement assumption.

<b>Summary of Retirement Analysis</b> (Hundreds of Thousands of Payroll)						
Fund	Males			Females		
	Actual	Expected	A/E	Actual	Expected	A/E
(1)	(2)	(3)	(4)	(5)	(6)	(7)
KERS Non-Hazardous	6,159	6,449	96%	7,691	7,997	96%
KERS Hazardous	1,845	1,801	102%	Included with Males	Included with Males	Included with Males
SPRS	1,120	1,234	91%	Included with Males	Included with Males	Included with Males

We are recommending no change to the normal retirement rates for the KERS non-hazardous fund. Overall, the expected average retirement age for males is age 59 and age 57 for females. The valuation also includes an assumption for reduced, early retirement which are less material than the normal retirement assumptions. We are recommending no change to the early retirement rates as well. Similarly, we are recommending continued use of the current retirement assumption for the KERS hazardous and SPRS funds.

Details of the retirement experience are provided in Section V on pages 66-70.

#### Adjustment to Retirement Rates for Members Participating on or after July 1, 2003

Members with a participation date on or after July 1, 2003, receive a relatively less generous pre-age 65 health insurance benefit compared to the benefit provided to members who become participants prior to July 1, 2003. Therefore, we recommend using a different retirement assumption to reflect an expectation that these members will retire at slightly later ages. Specifically, for members with a participation date on or after July 1, 2003 we are recommending that the retirement rates at each age (or service) below age 65 are 80% of the recommended retirement rates that are developed for the members with a participation date prior to July 1, 2003. Additional adjustments were made to retirement rates for Tier 2 and Tier 3 members to reflect the different retirement eligibility and benefits applicable to these members. Note that we must rely on our professional judgement regarding these retirement rates as it will be many years into the future before there is sufficient experience to analyze their actual retirement pattern. There were no recommended changes to the adjustment for members with a participation date on or after July 1, 2003 or to the retirement rates for Tier 2 and Tier 3 members. These retirement rates are shown in Sections IV and V.



## RETIREE MEDICAL PARTICIPATION

A retiree’s participation in the health insurance plan is voluntary, not mandatory. Some retirees may not elect to be covered, especially if they have coverage through a spouse or a previous employer. As a result, it is relevant to include an assumption in the actuarial valuation regarding the number of future retirees that will elect to participate in the retiree health insurance plan. It may be relevant to take into consideration the design of the health insurance plan when selecting this assumption, such as eligibility, plan choices, and retiree contribution requirements, which may affect a retiree’s decision to participate in the health insurance plan.

The current assumption is a service-based assumption, which is logical since the retiree’s cost subsidy increases as their service at retirement increases. The table on the following page summarizes the current participation assumption.

**Health Insurance Participation Assumption at Retirement  
(members with a participation date before July 1, 2003)**

Service at Retirement (Years)	System	
	KERS	SPRS
(1)	(2)	(3)
Under 10	50%	100%
10 to 14	75%	100%
15 to 19	90%	100%
20 or more	100%	100%

Additionally, 50% of KERS inactive vested members and 100% of SPRS inactive vested members with a participation date before July 1, 2003 are assumed to elect health coverage. 50% of KERS members and 75% of SPRS members with hazardous service are assumed to elect spouse coverage.

We reviewed the actual participation experience for the five-year period for each fund. The actual election rate remains relatively close to the expected election rate for those retirees. As a result, we recommend increasing the spouse election assumption for SPRS to 85% but recommend no other changes to the participation assumptions for the health insurance funds.

For members with a participation date on or after July 1, 2003 who receive the dollar subsidy benefit, 100% of members are assumed to elect health coverage. While actual participation experience for this benefit has been lower than 100%, recent experience shows that participation for this benefit is increasing as the members begin retiring with higher service. Therefore, we recommend no change to this assumption at this time.

## OTHER ASSUMPTIONS

There are other assumptions made in the course of a valuation, such as the percentage of members who are married, the age difference between members and spouses, etc. Currently 100% of the members are assumed to be married with the husband three years older than the wife. We believe they are generally realistic and/or conservative and recommend no changes to these other assumptions.



There are also assumptions that are specifically used in the valuation of the retiree health insurance funds. These include: the age-related morbidity/claims utilization, health care trend, and baseline claims cost. Each of these assumptions are reviewed on an annual basis and may be periodically updated as each year of claims experience is reviewed, as well as with possible plan design changes.

### **ACTUARIAL COST METHOD**

The individual Entry Age Normal cost method (EAN) is the current funding method being used to allocate the actuarial costs of each fund. The Entry Age Normal method will generally produce relatively level contribution amounts as a percentage of payroll from year-to-year, and allocates costs among various generations of taxpayers in a reasonable manner. It is by far the most commonly used actuarial cost method for large public retirement systems. We continue to believe this is the most appropriate funding method and recommend no change.

### **ACTUARIAL ASSET METHOD**

The current method for developing the actuarial value of assets is based on a five-year asset smoothing method that will identify each year's investment gain or loss on a market value of asset basis, and recognize that amount at the rate of 20% per year. Under this method, an investment gain or loss that occurs in a particular year will be fully recognized in the actuarial value of assets after five years. This asset method is also the most common asset valuation method used by large public retirement systems and the actual investment volatility experienced in FY 2021 and FY 2022 shows the relevance and importance of using this method for purposes of determining the actuarial contribution rate. As a result, we recommend continued use of this asset smoothing method.

## **SECTION IV**

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### **SUMMARY OF RECOMMENDED ASSUMPTIONS – KERS**

DRAFT

## Kentucky Employees Retirement System Summary of Actuarial Methods and Assumptions

The following presents a summary of the actuarial assumptions and methods proposed for use in the valuation of the Kentucky Employees Retirement System beginning with the valuation date June 30, 2023.

*Investment return rate:*

Assumed annual rate of 5.50% net of investment expenses for the non-hazardous retirement fund  
 Assumed annual rate of 6.50% net of investment expenses for the hazardous retirement fund, non-hazardous insurance fund, and hazardous insurance fund

*Price Inflation:*

Assumed annual rate of 2.50%

*Payroll Growth Assumption (used for amortization of unfunded accrued liabilities):*

Assumed annual rate of 0.00%

*Rates of Annual Salary Increase:*

Assumed rates of annual salary increases are shown below.

Service Years	Annual Rates of Salary					
	Merit & Seniority		Price Inflation & Productivity		Total Increase	
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous
0	12.00%	16.50%	3.30%	3.55%	15.30%	20.05%
1	3.50%	4.00%	3.30%	3.55%	6.80%	7.55%
2	2.75%	3.00%	3.30%	3.55%	6.05%	6.55%
3	2.50%	3.00%	3.30%	3.55%	5.80%	6.55%
4	2.00%	2.00%	3.30%	3.55%	5.30%	5.55%
5	1.50%	1.50%	3.30%	3.55%	4.80%	5.05%
6	1.25%	1.00%	3.30%	3.55%	4.55%	4.55%
7	1.00%	0.50%	3.30%	3.55%	4.30%	4.05%
8	0.75%	0.50%	3.30%	3.55%	4.05%	4.05%
9	0.50%	0.00%	3.30%	3.55%	3.80%	3.55%
10	0.50%	0.00%	3.30%	3.55%	3.80%	3.55%
11 & Over	0.00%	0.00%	3.30%	3.55%	3.30%	3.55%



**Retirement rates:**

Assumed annual rates of retirement are shown below. Rates are only applicable for members who are eligible for a service retirement.

Age	Non-Hazardous				Service	Hazardous			
	Normal Retirement		Early Retirement <sup>1</sup>			Members participating before 9/1/2008 <sup>2</sup>		Members participating between 9/1/2008 and 1/1/2014 <sup>3</sup>	Members participating after 1/1/2014 <sup>3</sup>
	Male	Female	Male	Female		Age 55-61	Age 62+		
Under 45	20.0%	33.0%			5	10.0%	35.0%		
45	21.0%	33.0%			6	10.0%	35.0%		
46	22.0%	33.0%			7	10.0%	35.0%		
47	23.0%	33.0%			8	10.0%	35.0%		
48	24.0%	33.0%			9	10.0%	35.0%		
49	25.0%	33.0%			10	10.0%	35.0%		
50	26.0%	33.0%			11	10.0%	35.0%		
51	27.0%	33.0%			12	10.0%	35.0%		
52	28.0%	33.0%			13	10.0%	35.0%		
53	29.0%	33.0%			14	10.0%	35.0%		
54	30.0%	33.0%			15	10.0%	35.0%		
55	30.0%	33.0%	5.0%	5.0%	16	10.0%	35.0%		
56	30.0%	33.0%	5.0%	5.0%	17	10.0%	35.0%		
57	30.0%	33.0%	5.0%	5.0%	18	10.0%	35.0%		
58	30.0%	33.0%	5.0%	5.0%	19	10.0%	35.0%		
59	30.0%	33.0%	5.0%	5.0%	20	50.0%	50.0%		
60	30.0%	33.0%	5.0%	8.0%	21	32.0%	32.0%		
61	30.0%	33.0%	8.0%	9.0%	22	32.0%	32.0%		
62	35.0%	35.0%	15.0%	20.0%	23	32.0%	32.0%		
63	30.0%	33.0%	15.0%	18.0%	24	32.0%	32.0%		
64	30.0%	33.0%	15.0%	16.0%	25	32.0%	32.0%	25.6%	16.0%
65	30.0%	33.0%			26	32.0%	32.0%	25.6%	16.0%
66	30.0%	33.0%			27	32.0%	32.0%	25.6%	16.0%
67	30.0%	33.0%			28	32.0%	32.0%	25.6%	16.0%
68	30.0%	33.0%			29	32.0%	32.0%	25.6%	16.0%
69	30.0%	33.0%			30+	32.0%	32.0%	25.6%	100.0%
70	30.0%	33.0%							
71	30.0%	33.0%							
72	30.0%	33.0%							
73	30.0%	33.0%							
74	30.0%	33.0%							
75	100.0%	100.0%							

<sup>1</sup> The annual rate of retirement is 12% for male members and 14% for female members with 25-26 years of service.

<sup>2</sup> The annual rate of retirement is 100% at age 65.

<sup>3</sup> The annual rate of retirement is 100% at age 60.

*Non-Hazardous System: For members hired after 7/1/2003, the rates shown above are multiplied by 80% if the member is under age 65 to reflect the different retiree health insurance benefit.*

*Hazardous System: For members hired after 7/1/2003 and prior to 9/1/2008, the rates shown above are multiplied by 80% if the member is under age 65 to reflect the different retiree health insurance benefit.*



*Disability rates:*

An abbreviated table with assumed rates of disability is shown below.

Age	Non-Hazardous		Hazardous	
	Male	Female	Male	Female
20	0.03%	0.03%	0.05%	0.05%
30	0.05%	0.05%	0.08%	0.08%
40	0.11%	0.11%	0.18%	0.18%
50	0.31%	0.31%	0.50%	0.50%
60	0.80%	0.80%	1.32%	1.32%

*Withdrawal rates (for causes other than disability and retirement):*

Assumed annual rates of withdrawal are shown below and include pre-retirement mortality rates as described on the next page.

Service Years	Annual Rates of Withdrawal	
	Non-Hazardous	Hazardous
1	22.00%	32.50%
2	18.10%	25.58%
3	14.73%	19.66%
4	12.77%	16.19%
5	11.37%	13.73%
6	10.29%	11.82%
7	9.41%	10.26%
8	8.66%	8.93%
9	8.01%	7.79%
10	7.44%	6.79%
11	6.93%	5.89%
12	6.47%	5.07%
13	6.04%	4.33%
14	5.65%	3.64%
15	5.29%	3.00%
16	4.96%	2.42%
17	4.64%	1.86%
18	4.36%	1.34%
19	4.07%	0.86%
20	3.82%	0.39%
21	3.56%	0.00%
22	3.32%	0.00%
23	3.10%	0.00%
24	2.88%	0.00%
25	2.67%	0.00%
26 & Over	0.00%	0.00%



*Mortality Assumption:*

Pre-retirement mortality: PUB-2010 General Mortality table, for the Non-Hazardous System, and the PUB-2010 Public Safety Mortality table for the Hazardous System, projected with the ultimate rates from the MP-2020 mortality improvement scale using a base year of 2010.

Post-retirement mortality (non-disabled): System-specific mortality table based on mortality experience from 2013-2022, projected with the ultimate rates from the MP-2020 mortality improvement scale using a base year of 2023.

The following table provides the life expectancy for a non-disabled retiree in future years based on the assumption with full generational projection:

Life Expectancy for an Age 65 Retiree in Years					
Gender	Year of Retirement				
	2025	2030	2035	2040	2045
Male	19.8	20.2	20.6	21.0	21.3
Female	22.4	22.7	23.1	23.4	23.7

Post-retirement mortality (disabled): PUB-2010 Disabled Mortality table, with rates multiplied by 150% for both male and female rates, projected with the ultimate rates from the mortality improvement scale MP-2020 using a base year of 2010.

*Marital status:*

100% of employees are assumed to be married, with the female spouse 3 years younger than the male spouse.

*Line of Duty/Duty-Related Disability*

Non-Hazardous: 2% of disabilities are assumed to be duty-related (100% of which are assumed to be “total and permanent”)

Hazardous: 10% of disabilities are assumed to occur in the line of duty (10% of which are assumed to be “total and permanent”)

*Line of Duty Death*

25% of deaths are assumed to occur in the line of duty

*Dependent Children:*

For members in the Hazardous Plan who receive a duty-related death or disability benefit, the member is assumed to be survived by two dependent children, each age 6 with payments for 15 years.



*Form of Payment:*

Members are assumed to elect a life-only annuity at retirement.

*Actuarial Cost Method:*

Entry Age Normal, Level Percentage of Pay. The Entry Age Normal actuarial cost method allocates the System’s actuarial present value of future benefits to various periods based upon service. The portion of the present value of future benefits allocated to years of service prior to the valuation date is the actuarial accrued liability, and the portion allocated to years following the valuation date is the present value of future normal costs. The normal cost is determined for each active member as the level percent of pay necessary to fully fund the expected benefits to be earned over the career of each individual active member. The normal cost is partially funded with active member contributions with the remainder funded by employer contributions.

*Health Care Participation Assumptions:*

- Active members are assumed to elect health coverage at retirement at the following participation rates.

Service at Retirement	Members participating before 7/1/2003*	Members participating after 7/1/2003
Under 10	50%	100%
10-14	75%	100%
15-19	90%	100%
Over 20	100%	100%

\* 100% of members with a duty disability or a duty death (in service) benefit are assumed to elect coverage at retirement.

- Future retirees are assumed to have a similar distribution by plan type as the current retirees.

Medicare Plan	Participation Percentage	Non-Medicare Plan	Participation Percentage
Medical Only <sup>1</sup>	5%	LivingWell Basic	2%
Essential Plan	8%	LivingWell CDHP	35%
Premium Plan	87%	LivingWell PPO	63%

<sup>1</sup> Includes Medicare Advantage Mirror Plans



*Health Care Participation Assumptions (continued):*

- 50% of deferred vested members participating before July 1, 2003 are assumed to elect health coverage at retirement. 100% of deferred vested members participating after July 1, 2003 are assumed to elect health coverage at retirement.
- Deferred vested members receiving insurance benefits from the non-hazardous fund are assumed to begin health coverage at age 55 for members participating before September 1, 2008, at age 60 for members participating on or after September 1, 2008 but before January 1, 2014, and at age 65 for members participating on or after January 1, 2014.
- Deferred vested members receiving insurance benefits from the hazardous fund are assumed to begin health coverage at age 50 for members participating before January 1, 2014 and at age 60 for members participating on or after January 1, 2014.
- 50% of future retirees, with hazardous service, are assumed to elect spouse health care coverage. No dependent coverage is assumed for members who only have non-hazardous service. 100% of spouses with health care coverage are assumed to continue coverage after the member's death.

*Other Assumptions*

1. Valuation payroll (used for determining the amortization contribution rate): Current fiscal year payroll.
2. Individual salaries used to project benefits: For salary amounts prior to the valuation date, the salary from the last fiscal year is projected backward with the valuation salary scale assumption. For future salaries, the salary from the last fiscal year is projected forward with one year's salary scale.
3. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported salaries represent amounts paid to members during the year ending on the valuation date.
4. Current active members that terminated employment (for reasons other than retirement, disability, or death) are assumed to commence their retirement benefits at first unreduced retirement eligibility. Members are assumed to elect a refund of member contributions if the value of their account balance exceeds the present value of the deferred benefit. Members participating in the Cash Balance plan are assumed to elect to receive a lump sum of their cash balance account if their account balance exceeds the present value of the deferred benefit and the member is not eligible for insurance benefits at termination.
5. The beneficiaries of current active members that die while active are assumed to commence their survivor benefits at the member's first unreduced retirement eligibility. Beneficiaries are assumed to elect a refund of member contributions if the value of the member's account balance exceeds the present value of the survivor benefit. Beneficiaries of active members that die while in the line of duty are assumed to commence their survivor benefits immediately at the death of the member.



6. There will be no recoveries once disabled.
7. Cash Balance Provisions: The cash balance interest crediting rate while a member is an active employee is assumed to equal 5.9% (based upon the 5.50% assumed investment return) for the Non-Hazardous Fund and 6.75% (based upon the 6.50% assumed investment return) for the Hazardous Fund. The interest crediting rate after a member terminates employment is 4% for all plans.
8. Decrement timing: Decrements of all types are assumed to occur mid-year. Decrement rates are used as described in this report, without adjustment for multiple decrement table effects.
9. Service: All members are assumed to accrue 1 year of benefit and eligibility service each year.
10. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
11. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
12. Current Inactive Population (Retirement Funds): All non-vested members are assumed to take an immediate refund of member contributions. Vested members are assumed to elect an immediate refund of member contributions at the valuation date if the value of their account balance exceeds the present value of their deferred benefit. Non-hazardous members are assumed to retire at age 65. Hazardous members hired prior to September 1, 2008 are assumed to retire at age 55 and hazardous members hired on or after September 1, 2008 are assumed to retire at age 60.
13. The additional \$5 per year of service insurance dollar subsidy effective January 1, 2023 is assumed to be paid in all applicable years.

## SECTION V

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### SUMMARY OF RECOMMENDED ASSUMPTIONS – SPRS

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## State Police Retirement System Summary of Actuarial Methods and Assumptions

The following presents a summary of the actuarial assumptions and methods proposed for use in the valuation of the State Police Retirement System beginning with the valuation date June 30, 2023.

*Investment return rate:*

Assumed annual rate of 5.50% net of investment expenses for the retirement fund

Assumed annual rate of 6.50% net of investment expenses for the insurance fund

*Price Inflation:*

Assumed annual rate of 2.50%

*Payroll Growth Assumption (used for amortization of unfunded accrued liabilities):*

Assumed annual rate of 0.00%

*Rates of Annual Salary Increase:*

Assumed rates of annual salary increases are shown below.

Service Years	Annual Rates of Salary Increases		
	Merit & Seniority	Price Inflation & Productivity	Total Increase
0	12.50%	3.55%	16.05%
1	5.00%	3.55%	8.55%
2	4.00%	3.55%	7.55%
3	2.00%	3.55%	5.55%
4	2.00%	3.55%	5.55%
5	2.00%	3.55%	5.55%
6	2.00%	3.55%	5.55%
7	1.00%	3.55%	4.55%
8	1.00%	3.55%	4.55%
9	0.00%	3.55%	3.55%
10 & Over	0.00%	3.55%	3.55%



*Retirement rates:*

Assumed annual rates of retirement are shown below. Rates are only applicable for members who are eligible for a service retirement.

Service	Members participating Before 9/1/2008 <sup>1</sup>	Members participating on or after 9/1/2008 <sup>2</sup>	Members participating after 1/1/2014 <sup>2</sup>
20	22.0%		
21	22.0%		
22	22.0%		
23	28.0%		
24	28.0%		
25	28.0%	17.6%	16.0%
26	28.0%	17.6%	16.0%
27	28.0%	17.6%	16.0%
28	44.0%	22.4%	16.0%
29	44.0%	22.4%	16.0%
30	44.0%	22.4%	100.0%
31	58.0%	22.4%	
32	58.0%	22.4%	
33	58.0%	35.2%	
34	58.0%	35.2%	
35	58.0%	35.2%	
36	58.0%	46.4%	
37	58.0%	46.4%	
38	58.0%	46.4%	
39	58.0%	46.4%	
40+	58.0%	46.4%	

<sup>1</sup> The annual rate of service retirement is 100% at age 55.

<sup>2</sup> The annual rate of service retirement is 100% at age 60.

For members hired after 7/1/2003 and prior to 9/1/2008, the rates shown above are multiplied by 80% if the member is under the age of 55 to reflect the different retiree health insurance benefit.

*Disability rates:*

An abbreviated table with assumed rates of disability is show below.

Age	Annual Rates of Disability	
	Male	Female
20	0.05%	0.05%
30	0.09%	0.09%
40	0.20%	0.20%
50	0.56%	0.56%
60	1.46%	1.46%

*Withdrawal rates (for causes other than disability and retirement):*

Assumed annual rates of withdrawal are shown below and include pre-retirement mortality rates as described on the next page.

Service	Annual Rates of Withdrawal
1	15.00%
2	5.30%
3	4.14%
4	3.47%
5	2.98%
6	2.61%
7	2.30%
8	2.05%
9	1.83%
10	1.63%
11	1.45%
12	1.29%
13	1.14%
14	1.01%
15	0.88%
16	0.77%
17	0.66%
18	0.56%
19	0.46%
20	0.37%
21 & Over	0.00%



*Mortality Assumption:*

Pre-retirement mortality: PUB-2010 Public Safety Mortality, projected with the ultimate rates from the MP-2020 mortality improvement scale using a base year of 2010.

Post-retirement mortality (non-disabled): System-specific mortality table based on mortality experience from 2013-2022, projected with the ultimate rates from the MP-2020 mortality improvement scale using a base year of 2023.

The following table provides the life expectancy for a non-disabled retiree in future years based on the assumption with full generational projection:

Life Expectancy for an Age 65 Retiree in Years					
Gender	Year of Retirement				
	2025	2030	2035	2040	2045
Male	19.8	20.2	20.6	21.0	21.3
Female	22.4	22.7	23.1	23.4	23.7

Post-retirement mortality (disabled): PUB-2010 Disabled Mortality table, with rates multiplied by 150% for both male and female rates, projected with the ultimate rates from the mortality improvement scale MP-2020 using a base year of 2010.

*Marital status:*

100% of employees are assumed to be married, with the female spouse 3 years younger than the male spouse.

*Line of Duty Disability*

70% of disabilities are assumed to occur in the line of duty (10% of which are assumed to be “total and permanent”)

*Line of Duty Death*

25% of deaths are assumed to occur in the line of duty

*Dependent Children:*

For members who receive a duty-related death or disability benefit, the member is assumed to be survived by two dependent children, each age 6 with payments for 15 years.



*Form of Payment:*

Members are assumed to elect a life-only annuity at retirement.

*Actuarial Cost Method:*

Entry Age Normal, Level Percentage of Pay. The Entry Age Normal actuarial cost method allocates the System’s actuarial present value of future benefits to various periods based upon service. The portion of the present value of future benefits allocated to years of service prior to the valuation date is the actuarial accrued liability, and the portion allocated to years following the valuation date is the present value of future normal costs. The normal cost is determined for each active member as the level percent of pay necessary to fully fund the expected benefits to be earned over the career of each individual active member. The normal cost is partially funded with active member contributions with the remainder funded by employer contributions.

*Health Care Participation Assumptions:*

- Active members are assumed to elect health coverage at retirement at the following participation rates.

Service at Retirement	Members participating before 7/1/2003*	Members participating after 7/1/2003
Under 10	100%	100%
10-14	100%	100%
15-19	100%	100%
Over 20	100%	100%

\* 100% of members with a duty disability or a duty death (in service) benefit are assumed to elect coverage at retirement.

- Future retirees are assumed to have a similar distribution by plan type as the current retirees.

Medicare Plan	Participation Percentage	Non-Medicare Plan	Participation Percentage
Medical Only <sup>1</sup>	5%	LivingWell Basic	2%
Essential Plan	8%	LivingWell CDHP	35%
Premium Plan	87%	LivingWell PPO	63%

<sup>1</sup>Includes Medicare Advantage Mirror Plans



*Health Care Participation Assumptions (continued):*

- 100% of deferred vested members participating are assumed to elect health coverage at retirement.
- Deferred vested members are assumed to begin health coverage at age 50 for members participating before January 1, 2014 and at age 60 for members participating on or after January 1, 2014.
- 85% of future retirees, with hazardous service, are assumed to elect spouse health care coverage. 100% of spouses with health care coverage are assumed to continue coverage after the member's death.

*Other Assumptions*

1. Valuation payroll (used for determining the amortization contribution rate): Current fiscal year payroll.
2. Individual salaries used to project benefits: For salary amounts prior to the valuation date, the salary from the last fiscal year is projected backward with the valuation salary scale assumption. For future salaries, the salary from the last fiscal year is projected forward with one year's salary scale.
3. Pay increase timing: Beginning of (fiscal) year. This is equivalent to assuming that reported salaries represent amounts paid to members during the year ending on the valuation date.
4. Current active members that terminated employment (for reasons other than retirement, disability, or death) are assumed to commence their retirement benefits at first unreduced retirement eligibility. Members are assumed to elect a refund of member contributions if the value of their account balance exceeds the present value of the deferred benefit. Members participating in the Cash Balance plan are assumed to elect to receive a lump sum of their cash balance account if their account balance exceeds the present value of the deferred benefit and the member is not eligible for insurance benefits at termination.
5. The beneficiaries of current active members that die while active are assumed to commence their survivor benefits at the member's first unreduced retirement eligibility. Beneficiaries are assumed to elect a refund of member contributions if the value of the member's account balance exceeds the present value of the survivor benefit. Beneficiaries of active members that die while in the line of duty are assumed to commence their survivor benefits immediately at the death of the member.
6. There will be no recoveries once disabled.
7. Cash Balance Provisions: The cash balance interest crediting rate while a member is an active employee is assumed to equal 5.9% (based upon the 5.50% assumed investment return). The interest crediting rate after a member terminates employment is 4%.
8. Cash Balance Credit for Unused Sick Leave (annual and at retirement): It is assumed Tier 3 members will receive an additional 7.5% of pay employer pay credit each year due to the



conversion of unused sick leave after the member attains five years of service. It is also assumed the Tier 3 members will have fund 480 hours of unused sick leave to convert to pay credit at the time of their retirement. It is assumed that the General Assembly will fund this benefit in all future years.

9. Decrement timing: Decrements of all types are assumed to occur mid-year. Decrement rates are used as described in this report, without adjustment for multiple decrement table effects.
10. Service: All members are assumed to accrue 1 year of benefit and eligibility service each year.
11. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur
12. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
13. Current Inactive Population (Retirement Fund): All non-vested members are assumed to take an immediate refund of member contributions. Vested members are assumed to elect an immediate refund of member contributions at the valuation date if the value of their account balance exceeds the present value of their deferred benefit. Members hired prior to September 1, 2008 are assumed to retire at age 55 and members hired on or after September 1, 2008 are assumed to retire at age 60.
14. The additional \$5 per year of service insurance dollar subsidy effective January 1, 2023 is assumed to be paid in all applicable years.

## **SECTION VI**

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### **SUMMARY OF DATA AND EXPERIENCE**

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## Salary Experiences

### Kentucky Public Pensions Authority Kentucky Employees Retirement System (KERS) Non-Hazardous Salary Increase Experience

Years of Service	Current Salary Scale		2014-2022 Actual Experience			Proposed Salary Scale	
	Total	Step Rate/ Promotional	Total	Above Inflation	Step Rate/ Promotional	Total	Step Rate/ Promotional
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	15.30%	12.00%	13.89%	11.21%	11.30%	15.30%	12.00%
2	6.80%	3.50%	5.87%	3.19%	3.27%	6.80%	3.50%
3	6.05%	2.75%	5.35%	2.67%	2.76%	6.05%	2.75%
4	5.80%	2.50%	4.98%	2.30%	2.39%	5.80%	2.50%
5	5.30%	2.00%	4.67%	1.99%	2.08%	5.30%	2.00%
6	4.80%	1.50%	4.18%	1.50%	1.59%	4.80%	1.50%
7	4.55%	1.25%	3.86%	1.17%	1.26%	4.55%	1.25%
8	4.30%	1.00%	3.67%	0.99%	1.08%	4.30%	1.00%
9	4.05%	0.75%	3.68%	1.00%	1.09%	4.05%	0.75%
10	3.80%	0.50%	3.38%	0.70%	0.79%	3.80%	0.50%
11 & Over	3.80%	0.50%	2.59%	-0.09%	0.00%	3.80%	0.50%
Current Inflation Assumption			2.30%	Proposed Inflation Assumption		2.50%	
Current Productivity Component			1.00%	Proposed Productivity Component		0.80%	
Actual CPI-U Inflation for June 2013 - June 2018			2.68%	Proposed Wage Inflation		3.30%	
Apparent Productivity Component			-0.09%				



## Salary Experiences

### Kentucky Public Pensions Authority Kentucky Employees Retirement System (KERS) Hazardous Salary Increase Experience

Years of Service	Current Salary Scale		2014-2022 Actual Experience			Proposed Salary Scale	
	Total	Step Rate/ Promotional	Total	Above Inflation	Step Rate/ Promotional	Total	Step Rate/ Promotional
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	20.05%	16.50%	21.41%	18.73%	16.54%	20.05%	16.50%
2	7.55%	4.00%	8.31%	5.63%	3.44%	7.55%	4.00%
3	6.55%	3.00%	7.31%	4.63%	2.45%	6.55%	3.00%
4	6.55%	3.00%	7.11%	4.42%	2.24%	6.55%	3.00%
5	5.55%	2.00%	6.48%	3.80%	1.62%	5.55%	2.00%
6	5.05%	1.50%	6.92%	4.24%	2.05%	5.05%	1.50%
7	4.55%	1.00%	5.94%	3.26%	1.08%	4.55%	1.00%
8	4.05%	0.50%	4.96%	2.28%	0.10%	4.05%	0.50%
9	4.05%	0.50%	5.45%	2.77%	0.58%	4.05%	0.50%
10	3.55%	0.00%	5.49%	2.81%	0.63%	3.55%	0.00%
11 & Over	3.55%	0.00%	4.86%	2.18%	0.00%	3.55%	0.00%
Current Inflation Assumption			2.30%	Proposed Inflation Assumption		2.50%	
Current Productivity Component			1.25%	Proposed Productivity Component		1.05%	
Actual CPI-U Inflation for June 2013 - June 2018			2.68%	Proposed Wage Inflation		3.55%	
Apparent Productivity Component			2.18%				



## Salary Experiences

### Kentucky Public Pensions Authority State Police Retirement System (SPRS) Salary Increase Experience

Years of Service	Current Salary Scale		2014-2022 Actual Experience			Proposed Salary Scale	
	Total	Step Rate/ Promotional	Total	Above Inflation	Step Rate/ Promotional	Total	Step Rate/ Promotional
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	16.05%	12.50%	34.10%	31.42%	29.66%	16.05%	12.50%
2	8.55%	5.00%	6.28%	3.60%	1.84%	8.55%	5.00%
3	7.55%	4.00%	7.68%	5.00%	3.24%	7.55%	4.00%
4	5.55%	2.00%	6.43%	3.75%	1.99%	5.55%	2.00%
5	5.55%	2.00%	5.62%	2.94%	1.18%	5.55%	2.00%
6	5.55%	2.00%	4.12%	1.44%	-0.32%	5.55%	2.00%
7	5.55%	2.00%	5.33%	2.65%	0.89%	5.55%	2.00%
8	4.55%	1.00%	4.25%	1.57%	-0.19%	4.55%	1.00%
9	4.55%	1.00%	2.99%	0.31%	-1.45%	4.55%	1.00%
10	3.55%	0.00%	2.88%	0.20%	-1.56%	3.55%	0.00%
11 & Over	3.55%	0.00%	4.44%	1.76%	0.00%	3.55%	0.00%
Current Inflation Assumption			2.30%	Proposed Inflation Assumption			2.50%
Current Productivity Component			1.25%	Proposed Productivity Component			1.05%
Actual CPI-U Inflation for June 2013 - June 2018			2.68%	Proposed Wage Inflation			3.55%
Apparent Productivity Component			1.76%				



## Mortality Experiences

### Kentucky Public Pensions Authority Post-Retirement Mortality Experience - Male

Age	Actual Deaths	Total Exposures	Actual Rate	Assumed Rate		Expected Deaths		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2)/(7)	Proposed (2)/(8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	27	7,034	0.0038	0.32%	0.34%	23	25	116.08%	106.17%
55-59	70	11,349	0.0062	0.48%	0.62%	64	73	109.94%	96.83%
60-64	159	15,704	0.0101	1.06%	1.01%	165	159	96.66%	100.35%
65-69	259	18,509	0.0140	1.30%	1.40%	242	267	106.81%	97.01%
70-74	349	13,647	0.0256	1.83%	2.56%	250	342	139.86%	102.17%
75-79	303	7,450	0.0407	3.27%	4.07%	241	301	125.70%	100.74%
80-84	284	3,980	0.0713	6.25%	7.13%	244	279	116.47%	101.75%
85-89	236	1,762	0.1340	11.40%	12.86%	194	219	121.73%	107.83%
90-94	107	508	0.2111	19.35%	21.62%	93	104	115.01%	102.94%
95-99	26	82	0.3180	27.33%	32.86%	22	25	119.80%	103.44%
100-104	3	8	0.4015	35.06%	45.52%	2	3	121.62%	92.93%
105-109	0	0	0.3333	44.56%	50.00%	0	0	77.97%	67.24%
Total	1,825	80,033				1,541	1,797	118.42%	101.51%

*Actual, expected and exposures are in thousands of benefit*



## Mortality Experiences

### Kentucky Public Pensions Authority Post-Retirement Mortality Experience - Female

Age	Actual Deaths	Total Exposures	Actual Rate	Assumed Rate		Expected Deaths		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2)/(7)	Proposed (2)/(8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	9	3,646	0.0025	0.23%	0.24%	8	9	109.03%	98.86%
55-59	30	8,524	0.0035	0.29%	0.41%	30	36	100.81%	83.24%
60-64	85	14,145	0.0060	0.73%	0.65%	102	94	82.90%	89.97%
65-69	157	16,655	0.0094	0.90%	1.03%	150	172	104.48%	90.97%
70-74	199	12,512	0.0159	1.20%	1.73%	151	216	131.65%	92.06%
75-79	207	7,227	0.0287	2.15%	3.12%	154	222	134.74%	93.21%
80-84	194	3,778	0.0513	4.24%	5.59%	157	208	123.40%	93.24%
85-89	169	1,864	0.0909	8.00%	10.61%	145	193	116.54%	87.71%
90-94	118	729	0.1619	13.94%	19.23%	97	134	121.35%	88.32%
95-99	38	150	0.2534	21.60%	30.47%	31	43	124.01%	88.44%
100-104	6	15	0.4084	30.98%	44.60%	4	6	142.45%	98.32%
105-109	0	1	0.5820	41.38%	54.50%	0	0	151.72%	110.98%
Total	1,212	69,246				1,030	1,334	117.69%	90.87%

*Actual, expected, and exposures are in thousands of benefit.*



## Mortality Experiences

### Kentucky Public Pensions Authority Post-Retirement Mortality Experience - Disabled Male

Age	Actual Deaths	Total Exposures	Actual Rate	Assumed Rate		Expected Deaths		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2)/(7)	Proposed (2)/(8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
40-44	2	106	0.0198	1.03%	1.04%	1	1	182.91%	181.82%
45-49	5	245	0.0204	1.60%	1.67%	4	4	125.54%	117.90%
50-54	9	423	0.0212	2.05%	2.48%	9	11	102.97%	84.76%
55-59	16	611	0.0254	2.41%	3.11%	15	19	104.51%	81.46%
60-64	31	760	0.0408	2.98%	3.65%	23	28	136.37%	110.93%
65-69	34	682	0.0496	3.83%	4.60%	26	31	129.72%	108.30%
70-74	29	435	0.0662	5.16%	5.98%	22	26	129.12%	111.33%
75-79	23	235	0.0992	7.39%	8.20%	17	19	135.62%	122.06%
80-84	18	116	0.1517	10.88%	11.97%	12	14	142.79%	129.82%
85-89	6	36	0.1727	16.51%	17.91%	6	6	109.81%	100.44%
90-94	2	7	0.2672	23.68%	27.62%	2	2	117.18%	101.51%
95-99	0	1	0.2527	32.81%	39.38%	0	0	81.32%	67.82%
<b>Total</b>	<b>174</b>	<b>3,656</b>				<b>137</b>	<b>161</b>	<b>127.46%</b>	<b>108.27%</b>

*Actual, expected, and exposures are in thousands of benefit.*



## Mortality Experiences

### Kentucky Public Pensions Authority Post-Retirement Mortality Experience - Disabled Female

Age	Actual Deaths	Total Exposures	Actual Rate	Assumed Rate		Expected Deaths		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2)/(7)	Proposed (2)/(8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
40-44	0	47	0.0085	1.00%	1.03%	0	1	79.86%	77.22%
45-49	4	151	0.0283	1.43%	1.59%	2	2	196.35%	171.93%
50-54	10	316	0.0301	1.67%	2.16%	5	7	179.87%	138.05%
55-59	14	580	0.0243	1.86%	2.50%	11	15	129.27%	96.85%
60-64	21	775	0.0273	2.19%	2.80%	17	22	124.24%	97.27%
65-69	24	698	0.0342	2.83%	3.36%	20	23	120.84%	101.83%
70-74	23	484	0.0477	4.03%	4.46%	19	22	119.00%	107.33%
75-79	18	300	0.0608	6.11%	6.48%	18	19	100.45%	94.58%
80-84	12	137	0.0905	9.47%	9.99%	13	13	98.97%	93.54%
85-89	6	35	0.1632	13.65%	15.65%	5	5	124.08%	109.42%
90-94	2	5	0.2774	19.51%	22.58%	1	1	150.83%	130.00%
95-99	0	1	0.2777	28.67%	32.83%	0	0	105.26%	92.02%
<b>Total</b>	<b>135</b>	<b>3,529</b>				<b>112</b>	<b>130</b>	<b>120.56%</b>	<b>103.20%</b>

*Actual, expected, and exposures are in thousands of benefit.*



## Termination Experiences

**Kentucky Public Pensions Authority  
Kentucky Employees Retirement System (KERS)  
Non-Hazardous  
Termination Experience - Service Based**

Service	Actual Terminations	Total Exposures	Actual Rate	Assumed Rate		Expected Terminations		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2)/(7)	Proposed (2)/(8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	563	2,073	0.2714	20.00%	22.00%	416	456	135.27%	123.40%
2	1,492	6,435	0.2319	16.45%	18.10%	1,063	1,164	140.36%	128.18%
3	1,567	7,460	0.2100	13.39%	14.73%	1,005	1,149	155.88%	136.34%
4	1,405	7,868	0.1785	11.61%	12.77%	920	1,051	152.68%	133.65%
5	1,286	8,490	0.1515	10.34%	11.37%	876	1,010	146.82%	127.34%
6	1,255	9,089	0.1380	9.35%	10.29%	838	978	149.73%	128.30%
7	1,309	10,197	0.1283	8.55%	9.41%	859	1,002	152.35%	130.61%
8	1,294	11,003	0.1176	7.87%	8.66%	852	996	151.87%	129.92%
9	1,278	12,055	0.1060	7.28%	8.01%	862	1,009	148.22%	126.62%
10	1,323	12,377	0.1069	6.76%	7.44%	821	962	161.12%	137.51%
11	1,279	12,718	0.1006	6.30%	6.93%	786	921	162.78%	138.92%
12	1,209	13,706	0.0882	5.88%	6.47%	789	927	153.20%	130.40%
13	1,218	14,753	0.0826	5.49%	6.04%	791	931	153.99%	130.83%
14	1,186	15,672	0.0757	5.14%	5.65%	785	926	151.07%	128.07%
15	1,128	16,630	0.0678	4.81%	5.29%	778	920	144.93%	122.56%
16	990	16,436	0.0603	4.51%	4.96%	719	853	137.75%	116.11%
17	928	16,266	0.0571	4.22%	4.64%	663	789	140.01%	117.65%
18	762	15,852	0.0480	3.96%	4.36%	604	722	126.08%	105.48%
19	749	15,963	0.0469	3.70%	4.07%	566	680	132.37%	110.18%
20	605	16,153	0.0375	3.47%	3.82%	535	644	113.18%	94.02%
21	626	15,395	0.0406	3.24%	3.56%	474	573	131.98%	109.18%
22	512	14,596	0.0350	3.02%	3.32%	416	507	122.97%	100.90%
23	349	13,728	0.0254	2.82%	3.10%	363	445	96.13%	78.42%
24	341	13,080	0.0260	2.62%	2.88%	319	394	106.75%	86.43%
25	289	6,229	0.0465	2.43%	2.67%	134	174	216.02%	166.36%
Total	24,941	304,222				17,234	20,183	144.72%	123.57%

*Actual, expected, and exposures are in thousands of salary.*



## Termination Experiences

**Kentucky Public Pensions Authority  
Kentucky Employees Retirement System (KERS)  
Hazardous  
Termination Experience - Service Based**

Service	Actual Terminations	Total Exposures	Actual Rate	Assumed Rate		Expected Terminations		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2)/(7)	Proposed (2)/(8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	246	535	0.4591	25.00%	32.50%	134	174	183.44%	141.27%
2	546	1,630	0.3353	19.68%	25.58%	322	417	169.69%	131.03%
3	460	1,691	0.2720	15.12%	19.66%	257	332	179.03%	138.58%
4	358	1,616	0.2213	12.45%	16.19%	203	262	176.16%	136.49%
5	291	1,611	0.1804	10.56%	13.73%	170	221	170.98%	131.52%
6	276	1,655	0.1666	9.09%	11.82%	149	196	185.03%	140.66%
7	274	1,701	0.1613	7.89%	10.26%	132	174	207.83%	157.66%
8	190	1,747	0.1087	6.87%	8.93%	118	156	160.96%	121.75%
9	207	1,883	0.1099	5.99%	7.79%	111	147	186.41%	140.76%
10	181	1,883	0.0962	5.22%	6.79%	96	128	188.70%	141.52%
11	143	1,879	0.0763	4.53%	5.89%	83	111	172.74%	129.16%
12	115	1,939	0.0595	3.90%	5.07%	73	98	158.02%	117.71%
13	121	2,022	0.0600	3.33%	4.33%	65	88	186.68%	137.89%
14	156	2,186	0.0713	2.80%	3.64%	58	80	268.70%	194.81%
15	88	2,033	0.0431	2.31%	3.00%	44	61	198.94%	143.49%
16	91	1,770	0.0514	1.86%	2.42%	31	43	293.41%	211.53%
17	84	1,732	0.0487	1.43%	1.86%	23	32	366.85%	263.67%
18	68	1,578	0.0434	1.03%	1.34%	14	21	488.94%	325.96%
19	50	1,497	0.0337	0.66%	0.86%	8	13	629.58%	387.43%
20	17	754	0.0221	0.30%	0.39%	1	3	1668.87%	556.29%
Total	3,963	33,343				2,092	2,757	189.43%	143.74%

*Actual, expected, and exposures are in thousands of salary.*



## Termination Experiences

### Kentucky Public Pensions Authority State Police Retirement System (SPRS) Termination Experience - Service Based

Service	Actual Terminations	Total Exposures	Actual Rate	Assumed Rate		Expected Terminations		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2)/(7)	Proposed (2)/(8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	21	114	0.1853	15.00%	15.00%	17	17	124.07%	124.07%
2	37	465	0.0787	4.82%	5.30%	22	25	166.22%	146.27%
3	25	590	0.0415	3.76%	4.14%	22	24	111.45%	102.16%
4	40	704	0.0567	3.15%	3.47%	22	24	181.41%	166.29%
5	39	740	0.0525	2.71%	2.98%	20	22	194.47%	176.79%
6	23	827	0.0283	2.37%	2.61%	19	22	123.12%	106.33%
7	51	948	0.0543	2.09%	2.30%	19	22	270.81%	233.88%
8	36	929	0.0388	1.86%	2.05%	16	19	225.15%	189.60%
9	28	996	0.0284	1.66%	1.83%	16	18	176.61%	156.98%
10	34	1,026	0.0333	1.48%	1.63%	14	17	244.31%	201.20%
11	38	1,164	0.0322	1.32%	1.45%	14	17	268.16%	220.84%
12	57	1,208	0.0469	1.17%	1.29%	13	16	435.70%	354.01%
13	19	1,150	0.0166	1.04%	1.14%	11	13	173.75%	147.02%
14	27	1,330	0.0201	0.92%	1.01%	11	13	243.41%	205.96%
15	11	1,377	0.0082	0.80%	0.88%	9	12	125.89%	94.42%
16	17	1,491	0.0112	0.70%	0.77%	9	11	185.75%	151.98%
17	7	1,504	0.0047	0.60%	0.66%	7	10	102.00%	71.40%
18	10	1,471	0.0068	0.51%	0.56%	6	8	165.97%	124.48%
19	13	1,497	0.0086	0.42%	0.46%	4	7	322.65%	184.37%
20	5	575	0.0093	0.34%	0.37%	1	2	533.25%	266.62%
<b>Total</b>	<b>538</b>	<b>20,106</b>				<b>272</b>	<b>319</b>	<b>197.71%</b>	<b>168.58%</b>

*Actual, expected, and exposures are in thousands of salary.*



## Retirement Experiences

**Kentucky Public Pensions Authority**  
**Kentucky Employees Retirement System (KERS)**  
**Non-Hazardous**  
**Unreduced Retirement Experience - Age Based - Male**

Age	Actual Retirements	Total Exposures	Actual Rate	Assumed Rate		Expected Retirements		Actual/Expected	
				Current <sup>1</sup>	Proposed <sup>1</sup>	Current	Proposed	Current (2)/(7)	Proposed (2)/(8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 45	101	153	0.66	20%	20%	31	31	326.31%	326.31%
45	42	106	0.40	21%	21%	22	22	191.14%	191.14%
46	83	247	0.33	22%	22%	54	54	152.98%	152.98%
47	144	335	0.43	23%	23%	77	77	186.80%	186.80%
48	140	567	0.25	24%	24%	136	136	102.75%	102.75%
49	178	741	0.24	25%	25%	185	185	96.05%	96.05%
50	271	876	0.31	26%	26%	228	228	119.07%	119.07%
51	324	1,029	0.31	27%	27%	278	278	116.58%	116.58%
52	312	1,133	0.28	28%	28%	317	317	98.46%	98.46%
53	280	1,102	0.25	29%	29%	320	320	87.50%	87.50%
54	305	1,264	0.24	30%	30%	379	379	80.34%	80.34%
55	322	1,358	0.24	30%	30%	407	407	79.23%	79.23%
56	315	1,221	0.26	30%	30%	366	366	86.18%	86.18%
57	229	980	0.23	30%	30%	294	294	77.96%	77.96%
58	262	953	0.27	30%	30%	286	286	91.49%	91.49%
59	295	824	0.36	30%	30%	247	247	119.39%	119.39%
60	166	718	0.23	30%	30%	215	215	77.10%	77.10%
61	202	741	0.27	30%	30%	222	222	90.88%	90.88%
62	235	657	0.36	35%	35%	230	230	102.35%	102.35%
63	178	586	0.30	30%	30%	176	176	100.94%	100.94%
64	120	453	0.27	30%	30%	136	136	88.54%	88.54%
65	382	1,443	0.27	30%	30%	433	433	88.30%	88.30%
66	323	1,173	0.28	30%	30%	352	352	91.68%	91.68%
67	311	904	0.34	30%	30%	271	271	114.71%	114.71%
68	113	594	0.19	30%	30%	178	178	63.33%	63.33%
69	159	594	0.27	30%	30%	178	178	89.53%	89.53%
70	120	452	0.27	30%	30%	136	136	88.35%	88.35%
71	66	344	0.19	30%	30%	103	103	63.60%	63.60%
72	89	295	0.30	30%	30%	88	88	100.75%	100.75%
73	59	208	0.28	30%	30%	62	62	95.30%	95.30%
74	34	140	0.24	30%	30%	42	42	80.15%	80.15%
Total	6,159	22,188				6,449	6,449	95.50%	95.50%
75 & Over	119	445	0.27	100%	100%	445	445	26.71%	26.71%
Total	6,278	22,633				6,894	6,894	91.06%	91.06%

<sup>1</sup> For members hired after 09/01/2008 and younger than 65, the rates other than 100% are reduced by 20% to account for a different health insurance benefit.

*Actual, expected, and exposures are in thousands of benefit.*



## Retirement Experiences

**Kentucky Public Pensions Authority**  
**Kentucky Employees Retirement System (KERS)**  
**Non-Hazardous**  
**Unreduced Retirement Experience - Age Based - Female**

Age	Actual Retirements	Total Exposures	Actual Rate	Assumed Rate		Expected Retirements		Actual/Expected	
				Current <sup>1</sup>	Proposed <sup>1</sup>	Current	Proposed	Current (2)/(7)	Proposed (2)/(8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 45	98	108	0.90	33%	33%	36	36	271.12%	271.12%
45	86	174	0.49	33%	33%	57	57	150.15%	150.15%
46	108	302	0.36	33%	33%	100	100	108.10%	108.10%
47	180	486	0.37	33%	33%	160	160	112.23%	112.23%
48	275	680	0.40	33%	33%	225	225	122.06%	122.06%
49	244	824	0.30	33%	33%	272	272	89.67%	89.67%
50	421	1,236	0.34	33%	33%	408	408	103.29%	103.29%
51	377	1,286	0.29	33%	33%	424	424	88.81%	88.81%
52	375	1,349	0.28	33%	33%	445	445	84.23%	84.23%
53	470	1,327	0.35	33%	33%	438	438	107.42%	107.42%
54	386	1,185	0.33	33%	33%	391	391	98.84%	98.84%
55	349	1,117	0.31	33%	33%	368	368	94.91%	94.91%
56	304	1,092	0.28	33%	33%	360	360	84.43%	84.43%
57	309	1,001	0.31	33%	33%	330	330	93.50%	93.50%
58	281	996	0.28	33%	33%	329	329	85.50%	85.50%
59	277	938	0.29	33%	33%	310	310	89.22%	89.22%
60	296	918	0.32	33%	33%	303	303	97.62%	97.62%
61	275	887	0.31	33%	33%	293	293	93.87%	93.87%
62	301	799	0.38	35%	35%	280	280	107.44%	107.44%
63	192	580	0.33	33%	33%	192	192	100.16%	100.16%
64	170	538	0.32	33%	33%	177	177	95.89%	95.89%
65	622	1,904	0.33	33%	33%	628	628	99.03%	99.03%
66	449	1,304	0.34	33%	33%	430	430	104.35%	104.35%
67	300	886	0.34	33%	33%	292	292	102.75%	102.75%
68	129	582	0.22	33%	33%	192	192	67.10%	67.10%
69	107	468	0.23	33%	33%	154	154	69.22%	69.22%
70	112	387	0.29	33%	33%	128	128	87.14%	87.14%
71	64	292	0.22	33%	33%	96	96	66.28%	66.28%
72	56	203	0.28	33%	33%	67	67	83.40%	83.40%
73	45	156	0.29	33%	33%	51	51	88.57%	88.57%
74	36	123	0.29	33%	33%	41	41	87.92%	87.92%
Total	7,691	24,130				7,977	7,977	96.41%	96.41%
75 & Over	68	288	0.24	100%	100%	288	288	23.72%	23.72%
Total	7,759	24,418				8,265	8,265	93.88%	93.88%

<sup>1</sup> For members hired after 09/01/2008 and younger than 65, the rates other than 100% are reduced by 20% to account for a different health insurance benefit.

*Actual, expected, and exposures are in thousands of benefit.*



## Retirement Experiences

**Kentucky Public Pensions Authority**  
**Kentucky Employees Retirement System (KERS)**  
**Hazardous**  
**Unreduced Retirement Experience - Age Based - Male & Female**

Service	Actual Retirements	Total Exposures	Actual Rate	Assumed Rate		Expected Retirements		Actual/Expected	
				Current <sup>1</sup>	Proposed <sup>1</sup>	Current	Proposed	Current (2)/(7)	Proposed (2)/(8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
20	603	1,366	0.44	50%	50%	682	682	88.38%	88.38%
21	344	847	0.41	32%	32%	271	271	126.97%	126.97%
22	147	562	0.26	32%	32%	179	179	82.03%	82.03%
23	163	531	0.31	32%	32%	170	170	96.14%	96.14%
24	104	373	0.28	32%	32%	119	119	86.99%	86.99%
25	109	306	0.36	32%	32%	98	98	111.03%	111.03%
26	91	208	0.44	32%	32%	66	66	138.50%	138.50%
27	66	153	0.43	32%	32%	49	49	134.74%	134.74%
28	69	151	0.46	32%	32%	48	48	144.73%	144.73%
29	66	130	0.51	32%	32%	41	41	159.98%	159.98%
30	37	76	0.49	32%	32%	24	24	154.44%	154.44%
31	13	46	0.27	32%	32%	15	15	84.91%	84.91%
32	0	29	0.00	32%	32%	9	9	0.00%	0.00%
33	13	29	0.44	32%	32%	9	9	140.79%	140.79%
34	0	22	0.00	32%	32%	7	7	0.00%	0.00%
35	3	15	0.22	32%	32%	5	5	68.12%	68.12%
36	3	16	0.22	32%	32%	5	5	69.57%	69.57%
37	13	13	1.00	32%	32%	4	4	332.51%	332.51%
38	0	0	N/A	32%	32%	0	0	N/A	N/A
39	0	0	N/A	32%	32%	0	0	N/A	N/A
40	0	0	N/A	32%	32%	0	0	N/A	N/A
Total	1,845	4,874				1,801	1,801	102.42%	102.42%

<sup>1</sup> For members hired before 09/01/2008, the annual rate of service retirement is 100% at age 65.

<sup>1</sup> For members hired on or after 09/01/2008, the annual rate of service retirement is 100% at age 60.

<sup>1</sup> For member with years of service greater than 5, but less than 20, the rate is 10% for age from 55 to 61 and 35% for age 62 and over.

<sup>1</sup> For members hired after 09/01/2008 and younger than 65, the rates other than 100% are reduced by 20% to account for a different health insurance benefit.

<sup>1</sup> For members hired after 01/01/2014, the rate is 20% until 30 years of service

*Actual, expected, and exposures are in thousands of benefit.*



## Retirement Experiences

**Kentucky Public Pensions Authority  
State Police Retirement System (SPRS)  
Unreduced Retirement Experience - Age Based - Male & Female**

Service (1)	Actual Retirements (2)	Total Exposures (3)	Actual Rate (4)	Assumed Rate		Expected Retirements		Actual/Expected	
				Current <sup>1</sup> (5)	Proposed <sup>1</sup> (6)	Current (7)	Proposed (8)	Current (2)/(7) (9)	Proposed (2)/(8) (10)
20	120	722	0.17	22%	22%	158	158	75.82%	75.82%
21	135	612	0.22	22%	22%	134	134	100.56%	100.56%
22	124	580	0.21	22%	22%	128	128	96.76%	96.76%
23	143	609	0.24	28%	28%	170	170	84.33%	84.33%
24	184	561	0.33	28%	28%	157	157	117.18%	117.18%
25	104	411	0.25	28%	28%	115	115	90.64%	90.64%
26	132	345	0.38	28%	28%	97	97	136.25%	136.25%
27	62	201	0.31	28%	28%	56	56	111.40%	111.40%
28	32	167	0.19	44%	44%	73	73	44.10%	44.10%
29	51	142	0.36	44%	44%	62	62	82.54%	82.54%
30	22	85	0.26	44%	44%	37	37	59.89%	59.89%
31	0	47	0.00	58%	58%	27	27	0.00%	0.00%
32	0	26	0.00	58%	58%	15	15	0.00%	0.00%
33	9	9	1.00	58%	58%	5	5	189.60%	189.60%
Total	1,120	4,516				1,234	1,234	90.72%	90.72%

<sup>1</sup> For members hired before 09/01/2008, the annual rate of service retirement is 100% at age 55.

<sup>1</sup> For members hired on or after 09/01/2008, the annual rate of service retirement is 100% at age 60.

<sup>1</sup> For members hired after 09/01/2008 and younger than 65, the rates other than 100% are reduced by 20% to account for a different health insurance benefit.

<sup>1</sup> For members hired after 01/01/2014, the rate is 20% until 30 years of service

*Actual, expected, and exposures are in thousands of benefit.*



**Kentucky Public Pensions Authority  
Kentucky Employees Retirement System (KERS)  
Non-Hazardous  
Reduced Retirement Experience - Age Based - Male**

Age	Actual Retirements	Total Exposures	Actual Rate	Assumed Rate		Expected Retirements		Actual/Expected	
				Current <sup>1</sup>	Proposed <sup>1</sup>	Current	Proposed	Current (2)/(7)	Proposed (2)/(8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 55 <sup>2</sup>	768	5,527	0.14	12%	12%	663	663	115.88%	115.88%
55	121	2,285	0.05	5%	5%	109	109	110.71%	110.71%
56	148	2,125	0.07	5%	5%	101	101	146.45%	146.45%
57	100	2,005	0.05	5%	5%	95	95	105.52%	105.52%
58	105	1,862	0.06	5%	5%	88	88	118.93%	118.93%
59	92	1,689	0.05	5%	5%	80	80	115.36%	115.36%
60	107	1,692	0.06	5%	5%	80	80	133.33%	133.33%
61	118	1,612	0.07	8%	8%	121	121	97.58%	97.58%
62	255	1,509	0.17	15%	15%	212	212	120.44%	120.44%
63	185	1,317	0.14	15%	15%	185	185	99.76%	99.76%
64	191	1,135	0.17	15%	15%	160	160	119.36%	119.36%
<b>Total</b>	<b>2,190</b>	<b>22,758</b>				<b>1,894</b>	<b>1,894</b>	<b>115.61%</b>	<b>115.61%</b>

1 For members hired after 09/01/2008 and younger than 65, the rates other than 100% are reduced by 20% to account for a different health insurance benefit.

2 Reflects members eligible for early retirement with 25-26 years of service but prior to reaching age 55

**Kentucky Public Pensions Authority  
Kentucky Employees Retirement System (KERS)  
Non-Hazardous  
Reduced Retirement Experience - Age Based - Female**

Age	Actual Retirements	Total Exposures	Actual Rate	Assumed Rate		Expected Retirements		Actual/Expected	
				Current <sup>1</sup>	Proposed <sup>1</sup>	Current	Proposed	Current (2)/(7)	Proposed (2)/(8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 55 <sup>2</sup>	967	7,505	0.13	14%	14%	1,050	1,050	92.12%	92.12%
55	191	3,513	0.05	5%	5%	169	169	113.20%	113.20%
56	225	3,326	0.07	5%	5%	160	160	140.66%	140.66%
57	179	3,157	0.06	5%	5%	151	151	118.63%	118.63%
58	227	3,115	0.07	5%	5%	149	149	152.06%	152.06%
59	165	3,004	0.05	5%	5%	144	144	114.66%	114.66%
60	238	2,904	0.08	8%	8%	221	221	107.70%	107.70%
61	220	2,697	0.08	9%	9%	230	230	95.45%	95.45%
62	477	2,468	0.19	20%	20%	468	468	101.95%	101.95%
63	295	1,972	0.15	18%	18%	335	335	87.94%	87.94%
64	264	1,666	0.16	16%	16%	251	251	105.28%	105.28%
<b>Total</b>	<b>3,448</b>	<b>35,326</b>				<b>3,328</b>	<b>3,328</b>	<b>103.61%</b>	<b>103.61%</b>

1 For members hired after 09/01/2008 and younger than 65, the rates other than 100% are reduced by 20% to account for a different health insurance benefit.

2 Reflects members eligible for early retirement with 25-26 years of service but prior to reaching age 55

*Actual, expected, and exposures are in thousands of benefit.*





## KENTUCKY PUBLIC PENSIONS AUTHORITY

David L. Eager, Executive Director  
1260 Louisville Road • Frankfort, Kentucky 40601  
kyret.ky.gov • Phone: 502-696-8800 • Fax: 502-696-8822



To: Kentucky Retirement Systems Board of Trustees

From: William O'Mara, Chair  
Joint Audit Committee  
Kristen N. Coffey, CICA *KNC*  
Division Director, Internal Audit Administration

Date: June 5, 2023

Subject: Summary of Joint Audit Committee Meeting

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The County Employees Retirement System (CERS) and Kentucky Retirement Systems (KRS) Joint Audit Committee held a regularly scheduled meeting on May 25, 2023.

**1. Requested actions by the KRS Board of Trustees (Board)**

- a. Annual Audit Plan – The Joint Audit Committee approved the Audit Plan as presented.

**Requested Action: The Joint Audit Committee requests that the KRS Board ratify the actions of the Joint Audit Committee and submit the Audit Plan to the Kentucky Public Pensions Authority for approval.**

**2. The following other items were also discussed during the Joint Audit Committee meeting. These are presented for informational purposes only.**

- a. Financial statements for the Quarter ended March 31, 2023.
- b. Information disclosures.
- c. Anonymous Tips.
- d. Internal Audit Budget – *12.09% overall remaining. Approximately 25% remaining for salary items, with one quarter remaining. No expenses anticipated for other line items.*
- e. Status of current internal audits – *Five audits closed, none remain open. Six projects closed, eight open.*
- f. Open internal audit findings and recommendations – *Six recommendations not yet implemented.*
- g. Reports issued since the last meeting (see attached).
  1. Accuracy of Information Sent to Humana and Department of Employer Insurance – *no reportable findings.*
  2. Plan Liquidity – Phase 3 – *one reportable finding and one management letter item.*
- h. Update on Structure of Audit Committee.
- i. Professional Article on Internal Audit role in Corporate Governance.
- j. Presentation on Internal Audit month.



## KENTUCKY PUBLIC PENSIONS AUTHORITY

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1260 Louisville Road · Frankfort, Kentucky 40601  
kyret.ky.gov · Phone: 502-696-8800 · Fax: 502-696-8822



**TO: Members of the KRS Board of Trustees**

**FROM: Joint CERS & KRS Retiree Health Plan Committee**

**DATE: June 5, 2023**

**SUBJECT: Joint CERS & KRS Retiree Health Plan Committee Report**

The Joint CERS & KRS Retiree Health Plan Committee met on Thursday, May 11, 2023. The Committee elected Jerry Powell (CERS) as Chair and Dr. Crystal Miller (KRS) as Vice-Chair.

Humana provided information on Plan Performance for 2022, Stars Review 2023, Inflation Reduction Act Impact in 2024 – 2029 and Introducing Humana Community Navigator for 2023. Humana also provided information on the Centers for Medicare and Medicaid Services (CMS) Final Notice for 2024 plan year, indicating an average CMS net payment of all payment policies of –1.12%, but this impact will vary greatly by region and county. They also provided an overview of product updates, which included continuous Glucose Monitors and Diabetic Testing Supplies, as well as a Truthbrush and an online exercise portal.

Humana discussed their exit from the Employer Group Commercial Medical Products. This includes the Commercial medical and pharmacy benefits which will impact the KPPA Medical Only and Medicare Advantage (MA) Mirror plans. Humana has received approval to continue to administer these plans through 2024. Humana is researching possible solutions to be able to continue to provide coverage for these plans through the contract engagement which ends 12/31/2025. This does not affect their Group Medicare products which includes the KPPA Medicare Advantage Premium and Essential plans

The Division of Retiree Health Care (RHC) provided an update on the Medicare Secondary Payer Act Reimbursement process. RHC reported that 50 retirees of the KERS plans have been reimbursed in the amount of \$161,211.77. SPRS had 10 retirees that have been reimbursed in the amount of \$135,584.64.



## KENTUCKY PUBLIC PENSIONS AUTHORITY

David L. Eager, Executive Director

1260 Louisville Road • Frankfort, Kentucky 40601  
kyret.ky.gov • Phone: 502-696-8800 • Fax: 502-696-8822



To: Kentucky Retirement Systems Board of Trustees

From: D’Juan Surratt  
Director of Employer Reporting, Compliance and Education

Date: June 5, 2023

Subject: Hazardous Position Classification

AGENCIES ARE REQUESTING HAZARDOUS DUTY COVERAGE FOR THE FOLLOWING POSITIONS:

<b><u>Agency</u></b>	<b><u>Position</u></b>	<b><u>Effective Date</u></b>
Department of Juvenile Justice	Correctional Captain	02/01/2023
Department of Juvenile Justice	Correctional Lieutenant	02/01/2023
Department of Juvenile Justice	Correctional Officer	02/01/2023
Department of Juvenile Justice	Correctional Officer Assistant	02/01/2023
Department of Juvenile Justice	Correctional Sergeant	02/01/2023
Morehead State University	Deputy Chief/Emergency Manager	07/01/2019

Kentucky Public Pensions Authority has reviewed the above requests and determined that they meet the statutory guidelines for Hazardous coverage. Position Questionnaires and Kentucky Personnel Cabinet Position Descriptions are attached.



### Combining Statement of Fiduciary Net Position - Pension Funds

As of March 31, 2023, with Comparative Totals as of March 31, 2022 (\$ in Thousands)  
(Unaudited)

ASSETS	KERS		SPRS	KRS TOTAL		Percentage of Change	Note
	Nonhazardous	Hazardous		FY 2023	FY 2022		
<b>CASH AND SHORT-TERM INVESTMENTS</b>							
Cash Deposits	\$863	\$99	\$25	\$986	\$371	165.58%	1
Short-term Investments	653,139	71,204	132,907	857,250	701,774	22.15%	2
<b>Total Cash and Short-term Investments</b>	<b>654,001</b>	<b>71,303</b>	<b>132,932</b>	<b>858,236</b>	<b>702,145</b>	<b>22.23%</b>	
<b>RECEIVABLES</b>							
Accounts Receivable	88,210	4,195	5,276	97,682	98,767	(1.10)%	
Accounts Receivable - Investments	22,893	6,166	4,488	33,547	51,365	(34.69)%	3
<b>Total Receivables</b>	<b>111,103</b>	<b>10,361</b>	<b>9,764</b>	<b>131,229</b>	<b>150,132</b>	<b>(12.59)%</b>	
<b>INVESTMENTS, AT FAIR VALUE</b>							
Core Fixed Income	644,763	107,193	113,858	865,814	859,558	0.73%	
Public Equities	1,061,428	376,178	187,206	1,624,812	1,508,763	7.69%	
Private Equities	155,140	62,367	16,367	233,874	293,211	(20.24)%	4
Specialty Credit	606,019	180,621	94,025	880,664	813,560	8.25%	
Derivatives	769	126	135	1,029	(2,616)	(139.35)%	5
Real Return	69,014	24,154	10,045	103,213	95,980	7.54%	
Real Estate	175,894	48,159	20,857	244,910	219,424	11.61%	6
<b>Total Investments, at Fair Value</b>	<b>2,713,027</b>	<b>798,798</b>	<b>442,493</b>	<b>3,954,317</b>	<b>3,787,881</b>	<b>4.39%</b>	
Securities Lending Collateral Invested	79,620	20,591	13,647	113,858	127,567	(10.75)%	7
<b>CAPITAL/INTANGIBLE ASSETS</b>							
Capital Assets	929	91	11	1,031	1,031	0.00%	
Intangible Assets	5,920	494	100	6,513	6,513	0.00%	
Accumulated Depreciation	(929)	(91)	(11)	(1,031)	(1,031)	0.00%	
Accumulated Amortization	(5,893)	(493)	(100)	(6,485)	(6,318)	2.64%	
<b>Total Capital Assets</b>	<b>27</b>	<b>1</b>	<b>-</b>	<b>28</b>	<b>195</b>	<b>(85.72)%</b>	
<b>Total Assets</b>	<b>3,557,778</b>	<b>901,053</b>	<b>598,836</b>	<b>5,057,667</b>	<b>4,767,921</b>	<b>6.08%</b>	
<b>LIABILITIES</b>							
Accounts Payable	2,449	523	54	3,026	1,793	68.79%	8
Investment Accounts Payable	26,880	6,044	5,204	38,127	131,814	(71.08)%	9
Securities Lending Collateral	79,620	20,591	13,647	113,858	127,567	(10.75)%	10
<b>Total Liabilities</b>	<b>108,948</b>	<b>27,158</b>	<b>18,905</b>	<b>155,011</b>	<b>261,174</b>	<b>(40.65)%</b>	
<b>Total Fiduciary Net Position Restricted for Pension Benefits</b>	<b>\$3,448,829</b>	<b>\$873,896</b>	<b>\$579,931</b>	<b>\$4,902,656</b>	<b>\$4,506,747</b>	<b>8.78%</b>	

**NOTE - Variance Explanation****Differences due to rounding.**

- Variance is a result of continuous fluctuation of deposits and transactions that flow through the cash account. As a result of an Internal Audit finding, we continue to evaluate the optimum cash balances at JP Morgan Chase.
- Short Term Investments are primarily comprised of the cash on hand at the custodial bank, the balance is larger than normal due to additional General Fund appropriations for SPRS (\$215M end of FY22) and KERS Non hazardous (\$180M).
- The variance in Investment Accounts Receivable is due to pending trades.
- The decline in private equity is a result of unrealized losses and distributions. Note: KRS pension funds did not commit to any new private equity funds from 2011-2020, therefore, there are less contributions and appreciation from newer funds to offset the distributions from the older funds.
- The variance in Derivatives is a result of hedging and arbitration of risk within the portfolios.
- The increase in Real Estate is due to additional funding of current managers.
- The variance is a result of the demand of the Securities Lending Program.
- The variance in Accounts Payable is due to an increase in outstanding employer credit invoices.
- The variance in Investment Accounts Payable is due to pending trades.
- The variance is a result of the demand of the Securities Lending Program.



## Combining Statement of Changes In Fiduciary Net Position - Pension Funds

For the nine month period ending March 31, 2023, with Comparative Totals for the nine month period ending March 31, 2022 (\$ in Thousands) (Unaudited)

	KERS		SPRS	KRS Total		Percentage of Change	Note
	Nonhazardous	Hazardous		FY 2023	FY 2022		
<b>ADDITIONS</b>							
Member Contributions	\$78,368	\$19,258	\$5,027	\$102,654	\$85,675	19.82%	1
Employer Contributions	84,888	47,067	42,185	174,141	231,414	(24.75)%	2
Actuarially Accrued Liability Contributions (AALC)	673,831	-	-	673,831	684,575	(1.57)%	
General Fund Appropriation	180,000	-	-	180,000	-	100.00%	3
Pension Spiking Contributions	9	29	-	38	14	170.11%	4
Health Insurance Contributions (HB1)	(9)	(4)	(6)	(19)	(2)	855.05%	5
Employer Cessation Contributions	-	-	-	-	50,464	(100.00)%	6
<b>Total Contributions</b>	<b>1,017,088</b>	<b>66,350</b>	<b>47,207</b>	<b>1,130,644</b>	<b>1,052,139</b>	<b>7.46%</b>	
<b>INVESTMENT INCOME</b>							
From Investing Activities							
Net Appreciation (Depreciation) in FV of Investments							
Net Appreciation (Depreciation) in FV of Investments	79,039	35,879	16,785	131,703	(16,068)	919.68%	7
Interest/Dividends	72,470	18,928	12,806	104,204	76,666	35.92%	8
Total Investing Activities Income	151,509	54,807	29,591	235,907	60,599		
Less: Investment Expense	10,211	3,429	1,515	15,155	10,477	44.65%	9
Less: Performance Fees	(264)	112	43	(109)	16,232	(100.67)%	10
Net Income from Investing Activities	141,562	51,267	28,033	220,862	33,890		
From Securities Lending Activities							
Securities Lending Income	2,039	603	343	2,984	206		
Less: Securities Lending Borrower Rebates	1,755	523	297	2,575	(237)		
Less: Securities Lending Agent Fees	43	12	7	61	66		
Net Income from Securities Lending	241	68	39	347	376	(7.58)%	
<b>Net Investment Income</b>	<b>141,803</b>	<b>51,334</b>	<b>28,072</b>	<b>221,209</b>	<b>34,266</b>	<b>545.57%</b>	
<b>Total Additions</b>	<b>1,158,891</b>	<b>117,684</b>	<b>75,279</b>	<b>1,351,854</b>	<b>1,086,405</b>	<b>24.43%</b>	
<b>DEDUCTIONS</b>							
Benefit Payments	767,922	58,869	47,892	874,683	873,895	0.09%	
Refunds	8,845	3,058	165	12,068	13,384	(9.83)%	
Administrative Expenses	10,038	1,098	217	11,352	9,981	13.74%	11
<b>Total Deductions</b>	<b>786,805</b>	<b>63,025</b>	<b>48,274</b>	<b>898,104</b>	<b>897,260</b>	<b>0.09%</b>	
Net Increase (Decrease) in Fiduciary Net Position Restricted for Pension Benefits							
	372,087	54,659	27,004	453,750	189,145		
<b>Total Fiduciary Net Position Restricted for Pension Benefits</b>							
<b>Beginning of Period</b>	<b>3,076,743</b>	<b>819,237</b>	<b>552,926</b>	<b>4,448,906</b>	<b>4,317,602</b>	<b>3.04%</b>	
<b>End of Period</b>	<b>\$3,448,829</b>	<b>\$873,896</b>	<b>\$579,931</b>	<b>\$4,902,656</b>	<b>\$4,506,747</b>	<b>8.78%</b>	

### NOTE - Variance Explanation

Differences due to rounding.

- 1) Member Contributions increased due to an increase in covered payroll.
- 2) Employer Contributions decreased due to the receipt of the 06/30/2021 payroll from PC001/KHRIS (at the 73.285% rate), paid and posted to 07/2021 (FY 2022).
- 3) General Fund Appropriation 3rd Quarter (KERS only): HB1 \$101,250,000; HB604 \$78,750,000;
- 4) Pension Spiking contributions increased due to an increase in KERS Hazardous.
- 5) Health Insurance Contributions continue to fluctuate in the Pension accounts due to Tier 2 and Tier 3 retiree health insurance system costs as well as corrections being processed to previous fiscal years.
- 6) Employer Cessation payment received from Kentucky Housing Corporation FY2022.
- 7) The increase in Net Appreciation in Fair Value of Investments is the result of unrealized gains in public equity.
- 8) The increase in income is the result of rising interest rates creating additional income for Core Fixed Income and Cash, which KRS plans hold a larger allocation.
- 9) The increase in Investment Expense is primarily the result of increased management fees and partnership expenses for Specialty Credit.
- 10) The decrease in performance fees is the result in less than favorable market conditions causing returns to drop, impacting those fees directly related to performance most notably Private Equity, Real Estate and Specialty Credit
- 11) The Administrative Expense increased for KERS and KERH due to the Hybrid split being used for the entire fiscal year.



### Combining Statement of Fiduciary Net Position - Insurance Funds

As of March 31, 2022, with Comparative Totals as of March 31, 2021 (\$ in Thousands) (Unaudited)

	KERS		SPRS	KRS Total		Percentage of Change	Note
	Nonhazardous	Hazardous		FY 2023	FY 2022		
<b>ASSETS</b>							
<b>CASH AND SHORT-TERM INVESTMENTS</b>							
Cash Deposits	\$196	\$9	\$20	\$226	\$129	75.23%	1
Short-term Investments	178,246	20,172	7,343	205,760	292,339	(29.62)%	2
<b>Total Cash and Short-term Investments</b>	<b>178,442</b>	<b>20,181</b>	<b>7,363</b>	<b>205,986</b>	<b>292,468</b>	<b>(29.57)%</b>	
<b>RECEIVABLES</b>							
Accounts Receivable	13,187	570	982	14,740	14,038	5.00%	
Investment Accounts Receivable	9,980	3,738	1,652	15,370	22,675	(32.21)%	3
<b>Total Receivables</b>	<b>23,167</b>	<b>4,309</b>	<b>2,634</b>	<b>30,110</b>	<b>36,713</b>	<b>(17.98)%</b>	
<b>INVESTMENTS, AT FAIR VALUE</b>							
Core Fixed Income	161,379	70,696	27,743	259,818	267,552	(2.89)%	
Public Equities	602,807	266,175	105,582	974,563	980,276	(0.58)%	
Private Equities	89,906	53,312	23,790	167,008	164,018	1.82%	
Specialty Credit	278,843	133,284	52,886	465,012	433,867	7.18%	
Derivatives	194	91	33	318	(760)	(141.86)%	4
Real Return	29,799	17,308	6,459	53,566	50,712	5.63%	
Real Estate	56,515	41,452	15,857	113,825	103,459	10.02%	5
<b>Total Investments, at Fair Value</b>	<b>1,219,443</b>	<b>582,318</b>	<b>232,350</b>	<b>2,034,111</b>	<b>1,999,124</b>	<b>1.75%</b>	
Securities Lending Collateral Invested	21,255	9,200	8,781	39,235	48,284	(18.74)%	6
<b>Total Assets</b>	<b>1,442,307</b>	<b>616,008</b>	<b>251,128</b>	<b>2,309,443</b>	<b>2,376,589</b>	<b>(2.83)%</b>	
<b>LIABILITIES</b>							
Accounts Payable	126	14	1	141	125	12.34%	7
Investment Accounts Payable	9,973	3,764	1,642	15,380	51,737	(70.27)%	8
Securities Lending Collateral	21,255	9,200	8,781	39,235	48,284	(18.74)%	9
<b>Total Liabilities</b>	<b>31,354</b>	<b>12,978</b>	<b>10,424</b>	<b>54,756</b>	<b>100,146</b>	<b>(45.32)%</b>	
<b>Total Fiduciary Net Position Restricted for OPEB</b>	<b>\$1,410,953</b>	<b>\$603,030</b>	<b>\$240,703</b>	<b>\$2,254,687</b>	<b>\$2,276,443</b>	<b>(0.96)%</b>	

**NOTE - Variance Explanation**

**Differences due to rounding.**

- 1) Variance is a result of continuous fluctuation of deposits and transactions that flow through the cash account. As a result of an Internal Audit finding, we continue to evaluate the optimum cash balances at JP Morgan Chase.
- 2) Short term investments are primarily comprised of cash on hand at the custodial bank, the variance in the balance is a result of the cash flows of each plan.
- 3) The variance in Investment Accounts Receivable is the result of pending trades.
- 4) The variance in Derivatives is a result of hedging and arbitration of risk within the portfolios.
- 5) The increase in Real Estate is due to additional funding of current managers.
- 6) The variance is a result of the demands of the Securities Lending Program.
- 7) The increase in Accounts Payable is due to an increase in outstanding employer credit invoices.
- 8) The variance in Investment Accounts Payable is due to pending trades.
- 9) The variance is a result of the demands of the Securities Lending Program.


**Combining Statement of Changes In Fiduciary Net Position - Insurance Funds**  
 For the nine month period ending March 31, 2023, with Comparative Totals for the nine month period ending March 31, 2022 (\$ In Thousands) (Unaudited)

	KERS		SPRS	KRS Total		Percentage of Change	Note
	Nonhazardous	Hazardous		FY 2023	FY 2022		
<b>ADDITIONS</b>							
Employer Contributions	\$26,329	\$38	\$6,875	\$33,242	\$31,597	5.20%	
Actuarially Accrued Liability Contributions (AALC)	65,748	-	-	65,748	76,233	(13.75)%	1
Medicare Drug Reimbursement	3	-	-	3	-		
Insurance Premiums	49	(56)	(96)	(103)	62	(266.71)%	2
Humana Gain Share Payment	4,851	368	224	5,444	8,211	(33.70)%	3
Retired Re-employed Healthcare	4,232	1,046	-	5,278	4,657	13.32%	4
Health Insurance Contributions (HB1)	6,111	1,158	260	7,529	5,929	26.99%	5
Employer Cessation Contributions	-	-	-	-	9,536	(100.00)%	6
<b>Total Contributions</b>	<b>107,322</b>	<b>2,554</b>	<b>7,263</b>	<b>117,139</b>	<b>136,226</b>	<b>(14.01)%</b>	
<b>INVESTMENT INCOME</b>							
From Investing Activities							
Net Appreciation (Depreciation) in FV of Investments	61,836	25,584	10,183	97,603	9,961	879.85%	7
Interest/Dividends	30,177	13,003	5,239	48,419	42,322	14.41%	8
Total Investing Activities Income	92,013	38,587	15,422	146,022	52,283		
Less: Investment Expense	5,102	2,752	1,104	8,958	7,656	17.01%	9
Less: Performance Fees	1,315	107	17	1,439	12,560	(88.54)%	10
Net Income from Investing Activities	85,596	35,728	14,301	135,625	32,067		
From Securities Lending Activities							
Securities Lending Income	786	321	137	1,244	102		
Less: Securities Lending Borrower Rebates	673	277	118	1,068	(121)		
Less: Securities Lending Agent Fees	17	7	3	26	33		
Net Income from Securities Lending	96	37	16	149	189	(21.15)%	11
<b>Net Investment Income</b>	<b>85,692</b>	<b>35,765</b>	<b>14,317</b>	<b>135,774</b>	<b>32,256</b>	<b>320.93%</b>	
<b>Total Additions</b>	<b>193,014</b>	<b>38,319</b>	<b>21,580</b>	<b>252,913</b>	<b>168,482</b>	<b>50.11%</b>	
<b>DEDUCTIONS</b>							
Healthcare Premiums Subsidies	81,719	15,043	10,823	107,584	114,029	(5.65)%	
Administrative Expenses	583	93	55	732	768		
Self-Funded Healthcare Costs	1,280	56	13	1,349	1,257	7.37%	
Excise Tax Insurance	-	-	-	-	3	(100.00)%	12
<b>Total Deductions</b>	<b>83,582</b>	<b>15,191</b>	<b>10,892</b>	<b>109,665</b>	<b>116,057</b>	<b>(5.51)%</b>	
Net Increase (Decrease) in Fiduciary Net Position Restricted for OPEB	109,432	23,128	10,689	143,248	52,425		
<b>Total Fiduciary Net Position Restricted for OPEB</b>							
<b>Beginning of Period</b>	<b>1,301,522</b>	<b>579,902</b>	<b>230,015</b>	<b>2,111,438</b>	<b>2,224,016</b>	<b>(5.06)%</b>	
<b>End of Period</b>	<b>\$1,410,953</b>	<b>\$603,030</b>	<b>\$240,703</b>	<b>\$2,254,687</b>	<b>\$2,276,441</b>	<b>(0.96)%</b>	

**NOTE - Variance Explanation** *Differences due to rounding*

- 1) AALC will fluctuate year to year based on the actuarial valuation.
- 2) Health Insurance Premiums decreased due to refunds processed to hazardous retirees for premiums paid for dependents that should have been covered by KPPA.
- 3) The Humana Gain Share payment will fluctuate year to year based on claims paid.
- 4) The increase in Retired Re-employed Healthcare Contributions is due to an increase in retired re-employed members in KERS and KERS Hazardous.
- 5) Health Insurance Contributions will continue to rise as Tier 2 and Tier 3 members increase.
- 6) Employer Cessation payment received from Kentucky Housing Corporation FY2022.
- 7) The increase in Net Appreciation in Fair Value of Investments is the result of unrealized gains in public equity.
- 8) The increase in income is the result of rising interest rates creating additional income for Core Fixed Income and Cash which KRS plans hold a larger allocation.
- 9) The increase in Investment Expense is primarily the result of increased management fees and partnership expenses for Specialty Credit.
- 10) The decrease in performance fees is the result in less than favorable market conditions causing returns to drop, impacting those fees directly related to performance most notably Private Equity, Real Estate and Specialty Credit.

**Pension Funds Contribution Report**

For the nine month period ending March 31, 2023, with Comparative Totals for the nine month period ending March 31, 2022 (\$ in Millions)

	Kentucky Employees Retirement System				State Police Retirement System	
	Nonhazardous		Hazardous		FY23	FY22
	FY23	FY22	FY23	FY22		
Member Contributions	\$78.4	\$67.0	\$19.2	\$15.1	\$5.0	\$3.5
Employer Contributions	84.9	140.8	47.1	44.3	42.2	46.3
Actuarially Accrued Liability Contributions	673.8	684.6	-	-	-	-
Employer Cessation Contributions	-	50.4	-	-	-	-
General Fund Appropriations	180.0	-	-	-	-	-
Net Investment Income	62.8	35.8	15.5	10.4	11.3	4.2
<b>Total Inflows</b>	<b>1,079.9</b>	<b>978.6</b>	<b>81.8</b>	<b>69.8</b>	<b>58.5</b>	<b>54.0</b>
Benefit Payments/Refund	776.8	777.6	61.9	61.3	48.1	48.3
Administrative Expenses	10.0	8.8	1.1	1.0	0.2	0.2
<b>Total Outflows</b>	<b>786.8</b>	<b>786.4</b>	<b>63.0</b>	<b>62.3</b>	<b>48.3</b>	<b>48.5</b>
<b>NET CONTRIBUTIONS</b>	<b>293.1</b>	<b>192.2</b>	<b>18.8</b>	<b>7.5</b>	<b>10.2</b>	<b>5.5</b>
Realized Gain/(Loss)	(21.3)	93.4	(3.5)	34.5	(4.3)	10.9
Unrealized Gain/(Loss)	100.3	(110.0)	39.4	(32.5)	21.1	(12.3)
<b>Change in Net Position</b>	<b>372.1</b>	<b>175.6</b>	<b>54.7</b>	<b>9.5</b>	<b>27.0</b>	<b>4.1</b>
<b>Beginning of Period</b>	<b>3,076.7</b>	<b>3,085.0</b>	<b>819.2</b>	<b>874.9</b>	<b>552.9</b>	<b>357.7</b>
<b>End of Period</b>	<b>\$3,448.8</b>	<b>\$3,260.6</b>	<b>\$873.9</b>	<b>\$884.4</b>	<b>\$579.9</b>	<b>\$361.8</b>

*Differences due to rounding.*

Net Contributions*	\$230.3	\$156.4	\$3.3	\$(2.9)	\$(1.1)	\$1.3
Cash Flow as % of Assets	6.68%	4.80%	0.38%	(0.32)%	(0.18)%	0.37%
Net Investment Income	\$62.8	\$35.8	\$15.5	\$10.4	\$11.3	\$4.2
Yield as % of Assets	1.82%	1.10%	1.77%	1.18%	1.95%	1.15%

*\*Net Contributions are less Net Investment Income.*

**Insurance Fund Contribution Report**

For the nine month period ending March 31, 2023, with Comparative Totals for the nine month period ending March 31, 2022 (\$ in Millions)

	Kentucky Employees Retirement System				State Police Retirement System	
	Nonhazardous		Hazardous		FY23	FY22
	FY23	FY22	FY23	FY22		
Employer Contributions	\$26.3	\$25.1	\$-	\$-	\$6.9	\$6.5
Actuarially Accrued Liability Contributions	65.7	76.2	-	-	-	-
Employer Cessation Contributions	-	9.5	-	-	-	-
Insurance Premiums	0.1	0.1	(0.1)	0.0	(0.1)	-
Humana Gain Share	4.9	7.3	0.4	0.5	0.2	0.3
Retired Reemployed Healthcare	4.2	3.7	1.0	1.0	-	-
Health Insurance Contributions	6.1	4.9	1.2	0.9	0.3	0.2
Net Investment Income	23.9	13.9	10.2	6.1	4.1	2.3
<b>Total Inflows</b>	<b>131.2</b>	<b>140.7</b>	<b>12.7</b>	<b>8.5</b>	<b>11.4</b>	<b>9.3</b>
Healthcare Premiums	83.0	89.1	15.1	15.5	10.8	10.7
Administrative Expenses	0.6	0.6	0.1	0.1	0.1	0.1
<b>Total Outflows</b>	<b>83.6</b>	<b>89.7</b>	<b>15.2</b>	<b>15.6</b>	<b>10.9</b>	<b>10.8</b>
<b>NET Contributions</b>	<b>47.6</b>	<b>51.0</b>	<b>(2.5)</b>	<b>(7.1)</b>	<b>0.5</b>	<b>(1.5)</b>
Realized Gain/(Loss)	(8.8)	41.0	(1.6)	24.9	(0.8)	10.5
Unrealized Gain/(Loss)	70.7	(43.3)	27.2	(16.4)	11.0	(6.7)
<b>Change in Net Position</b>	<b>109.5</b>	<b>48.7</b>	<b>23.1</b>	<b>1.4</b>	<b>10.7</b>	<b>2.3</b>
<b>Beginning of Period</b>	<b>1,301.5</b>	<b>1,353.1</b>	<b>579.9</b>	<b>624.9</b>	<b>230.0</b>	<b>246.0</b>
<b>End of Period</b>	<b>\$1,411.0</b>	<b>\$1,401.8</b>	<b>\$603.0</b>	<b>\$626.3</b>	<b>\$240.7</b>	<b>\$248.3</b>

*Differences due to rounding.*

Net Contributions*	\$23.7	\$37.2	\$(12.6)	\$(13.2)	\$(3.6)	\$(3.8)
Cash Flow as % of Assets	1.68%	2.65%	(2.09)%	(2.11)%	(1.51)%	(1.53)%
Net Investment Income	\$23.9	\$13.9	\$10.2	\$6.1	\$4.1	\$2.3
Yield as % of Assets	1.69%	0.99%	1.69%	0.98%	1.72%	0.92%

*\*Net Contributions are less Net Investment Income.*

KPPA ADMINISTRATIVE BUDGET FY 2022-2023						
BUDGET-TO-ACTUAL ANALYSIS						
FOR THE NINE MONTH PERIOD ENDING MACH 31, 2023, WITH COMPARATIVE TOTALS FOR THE NINE MONTH PERIOD ENDING MARCH 31, 2022						
Account Name	Budgeted	FY 2023 Expense	Remaining	Percent Remaining	FY 2022 Expense	Percent Difference
<b>PERSONNEL</b>						
<b>Staff</b>						
Salaries/Wages	\$17,000,000	\$12,181,863	\$4,818,137	28.34%	\$11,779,326	3.42%
Wages (Overtime)	285,000	161,741	123,259	43.25%	147,766	9.46%
Emp Paid Retirement	14,865,100	9,300,601	5,564,499	37.43%	9,404,829	(1.11)%
Emp Paid Health Ins	2,700,000	1,757,627	942,373	34.90%	1,876,528	(6.34)%
Emp Paid Sick Leave	115,000	213,594	(98,594)	(85.73)%	73,621	190.13%
Adoption Assistance Benefit	8,000	-	8,000	100.00%	-	0.00%
Workers Compensation	75,000	11,116	63,884	85.18%	75,163	(85.21)%
Unemployment	8,000	8,009	(9)	(0.11)%	-	100.00%
Other Personnel	1,273,448	896,204	377,244	29.62%	841,179	6.54%
Employee Training	18,000	8,041	9,959	55.33%	7,264	10.70%
Bonds	-	-	-	0.00%	81	(100.00)%
<b>Staff Subtotal</b>	<b>36,347,548</b>	<b>24,538,797</b>	<b>11,808,751</b>	<b>32.49%</b>	<b>24,205,757</b>	<b>1.38%</b>
<b>LEGAL &amp; AUDITING SERVICES</b>						
Legal Hearing Officers	100,000	129,545	(29,545)	(29.55)%	52,541	146.56%
Legal (Stoll, Keenon)	150,000	51,775	98,225	65.48%	78,867	(34.35)%
Frost Brown (Tax Advisor)	80,000	113,219	(33,219)	(41.52)%	21,397	429.13%
Reinhart	25,000	276	24,724	98.90%	-	0.00%
Ice Miller	300,000	91,866	208,134	69.38%	34,775	164.17%
Johnson, Bowman, Branco LLC	150,000	76,195	73,805	49.20%	53,008	43.74%
Dentons Bingham & Greenebaum	150,000	34,136	115,864	77.24%	-	100.00%
Legal Expense	25,000	23	24,977	99.91%	92	(75.00)%
Auditing	200,000	100,479	99,521	49.76%	85,655	17.31%
<b>Total Legal &amp; Auditing Services</b>	<b>1,180,000</b>	<b>597,515</b>	<b>582,485</b>	<b>49.36%</b>	<b>326,335</b>	<b>83.10%</b>
<b>CONSULTING SERVICES</b>						
Medical Reviewers	1,800,000	660,075	1,139,925	63.33%	1,037,696	(36.39)%
Escrow for Actuary Fees	-	(28,866)	28,866	0.00%	-	(100.00)%
<b>Total Consulting Services</b>	<b>1,800,000</b>	<b>631,209</b>	<b>1,168,791</b>	<b>64.93%</b>	<b>1,037,696</b>	<b>(39.17)%</b>
<b>CONTRACTUAL SERVICES</b>						
Miscellaneous Contracts	100,000	19,295	80,705	80.70%	16,179	19.26%
Human Resources Consulting	8,000	-	8,000	100.00%	5,794	(100.00)%
Actuarial Services	500,000	252,280	247,720	49.54%	362,868	(30.48)%
Facility Security Charges	80,000	28,003	51,997	65.00%	57,162	(51.01)%
Tuition Assistance	8,000	-	8,000	100.00%	-	0.00%
<b>Contractual Subtotal</b>	<b>696,000</b>	<b>299,578</b>	<b>396,422</b>	<b>56.96%</b>	<b>442,003</b>	<b>(32.22)%</b>
<b>PERSONNEL SUBTOTAL</b>	<b>\$40,023,548</b>	<b>\$26,067,098</b>	<b>\$13,956,450</b>	<b>34.87%</b>	<b>\$26,041,669</b>	<b>0.10%</b>
<b>OPERATIONAL</b>						
Natural Gas	35,000	28,796	6,204	17.73%	24,556	17.27%
Electric	125,000	85,321	39,679	31.74%	82,521	3.39%
Rent-Non State Building	56,000	37,982	18,018	32.18%	37,982	0.00%
Building Rental - PPW	1,000,000	721,573	278,427	27.84%	721,573	0.00%
Copier Rental	67,000	62,939	4,061	6.06%	60,765	3.58%
Rental Carpool	5,500	3,174	2,326	42.29%	2,911	9.03%
Vehicle/Equip. Maint.	1,000	-	1,000	100.00%	249	(100.00)%
Postage	420,000	293,304	126,696	30.17%	321,650	(8.81)%
Freight	200	41	159	79.28%	155	(73.55)%
Printing (State)	12,000	995	11,005	91.71%	4,548	(78.12)%
Printing (non-state)	105,000	50,640	54,360	51.77%	57,405	(11.78)%
Insurance	12,000	5,572	6,428	53.57%	5,422	2.77%
Garbage Collection	6,000	4,512	1,488	24.79%	4,412	2.27%
Conference Expense	35,000	10,868	24,132	68.95%	8,657	25.54%
Conference Exp. Investment	-	64	(64)	0.00%	-	100.00%
Conference Exp. Audit	2,000	714	1,286	64.30%	-	100.00%
MARS Usage	50,000	20,325	29,675	59.35%	20,325	0.00%

<b>KPPA ADMINISTRATIVE BUDGET 2022-23</b>						
<b>BUDGET-TO-ACTUAL ANALYSIS</b>						
FOR THE NINE MONTH PERIOD ENDING MARCH 31, 2023, WITH COMPARATIVE TOTALS FOR THE NINE MONTH PERIOD ENDING MARCH 31, 2022						
<b>Account Name</b>	<b>Budgeted</b>	<b>FY 2023 Expense</b>	<b>Remaining</b>	<b>Percent Remaining</b>	<b>FY 2022 Expense</b>	<b>Percent Difference</b>
COVID-19 Expenses	12,000	2,421	9,579	79.83%	9,733	(75.13)%
Office Supplies	75,000	71,446	3,554	4.74%	67,451	5.92%
Furniture & Office Equipment	20,000	204	19,796	98.98%	300	100.00%
Travel (In-State)	15,000	10,264	4,736	31.57%	4,792	114.19%
Travel (In-State) Investment	1,000	41	959	95.94%	39	0.00%
Travel (In-State) Audit	500	-	500	100.00%	-	0.00%
Travel (Out of State)	75,000	21,542	53,458	71.28%	382	5,539.27%
Travel (Out of State) Investment	100,000	10,578	89,422	89.42%	-	100.00%
Travel (Out of State) Audit	500	1,077	(577)	(115.40)%	-	100.00%
Dues & Subscriptions	70,000	49,607	20,393	29.13%	36,719	35.10%
Dues & Subscriptions Invest	17,000	11,542	5,458	32.11%	12,228	(5.61)%
Dues & Subscriptions Audit	1,500	400	1,100	73.33%	265	50.94%
Miscellaneous	70,000	43,344	26,656	38.08%	32,591	32.99%
Miscellaneous Investment	-	-	-	0.00%	-	0.00%
Miscellaneous Audit	200	-	200	100.00%	-	0.00%
COT Charges	25,000	14,435	10,565	42.26%	15,760	(8.41)%
Telephone - Wireless	7,000	5,143	1,857	26.53%	4,063	26.58%
Telephone - Other	150,000	74,975	75,025	50.02%	91,667	(18.21)%
Telephone - Video Conference	-	4,836	(4,836)	0.00%	-	100.00%
Computer Equip./Software	3,500,000	1,609,836	1,890,164	54.00%	1,788,674	(10.00)%
Comp. Equip./Software Invest	-	-	-	0.00%	-	0.00%
Comp. Equip./Software Audit	3,000	24,407	(21,407)	(713.56)%	-	100.00%
<b>OPERATIONAL SUBTOTAL</b>	<b>\$6,074,400</b>	<b>\$3,282,918</b>	<b>\$2,791,482</b>	<b>45.95%</b>	<b>\$3,419,455</b>	<b>(3.99)%</b>
<b>SUB-TOTAL</b>	<b>\$46,097,948</b>	<b>\$29,350,017</b>	<b>\$16,747,931</b>	<b>36.33%</b>	<b>\$29,461,124</b>	<b>(0.38)%</b>
<b>Reserve</b>	<b>4,086,552</b>	<b>-</b>	<b>4,086,552</b>	<b>100.00%</b>	<b>-</b>	<b>0.00%</b>
<b>TOTAL</b>	<b>\$50,184,500</b>	<b>\$29,350,017</b>	<b>\$20,834,483</b>	<b>41.52%</b>	<b>\$29,461,125</b>	<b>(0.38)%</b>

*Differences due to rounding*

<b>Plan</b>	<b>Budgeted</b>	<b>FY 2023 Expense</b>	<b>% of Total KPPA FY 2023 Expense</b>
<b>CERS Nonhazardous</b>	<b>\$28,896,235</b>	<b>\$16,899,740</b>	<b>57.58%</b>
<b>CERS Hazardous</b>	<b>2,559,410</b>	<b>1,496,851</b>	<b>5.10%</b>
<b>KERS Nonhazardous</b>	<b>16,543,320</b>	<b>9,675,233</b>	<b>32.965%</b>
<b>KERS Hazardous</b>	<b>1,824,207</b>	<b>1,066,873</b>	<b>3.635%</b>
<b>SPRS</b>	<b>361,328</b>	<b>211,320</b>	<b>0.720%</b>
<b>TOTAL</b>	<b>\$50,184,500</b>	<b>\$29,350,017</b>	

**JP MORGAN CHASE CREDIT EARNINGS AND FEES  
FOR THE NINE MONTH PERIOD ENDING MARCH 31, 2023**

	<b>Earnings</b>	<b>Fees</b>	<b>Net Earnings</b>
June-22	\$5,289	\$(5,906)	\$(616)
July-22	8,921	(5,814)	3,107
August-22	17,621	(6,185)	11,436
September-22	17,026	(6,033)	10,993
October-22	24,574	(6,031)	18,543
November-22	59,589	(5,070)	54,519
December-22	10,556	(6,884)	3,673
January-23	10,331	(6,550)	3,781
February-23	1,707	(6,524)	(4,817)
March-23	2,825	(6,510)	(3,685)
<b>Total</b>	<b>\$143,576</b>	<b>\$(41,922)</b>	<b>\$101,654</b>

**JP MORGAN CHASE HARD INTEREST EARNED  
FOR THE NINE MONTH PERIOD ENDING MARCH 31, 2023**

	<b>Clearing Account</b>	<b>CERS</b>	<b>KERS</b>	<b>Total</b>
February-23	\$20,504	\$5,149	\$3,415	\$29,068
March-23	15,428	6,688	4,505	\$26,621
<b>Total</b>	<b>\$35,931</b>	<b>\$11,837</b>	<b>\$7,920</b>	<b>\$55,689</b>



## KRS Outstanding Invoices by Type and Employer

Invoice Type	3/31/2023	12/31/2022	Change H/(L)
Actuarially Accrued Liability Contribution	\$2,652,617	\$2,267,851	17%
Employer Free Military and Decompression Service	251,450	185,451	36%
Member Pension Spiking Refund	(19,690)	(17,748)	11%
Monthly Reporting Invoice	(263,911)	(270,825)	(3)%
Penalty – Monthly Reporting	30,000	22,000	36%
Reinstatement	9,779	9,003	9%
Other Invoices**	(123,281)	(150,204)	(18)%
<b>Total</b>	<b>2,536,965</b>	<b>2,195,733</b>	
Health Insurance Reimbursement	769,063	753,140	2%
Omitted Employer	115,217	281,518	(59)%
Employer Pension Spiking*	197,656	215,875	(8)%
Standard Sick Leave	3,722,088	3,609,915	3%
USERRA Protected Military	354,117	319,086	11%
<b>Total</b>	<b>5,158,140</b>	<b>5,179,534</b>	(0)%
<b>Grand Total</b>	<b>\$7,695,105</b>	<b>\$7,375,267</b>	<b>4%</b>

\*Pension Spiking invoices on this report are Employer Pension Spiking. By statute these invoices are due 12 months from the invoice date. Employer Pension Spiking is in effect only for retirements prior to July 1, 2018, therefore, unless there has been a recently created invoice for a backdated retirement, all of these invoices are greater than 12 months old.

\*\*Other Invoices include Expense Allowance; Expired Post Pending; IPS Employer Refund; Penalty EOY Reporting; Personnel Adjustment; and, Refunded Member Contributions Due.

Employer Name (Top Ten)	3/31/2023	12/31/2022	Change H/(L)
Kentucky State Police	\$4,000,339	\$3,498,911	14%
Kentucky River Community Care Inc.	2,538,074	2,175,323	17%
Dept. for Behavioral Health Dev. Intell. Disabilities	193,920	117,901	64%
Dept for Community Based Services	178,430	(1,553)	(11588)%
Judicial Department Admin. Office of the Courts	149,578	78,325	91%
Seven County Services, Inc.	135,567	135,523	0%
Office of the Inspector General	87,009	66,551	31%
Barren County Attorney	61,436	153,637	(60)%
Dept for Public Health	60,063	39,374	53%
Unified Prosecutorial System	\$58,417	\$48,240	21%

	Total Unpaid Balance	Invoice Count
KERS	\$4,073,256	1,010
KERH	609,118	46
SPRS	3,012,731	62
<b>Grand Total:</b>	<b>\$7,695,105</b>	<b>1,118</b>



**KENTUCKY PUBLIC PENSIONS AUTHORITY**

**Penalty Invoices Report**  
**From: 1/1/2023 To: 3/31/2023**

**Note: Delinquent Interest amounts are included in the totals for the invoice**

Invoice Amount	Invoice Remaining Balance	Delinquent Interest	Invoice Status Date	Invoice Due Date	Invoice Status	Employer Classification	Comments
\$1,000	\$-	\$-	2/6/2023	5/20/2017	CANC	County Attorneys	New employer reporting official
1,000	-	-	3/6/2023	3/3/2023	CANC	County Attorneys	New employer reporting official
1,000	-	-	3/6/2023	3/31/2023	CANC	County Attorneys	New employer reporting official
<b>Total</b>	<b>\$3,000</b>	<b>\$-</b>					
\$1,000	\$1,000	\$-	1/30/2023	3/1/2023	CRTD	Master Commissioner	
1,000	1,000	-	2/14/2023	3/16/2023	CRTD	County Attorneys	
1,000	1,000	-	2/14/2023	3/16/2023	CRTD	County Attorneys	
1,000	1,000	-	2/14/2023	3/16/2023	CRTD	County Attorneys	
1,000	1,000	-	2/14/2023	3/16/2023	CRTD	County Attorneys	
1,000	1,000	-	2/14/2023	3/16/2023	CRTD	County Attorneys	
1,000	1,000	-	2/14/2023	3/16/2023	CRTD	County Attorneys	
1,000	1,000	-	2/14/2023	3/16/2023	CRTD	County Attorneys	
1,000	1,000	-	2/20/2023	3/22/2023	CRTD	County Attorneys	
1,000	1,000	-	2/20/2023	3/22/2023	CRTD	County Attorneys	
1,000	1,000	-	3/1/2023	3/31/2023	CRTD	County Attorneys	
1,000	1,000	-	3/17/2023	4/16/2023	CRTD	Non-P1 State Agencies	
1,000	1,000	-	3/24/2023	4/23/2023	CRTD	County Attorneys	
<b>Total</b>	<b>\$13,000</b>	<b>\$13,000</b>					
\$1,000	\$-	\$-	3/9/2023	1/11/2023	PAID	Universities	
1,000	-	-	2/17/2023	1/20/2023	PAID	Non-P1 State Agencies	
1,000	-	-	2/8/2023	2/17/2023	PAID	Regional Mental Health Units	
1,000	-	-	3/9/2023	3/1/2023	PAID	Universities	
1,000	-	-	3/17/2023	3/19/2023	PAID	Non-P1 State Agencies	
1,000	-	-	3/9/2023	3/22/2023	PAID	Universities	
1,000	-	-	3/9/2023	3/22/2023	PAID	Universities	
<b>Total</b>	<b>\$7,000</b>	<b>\$-</b>					

**Notes:**

**Invoice Status:**

CANC - Cancelled

CRTD - Created

PAID - Paid



**KENTUCKY PUBLIC PENSIONS AUTHORITY**

**David L. Eager, Executive Director**

1260 Louisville Road - Frankfort, Kentucky 40601  
 kyret.ky.gov • Phone: 502-696-8800 • Fax: 502-696-8822



**Kentucky Public Pensions Authority**

To: Kentucky Retirement Systems (KRS) Board of Trustees  
 From: Michael Lamb, KPPA, CFO  
 Date: June 5, 2023  
 Subject: FY 2024 - Allocation of Administrative Expenses – KRS System and Plans

**PURPOSE:**

The purpose of this memo is to ask the KRS Board of Trustees to approve the FY2024 allocation of the KRS hybrid % between the KERS Nonhazardous, KERS Hazardous, and SPRS plans, based on membership (as was done in the past).

The budget work group has determined that for FY 2024 the Hybrid % for administrative expenses for CERS and KRS is as follows:

CERS 64.34% and KRS 35.66%.

(These will be presented to the KPPA Board on June 28, 2023, for final approval).

Based on membership, the recommended allocation of the FY 2024 KRS hybrid % (of 35.66%) among the applicable plans is:

<b>KRS</b>	Membership as of 6/30/2022	% of Membership	% of Admin Expenses
KERS Nonhazardous	124,550	88.15%	31.434%
KERS Hazardous	13,936	9.86%	3.517%
SPRS	2,808	1.99%	0.709%
<b>KRS Total</b>	<b>141,294</b>	<b>100.00%</b>	<b>35.660%</b>

For informational Purposes the breakdown for FY 2022 and FY 2023 was:

<b>KRS</b>	Membership as of 6/30/2021	% of Membership	% of Admin Expenses
KERS Nonhazardous	123,857	88.33%	32.965%
KERS Hazardous	13,661	9.74%	3.635%
SPRS	2,704	1.93%	0.720%
<b>KRS Total</b>	<b>140,222</b>	<b>100.00%</b>	<b>37.320%</b>

**BACKGROUND:**

In accordance with KRS 61.505 11(a), the Kentucky Public Pensions Authority (KPPA) Board has the responsibility of determining how to prorate, assign or allocate to County Employees Retirement System and to Kentucky Retirement Systems all expenses incurred by or on behalf of the KPPA.

The KPPA Board approves the Hybrid % for the CERS and the KRS, but leaves the allocation among the individual plans of each system up to the Board of each system.

Attached are four prior memos for background and information:

March 24, 2022 – “Allocation of Administrative Expenses” – This memo provides the background, methodology, and allocation method (Hybrid) approved by the KPPA Board of Trustees.

April 28, 2022 – “Allocation of Administrative Expenses FY 2022 and FY 2023 – Update” - This Memo provides the approved Hybrid % for FY 2022 and FY 2023 as follows: CERS 62.68% and KRS 37.32%

June 16, 2022 - “Allocation of Administrative Expenses FY 2022 and FY 2023 – Update” – This Memo shows that both the KRS and CERS Board of Trustees concluded to allocate their systems Hybrid % Allocation to their specific plans based on membership.

March 14, 2023 - “Budget Planning” – This memo created the work group for the FY 2024 budget process, that has determined the Hybrid % for FY 2024 to be CERS 64.34% and KRS 35.66%.

KPPA Meeting - Administrative Expense Allocation



**KENTUCKY PUBLIC PENSIONS AUTHORITY**

**David L. Eager, Executive Director**

1260 Louisville Road · Frankfort, Kentucky 40601  
kyret.ky.gov · Phone: 502-696-8800 · Fax: 502-696-8822



**To:** Kentucky Public Pensions Authority Board  
**From:** Administrative Expense Allocation Work Group  
William O'Mara, CERS Trustee and CERS Finance Committee Chair  
C. Prewitt Lane, KRS Trustee and KRS Investment Committee Chair  
David L. Eager, KPPA Executive Director  
Ed Owens III, CERS CEO  
John Chilton, KRS CEO  
**Date:** March 24, 2022  
**Subject:** Allocation of Administrative Expenses

---

In accordance with KRS 61.505 11(a), the Kentucky Public Pensions Authority (KPPA) Board has the responsibility of determining how to prorate, assign or allocate to County Employees Retirement System and to Kentucky Retirement Systems all expenses incurred by or on behalf of the KPPA.

KPPA administrative expenses are reported quarterly to the CERS, KRS and KPPA boards. The report includes any plan-specific legal expenses that are allocated exclusively to one or more of the plans via end-of-fiscal year adjustments. The issue for the Board's consideration is which methodology to utilize to allocate the bulk of administrative expenses.

The KPPA Board assigned the task of researching allocation options to a work group of trustees and staff leadership who have been meeting since October 2021. The group was tasked with bringing an allocation recommendation back to the KPPA Board. The following is a summary of the research that was considered and the recommendation.

Current Allocation Calculation

Under the previous governance structure, the former Kentucky Retirement Systems Board of Trustees allocated administrative expenses based on the number of members (retired, active and inactive) in each of the pension funds administered by that Board. This was the basis of the calculation for many years.

KPPA Meeting - Administrative Expense Allocation

Direct expenses were allocated to the specific plan in which the cost occurred and were not reflected in the administrative budget but were tracked within the trust expenditures. Examples of direct expenses are benefit payments, insurance premium costs, and legal case expenses specific to investments. Investment fees are not tracked in administrative expenses and are allocated based on asset allocation. If it is an investment administrative expense, like a research/news resource, the allocation is based on the overall asset allocation of the entire portfolio. Manager fees are based on the specific manager's account asset allocation.

The reasoning behind this methodology is that the number of members who require services would be a significant factor in determining the number of counselors required, brochures ordered, benefits calculated, postage, server storage for data and images, etc. As membership increases, the costs of providing services to the membership also increases. This is especially true for staffing which is a significant portion of the administrative budget. In fiscal year 2021, salaries and benefits accounted for 82% of the actual administrative expenditures (\$29,308,549 of \$35,750,705).

#### Potential Allocation Methodologies

While exploring possible allocation methodologies, the work group strived to be both equitable and simple – equitable to all plans and yet simple enough to maintain transparency and auditability and to limit manual entries.

#### Membership

As has been done historically, this allocation methodology uses the premise that more membership necessitates more KPPA staff, and staff is a critical component of administrative expenses. Conversely, not all staffing types are membership dependent. For example, not all administrative expenses increase or decrease with membership changes. For example, the actuary has stated that preparing the valuation costs about the same for KERS as it does for CERS. The systems are so large that the difference in membership is not a factor in costs.

Additionally, the work group decided there are different types of staffing positions and that while some positions increased with membership increases not all did. Legal staff, for example, is more dependent on the number of court cases, legislative changes and system complexity than with membership count.

KPPA Meeting - Administrative Expense Allocation

**Assets Under Management**

Staff explored basing the allocation on percentage of assets under management (AUM) as of June 30 of the previous fiscal year. Important to note is that investment expenses are not tracked within administrative expenses. Neither are assets and liabilities connected to non-investment staffing and compensation levels which can be a driver of administrative costs. However, the work group did consider that AUM is a driver for investment staff compensation.

**Even Division between CERS and KRS**

Another option explored is a 50/50 split between the CERS and KRS funds. The primary reasoning on this option is that not all services are membership dependent. The example provided earlier is the actuary. Additionally, while staffing constitutes a major portion of the administrative budget, not all staffing positions increase when membership increases. Executive leadership, for example, is based on defined roles and not on membership. Information Technology security and development is not exclusively driven by the number of members but also by the complexity of the plan rules.

**Hybrid**

A final option considered by staff is a hybrid of membership count, sharing expenses evenly and AUM. The premise for this is that while there is merit to each allocation methodology. None is a perfect solution on its own.

With the overarching goals of being equitable to all plans and yet simple enough to maintain transparency and auditability and to limit manual errors, the work group decided a hybrid approach may be best. However, for simplicity one percentage to use on all expenditures is critical to reduce human error. Therefore, the decision was made to use a hybrid approach to calculate one percentage for each Board for all expenses.

The administrative budget was split into large categories. Large categories were defined as the usual budget categories and any line items that are \$100,000 or more. Each category was assigned the allocation method that best fit that category. Multiplying the budget for that category by the methodology percentage, an overall total budgeted dollar amount by system was calculated. Using the total dollar amount by system and the total fiscal year budget a single hybrid percentage was calculated for each Board.

KPPA Meeting - Administrative Expense Allocation

Budget Category	Allocation Method	Budgeted FY22	CERS	KRS
Membership as of 6/30/21		100.00%	65.04%	34.96%
50/50		100.00%	50.00%	50.00%
AUM (pension only) as of 6/30/21		100.00%	73.04%	26.96%
<b>PERSONNEL</b>				
KPPA Staff	Mem	\$29,665,107	\$19,294,186	\$10,370,921
KPPA Exec	50/50	\$1,300,000	\$650,000	\$650,000
KPPA Legal	50/50	\$2,500,000	\$1,250,000	\$1,250,000
KPPA Investments	AUM	\$2,100,000	\$1,533,840	\$566,160
Legal contracts	50/50	\$725,000	\$362,500	\$362,500
Auditing	50/50	\$118,350	\$59,175	\$59,175
Actuarial Services	50/50	\$700,000	\$350,000	\$350,000
Medical Examiners/Hearing Off.	Mem	\$1,284,600	\$835,504	\$449,096
Other Services (facility security, HR consults, misc contracts)	50/50	\$153,350	\$76,675	\$76,675
<b>OPERATIONAL</b>				
Building Rental (Frkt)	Mem	\$1,100,000	\$715,440	\$384,560
Operations (IT,Lville rent, travel, dues, office supplies)	Mem	\$4,294,137	\$2,792,907	\$1,501,230
Contingency	50/50	\$4,064,956	\$2,032,478	\$2,032,478
<b>TOTALS</b>		<b>\$48,005,500</b>	<b>\$29,952,704</b>	<b>\$18,052,796</b>
<b>Hybrid Percentage</b>			<b>62.39%</b>	<b>37.61%</b>

**Comparison of Methodologies**

FY 2022 Budget is \$48,000,500

	Membership		AUM		Even Split		Hybrid	
CERS	65.04%	\$ 31,222,777	73.04%	\$ 35,063,217	50.00%	\$ 24,002,750	62.39%	\$ 29,950,631
KRS	34.96%	\$ 16,782,723	26.96%	\$ 12,942,283	50.00%	\$ 24,002,750	37.61%	\$ 18,054,869
TOTAL	100.00%	\$ 48,005,500	100.00%	\$ 48,005,500	100.00%	\$ 48,005,500	100.00%	\$ 48,005,500

KPPA Meeting - Administrative Expense Allocation

**Recommendation:**

The work group recommends the following:

1. A combination of all of these methodologies be used to define a fiscal percentage for CERS and for KRS  
CERS 62.39%  
KRS 37.61%
2. Allow KRS and CERS Boards to determine the split for the plans under their administrative purview
3. Reevaluate the CERS/KRS split prior to the beginning of every fiscal year
4. Make the effective date of the recommended CERS/KRS percentages July 1, 2021, and instruct KPPA accounting staff to make correcting entries to implement that date
5. Since the evaluation process was just completed, use the FY 2022 hybrid percentage for FY 2023

KPPA Meeting - Administrative Expense Allocation Update



**KENTUCKY PUBLIC PENSIONS AUTHORITY**

David L. Eager, Executive Director  
 1260 Louisville Road · Frankfort, Kentucky 40601  
 kyret.ky.gov · Phone: 502-696-8800 · Fax: 502-696-8822



To: Kentucky Public Pensions Authority Board  
 From: Rebecca H Adkins, Deputy Executive Director  
 Date: April 28, 2022  
 Subject: Allocation of Administrative Expenses FY 2022 and FY 2023 - UPDATE

At the KPPA quarterly meeting on March 24, 2022, the KPPA Board elected to adopt the recommendations presented by the Cost Allocation Work Group with one change. They asked that staff of Legal Advocacy be moved from a 50/50 allocation to a membership allocation due to the majority of this group’s workload being attributable to disability cases. The remainder of Legal would stay at the 50/50 allocation.

KPPA agreed that the hybrid allocation would be used for FY22 and for FY23 and would be reevaluated every following year.

Additionally, the KPPA Board decided that the CERS Board and the KRS Board should decide how to allocate the administrative expenses assigned to CERS or KRS among the plans that are controlled by the Boards. CERS met on April 20, 2022, and determined to base the CERS nonhazardous and hazardous split on membership.

The hybrid percentages presented on March 24:

KRS 37.61%  
 CERS 62.39%

The updated hybrid percentages after changing the allocation for legal advocacy staff:

KRS 37.32%  
 CERS 62.68%

	Membership as of 6/30/21	Percentage of Membership	Percentage of Admin Expenses
CERS Nonhazardous	239,626	91.87%	57.58%
CERS Hazardous	21,195	8.13%	5.10%

**This memo is for informational purposes.**

## KPPA Meeting - Administrative Expense Allocation Update

Presented on March 24:

Budget Category	Allocation Method	Budgeted FY22	CERS	KRS
Membership as of 6/30/21		100.00%	65.04%	34.96%
50/50		100.00%	50.00%	50.00%
AUM (pension only) as of 6/30/21		100.00%	73.04%	26.96%
<b>PERSONNEL</b>				
KPPA Staff	Mem	\$29,665,107	\$19,294,186	\$10,370,921
KPPA Exec	50/50	\$1,300,000	\$650,000	\$650,000
KPPA Legal	50/50	\$2,500,000	\$1,250,000	\$1,250,000
KPPA Investments	AUM	\$2,100,000	\$1,533,840	\$566,160
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Auditing	50/50	\$118,350	\$59,175	\$59,175
Actuarial Services	50/50	\$700,000	\$350,000	\$350,000
Medical Examiners/Hearing Off.	Mem	\$1,284,600	\$835,504	\$449,096
Other Services (facility security, HR consults, misc contracts)	50/50	\$153,350	\$76,675	\$76,675
<b>OPERATIONAL</b>				
Building Rental (Frkt)	Mem	\$1,100,000	\$715,440	\$384,560
Operations (IT,Lville rent, travel, dues, office supplies)	Mem	\$4,294,137	\$2,792,907	\$1,501,230
Contingency	50/50	\$4,064,956	\$2,032,478	\$2,032,478
<b>TOTALS</b>		<b>\$48,005,500</b>	<b>\$29,952,704</b>	<b>\$18,052,796</b>
<b>Hybrid Percentage</b>			<b>62.39%</b>	<b>37.61%</b>



KPPA Meeting - Administrative Expense Allocation Update

<b>KPPA Personnel Executive</b>	<b>KPPA Personnel Legal</b>	<b>KPPA Personnel Legal Advocacy</b>	<b>KPPA Personnel Investments</b>	<b>CERS/KRS Personnel</b>
<b>50/50</b>	<b>50/50</b>	<b>MEM</b>	<b>AUM</b>	<b>MEM</b>
David Eager	Andrea Freadreacea	Carrie Slayton	Anthony Chiu	Ed Owens
Rebecca Adkins	Barry Seidl	Kathy Rupinen	Carol Johnson	John Chilton
Michael Board	Beth Camic	Kevin Edelman	Jared Crawford	
Sherry Rankin	Carrie Bass	Laura Stevens	Joe Gilbert	
Ashley Gabbard	Crystal Smith	Leigh Ann Davis	Steve Willer	
	Jenny Jones	Nathan Goodrich	Steven Herbert	
	Jessica Beaubien	Paralegal		
	Jillian Hall	Staff Attorney III		
	Kristi Wackowski	Staff Attorney Supervisor		
	Legal Secretary			
	Lisa Perry			
	Staff Attorney III			
	Tracy Chambers			
	Vicki Hale			

KPPA Meeting - Quarterly Financial Statements



**KENTUCKY PUBLIC PENSIONS AUTHORITY**

David L. Eager, Executive Director

1260 Louisville Road · Frankfort, Kentucky 40601  
 kyret.ky.gov · Phone: 502-696-8800 · Fax: 502-696-8822



To: Kentucky Public Pensions Authority Board  
 From: Rebecca H Adkins, Deputy Executive Director  
 Date: June 16, 2022  
 Subject: Allocation of Administrative Expenses FY 2022 and FY 2023 - UPDATE

At the KPPA quarterly meeting on March 24, 2022, the KPPA Board elected to adopt the recommendations presented by the Cost Allocation Work Group. KPPA agreed that the hybrid allocation would be used for FY22 and FY23 and would be reevaluated each following year.

Additionally, the KPPA Board decided that the CERS Board and the KRS Board should decide how to allocate the administrative expenses assigned to CERS or KRS among the plans that are controlled by the Boards. CERS met on April 20, 2022, and determined to base the CERS Nonhazardous and CERS Hazardous split on membership. KRS met on June 6, 2022, and determined to base the SPRS, KERS Nonhazardous and KERS Hazardous split on membership.

The hybrid percentages approved by KPPA on March 24:

KRS 37.32%  
 CERS 62.68%

Plan-specific percentages after decisions by the CERS Board and the KRS Board:

	Membership as of 6/30/21	Percentage of Membership	Percentage of Admin Expenses
CERS Nonhazardous	239,626	91.87%	57.58%
CERS Hazardous	21,195	8.13%	5.10%
<b>CERS Total</b>	<b>260,821</b>	<b>100%</b>	<b>62.68%</b>
KERS Nonhazardous	123,857	88.33%	32.965%
KERS Hazardous	13,661	9.74%	3.635%
SPRS	2,704	1.93%	0.720%
<b>KRS Total</b>	<b>140,222</b>	<b>100%</b>	<b>37.320%</b>
<b>Total</b>	<b>401,043</b>		<b>100%</b>

Recommendation:  
 This memo is for informational purposes.

KPPA Board Meeting - Budget Planning



**KENTUCKY PUBLIC PENSIONS AUTHORITY**

**David L. Eager, Executive Director**

1260 Louisville Road · Frankfort, Kentucky 40601  
kyret.ky.gov · Phone: 502-696-8800 · Fax: 502-696-8822



To: Kentucky Public Pensions Authority Board Members  
From: Rebecca H Adkins, Deputy Executive Director  
Mike Lamb, CFO  
Date: March 14, 2023  
Subject: Budget Planning

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There are several items related to administrative and investment budgets that require decisions from the KPPA Board prior to June 30, 2023.

- **FY2024 Administrative and Investment Budgets**  
On March 24, 2022, and June 6, 2022, the KPPA Board agreed upon a hybrid percentage methodology to determine how to allocate administrative costs to the CERS and the KRS plans. At that time, the Board agreed to reevaluate the hybrid percentage annually.
- **FY2023 Separation Expenses**  
KRS 61.505 11(a)(2) requires the KPPA Board to determine which costs are "attributable solely to establishing a separate County Employees Retirement System board and the Kentucky Public Pensions Authority".
- **Biennial Budget Request for 2024–2026 (FY2025 and FY2026)**  
KRS 61.505 11(b) requires that the KPPA Board "shall approve the biennial budget unit request prior to its submission by the Authority."
- **Budget Policy**  
The KPPA Board may want to create a Budget Policy.

In 2021, the Board defined a work group of one CERS trustee and one KRS trustee to work with staff and the KRS and CERS CEOs on budget items similar to items listed above for FY2023.

**Recommendation for consideration:**

Define a work group to make recommendations to the full KPPA Board regarding the budget planning items described in the memo

Kentucky Retirement Systems

# Investment Review and Update

Quarter Ending: March 31, 2023

Kentucky Retirement Systems

# Economic and Market Update

Quarter Ending: March 31, 2023

## Asset Class Performance

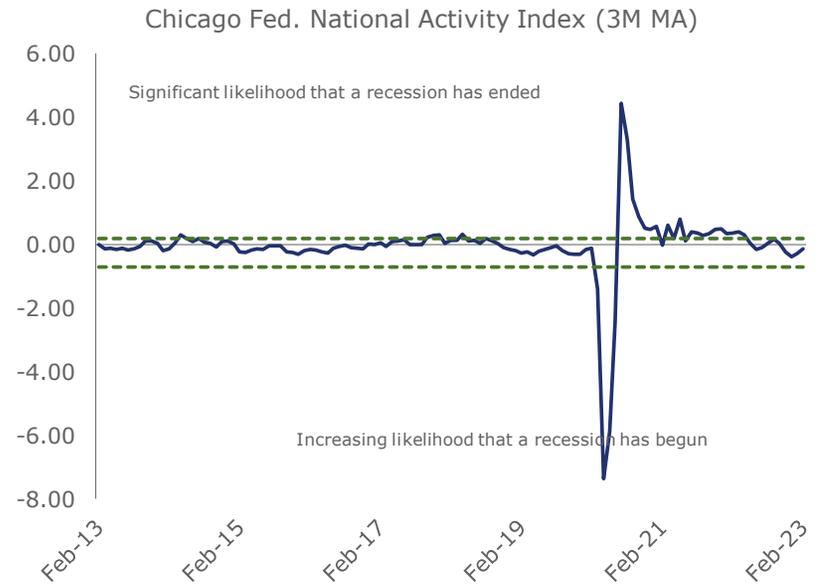
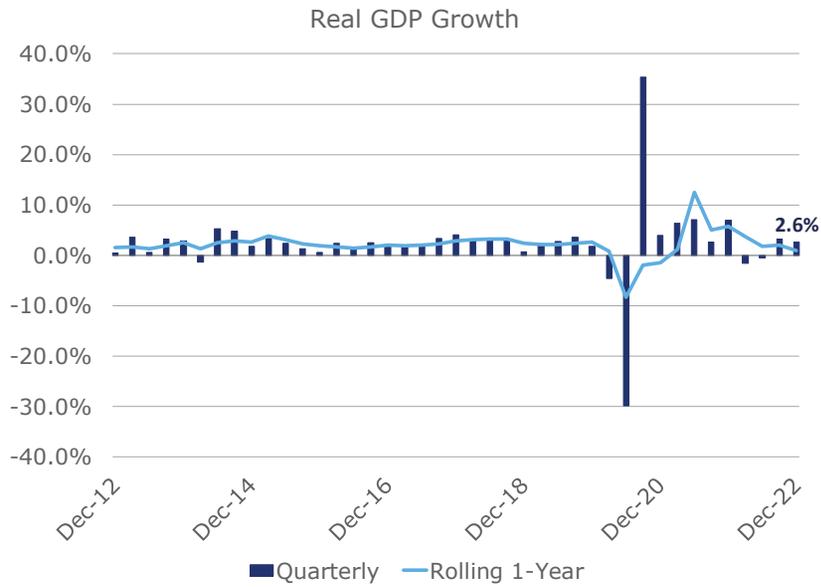
### Asset Class Returns - Best to Worst

### Annualized 5-Year as of 3/23

2018	2019	2020	2021	2022	2023 YTD	
T-Bills 1.9%	U.S. Equity 31.0%	U.S. Equity 20.8%	REITs 46.2%	Commodities 16.1%	Developed 8.6%	U.S. Equity 10.7%
Core Bond 0.0%	REITs 25.8%	Emrg Mrkts 18.7%	Commodities 27.1%	T-Bills 1.3%	U.S. Equity 7.3%	REITs 5.7%
U.S. TIPS -1.3%	Developed 22.7%	U.S. TIPS 11.0%	U.S. Equity 26.7%	High Yield -11.2%	Emrg Mrkts 4.0%	Commodities 5.4%
High Yield -2.1%	Emrg Mrkts 18.9%	Developed 8.3%	Developed 11.8%	U.S. TIPS -11.8%	High Yield 3.6%	Developed 4.0%
REITs -4.8%	High Yield 14.3%	Core Bond 7.5%	U.S. TIPS 6.0%	Core Bond -13.0%	U.S. TIPS 3.3%	High Yield 3.2%
U.S. Equity -5.3%	Core Bond 8.7%	High Yield 7.1%	High Yield 5.3%	Developed -14.0%	REITs 3.2%	U.S. TIPS 2.9%
Commodities -11.2%	U.S. TIPS 8.4%	T-Bills 0.7%	T-Bills 0.0%	U.S. Equity -19.0%	Core Bond 3.0%	T-Bills 1.4%
Developed -13.4%	Commodities 7.7%	Commodities -3.1%	Core Bond -1.5%	Emrg Mrkts -19.7%	T-Bills 1.1%	Core Bond 0.9%
Emrg Mrkts -14.2%	T-Bills 2.3%	REITs -7.9%	Emrg Mrkts -2.2%	REITs -26.8%	Commodities -5.4%	Emrg Mrkts -0.5%

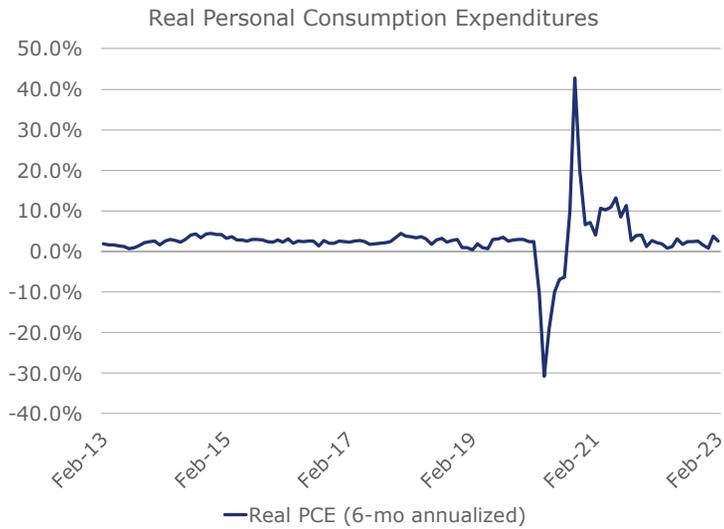
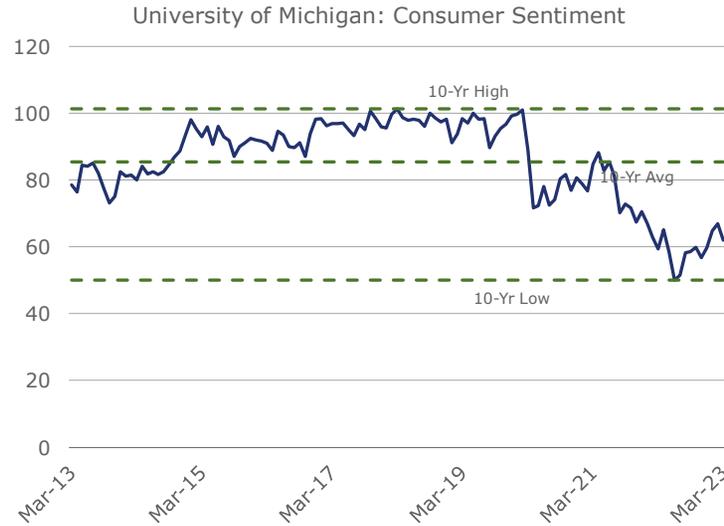
Data Sources: Bloomberg Note: Developed asset class is developed equity markets ex-U.S., ex-Canada

# Economic Growth



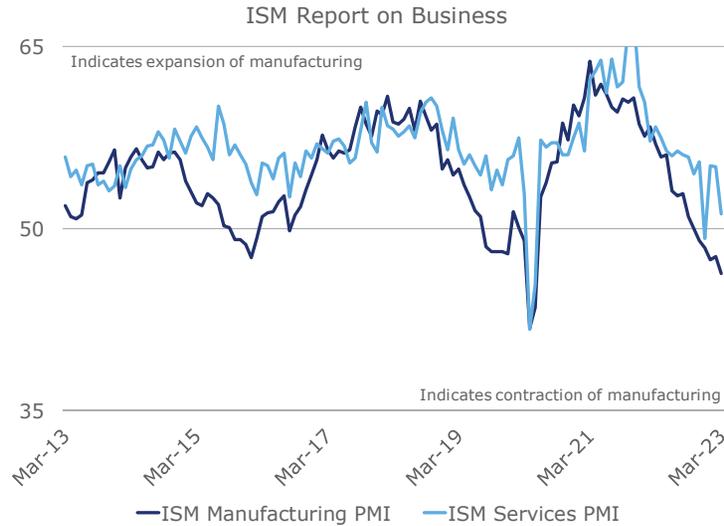
Data Sources: Bloomberg

# Consumer Activity



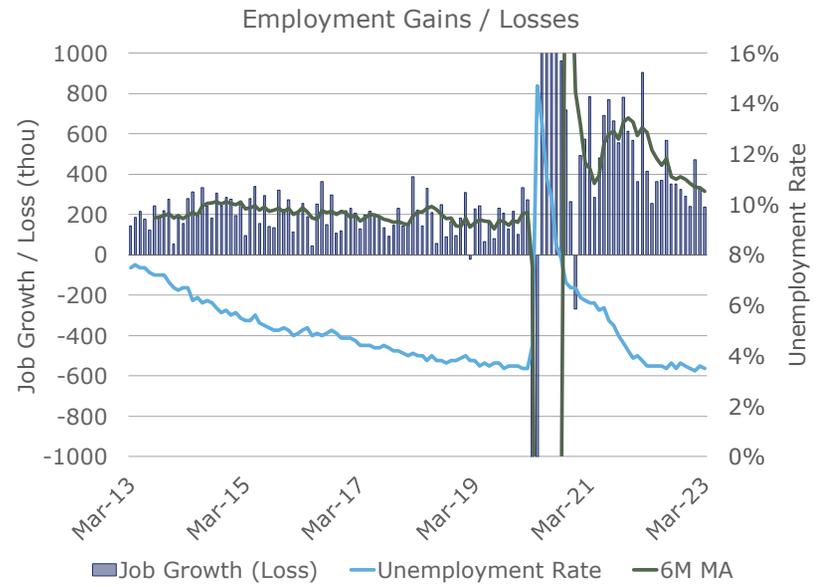
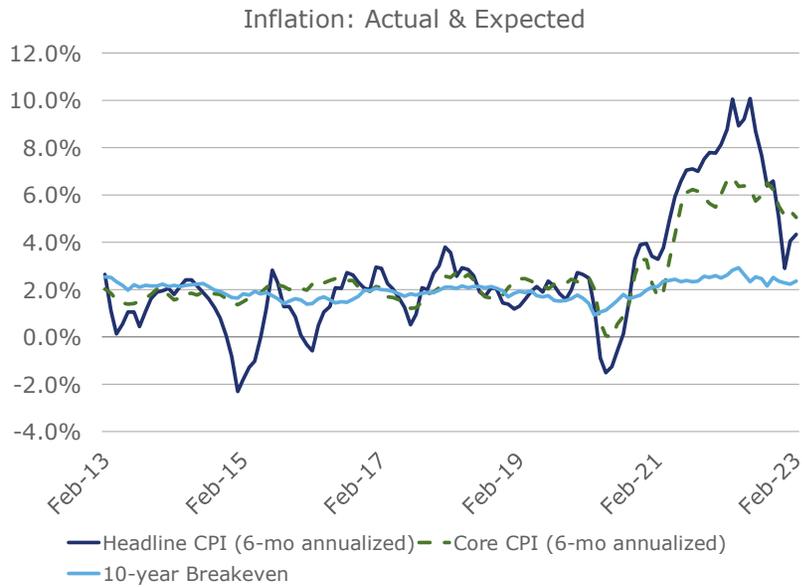
Data Sources: Bloomberg

# Business Activity



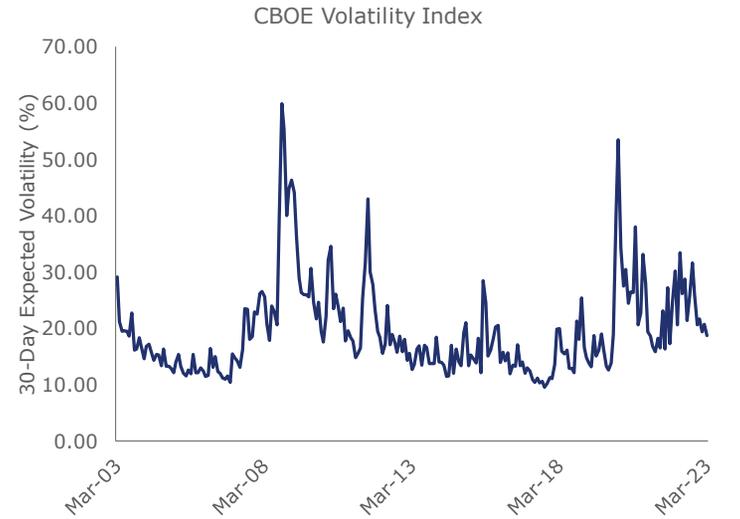
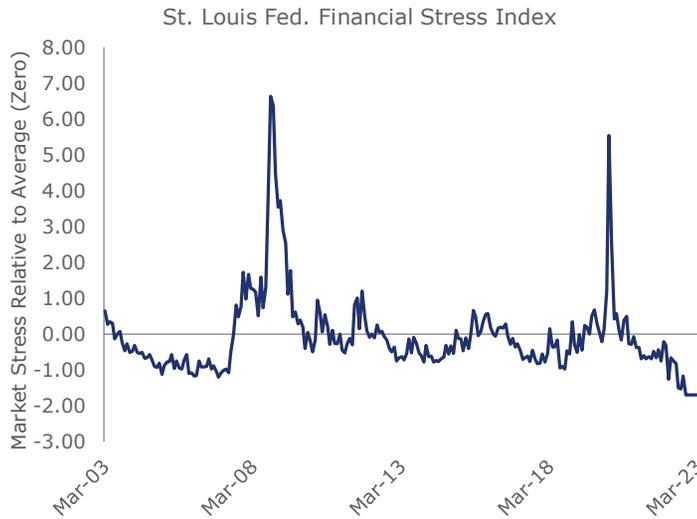
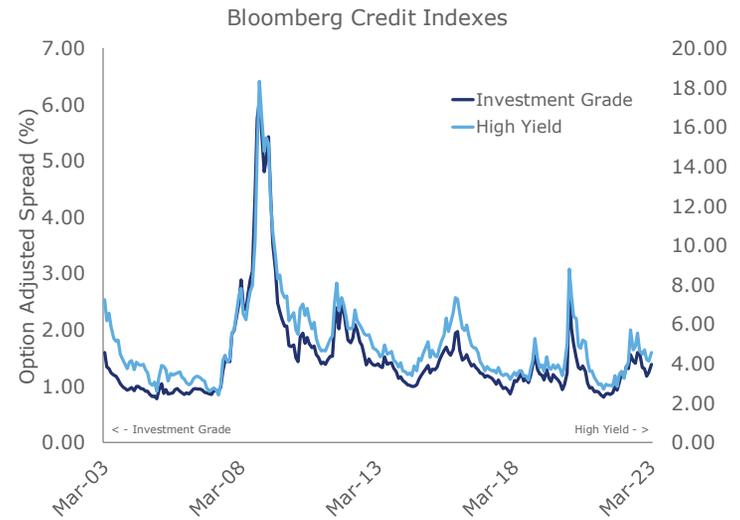
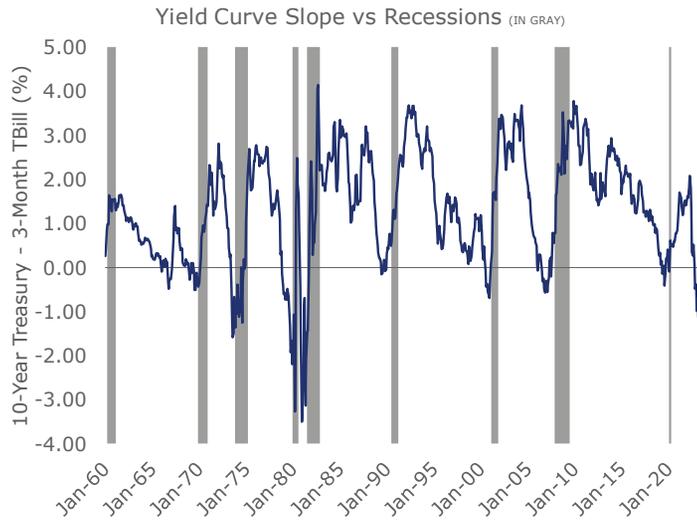
Data Sources: Bloomberg

# Inflation and Employment



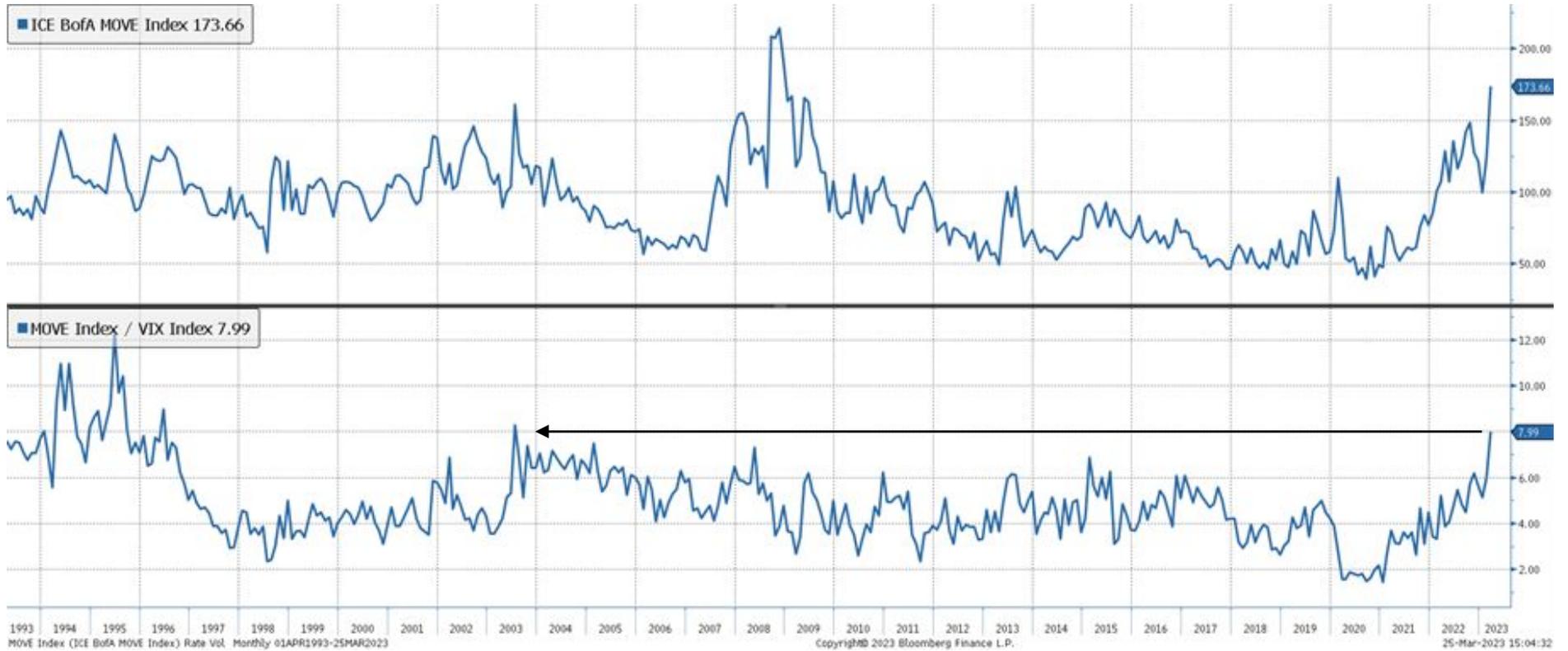
Data Sources: Bloomberg

# Risk Monitor



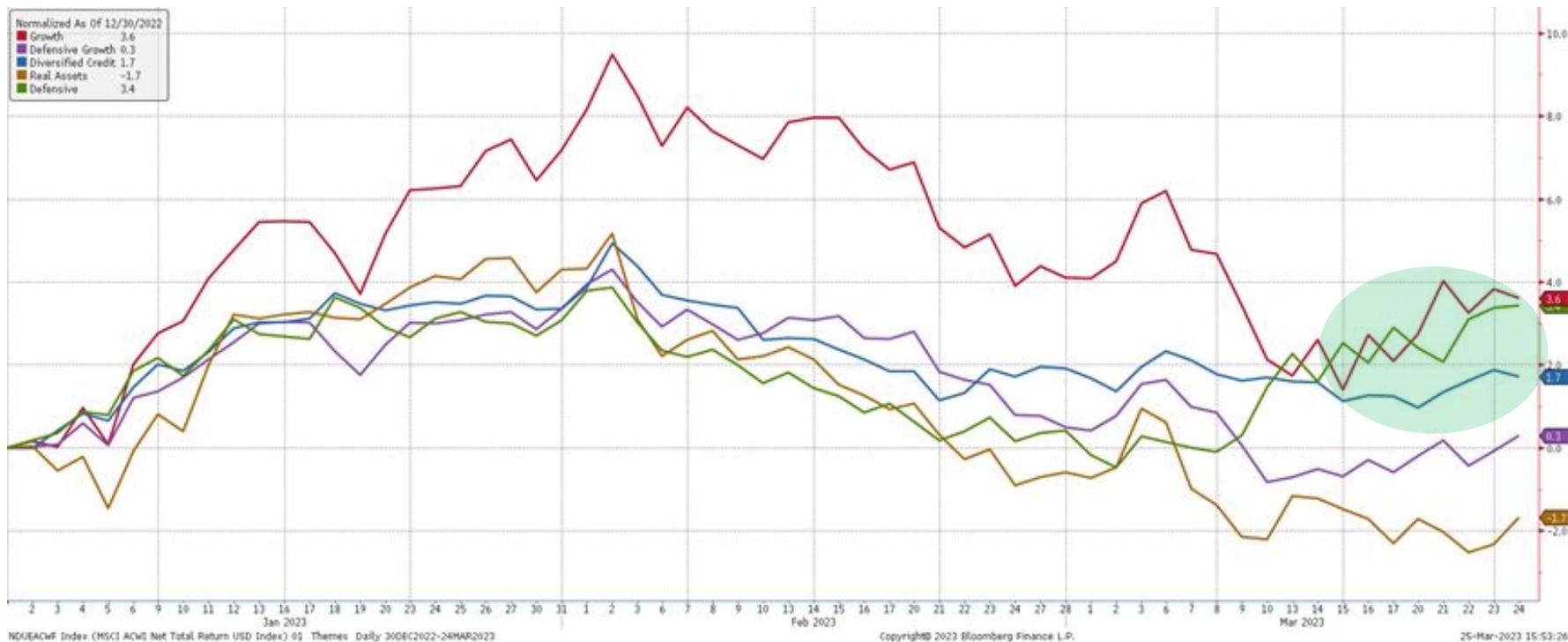
Data Sources: Bloomberg

# Extreme Interest Rate Volatility



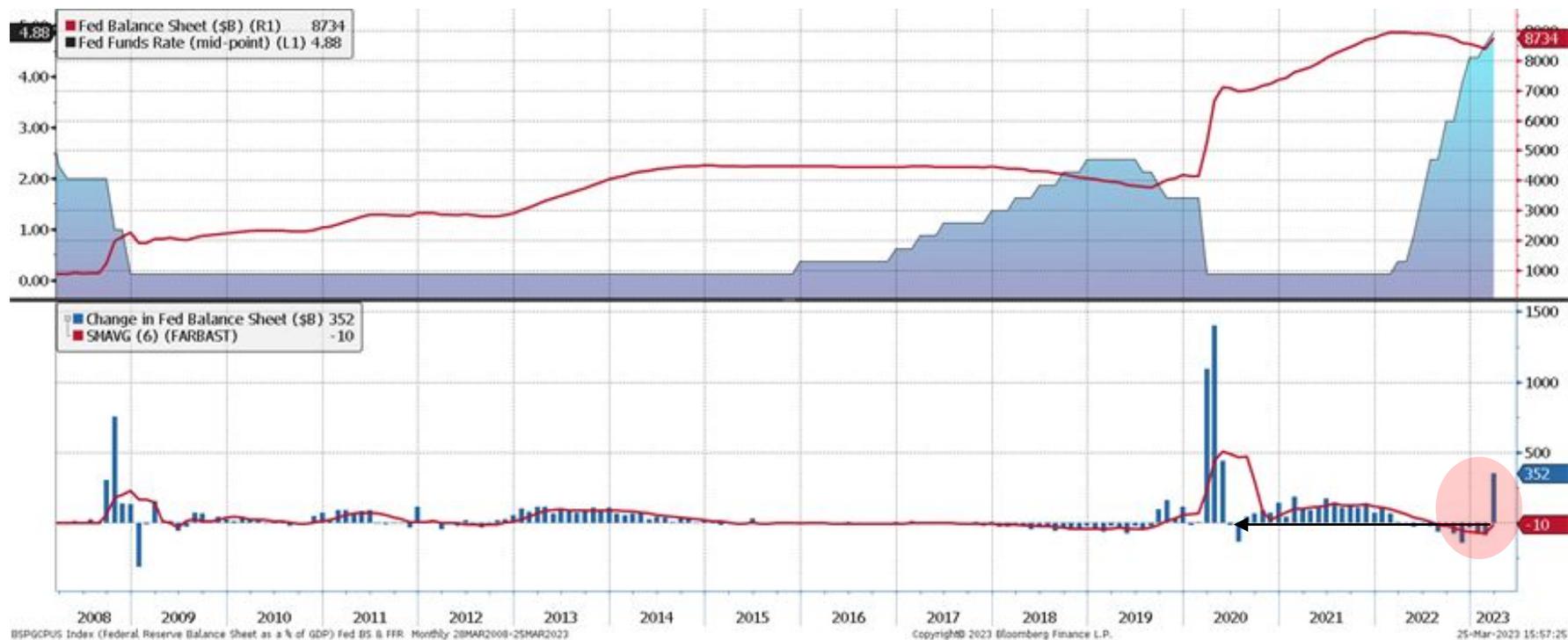
Data Source: Bloomberg

# Many Risk-Assets Showing Resilience



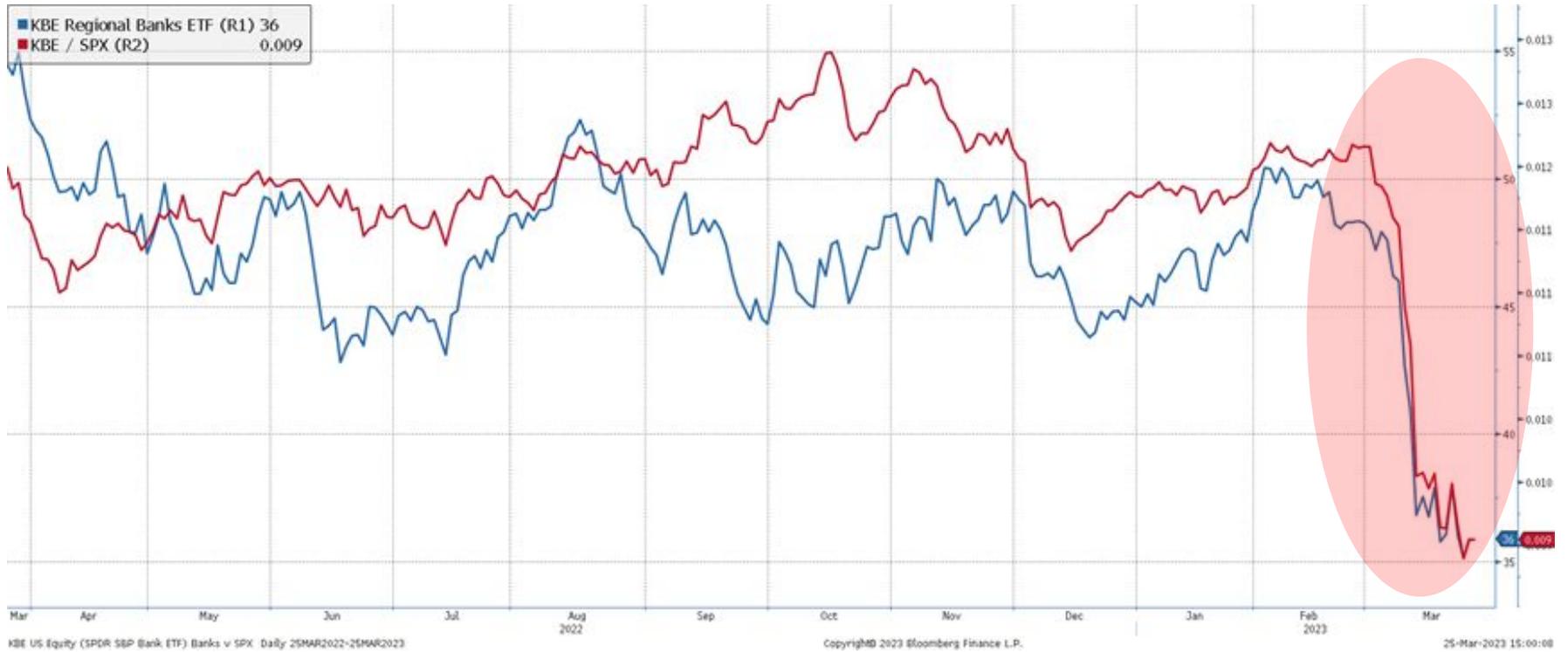
Data Source: Bloomberg

# Fed Response: “Dovish Hike” - End of QT?



Data Source: Bloomberg

# Regional Banks Under Stress

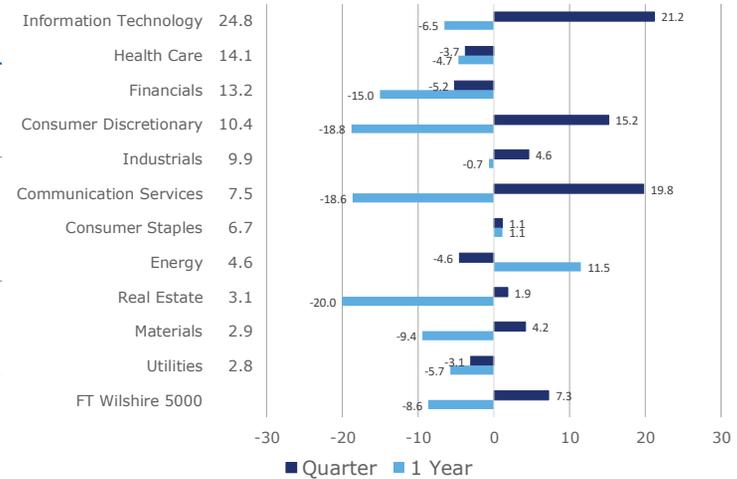


Data Source: Bloomberg

# U.S. Equity Market

As of 3/31/2023	Quarter	YTD	1 Year	3 Year	5 Year	10 Year
FT Wilshire 5000	7.3	7.3	-8.6	18.8	10.7	11.9
Wilshire U.S. Large Cap	7.6	7.6	-8.4	18.8	11.2	12.3
Wilshire U.S. Small Cap	3.6	3.6	-10.3	19.8	6.0	8.7
Wilshire U.S. Large Growth	15.7	15.7	-11.4	19.7	12.9	14.2
Wilshire U.S. Large Value	0.1	0.1	-4.8	17.5	9.4	10.3
Wilshire U.S. Small Growth	6.3	6.3	-8.7	17.6	6.1	9.2
Wilshire U.S. Small Value	1.0	1.0	-11.7	22.0	5.8	8.1
Wilshire REIT Index	3.2	3.2	-21.3	11.0	5.7	5.9
MSCI USA Min. Vol. Index	1.3	1.3	-4.4	12.4	9.1	10.6
FTSE RAFI U.S. 1000 Index	1.7	1.7	-5.9	22.1	10.0	11.0

U.S. Sector Weight and Return (%)



Large Cap vs Small Cap



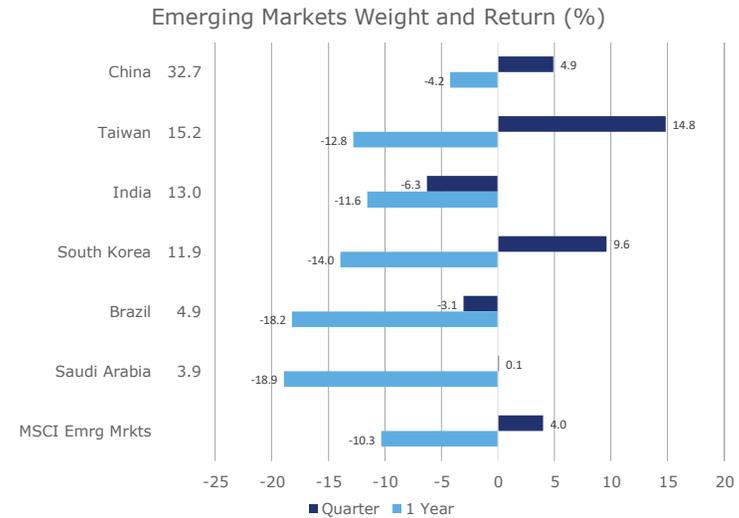
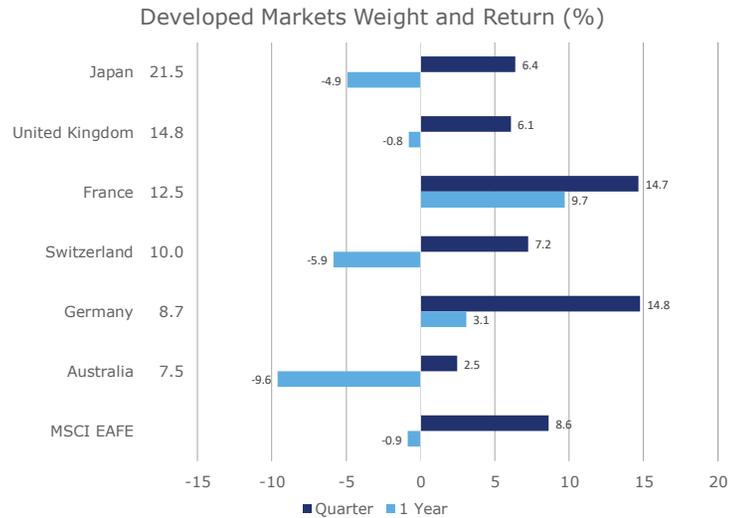
Large Growth vs Large Value



Data Sources: Bloomberg, Wilshire Atlas

# Non-U.S. Equity Market

As of 3/31/2023	Quarter	YTD	1 Year	3 Year	5 Year	10 Year
MSCI ACWI ex-US (\$G)	7.0	7.0	-4.6	12.3	3.0	4.7
MSCI EAFE (\$G)	8.6	8.6	-0.9	13.5	4.0	5.5
MSCI Emerging Markets (\$G)	4.0	4.0	-10.3	8.2	-0.5	2.4
MSCI Frontier Markets (\$G)	2.5	2.5	-16.3	7.9	-3.7	0.0
MSCI ACWI ex-US Growth (\$G)	8.7	8.7	-6.0	9.8	3.7	5.4
MSCI ACWI ex-US Value (\$G)	5.1	5.1	-3.9	14.9	1.9	3.9
MSCI ACWI ex-US Small (\$G)	4.8	4.8	-9.9	15.5	2.1	5.5
MSCI ACWI Minimum Volatility	1.7	1.7	-5.5	8.9	5.7	7.4
MSCI EAFE Minimum Volatility	5.8	5.8	-4.6	5.3	1.6	4.7
FTSE RAFI Developed ex-US	6.7	6.7	-1.6	16.8	3.4	5.3
MSCI EAFE LC (G)	7.7	7.7	4.4	15.2	6.8	7.9
MSCI Emerging Markets LC (G)	3.8	3.8	-6.2	9.2	2.3	5.4

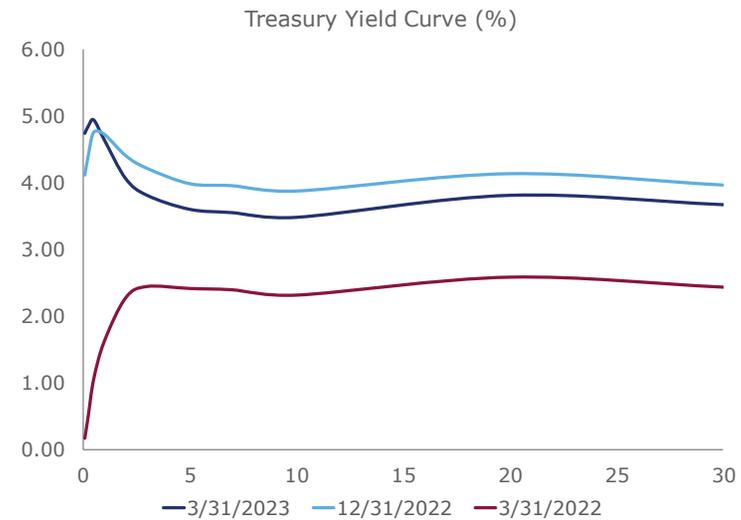
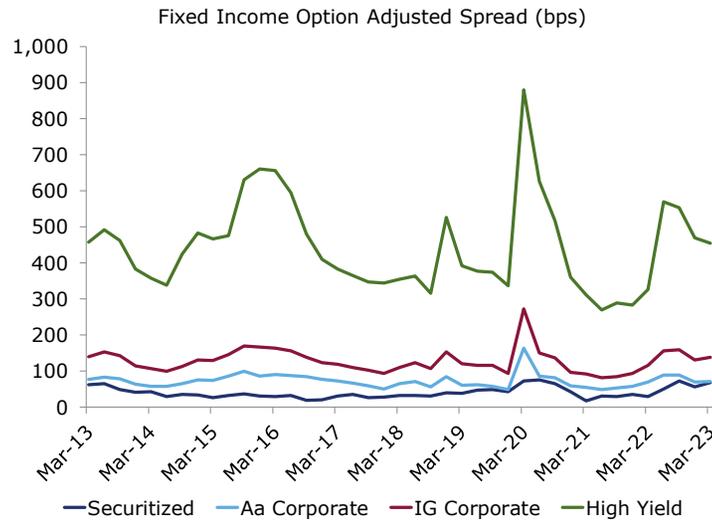


Data Sources: Bloomberg

# U.S. Fixed Income

As of 3/31/2023	YTW	DUR.	QTR	YTD	1 YR	3 YR	5 YR	10 YR
Bloomberg Aggregate	4.4	6.3	3.0	3.0	-4.8	-2.8	0.9	1.4
Bloomberg Treasury	3.8	6.3	3.0	3.0	-4.5	-4.2	0.7	0.9
Bloomberg Gov't-Rel.	4.4	5.4	2.9	2.9	-3.3	-1.6	1.1	1.4
Bloomberg Securitized	4.6	5.8	2.5	2.5	-4.7	-3.1	0.3	1.0
Bloomberg Corporate	5.2	7.2	3.5	3.5	-5.6	-0.5	1.6	2.3
Bloomberg LT Gov't/Credit	4.6	14.6	5.8	5.8	-13.4	-6.3	0.6	2.3
Bloomberg LT Treasury	3.8	16.4	6.2	6.2	-16.0	-11.3	-0.4	1.5
Bloomberg LT Gov't-Rel.	5.1	11.7	5.2	5.2	-9.9	-3.1	0.6	2.3
Bloomberg LT Corporate	5.3	13.2	5.4	5.4	-11.5	-2.6	1.1	3.0
Bloomberg U.S. TIPS *	3.5	7.6	3.3	3.3	-6.1	1.8	2.9	1.5
Bloomberg High Yield	8.5	3.7	3.6	3.6	-3.3	5.9	3.2	4.1
S&P/LSTA Leveraged Loan	9.4	0.3	3.2	3.2	2.5	8.5	3.6	3.8
Treasury Bills	4.7	0.3	1.1	1.1	2.5	0.8	1.4	0.9

\* Yield and Duration statistics are for a proxy index based on similar maturity, the Bloomberg Barclays U.S. Treasury 7-10 Year Index

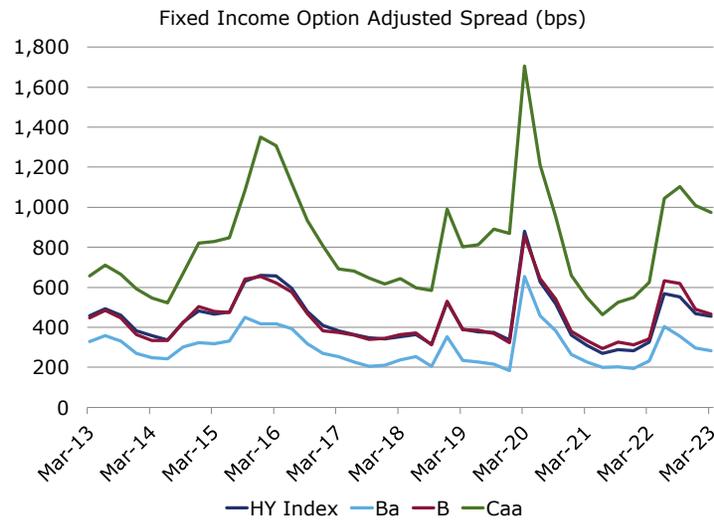


Data Sources: Bloomberg

# High Yield Bond Market

As of 3/31/2023

	YTW	QTR	YTD	1 YR	3 YR	5 YR	10 YR
Bloomberg High Yield	8.5	3.6	3.6	-3.3	5.9	3.2	4.1
S&P LSTA Leveraged Loan	9.1	2.9	2.9	2.4	6.5	3.4	3.3
<b>High Yield Quality Distribution</b>	<b>Weight</b>						
Ba U.S. High Yield	48.8%	6.8	3.4	3.4	-1.9	5.8	4.5
B U.S. High Yield	39.6%	8.7	3.5	3.5	-3.7	5.4	3.7
Caa U.S. High Yield	10.7%	13.4	5.0	5.0	-8.6	7.1	3.4
Ca to D U.S. High Yield	0.9%	35.1	-3.6	-3.6	-10.3	12.4	-5.3

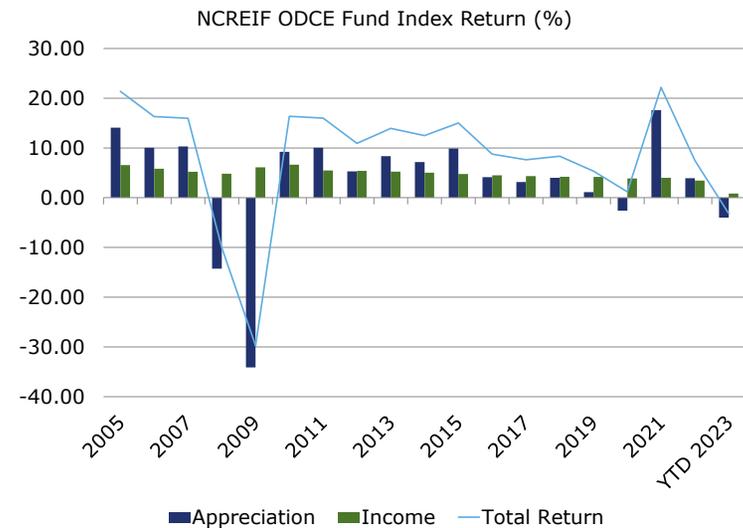
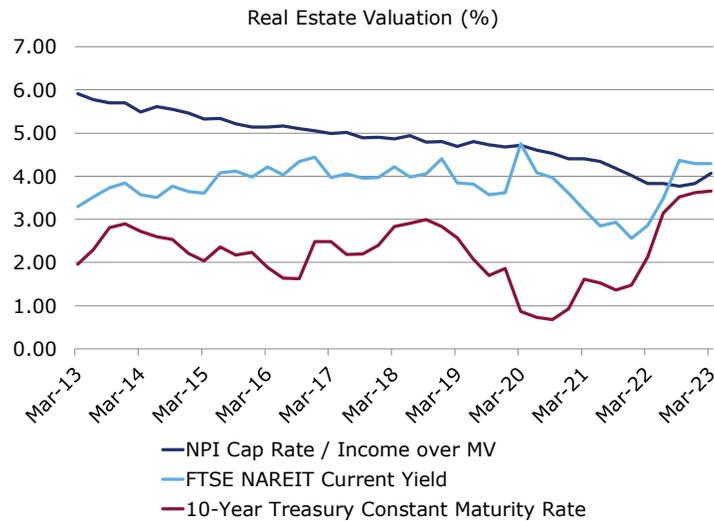


Data Sources: Bloomberg

# Real Assets

As of 3/31/2023

	Quarter	YTD	1 Year	3 Year	5 Year	10 Year
Bloomberg U.S. TIPS	3.3	3.3	-6.1	1.8	2.9	1.5
Bloomberg Commodity Index	-5.4	-5.4	-12.5	20.8	5.4	-1.7
Bloomberg Gold Index	8.1	8.1	0.7	5.9	7.1	1.3
Wilshire Global RESI Index	2.3	2.3	-20.8	9.0	3.2	4.3
NCREIF ODCE Fund Index	-3.2	-3.2	-3.1	8.4	7.5	9.5
NCREIF Timberland Index	1.8	1.8	11.3	8.1	5.5	5.8
FTSE Global Core Infrastructure 50/50	0.7	0.7	-7.1	11.1	6.6	7.1
Alerian Midstream Energy	0.8	0.8	-1.2	34.8	9.7	n.a.
Bitcoin	71.7	71.7	-38.0	63.6	32.9	77.7



Data Sources: Bloomberg, National Council of Real Estate Investment Fiduciaries

# March 2023 Asset Class Assumptions

	Equity						Fixed Income						Real Assets						
	US Stock	Dev ex-US Stock	Emg Stock	Global ex-US Stock	Global Stock	Private Equity	Cash	Core Bond	LT Core Bond	TIPS	High Yield	Private Credit	Dev ex-US Bond (Hdg)	US RES	Global RES	Private RE	Cmdty	Real Assets	US CPI
Compound Return (%)	6.15	6.90	7.15	7.25	6.70	9.60	3.65	4.60	4.60	3.65	6.25	8.55	2.85	5.75	5.90	6.25	5.90	6.65	2.25
Expected Risk (%)	17.00	18.00	26.00	19.10	17.10	29.65	0.75	4.70	9.85	6.00	10.00	12.75	4.00	17.50	16.45	13.90	16.00	12.35	1.75
Cash Yield (%)	1.65	3.15	2.75	3.05	2.20	0.00	3.65	4.90	4.95	4.25	9.35	4.90	3.45	4.05	4.05	2.25	3.65	3.15	0.00
Growth Exposure	8.00	8.00	8.00	8.00	8.00	14.00	0.00	-0.95	-2.40	-3.00	4.00	5.10	-1.00	6.00	6.00	3.50	0.00	2.70	0.00
Inflation Exposure	-3.00	0.00	5.00	1.45	-1.30	-3.75	0.00	-2.50	-6.80	2.50	-1.00	-1.50	-3.00	1.00	1.80	1.00	12.00	5.25	1.00
<b>Correlations</b>																			
US Stock	1.00																		
Dev ex-US Stock (USD)	0.81	1.00																	
Emerging Mkt Stock	0.74	0.74	1.00																
Global ex-US Stock	0.84	0.95	0.89	1.00															
Global Stock	0.95	0.91	0.84	0.94	1.00														
Private Equity	0.72	0.63	0.61	0.67	0.73	1.00													
Cash Equivalents	-0.05	-0.09	-0.05	-0.08	-0.06	0.00	1.00												
Core Bond	0.28	0.13	0.00	0.08	0.20	0.30	0.18	1.00											
LT Core Bond	0.31	0.15	0.01	0.11	0.24	0.31	0.11	0.94	1.00										
TIPS	-0.05	0.00	0.15	0.06	-0.01	-0.03	0.20	0.60	0.48	1.00									
High Yield Bond	0.54	0.39	0.49	0.46	0.53	0.31	-0.10	0.24	0.32	0.05	1.00								
Private Credit	0.68	0.55	0.58	0.60	0.68	0.44	0.00	0.24	0.30	0.00	0.76	1.00							
Dev ex-US Bond (Hdg)	0.16	0.25	-0.01	0.16	0.17	0.26	0.10	0.68	0.66	0.39	0.26	0.22	1.00						
US RE Securities	0.58	0.47	0.44	0.49	0.57	0.49	-0.05	0.17	0.22	0.10	0.56	0.62	0.05	1.00					
Global RE Securities	0.64	0.57	0.54	0.60	0.65	0.55	-0.05	0.17	0.21	0.11	0.61	0.68	0.04	0.96	1.00				
Private Real Estate	0.55	0.45	0.45	0.49	0.54	0.50	-0.05	0.19	0.25	0.09	0.58	0.63	0.05	0.79	0.78	1.00			
Commodities	0.25	0.34	0.39	0.38	0.32	0.28	0.00	-0.03	-0.03	0.25	0.29	0.29	-0.10	0.25	0.28	0.25	1.00		
Real Assets	0.62	0.63	0.65	0.69	0.67	0.57	-0.03	0.22	0.24	0.30	0.64	0.69	0.04	0.78	0.84	0.76	0.64	1.00	
Inflation (CPI)	-0.10	-0.15	-0.13	-0.15	-0.13	-0.10	0.10	-0.12	-0.12	0.15	-0.08	0.00	-0.08	0.05	0.04	0.05	0.44	0.22	1.00

Kentucky Retirement Systems

# Performance and Asset Allocations

Quarter Ending: March 31, 2023

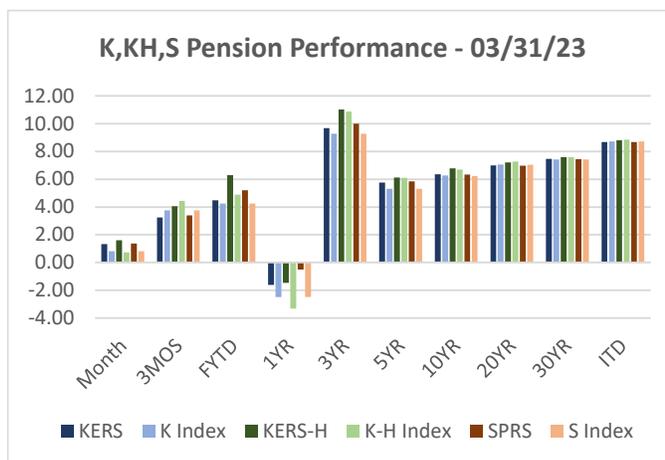
**What’s going on in the marketplace?**

During the first quarter of 2023, global risks markets were able to shrug off a multitude of headwinds and produce positive performance. Markets were buoyed early in the quarter as optimism grew that the economy could avoid a recession and central banks would shortly shift to easing mode. This market optimism faded as concerns grew regarding the health of the banking sector following the sudden failure of two regional banks. Markets were able to rebound late in the quarter to finish on a positive note as fears of immediate contagion subsided, and optimism again took root. Despite this, most remain cautious on the market as earnings are likely to come under pressure as underlying growth seems to be slowing at a more meaningful pace. The market seems to be experiencing a broad underlying slowdown as company trends are beginning to decelerate. That said, it is a difficult starting point for comparison as we are coming off elevated numbers post pandemic, and high inflation and rates. Despite the long-predicted recession to come, as mentioned above, equity markets continue to be resilient as businesses have been performing against low expectations. Supply chains seem to be functioning and inflationary pressures are starting to abate. The financial industry experienced a couple of significant bank failures, as bond investments came under significant pressures during the quarter; however, they appear to be idiosyncratic, and contagion seems minimal. This is still likely to renew banks focus on capital/liquidity and may result in tightening credit availability. Mixed data has created some confusion in the marketplace. Equity markets seem to be doing well, while bond markets say we are headed for recession. Mixed growth trends are evidence of the contradiction as machine and semi-conductor sales are down, while retail and travel activity are up. There is a dichotomy in soft and hard data as well; PMI and business surveys say we are in recession, while auto and construction data say different. Slowing demand in North America is being offset by increasing demand in China (re-opening post covid).

**The KPPA Pension Trust portfolio returned 1.61% during the month of March, outperforming its blended benchmark return of 0.99%.** The KRS Pension Composite produced a 1.38% return during the month. The KERS and SPRS Pension portfolios returned 1.32% and 1.36% respectively, while their benchmark gained 0.82%. The KERS-H Pension portfolio gained 1.60% versus its benchmark return of 0.72%. The funds outperformed their respective benchmarks due to similar drivers of attribution. The portfolios benefited from solid relative performance in the high yield, real estate, and private equity spaces combined with an underweight to real estate, which was the weakest performing asset class during the period. Partially offsetting relative outperformance, was weakness in the public equity (primarily due to a mismatch in index attribution between the R3000 and US component of the MSCI ACWI) and core fixed income portfolios.

For the fiscal year, the KPPA Pension Trust portfolio gained 6.26%, outperforming the benchmark return of 5.00%, while the KRS Pension Composite returned 4.89%. The KERS and SPRS Pension portfolios returned 4.47% and 5.20%, against a benchmark return of 4.24%. The KERS-H Pension portfolio gained 6.29% while its benchmark returned 4.88%.

**Global equity markets** were stronger during the month, as evidenced by the MSCI ACWI Index rising 3.08%. US markets outpaced their international market counterparts (R3000: 2.67% versus MSCI ACWI Ex-US: 2.13%). This brought the fiscal year return for global equity markets to 9.75% (KPPA global equity portfolio: 11.53%).



**US equity markets** gained 2.67% during the month (Russell 3000), while the KPPA portfolio underperformed, returning 2.31%. The market was driven by strength in the large cap segment (3.67%), while midcaps and small caps were significantly weaker (-3.21% and -4.78%, respectively). Growth significantly outperformed value during the month, returning 6.25% versus -0.86%, as evidenced by the Russell 3000 style indices. For the fiscal year, the KPPA US Equity portfolio has gained 9.98% compared with its benchmark return of 9.75%. Relative outperformance has been driven by the portfolio's slight overweight down market cap to midcaps which have returned 12.17% for the fiscal year.

**NonUS equity markets** returned 2.13% (MSCI ACWI Ex-US) during the month. Developed markets returned 2.34% (MSCI World Ex-US) and emerging markets gained 3.03% (MSCI EM) during the period while period. The KPPA portfolio returned 2.56% during the month, outperforming its benchmark by 43bps. Relative outperformance was driven by stock selection, as the majority of individual active mandates bested their respective benchmarks. The fiscal year return now stands at 13.63% versus 9.85%.

**The specialty credit portfolio** outperformed its benchmark during the month, returning 1.61% versus 0.52%. The high yield market returned 1.07% during the period, as the leverage loan market remained relatively flat (-0.03%). For the fiscal year to date, the portfolio has underperformed its benchmark, gaining 5.16% versus 7.31%. The reported relative underperformance is largely driven by the issues associated with timing differences between the private market mandates and the public market benchmarks which tend to be exacerbated during periods of larger moves in the public markets. Individual strategy relative performance has been mixed fiscal year to date.

**The core fixed income portfolio** gained 1.15% compared to the Bloomberg Aggregate Index gaining 2.54% as Government bond yields overall decreased significantly in March as investors sought refuge of safer assets and forward rate hike expectations decreased in light of the banking sector turmoil. Relative underperformance was attributable to positioning within the allocation; the portfolios continue to remain underweight overall duration given the potential for higher rates and continued volatility. The fiscal year-to-date return now stands at 1.39% compared to the benchmark return of -0.09%.

**The private equity allocation** gained 160bps during the month, bringing the fiscal year to date return to -4.53%. Trailing public marks have significantly affected the overall performance of the portfolio, and the portfolio's 1-year return crossed into negative territory recently coming in at -2.92% at the end of March.

**The real return portfolio** gained 31bps during the month, compared to its benchmark return of 0.79%. As with several of the previous months, performance, both absolute and relative, was heavily influenced by the MLP portion of the portfolio (approximately 40% of the allocation); which lost -0.98%. For the fiscal year, the portfolio has returned 9.97% versus the benchmark return of 5.15%.

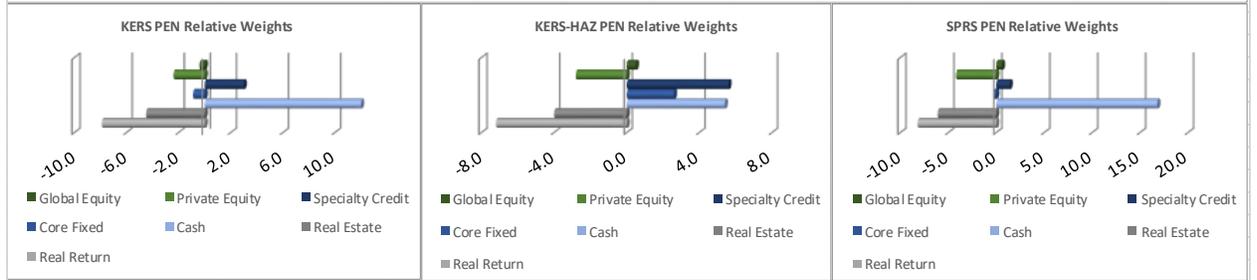
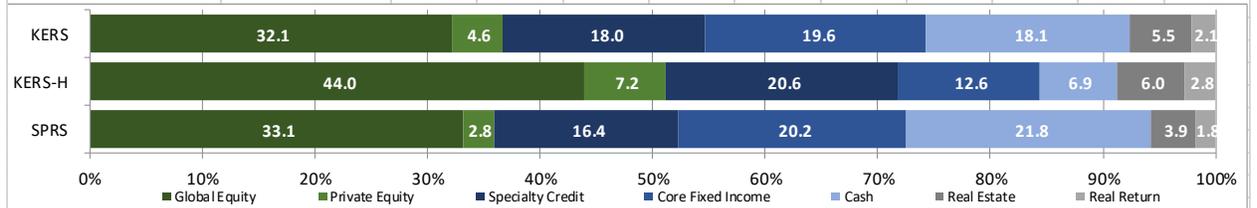
**The real estate** portfolio fell -1.57% during the month. The 1-year return now stands at 6.09% versus the 6.55% return of its benchmark, closing the relative gap that existed due to the benchmark finally adjusting to the impact of higher interest rates. The three open-end real estate funds in the portfolio (approximately 75% of the allocation) continue to outperform the benchmark.

**The cash portfolio** returned 0.31% during the month compared with the 3-month T-bill's 0.40%. This brought the fiscal year return to 2.31%, trailing the benchmark return of 2.46%. The relative underperformance of the cash portfolio is most attributable to lower rates offered by overnight repurchase agreements relative to the yields of the 3-month T-bill.

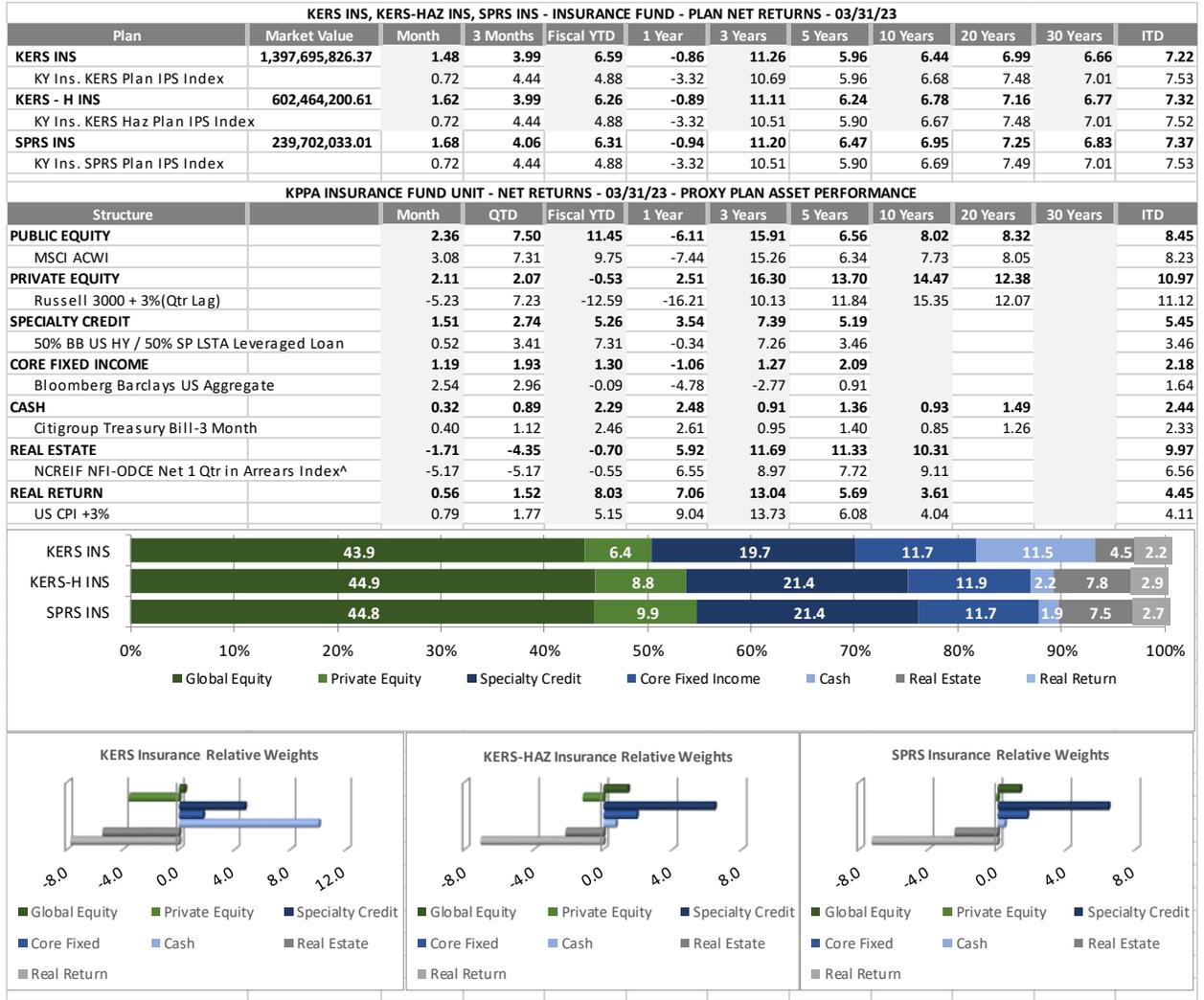
KRS Board Meeting - Investment Committee Report

KERS, KERS-HAZ, & SPRS - PENSION FUND - PLAN NET RETURNS - 03/31/23											
Plan	Market Value	Month	3 Months	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	ITD
<b>KERS</b>	<b>3,362,178,403.71</b>	<b>1.32</b>	<b>3.24</b>	<b>4.47</b>	<b>-1.62</b>	<b>9.67</b>	<b>5.75</b>	<b>6.36</b>	<b>6.99</b>	<b>7.46</b>	<b>8.68</b>
KY Ret. KERS Plan IPS Index		0.82	3.76	4.24	-2.48	9.27	5.32	6.26	7.05	7.43	8.72
<b>KERS- H</b>	<b>870,123,645.98</b>	<b>1.60</b>	<b>4.06</b>	<b>6.29</b>	<b>-1.46</b>	<b>11.03</b>	<b>6.12</b>	<b>6.78</b>	<b>7.21</b>	<b>7.60</b>	<b>8.80</b>
KY Ret. KERS Haz Plan IPS Index		0.72	4.44	4.88	-3.32	10.88	6.09	6.69	7.27	7.58	8.84
<b>SPRS</b>	<b>574,684,459.81</b>	<b>1.36</b>	<b>3.40</b>	<b>5.20</b>	<b>-0.51</b>	<b>10.00</b>	<b>5.84</b>	<b>6.33</b>	<b>6.98</b>	<b>7.45</b>	<b>8.68</b>
KY Ret. SPRS Plan IPS Index		0.82	3.76	4.24	-2.48	9.27	5.32	6.23	7.04	7.42	8.71

KPPA PENSION FUND UNIT - NET RETURNS - 03/31/23 - PROXY PLAN ASSET PERFORMANCE											
Structure		Month	QTD	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	ITD
<b>PUBLIC EQUITY</b>		<b>2.41</b>	<b>7.55</b>	<b>11.53</b>	<b>-6.09</b>	<b>15.89</b>	<b>6.58</b>	<b>7.98</b>	<b>8.43</b>	<b>8.43</b>	<b>10.12</b>
MSCI ACWI		3.08	7.31	9.75	-7.44	15.29	6.37	7.75	8.38	8.22	9.95
<b>PRIVATE EQUITY</b>		<b>1.60</b>	<b>1.55</b>	<b>-4.53</b>	<b>-2.92</b>	<b>16.07</b>	<b>13.79</b>	<b>13.38</b>	<b>12.69</b>		<b>11.80</b>
Russell 3000 + 3%(Qtr Lag)		-5.23	7.23	-12.59	-16.21	10.13	11.84	15.35	12.25		11.56
<b>SPECIALTY CREDIT</b>		<b>1.61</b>	<b>2.80</b>	<b>5.16</b>	<b>3.27</b>	<b>7.48</b>	<b>5.29</b>				<b>5.61</b>
50% BB US HY / 50% SP LSTA Leveraged Loan		0.52	3.41	7.31	-0.34	7.26	3.46				3.46
<b>CORE FIXED INCOME</b>		<b>1.15</b>	<b>1.94</b>	<b>1.39</b>	<b>-0.74</b>	<b>1.43</b>	<b>2.26</b>				<b>2.47</b>
Bloomberg Barclays US Aggregate		2.54	2.96	-0.09	-4.78	-2.77	0.91				1.64
<b>CASH</b>		<b>0.31</b>	<b>0.88</b>	<b>2.31</b>	<b>2.49</b>	<b>0.92</b>	<b>1.47</b>	<b>1.11</b>	<b>1.66</b>	<b>2.70</b>	<b>3.30</b>
Citigroup Treasury Bill-3 Month		0.40	1.12	2.46	2.61	0.95	1.40	0.85	1.26	2.31	2.90
<b>REAL ESTATE</b>		<b>-1.57</b>	<b>-4.24</b>	<b>-0.51</b>	<b>6.09</b>	<b>11.87</b>	<b>11.38</b>	<b>10.31</b>	<b>8.38</b>	<b>6.69</b>	<b>6.75</b>
NCREIF NFI-ODCE Net 1 Qtr in Arrears Index^		-5.17	-5.17	-0.55	6.55	8.97	7.72	9.11	7.40	7.72	6.61
<b>REAL RETURN</b>		<b>0.31</b>	<b>2.10</b>	<b>9.97</b>	<b>8.14</b>	<b>14.45</b>	<b>5.93</b>	<b>3.85</b>			<b>4.71</b>
US CPI +3%		0.79	1.77	5.15	9.04	14.76	6.11	3.98			4.07



KRS Board Meeting - Investment Committee Report

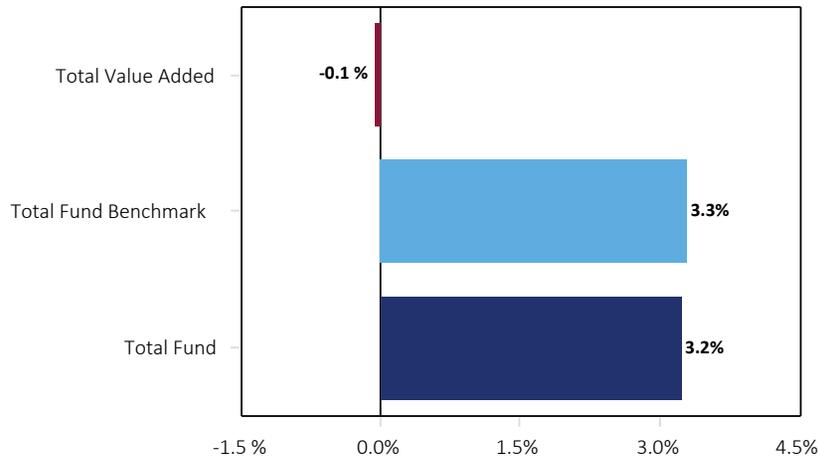


# Total Fund Attribution

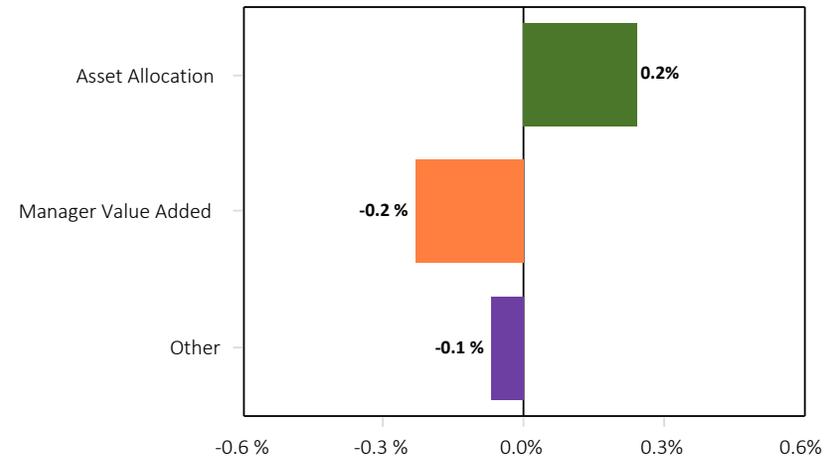
KERS Pension Plan

Periods Ended 1 Quarter Ending March 31, 2023

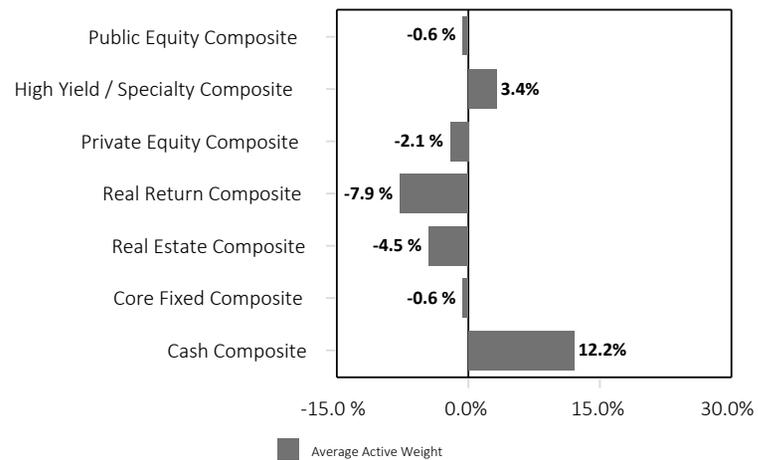
## Total Fund Performance



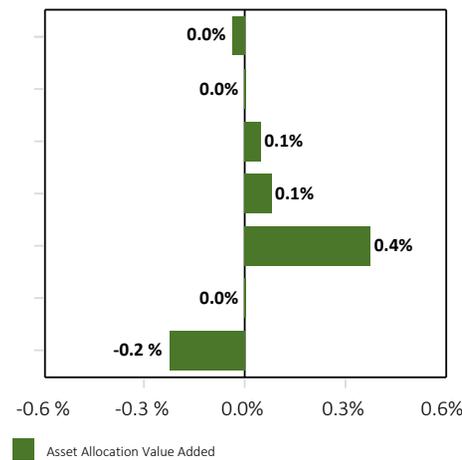
## Total Value Added:-0.1 %



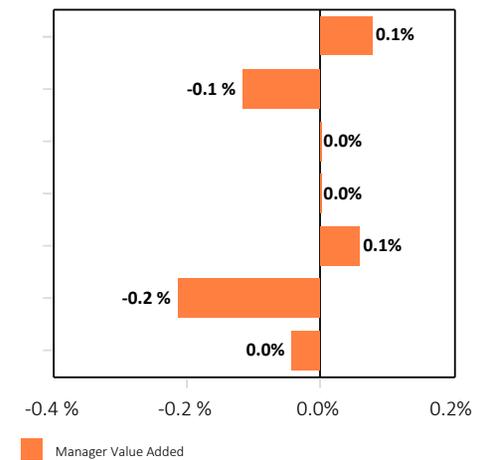
## Total Asset Allocation:0.2%



## Asset Allocation Value Added:0.2%



## Total Manager Value Added:-0.2 %

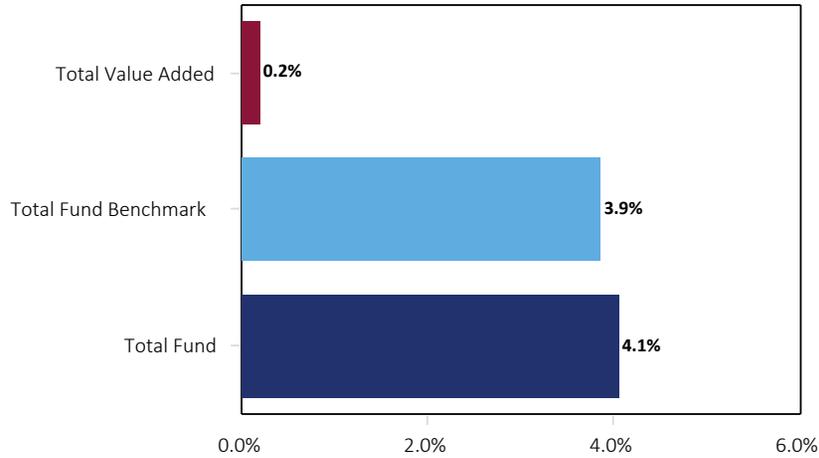


# Total Fund Attribution

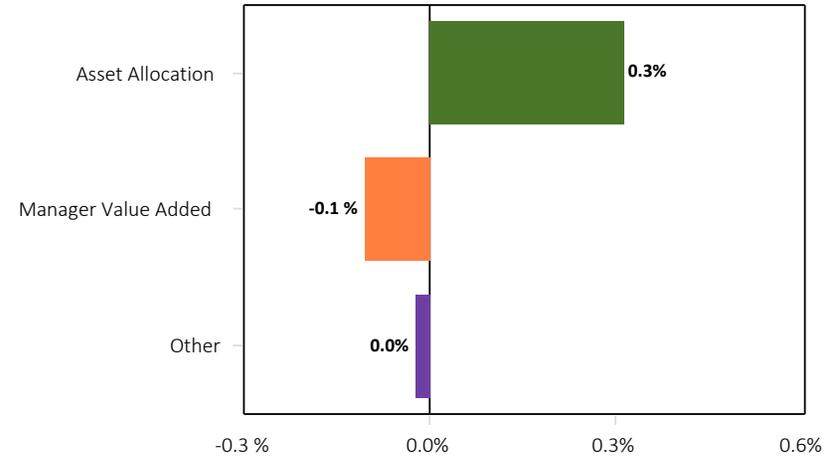
KERS (H) Pension Plan

Periods Ended 1 Quarter Ending March 31, 2023

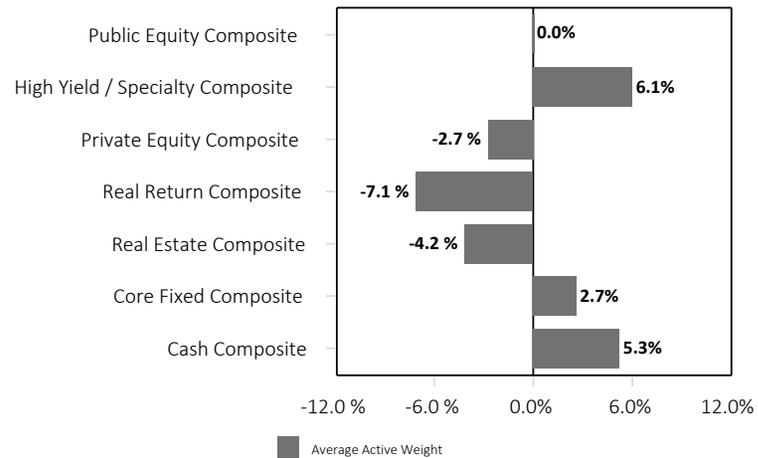
## Total Fund Performance



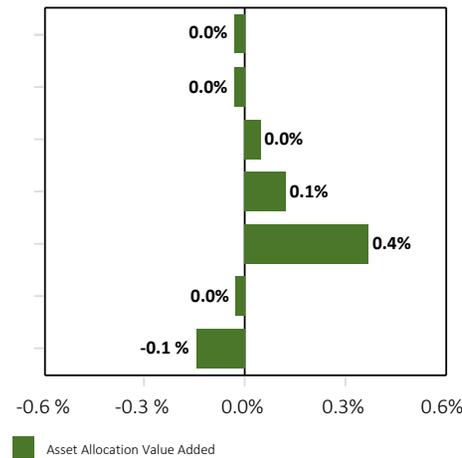
## Total Value Added:0.2%



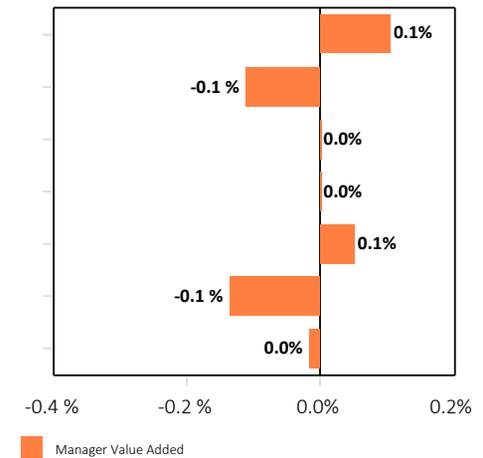
## Total Asset Allocation:0.3%



## Asset Allocation Value Added:0.3%



## Total Manager Value Added:-0.1%

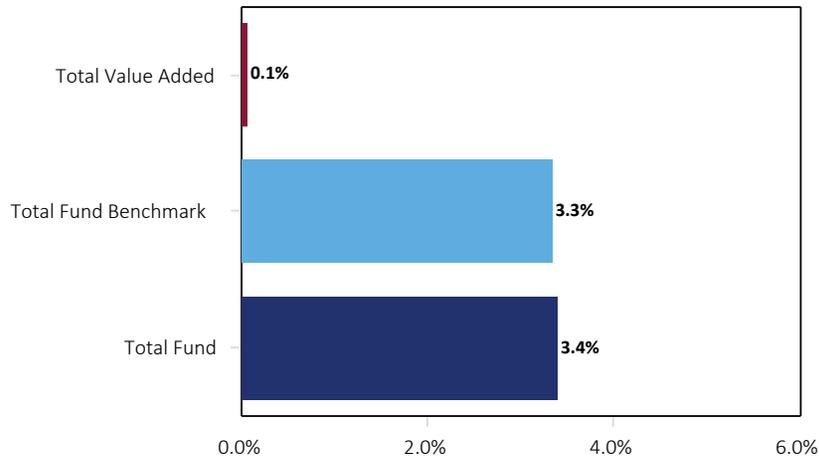


# Total Fund Attribution

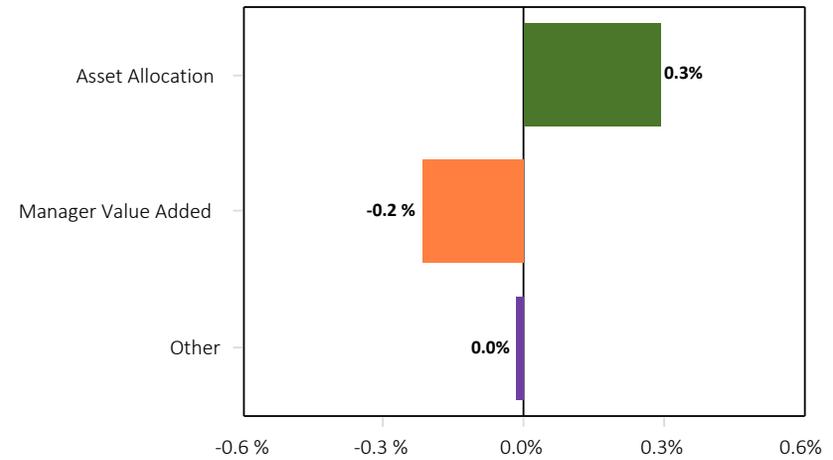
SPRS Pension Plan

Periods Ended 1 Quarter Ending March 31, 2023

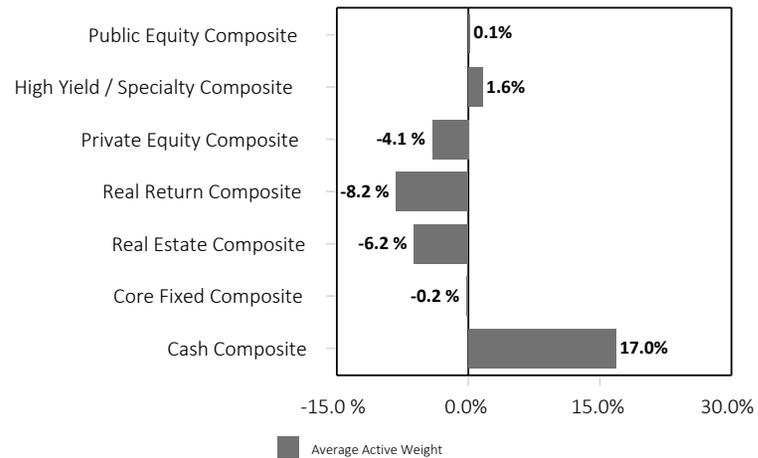
## Total Fund Performance



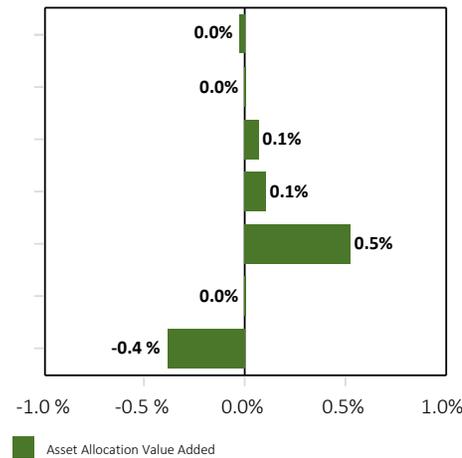
## Total Value Added:0.1%



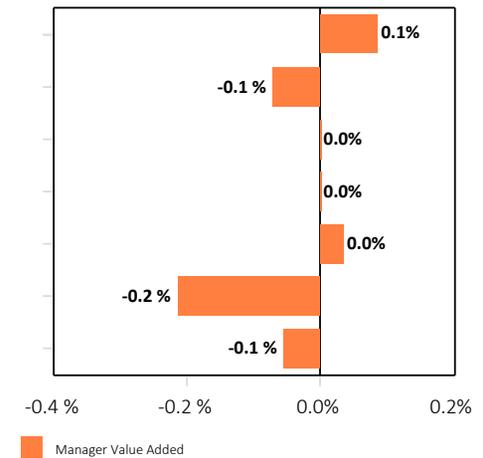
## Total Asset Allocation:0.3%



## Asset Allocation Value Added:0.3%



## Total Manager Value Added:-0.2%

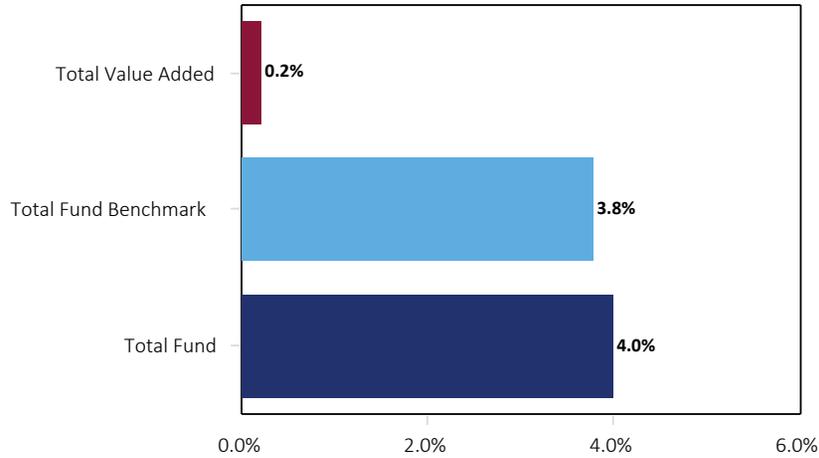


# Total Fund Attribution

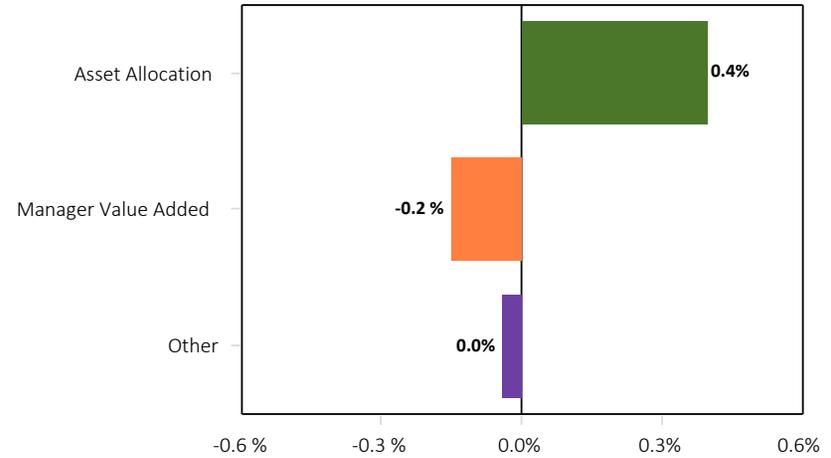
KERS Insurance Plan

Periods Ended 1 Quarter Ending March 31, 2023

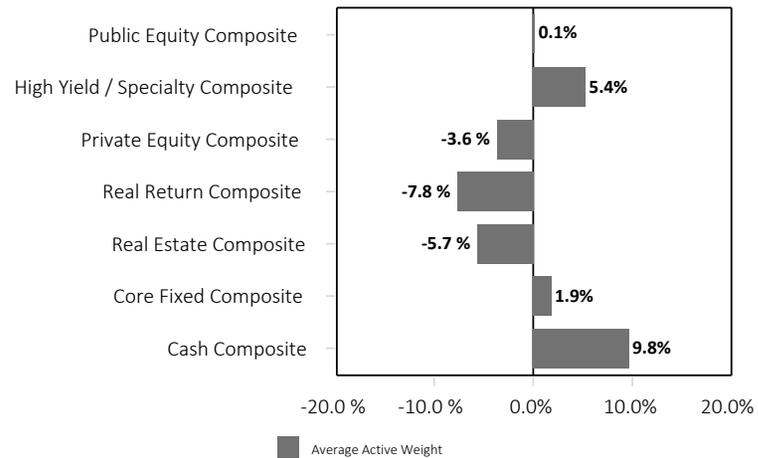
## Total Fund Performance



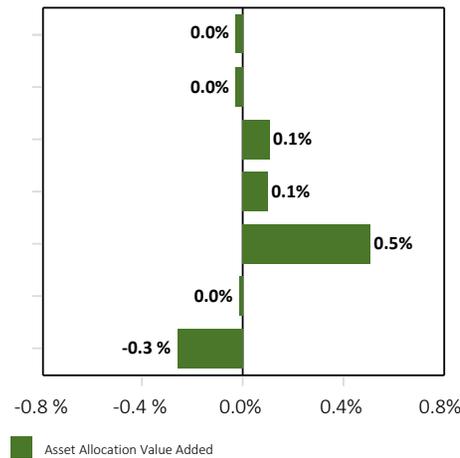
## Total Value Added:0.2%



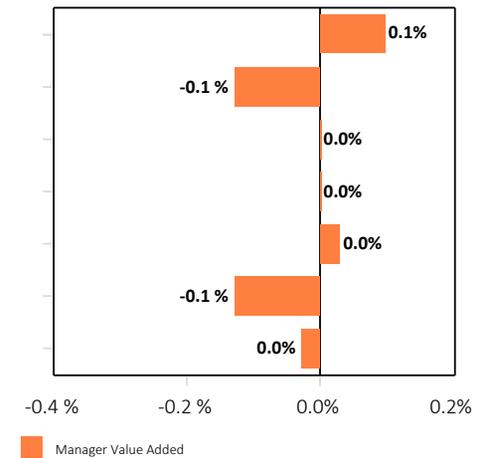
## Total Asset Allocation:0.4%



## Asset Allocation Value Added:0.4%



## Total Manager Value Added:-0.2%

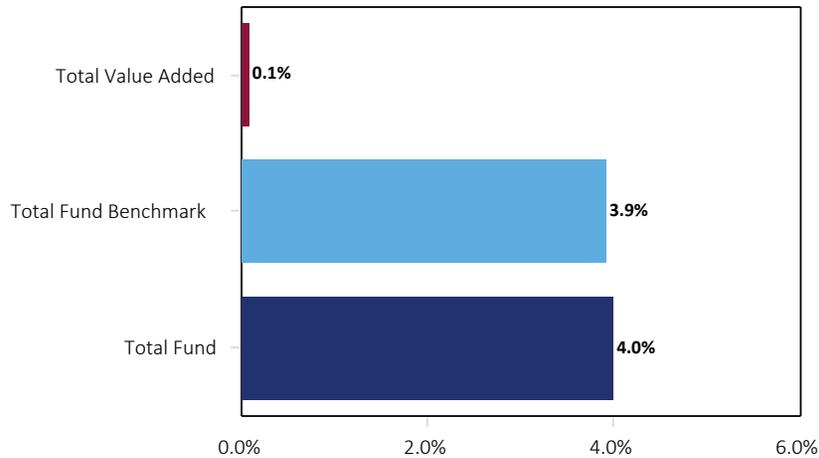


# Total Fund Attribution

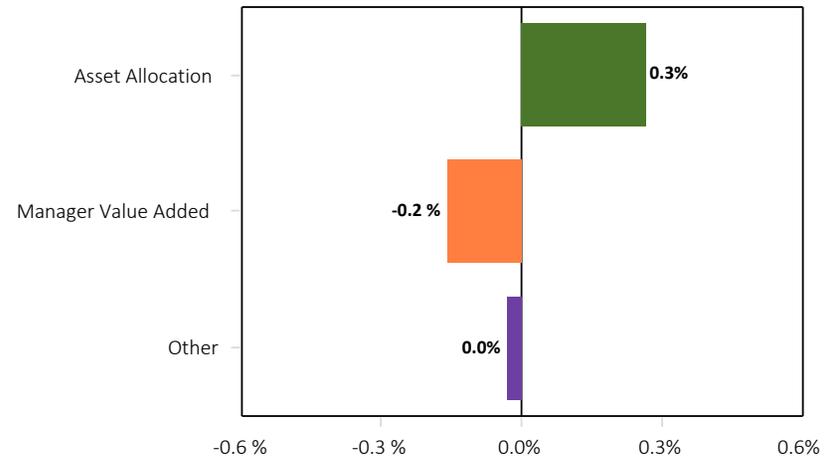
KERS (H) Insurance Plan

Periods Ended 1 Quarter Ending March 31, 2023

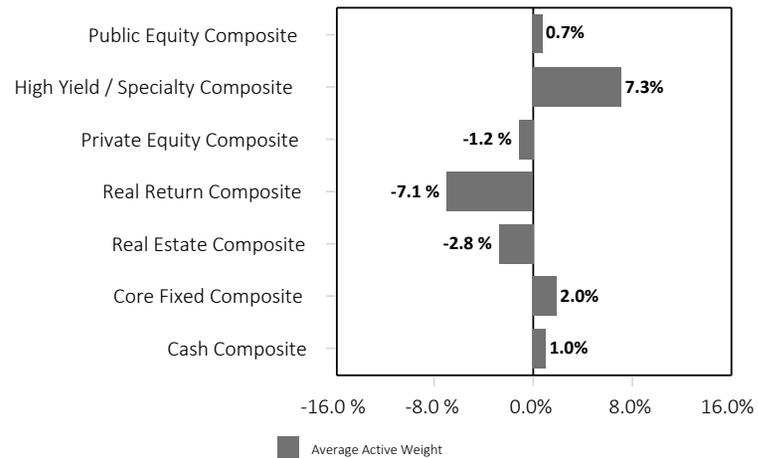
## Total Fund Performance



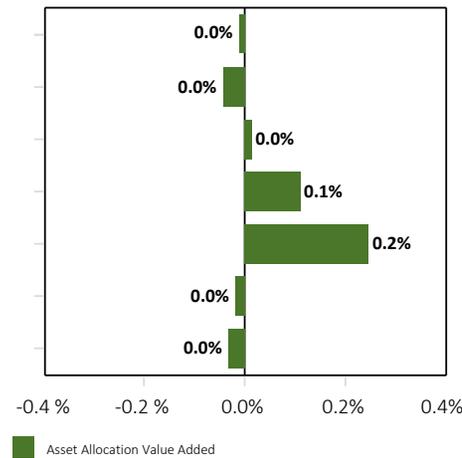
## Total Value Added:0.1%



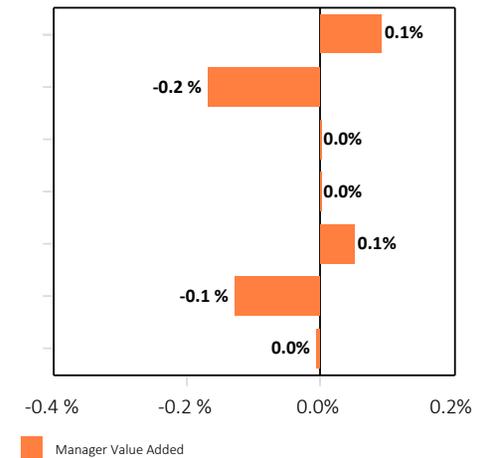
## Total Asset Allocation:0.3%



## Asset Allocation Value Added:0.3%



## Total Manager Value Added:-0.2%

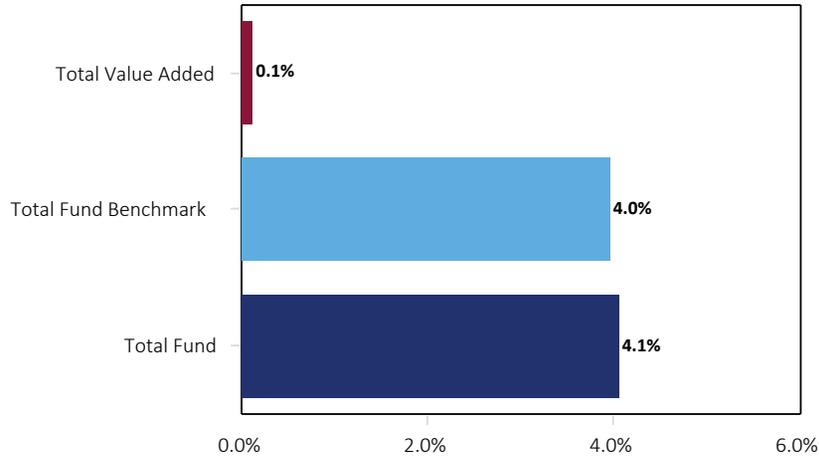


# Total Fund Attribution

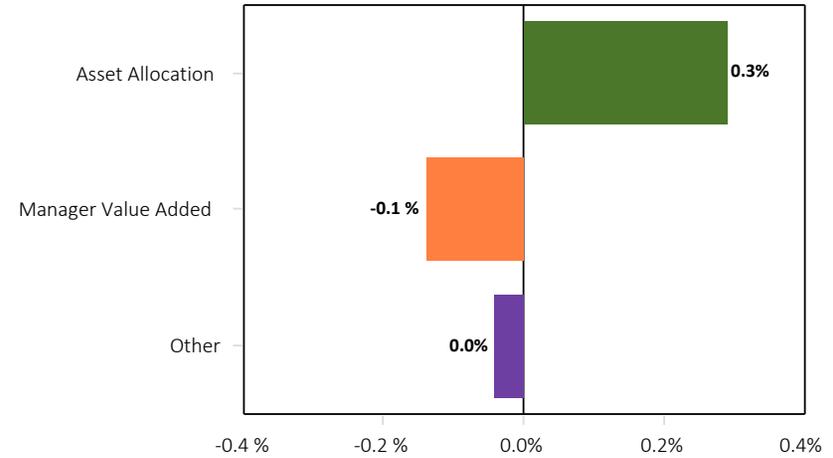
SPRS Insurance Plan

Periods Ended 1 Quarter Ending March 31, 2023

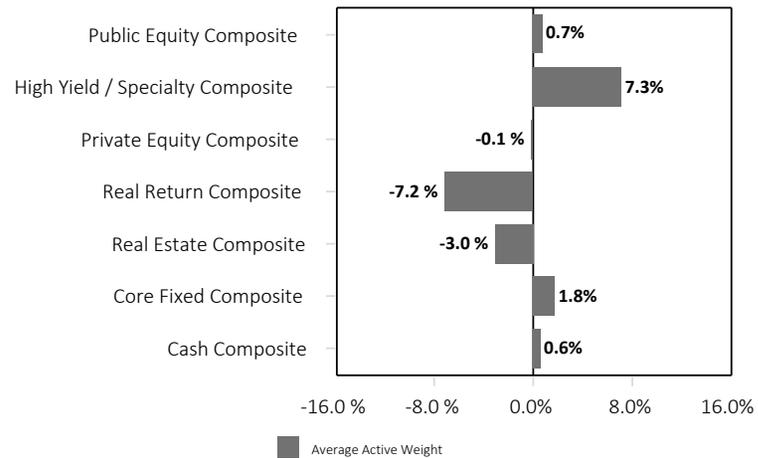
## Total Fund Performance



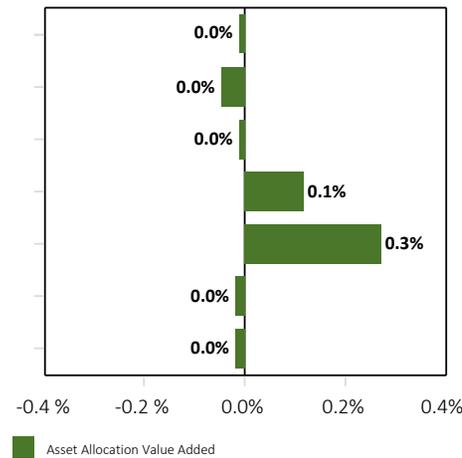
## Total Value Added:0.1%



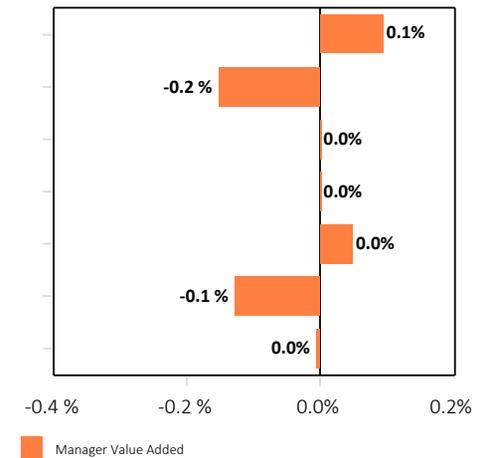
## Total Asset Allocation:0.3%



## Asset Allocation Value Added:0.3%



## Total Manager Value Added:-0.1%

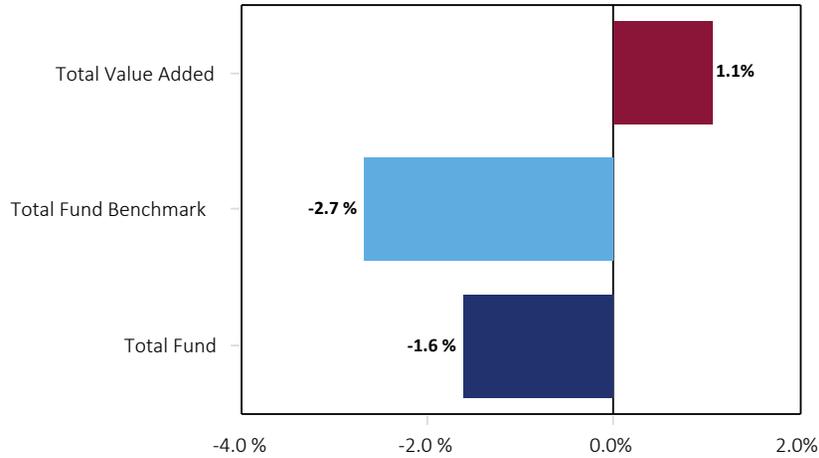


# Total Fund Attribution

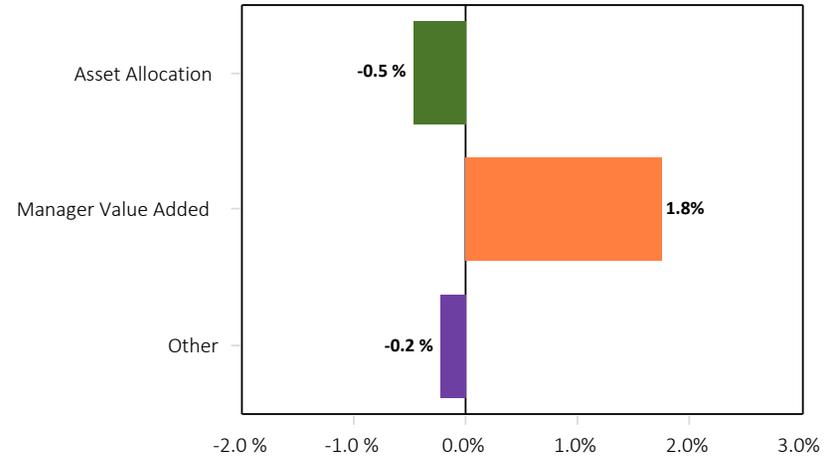
KERS Pension Plan

Periods Ended 1 Year Ending March 31, 2023

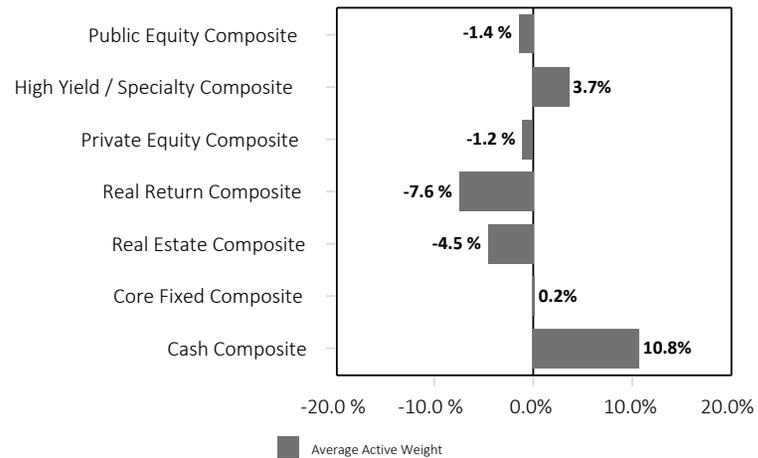
## Total Fund Performance



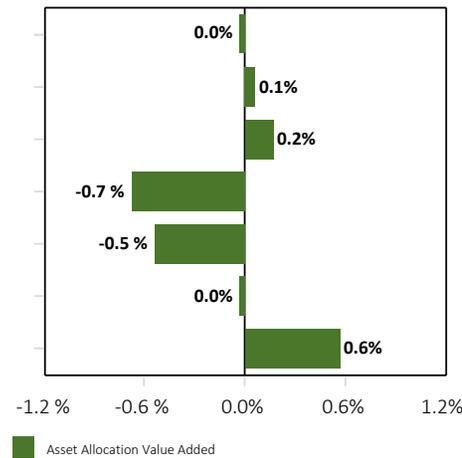
## Total Value Added: 1.1%



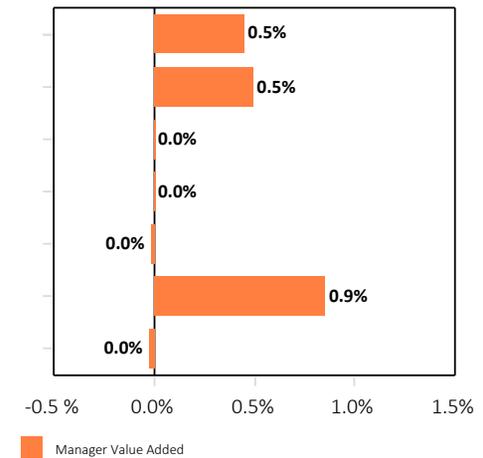
## Total Asset Allocation: -0.5%



## Asset Allocation Value Added: -0.5%



## Total Manager Value Added: 1.8%

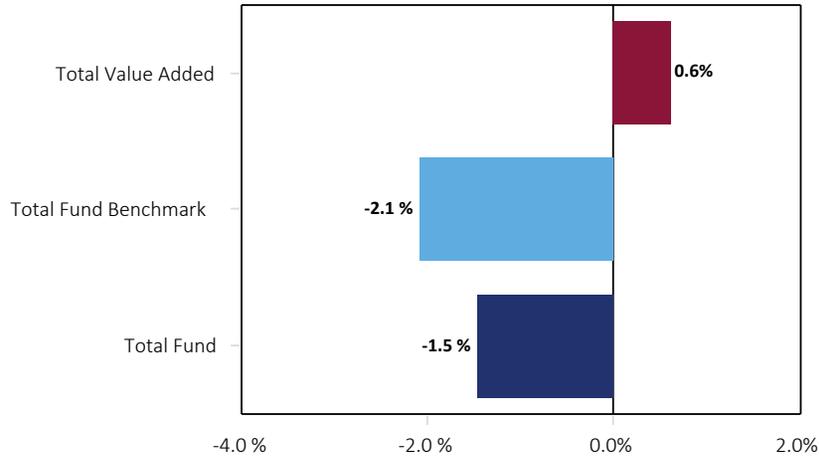


# Total Fund Attribution

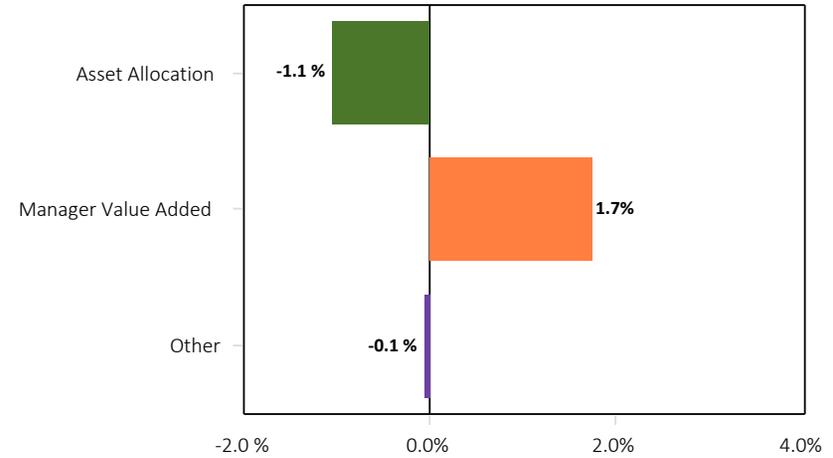
KERS (H) Pension Plan

Periods Ended 1 Year Ending March 31, 2023

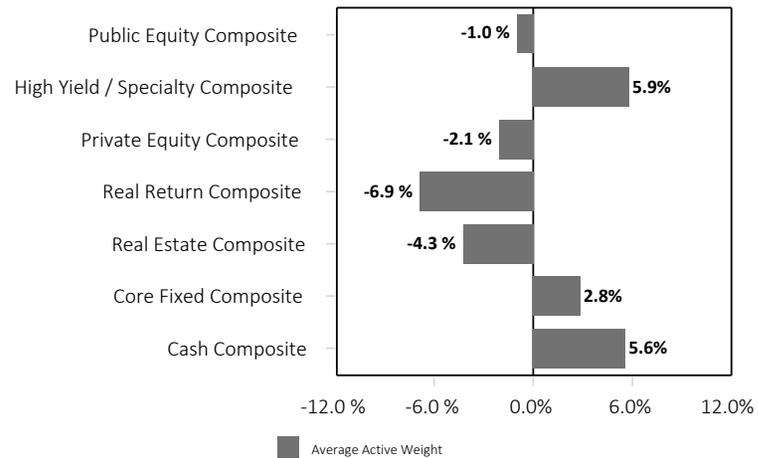
## Total Fund Performance



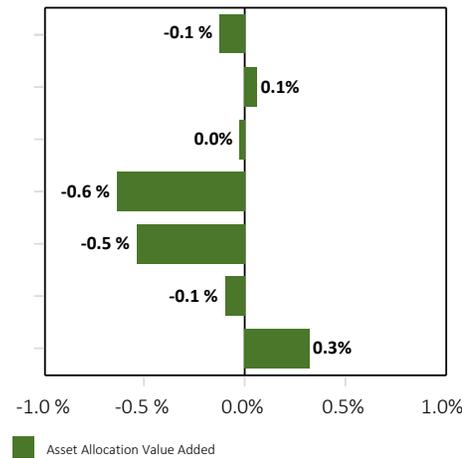
## Total Value Added:0.6%



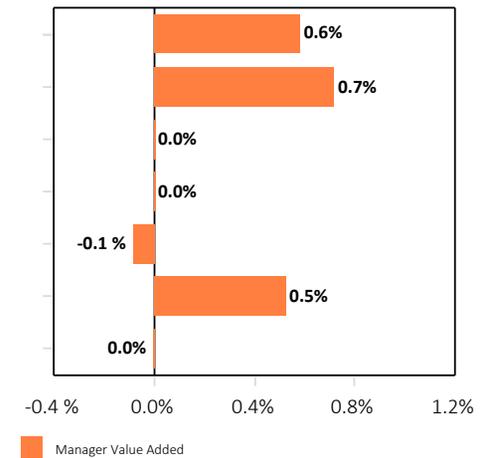
## Total Asset Allocation:-1.1 %



## Asset Allocation Value Added:-1.1 %



## Total Manager Value Added:1.7%

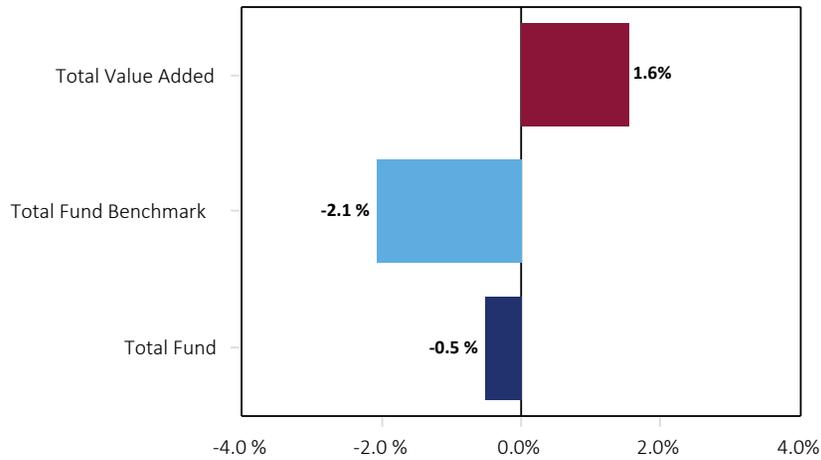


# Total Fund Attribution

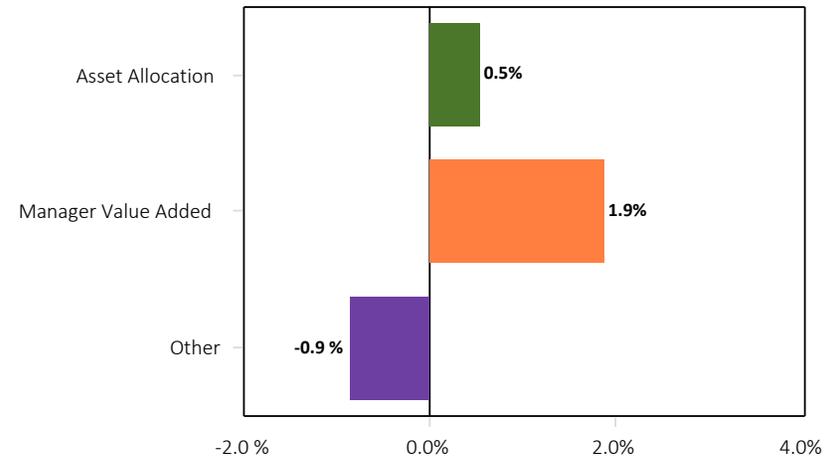
SPRS Pension Plan

Periods Ended 1 Year Ending March 31, 2023

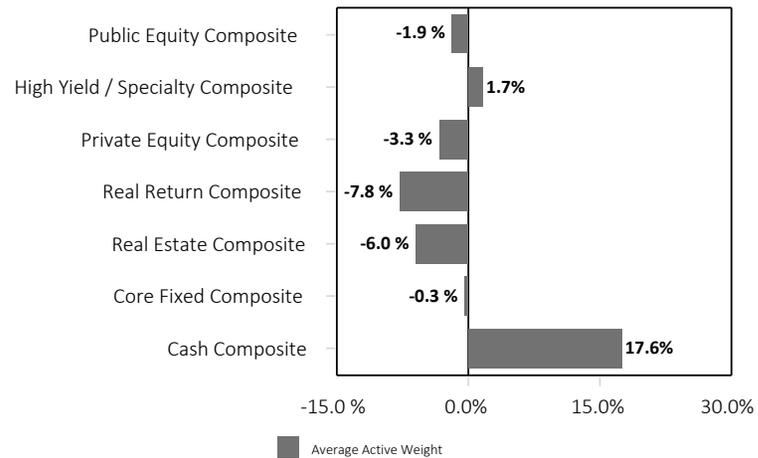
## Total Fund Performance



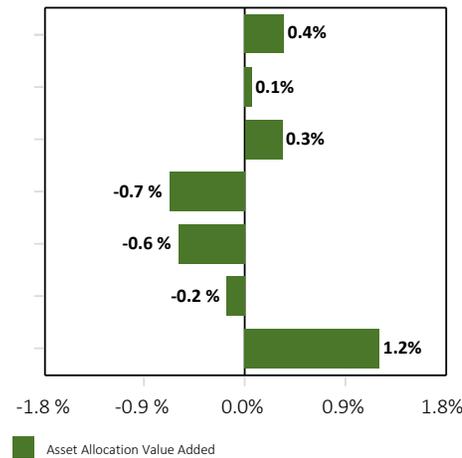
## Total Value Added:1.6%



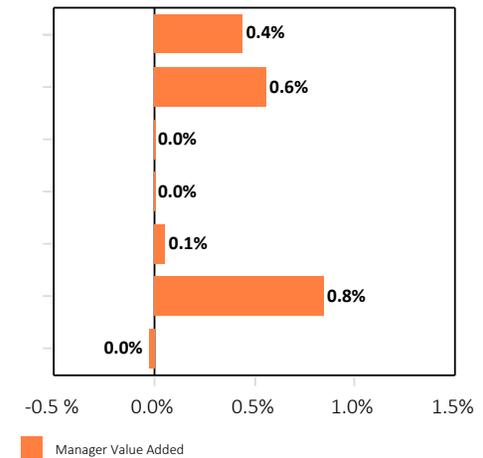
## Total Asset Allocation:0.5%



## Asset Allocation Value Added:0.5%



## Total Manager Value Added:1.9%

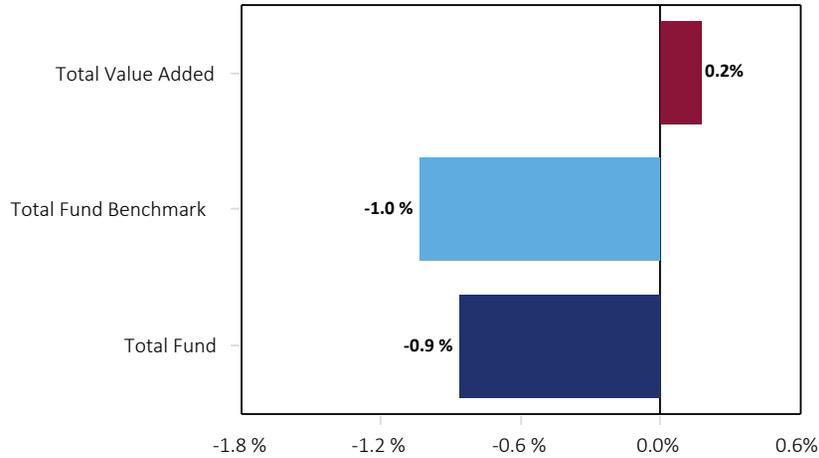


# Total Fund Attribution

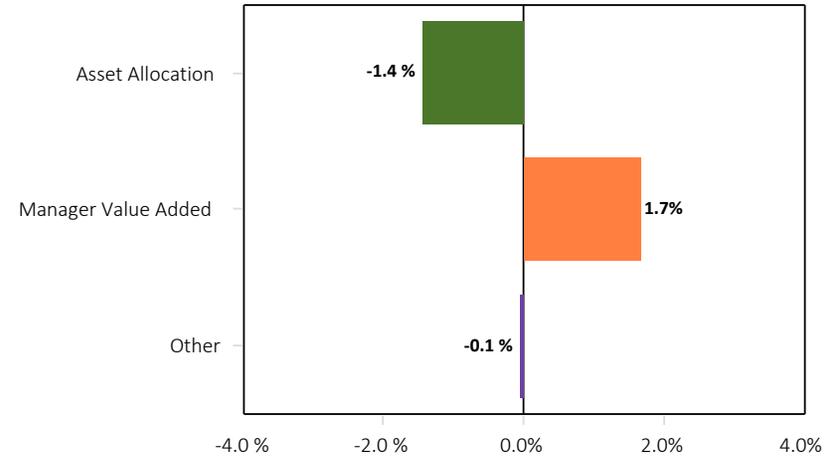
KERS Insurance Plan

Periods Ended 1 Year Ending March 31, 2023

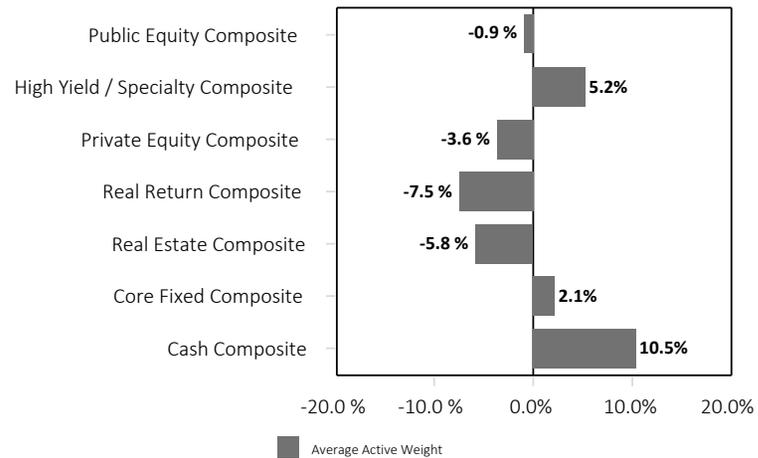
## Total Fund Performance



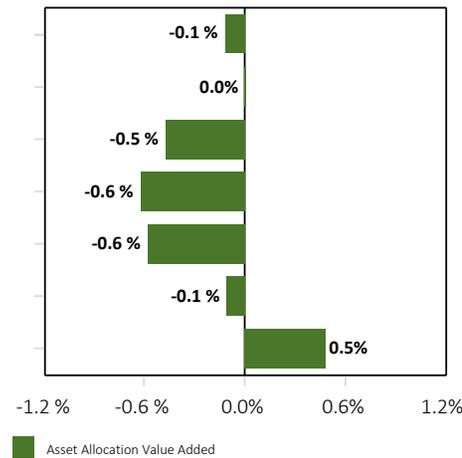
## Total Value Added:0.2%



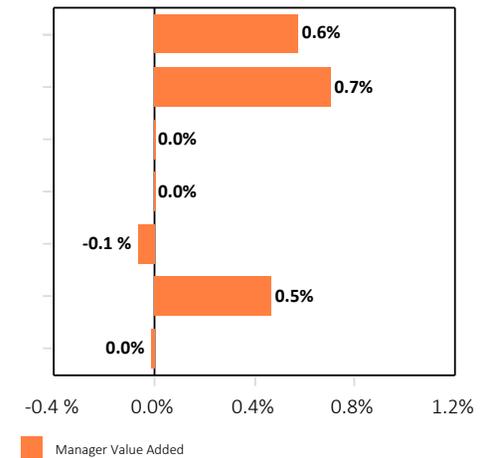
## Total Asset Allocation:-1.4 %



## Asset Allocation Value Added:-1.4 %



## Total Manager Value Added:1.7%

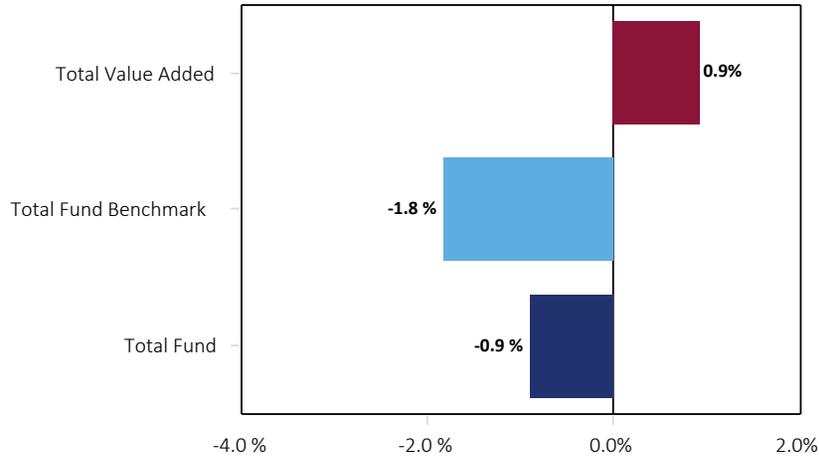


# Total Fund Attribution

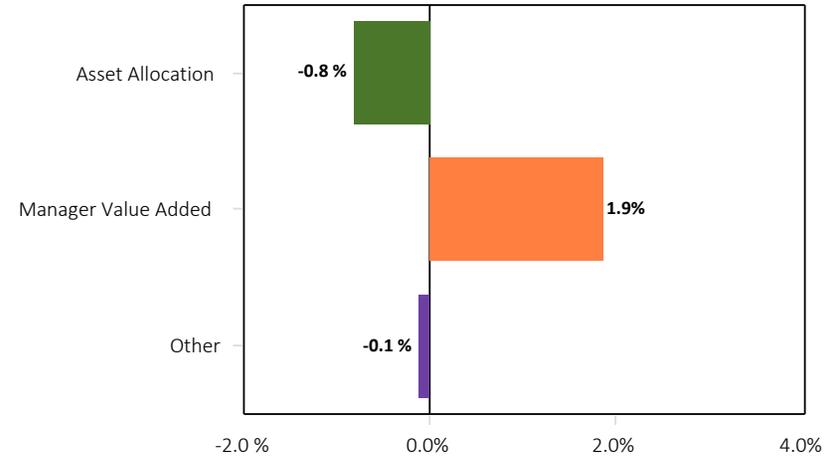
KERS (H) Insurance Plan

Periods Ended 1 Year Ending March 31, 2023

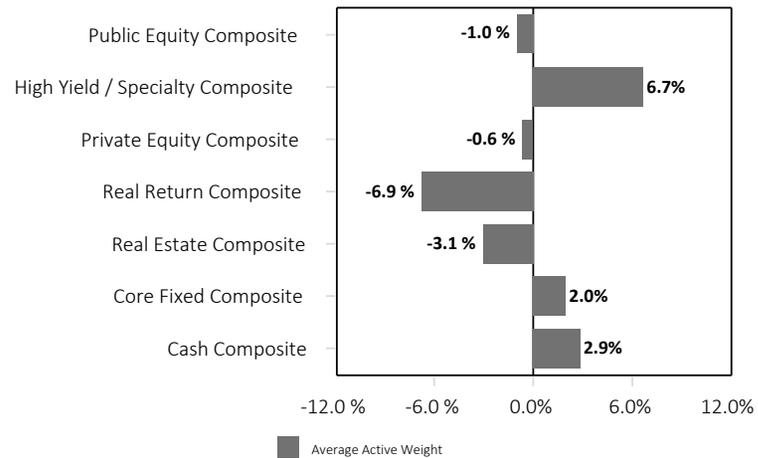
## Total Fund Performance



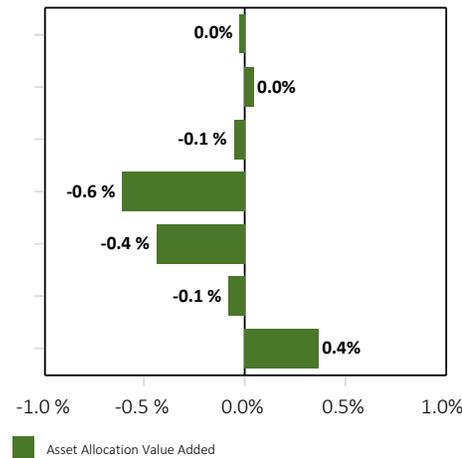
## Total Value Added:0.9%



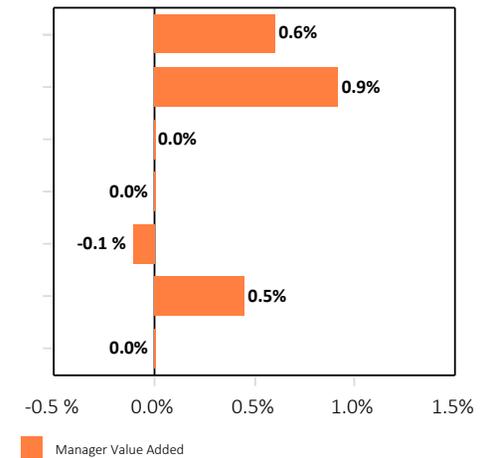
## Total Asset Allocation:-0.8 %



## Asset Allocation Value Added:-0.8 %



## Total Manager Value Added:1.9%

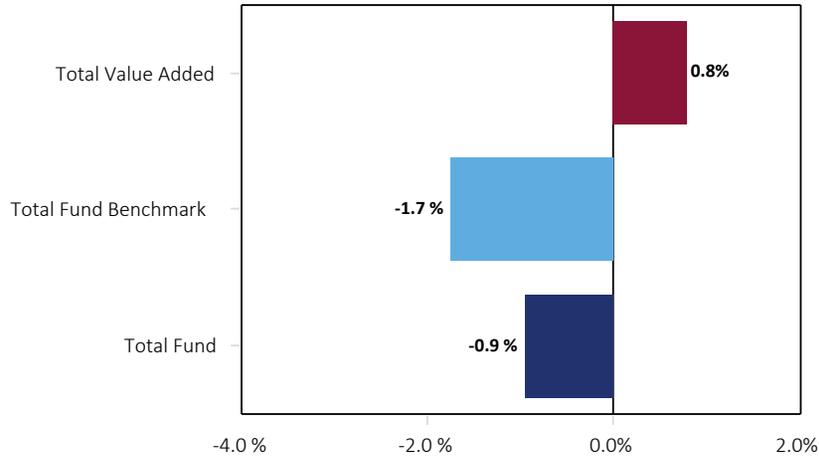


# Total Fund Attribution

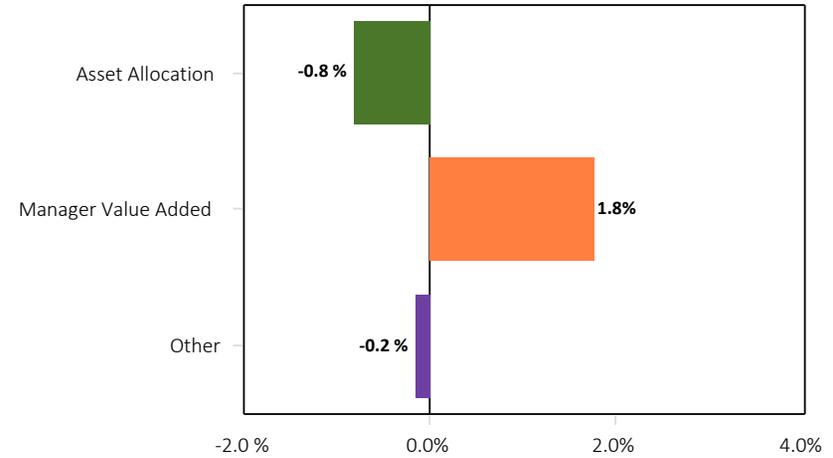
SPRS Insurance Plan

Periods Ended 1 Year Ending March 31, 2023

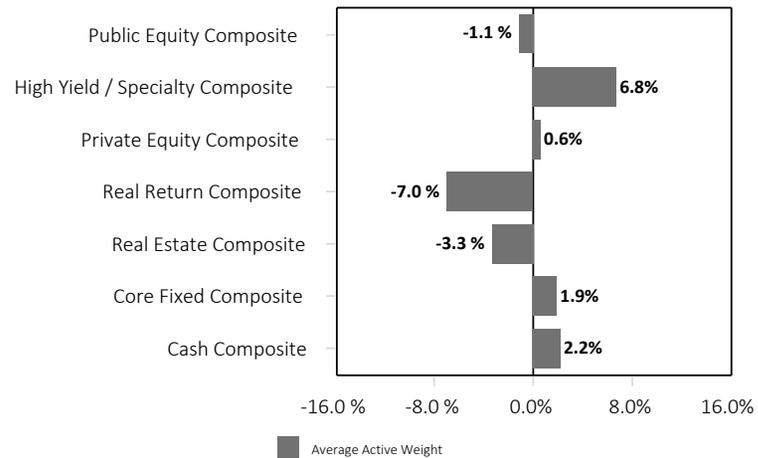
## Total Fund Performance



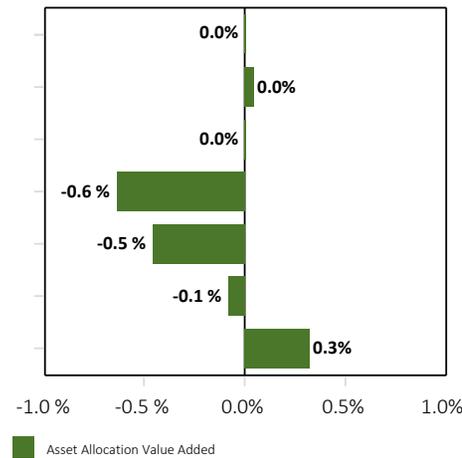
## Total Value Added:0.8%



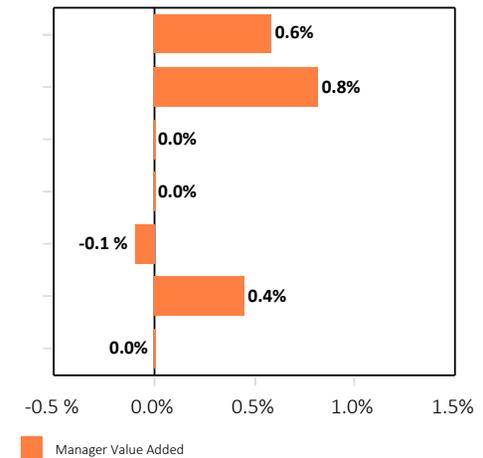
## Total Asset Allocation:-0.8%



## Asset Allocation Value Added:-0.8%



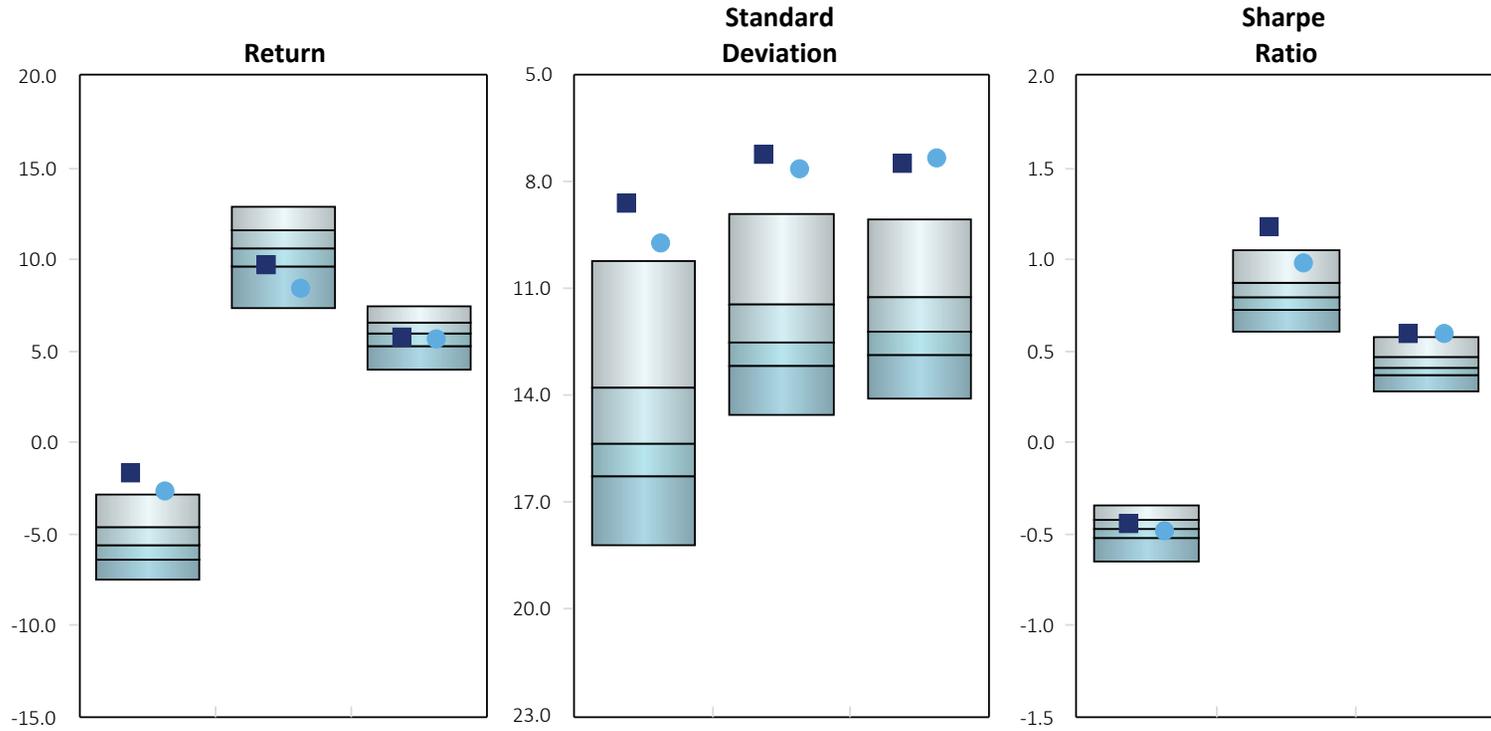
## Total Manager Value Added:1.8%



# Plan Sponsor Peer Group Analysis - Multi Statistics

KERS Pension Plan vs All Public Plans-Total Fund

Periods Ended March 31, 2023



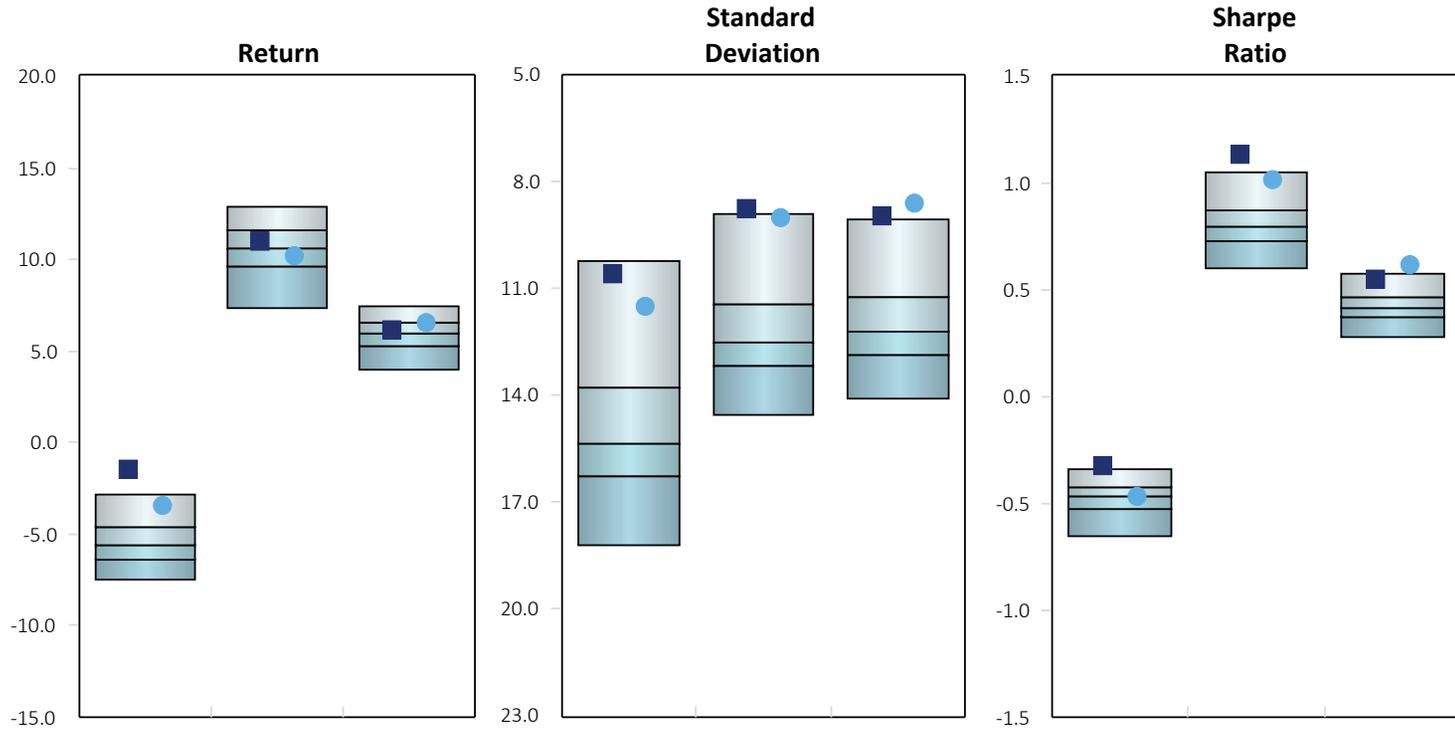
	1 Year	3 Years	5 Years	1 Year	3 Years	5 Years	1 Year	3 Years	5 Years
■ KERS Pension Plan	-1.62 (3)	9.68 (74)	5.76 (58)	8.59 (2)	7.26 (2)	7.50 (2)	-0.44 (36)	1.18 (2)	0.59 (5)
● KERS Pension IPS Index	-2.60 (5)	8.45 (90)	5.67 (60)	9.72 (4)	7.63 (3)	7.33 (2)	-0.48 (59)	0.98 (11)	0.59 (5)
5th Percentile	-2.79	12.91	7.44	10.25	8.91	9.08	-0.34	1.05	0.58
1st Quartile	-4.66	11.59	6.55	13.78	11.48	11.23	-0.42	0.88	0.47
Median	-5.58	10.62	5.94	15.35	12.51	12.21	-0.47	0.79	0.41
3rd Quartile	-6.41	9.59	5.30	16.29	13.20	12.86	-0.52	0.73	0.37
95th Percentile	-7.53	7.39	3.94	18.23	14.56	14.11	-0.65	0.60	0.28

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Plan Sponsor Peer Group Analysis - Multi Statistics

KERS (H) Pension Plan vs All Public Plans-Total Fund

Periods Ended March 31, 2023



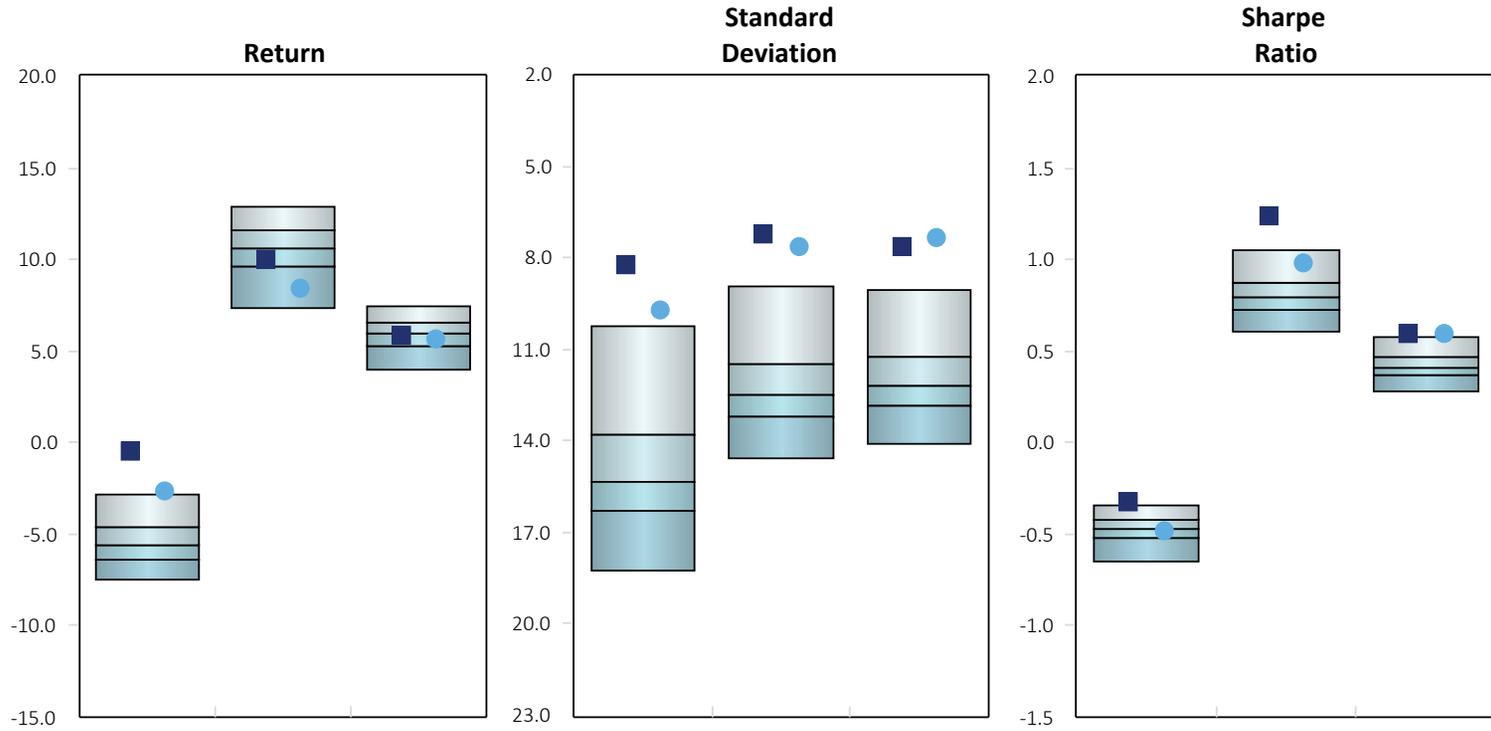
	1 Year	3 Years	5 Years	1 Year	3 Years	5 Years	1 Year	3 Years	5 Years
■ KERS (H) Pension Plan	-1.46 (3)	11.02 (40)	6.12 (41)	10.60 (5)	8.76 (4)	8.98 (4)	-0.32 (4)	1.14 (3)	0.55 (8)
● KERS (H) Pension IPS Index	-3.45 (10)	10.17 (62)	6.57 (25)	11.51 (9)	9.02 (5)	8.59 (4)	-0.47 (49)	1.02 (8)	0.62 (4)
5th Percentile	-2.79	12.91	7.44	10.25	8.91	9.08	-0.34	1.05	0.58
1st Quartile	-4.66	11.59	6.55	13.78	11.48	11.23	-0.42	0.88	0.47
Median	-5.58	10.62	5.94	15.35	12.51	12.21	-0.47	0.79	0.41
3rd Quartile	-6.41	9.59	5.30	16.29	13.20	12.86	-0.52	0.73	0.37
95th Percentile	-7.53	7.39	3.94	18.23	14.56	14.11	-0.65	0.60	0.28

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Plan Sponsor Peer Group Analysis - Multi Statistics

SPRS Pension Plan vs All Public Plans-Total Fund

Periods Ended March 31, 2023



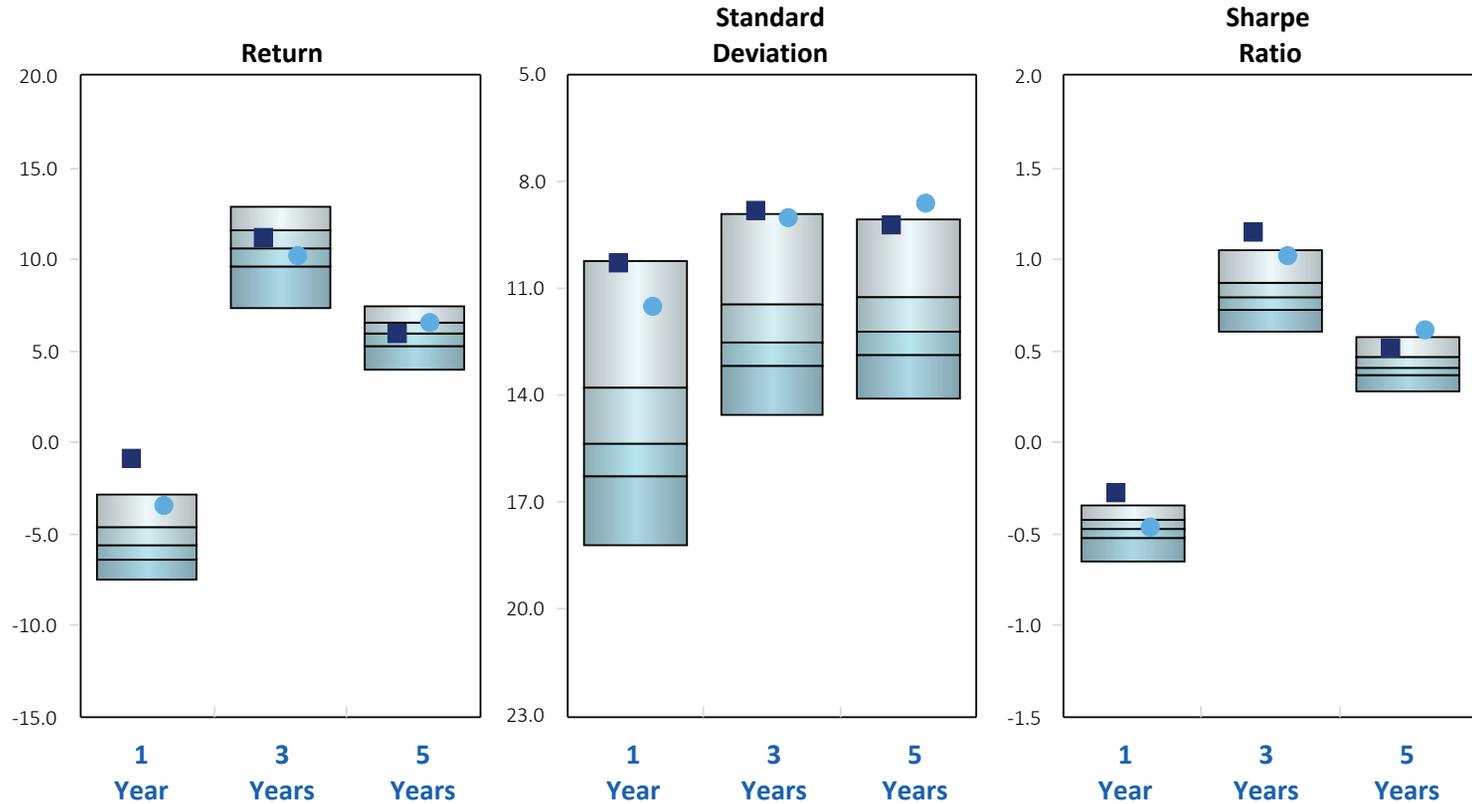
	1 Year	3 Years	5 Years	1 Year	3 Years	5 Years	1 Year	3 Years	5 Years
■ SPRS Pension Plan	-0.51 (2)	10.00 (66)	5.84 (55)	8.22 (2)	7.19 (2)	7.62 (2)	-0.33 (5)	1.23 (2)	0.59 (5)
● SPRS Pension IPS Index	-2.60 (5)	8.45 (90)	5.71 (60)	9.72 (4)	7.63 (3)	7.32 (2)	-0.48 (59)	0.98 (11)	0.60 (4)
5th Percentile	-2.79	12.91	7.44	10.25	8.91	9.08	-0.34	1.05	0.58
1st Quartile	-4.66	11.59	6.55	13.78	11.48	11.23	-0.42	0.88	0.47
Median	-5.58	10.62	5.94	15.35	12.51	12.21	-0.47	0.79	0.41
3rd Quartile	-6.41	9.59	5.30	16.29	13.20	12.86	-0.52	0.73	0.37
95th Percentile	-7.53	7.39	3.94	18.23	14.56	14.11	-0.65	0.60	0.28

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Plan Sponsor Peer Group Analysis - Multi Statistics

KERS Insurance Plan vs All Public Plans-Total Fund

Periods Ended March 31, 2023



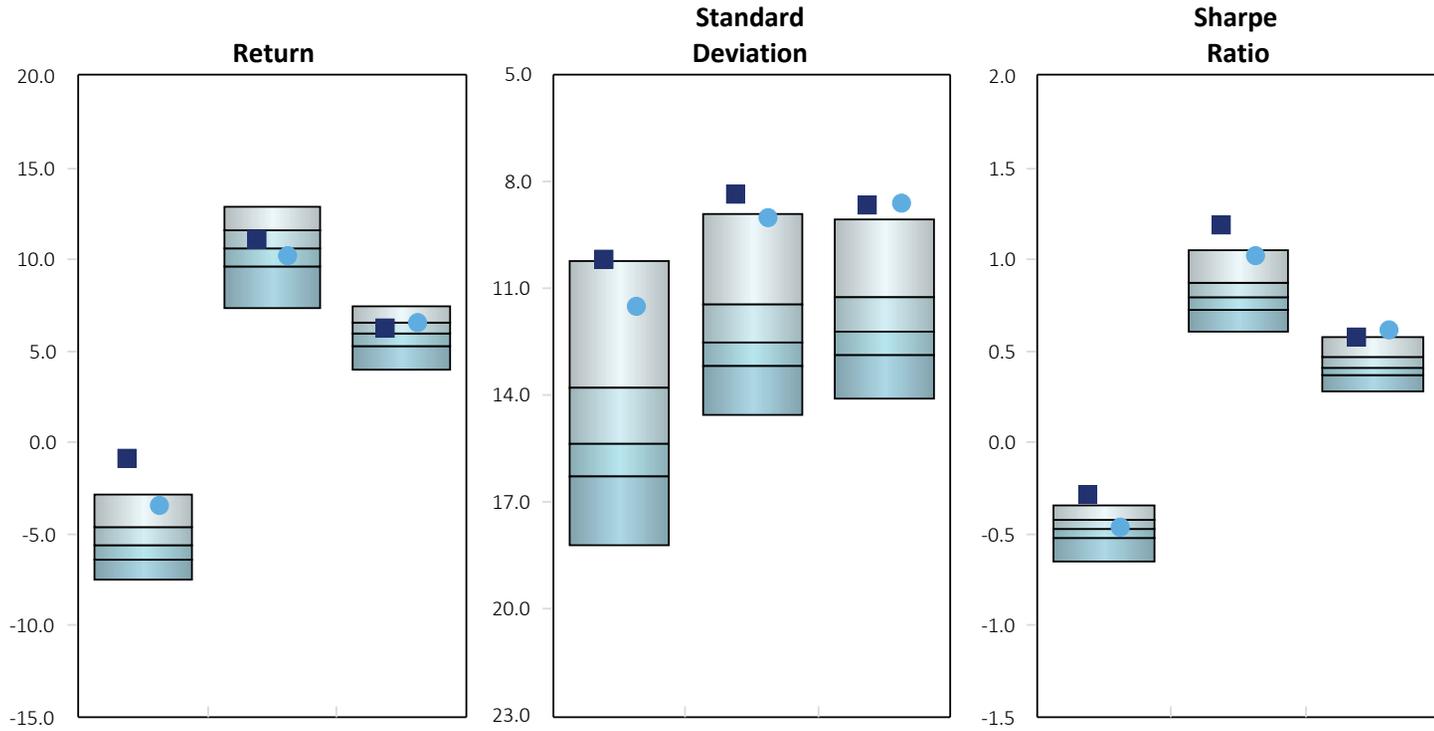
	1 Year	3 Years	5 Years	1 Year	3 Years	5 Years	1 Year	3 Years	5 Years
■ KERS Insurance Plan	-0.86 (2)	11.25 (34)	5.96 (49)	10.29 (5)	8.83 (4)	9.20 (5)	-0.28 (2)	1.15 (3)	0.52 (10)
● KERS Insurance IPS Index	-3.45 (10)	10.17 (62)	6.57 (25)	11.51 (9)	9.02 (5)	8.59 (4)	-0.47 (49)	1.02 (8)	0.62 (4)
5th Percentile	-2.79	12.91	7.44	10.25	8.91	9.08	-0.34	1.05	0.58
1st Quartile	-4.66	11.59	6.55	13.78	11.48	11.23	-0.42	0.88	0.47
Median	-5.58	10.62	5.94	15.35	12.51	12.21	-0.47	0.79	0.41
3rd Quartile	-6.41	9.59	5.30	16.29	13.20	12.86	-0.52	0.73	0.37
95th Percentile	-7.53	7.39	3.94	18.23	14.56	14.11	-0.65	0.60	0.28

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Plan Sponsor Peer Group Analysis - Multi Statistics

KERS (H) Insurance Plan vs All Public Plans-Total Fund

Periods Ended March 31, 2023



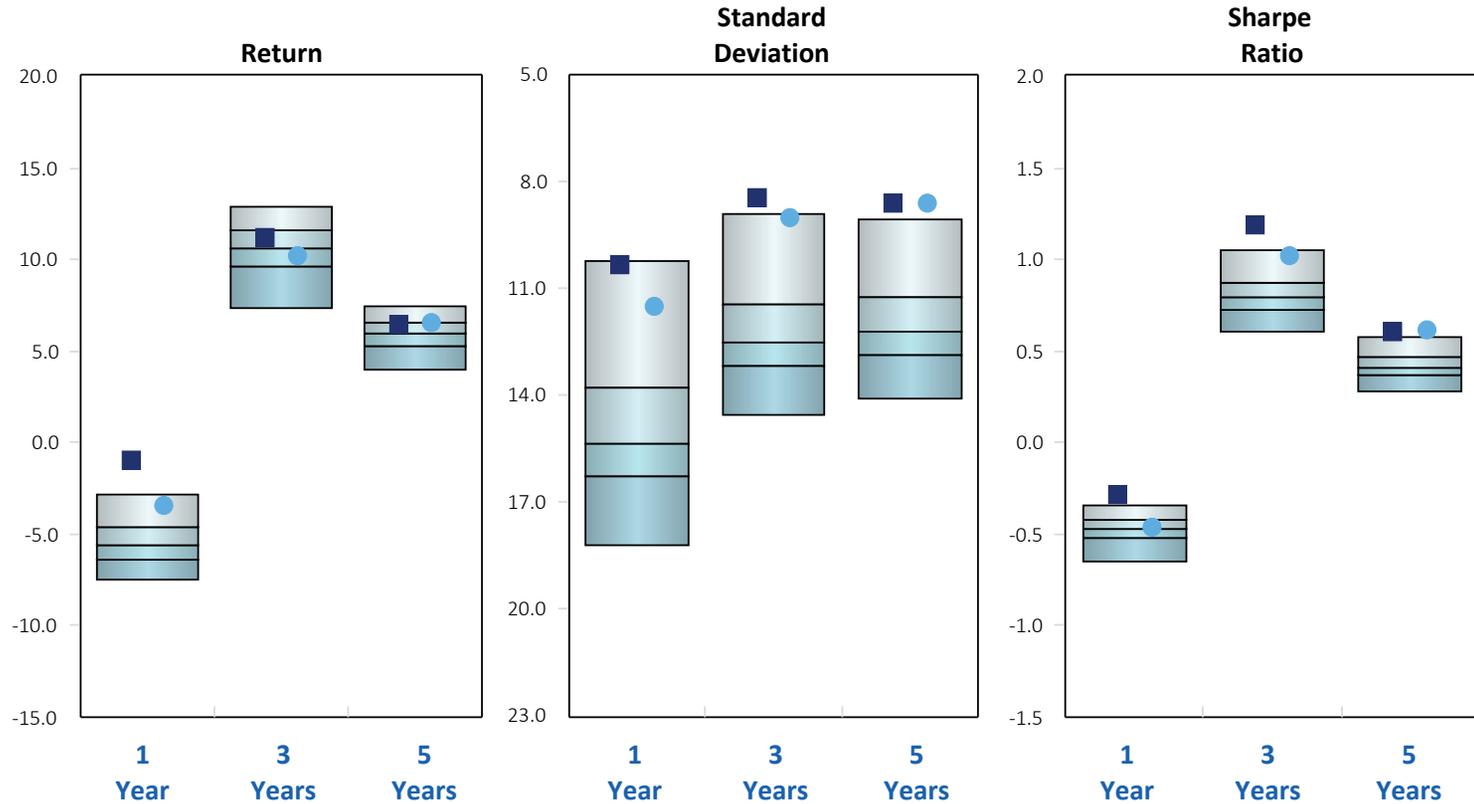
	1 Year	3 Years	5 Years	1 Year	3 Years	5 Years	1 Year	3 Years	5 Years
■ KERS (H) Insurance Plan	-0.89 (2)	11.10 (38)	6.24 (36)	10.21 (4)	8.38 (3)	8.67 (4)	-0.28 (2)	1.19 (2)	0.58 (6)
● KERS (H) Insurance IPS Index	-3.45 (10)	10.17 (62)	6.60 (24)	11.51 (9)	9.02 (5)	8.59 (4)	-0.47 (49)	1.02 (8)	0.62 (4)
5th Percentile	-2.79	12.91	7.44	10.25	8.91	9.08	-0.34	1.05	0.58
1st Quartile	-4.66	11.59	6.55	13.78	11.48	11.23	-0.42	0.88	0.47
Median	-5.58	10.62	5.94	15.35	12.51	12.21	-0.47	0.79	0.41
3rd Quartile	-6.41	9.59	5.30	16.29	13.20	12.86	-0.52	0.73	0.37
95th Percentile	-7.53	7.39	3.94	18.23	14.56	14.11	-0.65	0.60	0.28

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Plan Sponsor Peer Group Analysis - Multi Statistics

SPRS Insurance Plan vs All Public Plans-Total Fund

Periods Ended March 31, 2023



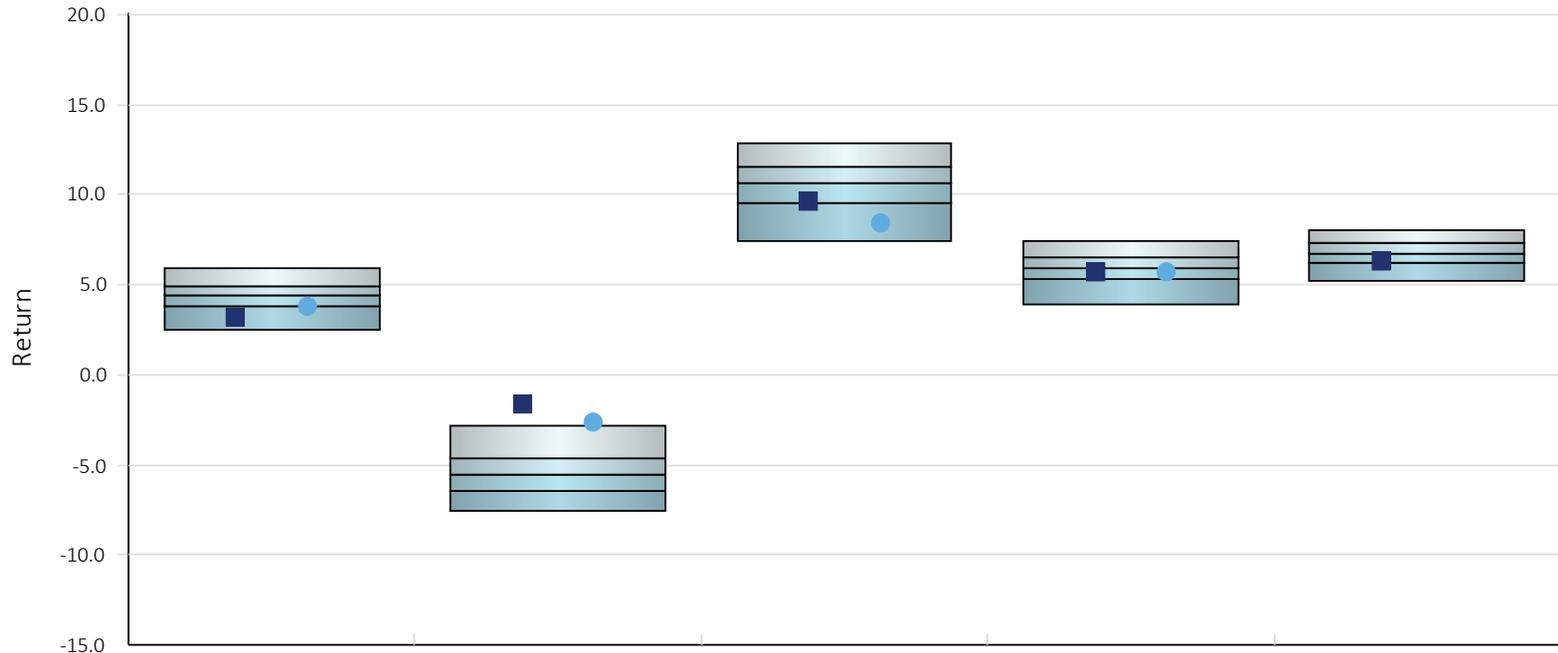
	1 Year	3 Years	5 Years	1 Year	3 Years	5 Years	1 Year	3 Years	5 Years
■ SPRS Insurance Plan	-0.94 (2)	11.19 (35)	6.46 (28)	10.35 (5)	8.45 (3)	8.61 (4)	-0.28 (2)	1.19 (2)	0.60 (4)
● SPRS Insurance IPS Index	-3.45 (10)	10.17 (62)	6.60 (24)	11.51 (9)	9.02 (5)	8.59 (4)	-0.47 (49)	1.02 (8)	0.62 (4)
5th Percentile	-2.79	12.91	7.44	10.25	8.91	9.08	-0.34	1.05	0.58
1st Quartile	-4.66	11.59	6.55	13.78	11.48	11.23	-0.42	0.88	0.47
Median	-5.58	10.62	5.94	15.35	12.51	12.21	-0.47	0.79	0.41
3rd Quartile	-6.41	9.59	5.30	16.29	13.20	12.86	-0.52	0.73	0.37
95th Percentile	-7.53	7.39	3.94	18.23	14.56	14.11	-0.65	0.60	0.28

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Plan Sponsor Peer Group Analysis

KERS Pension Plan vs All Public Plans-Total Fund

Periods Ended March 31, 2023



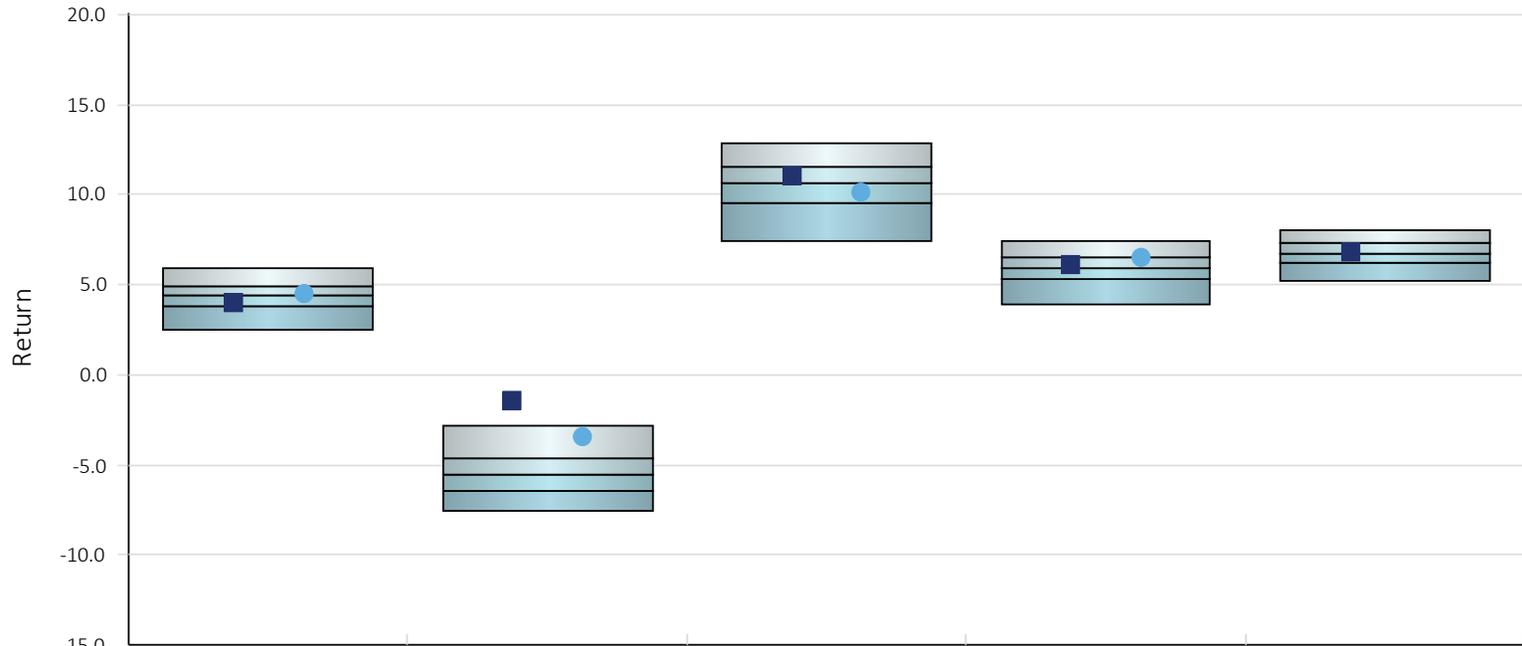
	<b>QTD</b>	<b>1 Year</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
■ KERS Pension Plan	3.24 (90)	-1.62 (3)	9.68 (74)	5.76 (58)	6.36 (69)
● KERS Pension IPS Index	3.80 (75)	-2.60 (5)	8.45 (90)	5.67 (60)	
5th Percentile	5.90	-2.79	12.91	7.44	8.03
1st Quartile	4.94	-4.66	11.59	6.55	7.30
Median	4.41	-5.58	10.62	5.94	6.76
3rd Quartile	3.77	-6.41	9.59	5.30	6.22
95th Percentile	2.54	-7.53	7.39	3.94	5.19
Population	542	530	515	497	405

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Plan Sponsor Peer Group Analysis

KERS (H) Pension Plan vs All Public Plans-Total Fund

Periods Ended March 31, 2023



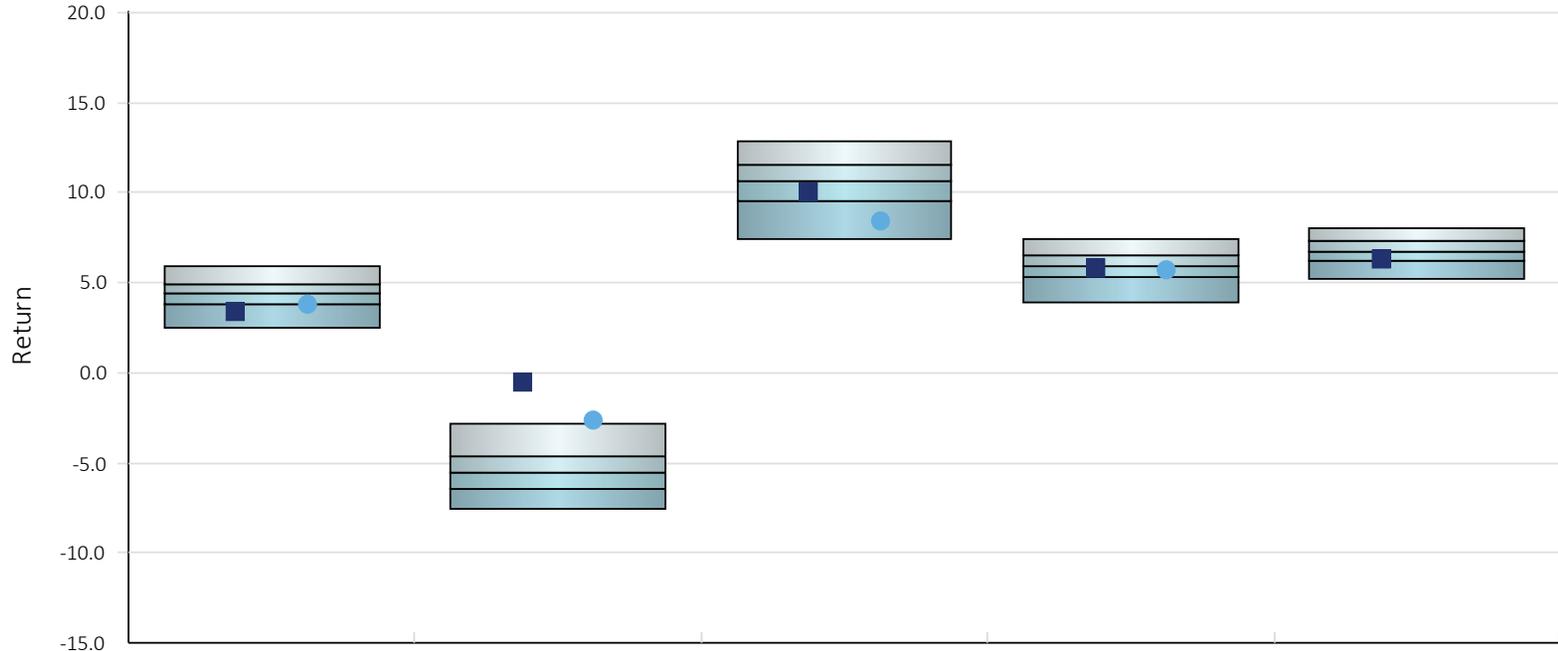
	<b>QTD</b>	<b>1 Year</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
■ KERS (H) Pension Plan	4.06 (65)	-1.46 (3)	11.02 (40)	6.12 (41)	6.78 (50)
● KERS (H) Pension IPS Index	4.50 (44)	-3.45 (10)	10.17 (62)	6.57 (25)	
5th Percentile	5.90	-2.79	12.91	7.44	8.03
1st Quartile	4.94	-4.66	11.59	6.55	7.30
Median	4.41	-5.58	10.62	5.94	6.76
3rd Quartile	3.77	-6.41	9.59	5.30	6.22
95th Percentile	2.54	-7.53	7.39	3.94	5.19
Population	542	530	515	497	405

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Plan Sponsor Peer Group Analysis

## SPRS Pension Plan vs All Public Plans-Total Fund

Periods Ended March 31, 2023



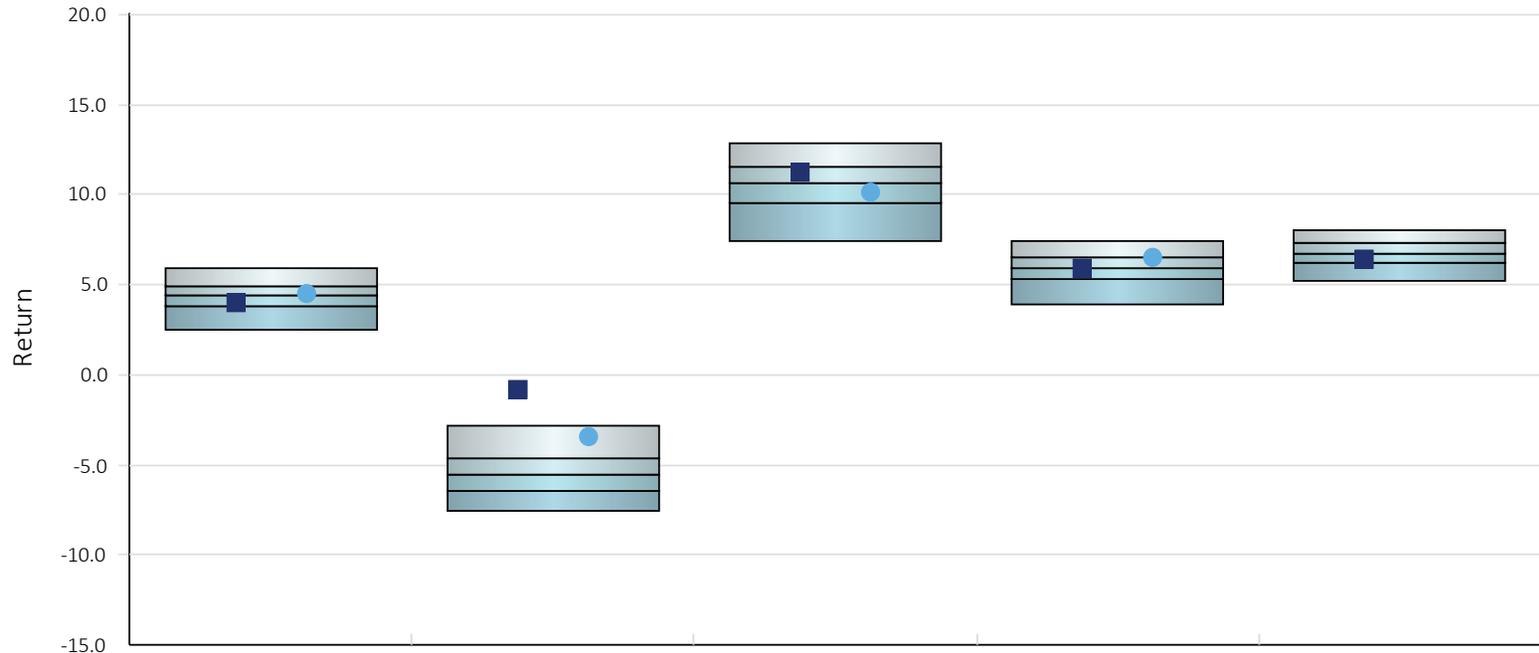
	QTD	1 Year	3 Years	5 Years	10 Years
■ SPRS Pension Plan	3.40 (87)	-0.51 (2)	10.00 (66)	5.84 (55)	6.33 (70)
● SPRS Pension IPS Index	3.80 (75)	-2.60 (5)	8.45 (90)	5.71 (60)	
5th Percentile	5.90	-2.79	12.91	7.44	8.03
1st Quartile	4.94	-4.66	11.59	6.55	7.30
Median	4.41	-5.58	10.62	5.94	6.76
3rd Quartile	3.77	-6.41	9.59	5.30	6.22
95th Percentile	2.54	-7.53	7.39	3.94	5.19
Population	542	530	515	497	405

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Plan Sponsor Peer Group Analysis

KERS Insurance Plan vs All Public Plans-Total Fund

Periods Ended March 31, 2023



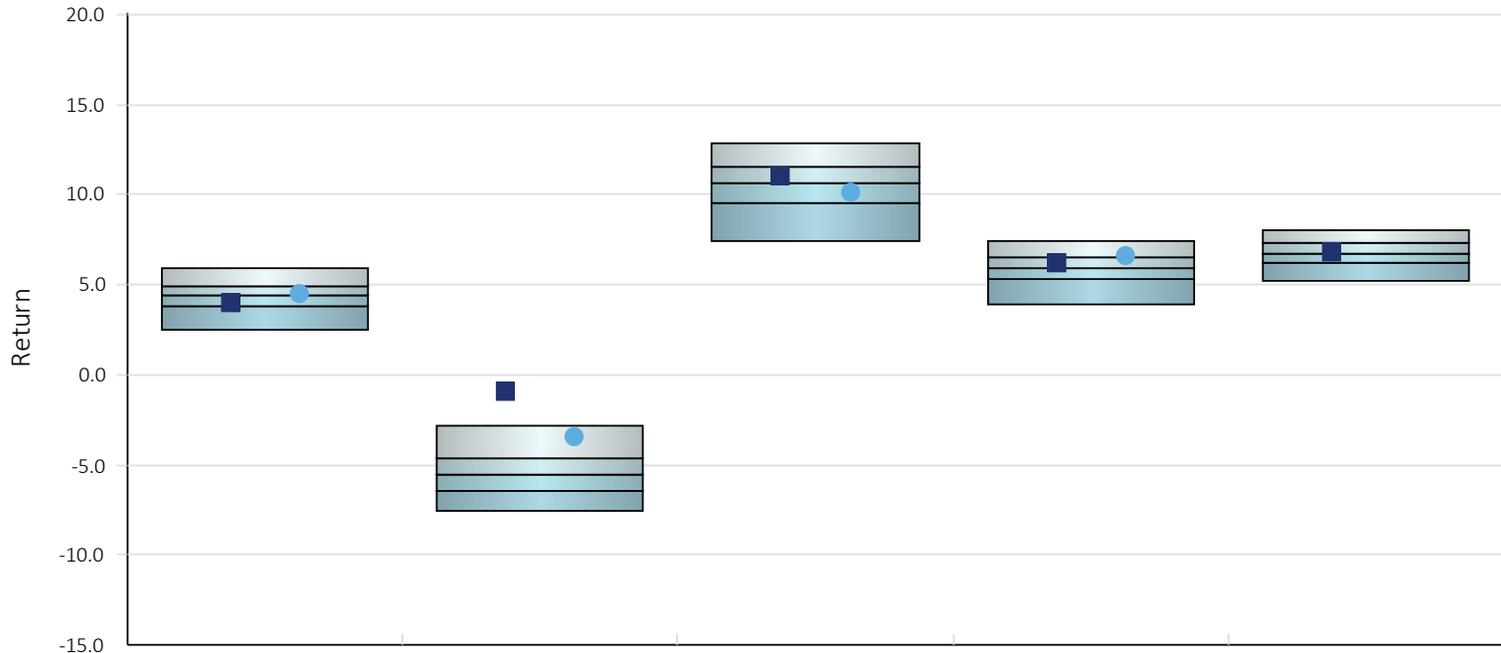
	<b>QTD</b>	<b>1 Year</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
■ KERS Insurance Plan	3.99 (67)	-0.86 (2)	11.25 (34)	5.96 (49)	6.43 (68)
● KERS Insurance IPS Index	4.50 (44)	-3.45 (10)	10.17 (62)	6.57 (25)	
5th Percentile	5.90	-2.79	12.91	7.44	8.03
1st Quartile	4.94	-4.66	11.59	6.55	7.30
Median	4.41	-5.58	10.62	5.94	6.76
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Population	542	530	515	497	405

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Plan Sponsor Peer Group Analysis

KERS (H) Insurance Plan vs All Public Plans-Total Fund

Periods Ended March 31, 2023



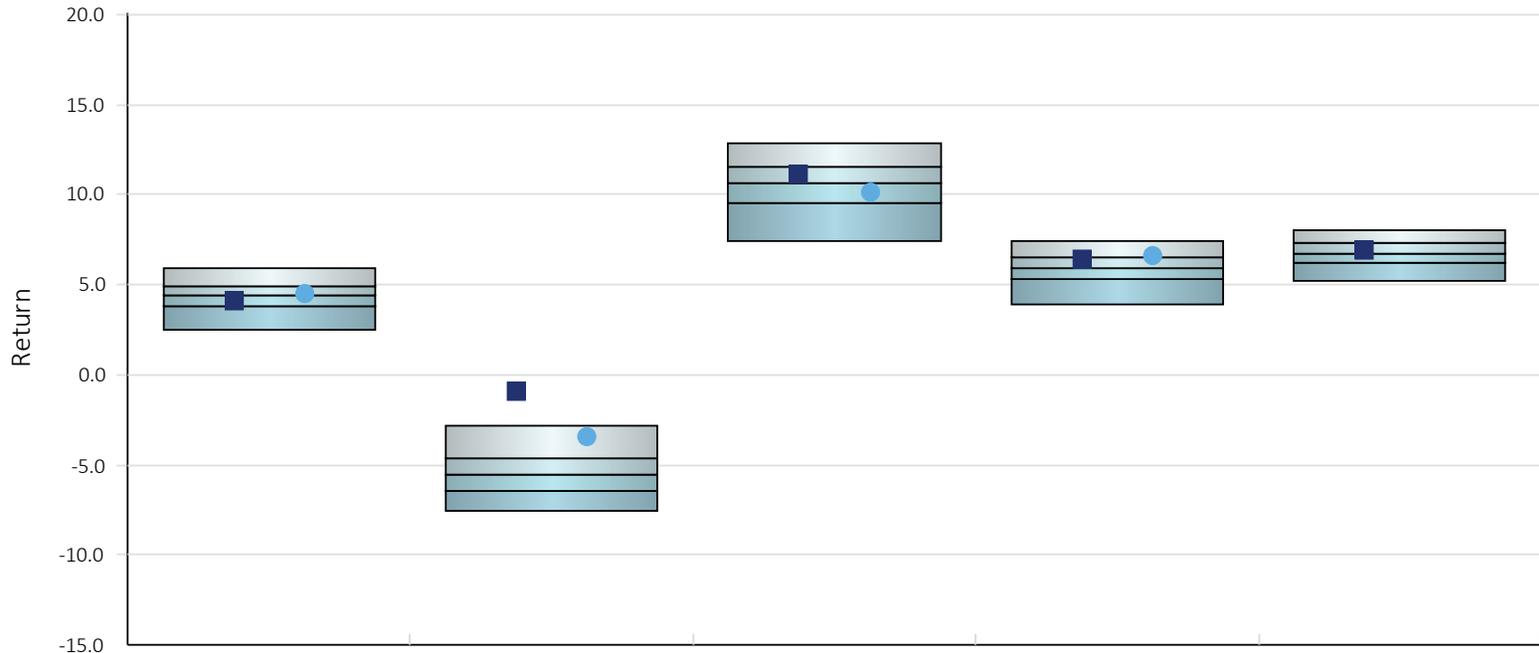
	<b>QTD</b>	<b>1 Year</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
■ KERS (H) Insurance Plan	3.99 (67)	-0.89 (2)	11.10 (38)	6.24 (36)	6.78 (50)
● KERS (H) Insurance IPS Index	4.50 (44)	-3.45 (10)	10.17 (62)	6.60 (24)	
5th Percentile	5.90	-2.79	12.91	7.44	8.03
1st Quartile	4.94	-4.66	11.59	6.55	7.30
Median	4.41	-5.58	10.62	5.94	6.76
3rd Quartile	3.77	-6.41	9.59	5.30	6.22
95th Percentile	2.54	-7.53	7.39	3.94	5.19
Population	542	530	515	497	405

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Plan Sponsor Peer Group Analysis

## SPRS Insurance Plan vs All Public Plans-Total Fund

Periods Ended March 31, 2023



	<b>QTD</b>	<b>1 Year</b>	<b>3 Years</b>	<b>5 Years</b>	<b>10 Years</b>
■ SPRS Insurance Plan	4.06 (65)	-0.94 (2)	11.19 (35)	6.46 (28)	6.94 (40)
● SPRS Insurance IPS Index	4.50 (44)	-3.45 (10)	10.17 (62)	6.60 (24)	
5th Percentile	5.90	-2.79	12.91	7.44	8.03
1st Quartile	4.94	-4.66	11.59	6.55	7.30
Median	4.41	-5.58	10.62	5.94	6.76
3rd Quartile	3.77	-6.41	9.59	5.30	6.22
95th Percentile	2.54	-7.53	7.39	3.94	5.19
Population	542	530	515	497	405

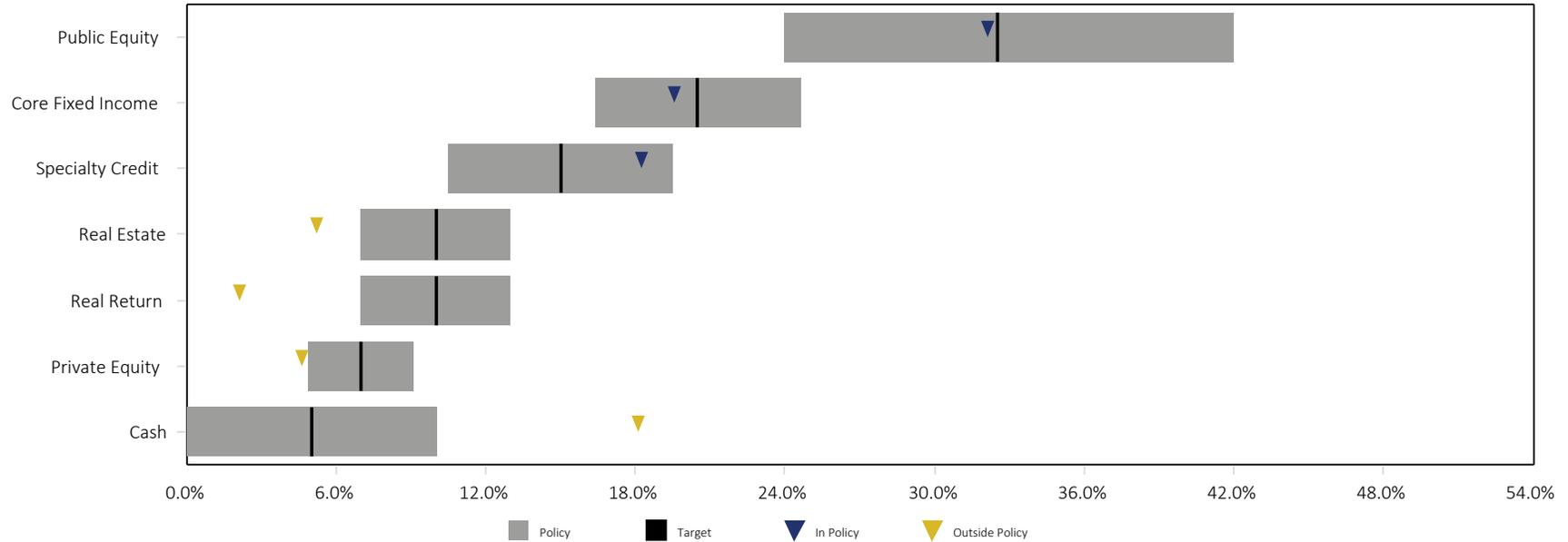
Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# Asset Allocation Compliance

KERS Pension Plan

Periods Ended As of March 31, 2023

## Executive Summary



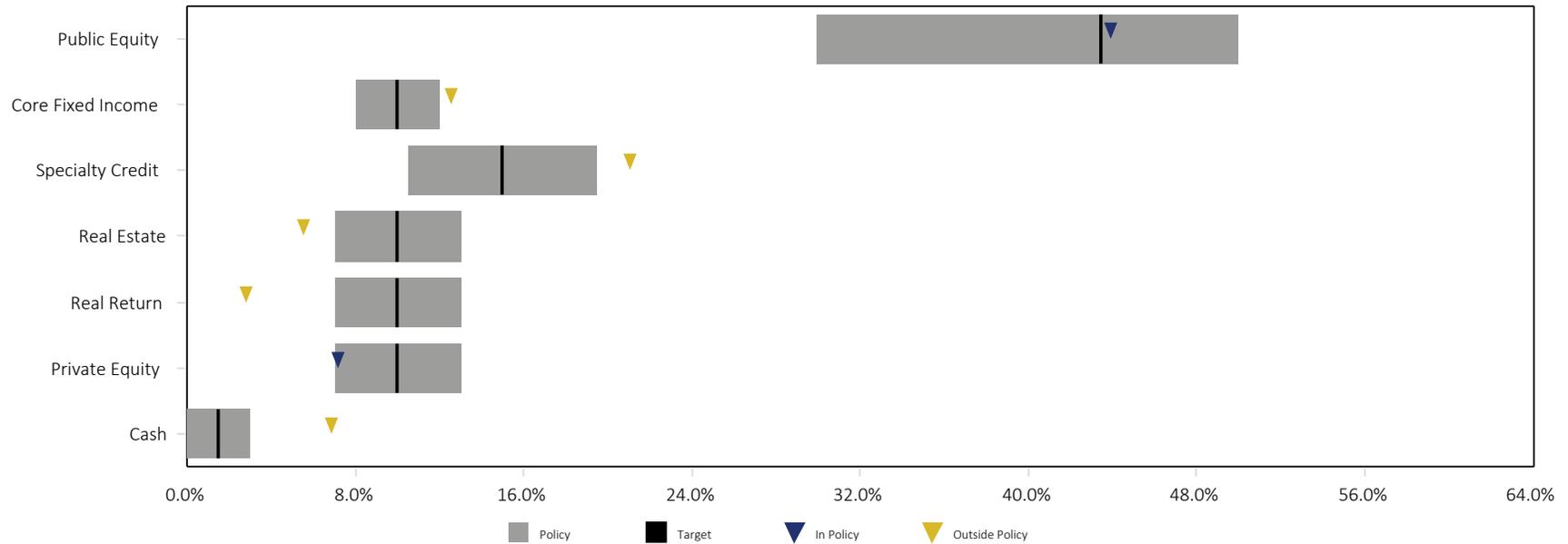
	Asset Allocation \$	Asset Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)	Target Rebalance \$
Public Equity	1,079,572,828	32.11	24.00	42.00	32.50	13,135,153
Core Fixed Income	657,617,254	19.56	16.40	24.60	20.50	31,629,318
Specialty Credit	614,065,920	18.26	10.50	19.50	15.00	-109,739,159
Real Estate	175,894,392	5.23	7.00	13.00	10.00	160,323,449
Real Return	70,565,346	2.10	7.00	13.00	10.00	265,652,494
Private Equity	155,150,167	4.61	4.90	9.10	7.00	80,202,321
Cash	609,312,497	18.12	0.00	10.00	5.00	-441,203,576
<b>Total Fund</b>	<b>3,362,178,403</b>	<b>100.00</b>			<b>100.00</b>	

# Asset Allocation Compliance

KERS (H) Pension Plan

Periods Ended As of March 31, 2023

## Executive Summary



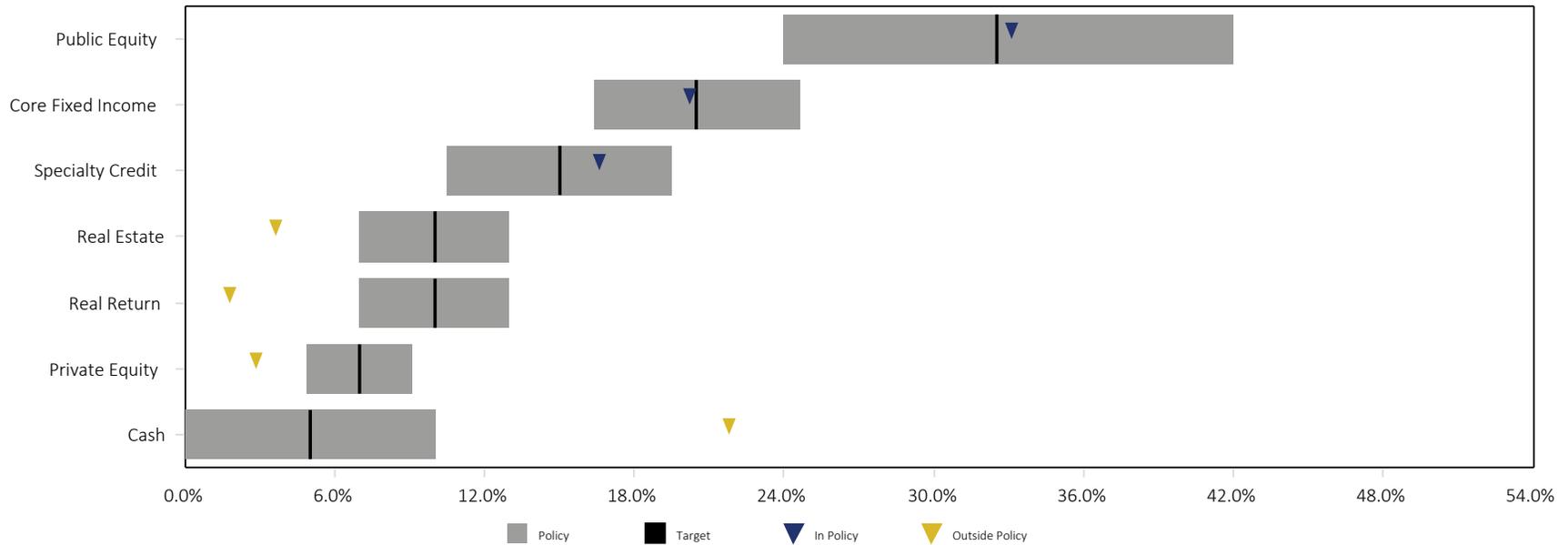
	Asset Allocation \$	Asset Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)	Target Rebalance \$
Public Equity	382,597,394	43.97	30.00	50.00	43.50	-4,093,608
Core Fixed Income	109,329,544	12.56	8.00	12.00	10.00	-22,317,179
Specialty Credit	183,154,528	21.05	10.50	19.50	15.00	-52,635,981
Real Estate	48,158,594	5.53	7.00	13.00	10.00	38,853,770
Real Return	24,545,243	2.82	7.00	13.00	10.00	62,467,122
Private Equity	62,368,687	7.17	7.00	13.00	10.00	24,643,678
Cash	59,969,656	6.89	0.00	3.00	1.50	-46,917,801
Total Fund	870,123,646	100.00			100.00	

# Asset Allocation Compliance

SPRS Pension Plan

Periods Ended As of March 31, 2023

## Executive Summary



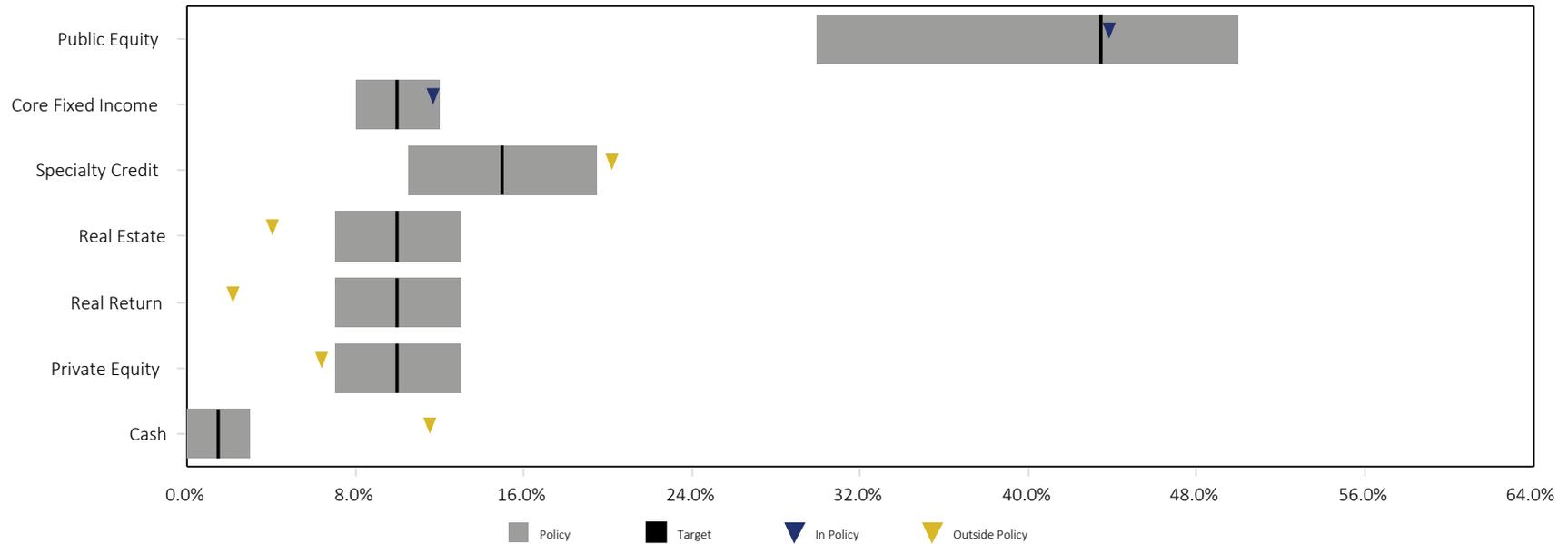
	Asset Allocation \$	Asset Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)	Target Rebalance \$
Public Equity	190,498,648	33.15	24.00	42.00	32.50	-3,726,199
Core Fixed Income	116,128,283	20.21	16.40	24.60	20.50	1,682,031
Specialty Credit	95,543,279	16.63	10.50	19.50	15.00	-9,340,610
Real Estate	20,856,691	3.63	7.00	13.00	10.00	36,611,755
Real Return	10,202,350	1.78	7.00	13.00	10.00	47,266,096
Private Equity	16,367,925	2.85	4.90	9.10	7.00	23,859,987
Cash	125,087,282	21.77	0.00	10.00	5.00	-96,353,059
<b>Total Fund</b>	<b>574,684,460</b>	<b>100.00</b>			<b>100.00</b>	

# Asset Allocation Compliance

KERS Insurance Plan

Periods Ended As of March 31, 2023

## Executive Summary



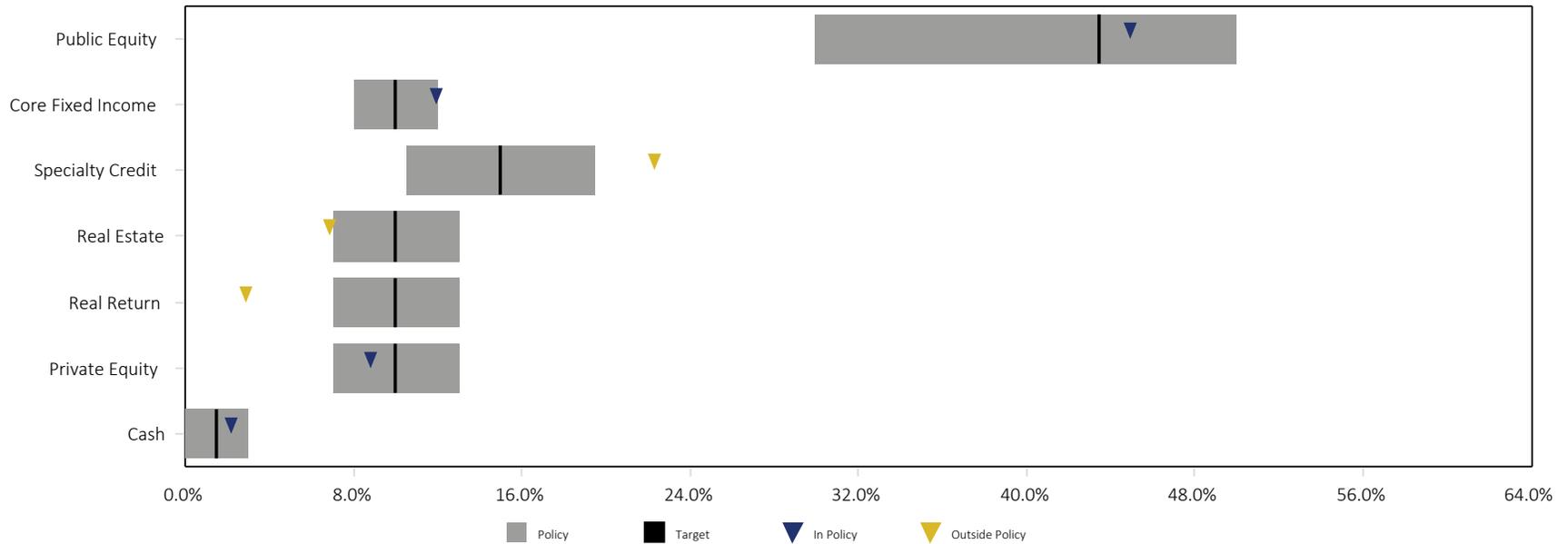
	Asset Allocation \$	Asset Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)	Target Rebalance \$
Public Equity	613,591,556	43.90	30.00	50.00	43.50	-5,593,872
Core Fixed Income	163,700,876	11.71	8.00	12.00	10.00	-23,931,293
Specialty Credit	282,512,967	20.21	10.50	19.50	15.00	-72,858,593
Real Estate	56,515,447	4.04	7.00	13.00	10.00	83,254,135
Real Return	30,337,567	2.17	7.00	13.00	10.00	109,432,015
Private Equity	89,906,552	6.43	7.00	13.00	10.00	49,863,031
Cash	161,130,860	11.53	0.00	3.00	1.50	-140,165,423
<b>Total Fund</b>	<b>1,397,695,825</b>	<b>100.00</b>			<b>100.00</b>	

# Asset Allocation Compliance

KERS (H) Insurance Plan

Periods Ended As of March 31, 2023

## Executive Summary



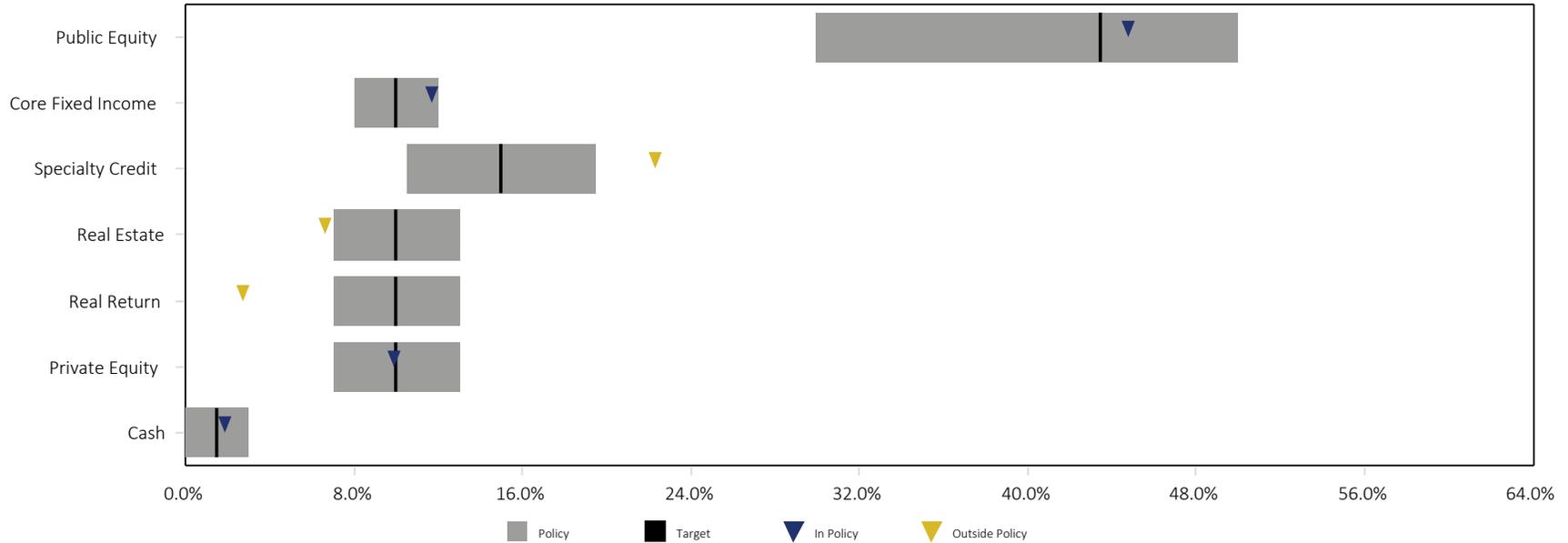
	Asset Allocation \$	Asset Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)	Target Rebalance \$
Public Equity	270,733,346	44.94	30.00	50.00	43.50	-8,661,419
Core Fixed Income	71,713,645	11.90	8.00	12.00	10.00	-11,467,225
Specialty Credit	134,442,706	22.32	10.50	19.50	15.00	-44,073,076
Real Estate	41,452,341	6.88	7.00	13.00	10.00	18,794,079
Real Return	17,571,568	2.92	7.00	13.00	10.00	42,674,852
Private Equity	53,312,512	8.85	7.00	13.00	10.00	6,933,907
Cash	13,238,081	2.20	0.00	3.00	1.50	-4,201,118
Total Fund	602,464,199	100.00			100.00	

# Asset Allocation Compliance

SPRS Insurance Plan

Periods Ended As of March 31, 2023

## Executive Summary



	Asset Allocation \$	Asset Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)	Target Rebalance \$
Public Equity	107,419,059	44.81	30.00	50.00	43.50	-3,148,674
Core Fixed Income	28,141,812	11.74	8.00	12.00	10.00	-4,171,608
Specialty Credit	53,442,621	22.30	10.50	19.50	15.00	-17,487,317
Real Estate	15,857,396	6.62	7.00	13.00	10.00	8,112,808
Real Return	6,561,195	2.74	7.00	13.00	10.00	17,409,008
Private Equity	23,790,252	9.92	7.00	13.00	10.00	179,951
Cash	4,489,698	1.87	0.00	3.00	1.50	-894,168
Total Fund	239,702,033	100.00			100.00	

# Asset Allocation & Performance

## Total Fund

Periods Ended March 31, 2023

	Market Value \$	Performance (%) net of fees									
		QTD	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date
<b>KERS Pension Plan</b>	<b>3,362,178,403</b>	<b>3.24</b>	<b>4.47</b>	<b>-1.62</b>	<b>9.68</b>	<b>5.76</b>	<b>6.36</b>	<b>7.00</b>	<b>7.46</b>	<b>8.69</b>	<b>4/1/1984</b>
KERS Pension IPS Index		3.80	4.19	-2.60	8.45	5.67					
Value Added		-0.56	0.28	0.98	1.23	0.09					
KERS Pension Attribution Index		3.30	4.61	-2.69	9.58						
Value Added		-0.06	-0.14	1.07	0.10						
Assumed Rate 5.25%		1.29	3.91	5.25	5.25	5.25					
Value Added		1.95	0.56	-6.87	4.43	0.51					
<b>KERS Insurance Plan</b>	<b>1,397,695,825</b>	<b>3.99</b>	<b>6.59</b>	<b>-0.86</b>	<b>11.25</b>	<b>5.96</b>	<b>6.43</b>	<b>6.99</b>	<b>6.66</b>	<b>7.22</b>	<b>4/1/1987</b>
KERS Insurance IPS Index		4.50	4.83	-3.45	10.17	6.57					
Value Added		-0.51	1.76	2.59	1.08	-0.61					
KERS Insurance Attribution Index		3.79	6.65	-1.03	11.67						
Value Added		0.20	-0.06	0.17	-0.42						
Assumed Rate 6.25%		1.53	4.65	6.25	6.25	6.25					
Value Added		2.46	1.94	-7.11	5.00	-0.29					
<b>KERS (H) Pension Plan</b>	<b>870,123,646</b>	<b>4.06</b>	<b>6.29</b>	<b>-1.46</b>	<b>11.02</b>	<b>6.12</b>	<b>6.78</b>	<b>7.21</b>	<b>7.60</b>	<b>8.79</b>	<b>4/1/1984</b>
KERS (H) Pension IPS Index		4.50	4.83	-3.45	10.17	6.57					
Value Added		-0.44	1.46	1.99	0.85	-0.45					
KERS (H) Pension Attribution Index		3.87	6.13	-2.08	11.41						
Value Added		0.19	0.16	0.62	-0.39						
Assumed Rate 6.25%		1.53	4.65	6.25	6.25	6.25					
Value Added		2.53	1.64	-7.71	4.77	-0.13					

## Asset Allocation & Performance

Total Fund

Periods Ended March 31, 2023

	Market Value \$	Performance (%) net of fees									
		QTD	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date
<b>KERS (H) Insurance Plan</b>	<b>602,464,199</b>	<b>3.99</b>	<b>6.26</b>	<b>-0.89</b>	<b>11.10</b>	<b>6.24</b>	<b>6.78</b>	<b>7.16</b>	<b>6.77</b>	<b>7.32</b>	<b>4/1/1987</b>
KERS (H) Insurance IPS Index		4.50	4.83	-3.45	10.17	6.60					
Value Added		-0.51	1.43	2.56	0.93	-0.36					
KERS (H) Insurance Attribution Index		3.92	6.25	-1.82	11.25						
Value Added		0.07	0.01	0.93	-0.15						
Assumed Rate 6.25%		1.53	4.65	6.25	6.25	6.25					
Value Added		2.46	1.61	-7.14	4.85	-0.01					
<b>SPRS Pension Plan</b>	<b>574,684,460</b>	<b>3.40</b>	<b>5.20</b>	<b>-0.51</b>	<b>10.00</b>	<b>5.84</b>	<b>6.33</b>	<b>6.98</b>	<b>7.45</b>	<b>8.68</b>	<b>4/1/1984</b>
SPRS Pension IPS Index		3.80	4.19	-2.60	8.45	5.71					
Value Added		-0.40	1.01	2.09	1.55	0.13					
SPRS Pension Attribution Index		3.35	4.90	-2.08	9.44						
Value Added		0.05	0.30	1.57	0.56						
Assumed Rate 5.25%		1.29	3.91	5.25	5.25	5.25					
Value Added		2.11	1.29	-5.76	4.75	0.59					
<b>SPRS Insurance Plan</b>	<b>239,702,033</b>	<b>4.06</b>	<b>6.31</b>	<b>-0.94</b>	<b>11.19</b>	<b>6.46</b>	<b>6.94</b>	<b>7.25</b>	<b>6.83</b>	<b>7.37</b>	<b>4/1/1987</b>
SPRS Insurance IPS Index		4.50	4.83	-3.45	10.17	6.60					
Value Added		-0.44	1.48	2.51	1.02	-0.14					
SPRS Insurance Attribution Index		3.96	6.34	-1.74	11.28						
Value Added		0.10	-0.03	0.80	-0.09						
Assumed Rate 6.25%		1.53	4.65	6.25	6.25	6.25					
Value Added		2.53	1.66	-7.19	4.94	0.21					

# Asset Allocation & Performance

## Pension Plan Accounts

Periods Ended March 31, 2023

	Performance (%) net of fees							Inception Date
	1 Month	QTD	FYTD	1 Year	3 Years	5 Years	Since Inception	
<b>Public Equity</b>	<b>2.41</b>	<b>7.55</b>	<b>11.49</b>	<b>-6.10</b>			<b>-6.61</b>	<b>12/1/2021</b>
Public Equity Policy Index	3.08	7.31	9.75	-7.44			-6.75	
Value Added	-0.67	0.24	1.74	1.34			0.14	
<b>US Equity Composite</b>	<b>2.31</b>	<b>6.82</b>	<b>9.99</b>	<b>-7.88</b>	<b>18.83</b>	<b>10.14</b>	<b>11.17</b>	<b>4/1/1984</b>
Russell 3000 Index	2.67	7.18	9.75	-8.58	18.48	10.45	11.06	
Value Added	-0.36	-0.36	0.24	0.70	0.35	-0.31	0.11	
<b>S&amp;P 500 Index</b>	<b>3.69</b>	<b>7.51</b>	<b>9.96</b>	<b>-7.57</b>	<b>18.66</b>	<b>11.46</b>	<b>8.19</b>	<b>7/1/2001</b>
S&P 500 Index	3.67	7.50	9.98	-7.73	18.60	11.19	7.81	
Value Added	0.02	0.01	-0.02	0.16	0.06	0.27	0.38	
<b>Scientific Beta</b>	<b>1.05</b>	<b>2.97</b>	<b>8.10</b>	<b>-6.09</b>	<b>17.42</b>	<b>8.30</b>	<b>9.77</b>	<b>7/1/2016</b>
S&P 500 Index	3.67	7.50	9.98	-7.73	18.60	11.19	12.51	
Value Added	-2.62	-4.53	-1.88	1.64	-1.18	-2.89	-2.74	
<b>River Road FAV</b>	<b>-0.17</b>	<b>0.70</b>	<b>5.44</b>	<b>-10.45</b>	<b>11.37</b>	<b>5.21</b>	<b>8.22</b>	<b>7/1/2016</b>
Russell 3000 Value Index	-0.86	0.91	6.92	-6.35	18.12	7.30	8.58	
Value Added	0.69	-0.21	-1.48	-4.10	-6.75	-2.09	-0.36	
<b>Westfield Capital</b>	<b>5.60</b>	<b>15.03</b>	<b>12.90</b>	<b>-10.53</b>	<b>17.74</b>	<b>13.23</b>	<b>12.98</b>	<b>7/1/2011</b>
Russell 3000 Growth Index	6.25	13.85	12.56	-10.88	18.23	13.02	13.75	
Value Added	-0.65	1.18	0.34	0.35	-0.49	0.21	-0.77	
<b>Internal US Mid Cap</b>	<b>-3.06</b>	<b>4.15</b>	<b>12.96</b>	<b>-4.47</b>	<b>22.50</b>	<b>8.35</b>	<b>9.34</b>	<b>8/1/2014</b>
S&P MidCap 400 Index	-3.21	3.81	12.17	-5.12	22.10	7.67	8.96	
Value Added	0.15	0.34	0.79	0.65	0.40	0.68	0.38	
<b>NTGI Structured</b>	<b>-4.52</b>	<b>2.90</b>	<b>8.81</b>	<b>-7.43</b>	<b>20.33</b>	<b>7.10</b>	<b>9.58</b>	<b>10/1/1999</b>
Russell 2000 Index	-4.78	2.74	6.75	-11.61	17.51	4.71	7.74	
Value Added	0.26	0.16	2.06	4.18	2.82	2.39	1.84	

## Asset Allocation & Performance

### Pension Plan Accounts

Periods Ended March 31, 2023

	Performance (%) net of fees							
	1 Month	QTD	FYTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
<b>Next Century Growth</b>	<b>0.69</b>	<b>11.82</b>	<b>16.88</b>	<b>-11.15</b>	<b>37.80</b>		<b>26.50</b>	<b>11/1/2019</b>
Russell Microcap Growth Index	-5.85	0.76	5.70	-17.98	10.87		4.16	
Value Added	6.54	11.06	11.18	6.83	26.93		22.34	
<b>Non-US Equity Composite</b>	<b>2.56</b>	<b>8.57</b>	<b>13.59</b>	<b>-3.67</b>	<b>12.87</b>	<b>3.28</b>	<b>3.51</b>	<b>7/1/2000</b>
MSCI ACWI ex US IMI (10/17)	2.13	6.56	9.85	-5.84	12.20	2.35	3.44	
Value Added	0.43	2.01	3.74	2.17	0.67	0.93	0.07	
<b>BlackRock World Ex US</b>	<b>2.31</b>	<b>8.14</b>	<b>14.36</b>	<b>-2.19</b>	<b>14.01</b>	<b>3.68</b>	<b>6.34</b>	<b>7/1/2009</b>
MSCI World ex US (11/19)	2.22	8.02	13.96	-2.74	13.49	3.28	6.06	
Value Added	0.09	0.12	0.40	0.55	0.52	0.40	0.28	
<b>American Century</b>	<b>3.10</b>	<b>9.55</b>	<b>15.05</b>	<b>-6.50</b>	<b>12.57</b>	<b>5.89</b>	<b>5.88</b>	<b>7/1/2014</b>
MSCI ACWI ex US IMI (10/17)	2.13	6.56	9.85	-5.84	12.20	2.35	2.96	
Value Added	0.97	2.99	5.20	-0.66	0.37	3.54	2.92	
<b>Franklin Templeton</b>	<b>3.46</b>	<b>12.17</b>	<b>16.43</b>	<b>-8.85</b>	<b>7.87</b>	<b>1.81</b>	<b>4.48</b>	<b>7/1/2014</b>
MSCI ACWI ex US IMI (10/17)	2.13	6.56	9.85	-5.84	12.20	2.35	2.96	
Value Added	1.33	5.61	6.58	-3.01	-4.33	-0.54	1.52	
<b>Lazard Asset Mgmt</b>	<b>3.07</b>	<b>8.94</b>	<b>12.06</b>	<b>-2.06</b>	<b>12.44</b>	<b>2.70</b>	<b>3.82</b>	<b>7/1/2014</b>
MSCI ACWI ex US IMI (10/17)	2.13	6.56	9.85	-5.84	12.20	2.35	2.96	
Value Added	0.94	2.38	2.21	3.78	0.24	0.35	0.86	
<b>LSV Asset Mgmt</b>	<b>1.61</b>	<b>7.19</b>	<b>14.24</b>	<b>-0.54</b>	<b>14.00</b>	<b>2.64</b>	<b>3.15</b>	<b>7/1/2014</b>
MSCI ACWI ex US IMI (10/17)	2.13	6.56	9.85	-5.84	12.20	2.35	2.96	
Value Added	-0.52	0.63	4.39	5.30	1.80	0.29	0.19	
<b>Axiom</b>	<b>1.39</b>	<b>7.62</b>	<b>8.57</b>	<b>-13.22</b>			<b>-19.16</b>	<b>12/1/2021</b>
MSCI AC World ex USA Small Cap (Net)	0.23	4.70	8.70	-10.37			-9.66	
Value Added	1.16	2.92	-0.13	-2.85			-9.50	

# Asset Allocation & Performance

## Pension Plan Accounts

Periods Ended March 31, 2023

	Performance (%) net of fees							
	1 Month	QTD	FYTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
<b>JP Morgan Emerging Markets</b>	<b>1.61</b>	<b>5.50</b>	<b>5.77</b>	<b>-7.39</b>	<b>9.75</b>		<b>1.45</b>	<b>11/1/2019</b>
MSCI Emerging Markets IMI Index	2.79	4.01	1.88	-10.32	9.60		1.92	
Value Added	-1.18	1.49	3.89	2.93	0.15		-0.47	
<b>Pzena Emerging Markets</b>	<b>3.31</b>	<b>7.17</b>	<b>11.91</b>	<b>0.09</b>	<b>18.83</b>		<b>6.13</b>	<b>11/1/2019</b>
MSCI Emerging Markets (Net)	3.03	3.96	0.84	-10.70	7.83		0.81	
Value Added	0.28	3.21	11.07	10.79	11.00		5.32	
<b>Private Equity Composite</b>	<b>1.60</b>	<b>1.54</b>	<b>-4.54</b>	<b>-2.91</b>	<b>16.11</b>	<b>13.81</b>	<b>11.81</b>	<b>7/1/2002</b>
Russell 3000 +3% 1 Quarter Lag	-5.62	7.98	-12.79	-16.78	10.28	12.05	11.43	
Value Added	7.22	-6.44	8.25	13.87	5.83	1.76	0.38	
<b>Core Fixed Composite</b>	<b>1.15</b>	<b>1.94</b>	<b>1.37</b>	<b>-0.77</b>	<b>1.43</b>		<b>2.36</b>	<b>10/1/2018</b>
Blmbg. U.S. Aggregate Index	2.54	2.96	-0.09	-4.78	-2.77		1.04	
Value Added	-1.39	-1.02	1.46	4.01	4.20		1.32	
<b>Loomis Sayles Intrmd</b>	<b>2.04</b>	<b>2.46</b>	<b>0.28</b>	<b>-2.60</b>	<b>-1.21</b>		<b>0.98</b>	<b>2/1/2019</b>
Blmbg. U.S. Intermediate Aggregate Index	2.15	2.39	0.15	-2.79	-1.96		0.51	
Value Added	-0.11	0.07	0.13	0.19	0.75		0.47	
<b>Lord Abbett</b>	<b>0.76</b>	<b>1.67</b>	<b>1.75</b>	<b>0.06</b>	<b>2.57</b>		<b>1.72</b>	<b>10/1/2018</b>
ICE BofA 1-3 Year U.S. Corporate Index	0.88	1.29	1.36	0.33	0.96		1.63	
Value Added	-0.12	0.38	0.39	-0.27	1.61		0.09	
<b>NISA</b>	<b>2.43</b>	<b>3.00</b>	<b>0.10</b>	<b>-4.37</b>	<b>-2.18</b>	<b>1.24</b>	<b>2.99</b>	<b>2/1/2009</b>
Blmbg. U.S. Aggregate Index	2.54	2.96	-0.09	-4.78	-2.77	0.90	2.72	
Value Added	-0.11	0.04	0.19	0.41	0.59	0.34	0.27	

## Asset Allocation & Performance

### Pension Plan Accounts

Periods Ended March 31, 2023

	Performance (%) net of fees							
	1 Month	QTD	FYTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
<b>High Yield / Specialty Credit Composite</b>	<b>1.61</b>	<b>2.80</b>	<b>5.18</b>	<b>3.29</b>	<b>7.49</b>		<b>5.52</b>	<b>10/1/2018</b>
Policy Index	0.52	3.41	7.31	-0.34	7.26		3.17	
Value Added	1.09	-0.61	-2.13	3.63	0.23		2.35	
<b>Adams St SPC II A</b>	<b>2.97</b>	<b>2.97</b>	<b>6.31</b>	<b>21.37</b>			<b>14.88</b>	<b>6/1/2020</b>
<b>Adams St SPC II B</b>	<b>2.04</b>	<b>2.04</b>	<b>6.26</b>	<b>3.09</b>			<b>9.55</b>	<b>6/1/2020</b>
<b>Arrowmark</b>	<b>1.22</b>	<b>3.76</b>	<b>9.41</b>	<b>10.90</b>	<b>15.44</b>		<b>9.54</b>	<b>6/1/2018</b>
Morningstar LSTA US Leveraged Loan	-0.03	3.23	7.33	2.54	8.52		3.64	
Value Added	1.25	0.53	2.08	8.36	6.92		5.90	
<b>Blue Torch</b>	<b>3.92</b>	<b>3.92</b>	<b>10.52</b>	<b>13.78</b>			<b>10.15</b>	<b>8/1/2020</b>
<b>BSP Coinvestment</b>	<b>2.31</b>	<b>2.31</b>	<b>4.62</b>	<b>6.30</b>	<b>6.83</b>		<b>6.37</b>	<b>10/1/2019</b>
Morningstar LSTA US Leveraged Loan	-0.03	3.23	7.33	2.54	8.52		3.57	
Value Added	2.34	-0.92	-2.71	3.76	-1.69		2.80	
<b>BSP Private Credit</b>	<b>1.22</b>	<b>1.22</b>	<b>2.00</b>	<b>3.49</b>	<b>6.76</b>	<b>5.81</b>	<b>5.61</b>	<b>2/1/2018</b>
Morningstar LSTA US Leveraged Loan	-0.03	3.23	7.33	2.54	8.52	3.63	3.61	
Value Added	1.25	-2.01	-5.33	0.95	-1.76	2.18	2.00	
<b>Capital Springs</b>	<b>8.17</b>	<b>8.17</b>	<b>9.10</b>	<b>11.40</b>	<b>10.88</b>		<b>10.28</b>	<b>2/1/2020</b>
Morningstar LSTA US Leveraged Loan	-0.03	3.23	7.33	2.54	8.52		3.21	
Value Added	8.20	4.94	1.77	8.86	2.36		7.07	
<b>Cerberus Capital Mgmt</b>	<b>0.88</b>	<b>2.09</b>	<b>6.52</b>	<b>9.52</b>	<b>11.97</b>	<b>10.82</b>	<b>9.67</b>	<b>9/1/2014</b>
Morningstar LSTA US Leveraged Loan	-0.03	3.23	7.33	2.54	8.52	3.63	3.70	
Value Added	0.91	-1.14	-0.81	6.98	3.45	7.19	5.97	
<b>Columbia</b>	<b>1.58</b>	<b>3.99</b>	<b>8.27</b>	<b>-2.12</b>	<b>5.77</b>	<b>3.82</b>	<b>5.49</b>	<b>11/1/2011</b>
Blmbg. U.S. Corp: High Yield Index	1.07	3.57	7.19	-3.34	5.91	3.21	5.22	
Value Added	0.51	0.42	1.08	1.22	-0.14	0.61	0.27	

# Asset Allocation & Performance

## Pension Plan Accounts

Periods Ended March 31, 2023

	Performance (%) net of fees							
	1 Month	QTD	FYTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
<b>Manulife Asset Mgmt</b>	<b>2.11</b>	<b>3.48</b>	<b>5.96</b>	<b>-1.51</b>	<b>4.31</b>	<b>3.15</b>	<b>3.70</b>	<b>12/1/2011</b>
Policy Index	2.35	2.93	0.55	-4.61	-2.02	1.05	1.06	
Value Added	-0.24	0.55	5.41	3.10	6.33	2.10	2.64	
<b>Marathon Bluegrass</b>	<b>1.48</b>	<b>1.17</b>	<b>-3.87</b>	<b>-3.60</b>	<b>4.16</b>	<b>4.52</b>	<b>5.62</b>	<b>1/1/2016</b>
Blmbg. U.S. Corp: High Yield Index	1.07	3.57	7.19	-3.34	5.91	3.21	5.38	
Value Added	0.41	-2.40	-11.06	-0.26	-1.75	1.31	0.24	
<b>Shenkman Capital</b>	<b>-0.01</b>	<b>2.80</b>	<b>6.91</b>	<b>2.27</b>	<b>8.06</b>	<b>3.51</b>	<b>4.26</b>	<b>10/1/2010</b>
Morningstar LSTA US Leveraged Loan	-0.03	3.23	7.33	2.54	8.52	3.63	4.32	
Value Added	0.02	-0.43	-0.42	-0.27	-0.46	-0.12	-0.06	
<b>Waterfall</b>	<b>1.45</b>	<b>2.90</b>	<b>5.96</b>	<b>3.92</b>	<b>9.64</b>	<b>4.81</b>	<b>9.34</b>	<b>2/1/2010</b>
Policy Index	0.61	3.11	6.06	-0.67	4.94	2.79	4.31	
Value Added	0.84	-0.21	-0.10	4.59	4.70	2.02	5.03	
<b>White Oak Yield Spectrum</b>	<b>0.96</b>	<b>0.96</b>	<b>3.45</b>	<b>5.08</b>	<b>5.37</b>	<b>5.35</b>	<b>5.26</b>	<b>3/1/2018</b>
Morningstar LSTA US Leveraged Loan	-0.03	3.23	7.33	2.54	8.52	3.63	3.63	
Value Added	0.99	-2.27	-3.88	2.54	-3.15	1.72	1.63	
<b>H/2 Credit Partner</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>3.17</b>	<b>1.35</b>	<b>4.13</b>	<b>7/1/2011</b>
<b>Mesa West Core Lend</b>	<b>-1.04</b>	<b>-1.04</b>	<b>1.89</b>	<b>3.12</b>	<b>4.70</b>	<b>5.96</b>	<b>6.27</b>	<b>5/1/2013</b>
<b>Mesa West IV</b>	<b>-1.02</b>	<b>-1.02</b>	<b>-2.66</b>	<b>-1.82</b>	<b>5.23</b>	<b>6.05</b>	<b>5.41</b>	<b>3/1/2017</b>
<b>Cash Composite</b>	<b>0.31</b>	<b>0.88</b>	<b>2.31</b>	<b>2.49</b>	<b>0.92</b>	<b>1.48</b>	<b>3.30</b>	<b>1/1/1988</b>
FTSE 3 Month T-Bill	0.40	1.12	2.46	2.61	0.95	1.40	2.90	
Value Added	-0.09	-0.24	-0.15	-0.12	-0.03	0.08	0.40	

## Asset Allocation & Performance

### Pension Plan Accounts

Periods Ended March 31, 2023

	Performance (%) net of fees							
	1 Month	QTD	FYTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
<b>Real Estate Composite</b>	-1.58	-4.24	-0.46	6.16	11.91	11.03	6.67	7/1/1984
NCREIF ODCE NOF 1 Quarter Lag	-5.17	-5.17	-0.55	6.55	8.97	7.72		
Value Added	3.59	0.93	0.09	-0.39	2.94	3.31		
<b>Baring</b>	-9.15	-9.71	-11.09	-1.42	8.74		14.87	1/1/2019
<b>Barings Euro RE II</b>	-16.44	-16.97	-17.91	-23.65			-20.25	12/1/2020
<b>Divcowest IV</b>	-4.29	-4.29	-4.48	-3.43	10.86	12.62	17.46	3/1/2014
<b>Fundamental Partners III</b>	3.79	3.79	3.60	7.95	18.62	15.91	14.24	5/1/2017
<b>Greenfield Acq VI</b>	-20.30	-20.30	-32.21	-33.18	-38.60	-39.62	-18.48	12/1/2012
<b>Greenfield Acq VII</b>	-13.99	-13.99	-2.67	-1.12	14.17	14.69	13.71	7/1/2014
<b>Harrison Street</b>	-0.44	-1.03	7.34	10.10	7.40	7.33	8.17	5/1/2012
<b>Lubert Adler VII</b>	-8.73	-8.73	-8.56	-4.07	-5.77	-0.23	-1.56	7/1/2014
<b>Lubert Adler VII B</b>	7.57	7.57	13.15	19.79	26.24	19.99	16.21	7/1/2017
<b>Patron Capital</b>	-0.79	-1.45	-5.79	-8.51	4.17	5.76	3.84	8/1/2016
<b>Prologis Targeted US</b>	0.00	-5.57	-0.04	11.89	22.27	20.04	17.92	10/1/2014
<b>Rubenstein PF II</b>	-17.50	-17.50	-26.59	-26.43	-10.91	-3.87	4.32	7/1/2013
<b>Stockbridge Sm/Mkts</b>	-2.05	-6.24	-5.64	6.95	10.58	9.38	9.39	5/1/2014
<b>Walton St RE VI</b>	5.25	5.25	11.62	14.32	6.65	4.80	-11.06	5/1/2009
<b>Walton St RE VII</b>	-0.40	-0.40	3.53	1.96	-1.40	-1.23	5.69	7/1/2013

# Asset Allocation & Performance

## Pension Plan Accounts

Periods Ended March 31, 2023

	Performance (%) net of fees							
	1 Month	QTD	FYTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
<b>Real Return Composite</b>	<b>0.31</b>	<b>2.10</b>	<b>9.99</b>	<b>8.16</b>	<b>14.44</b>	<b>5.94</b>	<b>4.71</b>	<b>7/1/2011</b>
US CPI + 3%	0.30	1.69	4.70	8.14	8.51	6.99	5.61	
Value Added	0.01	0.41	5.29	0.02	5.93	-1.05	-0.90	
<b>Tortoise Capital</b>	<b>-0.98</b>	<b>3.24</b>	<b>23.39</b>	<b>11.26</b>	<b>39.29</b>	<b>7.48</b>	<b>9.35</b>	<b>8/1/2009</b>
Alerian MLP Index	-1.18	4.09	23.84	14.70	47.08	7.42	6.71	
Value Added	0.20	-0.85	-0.45	-3.44	-7.79	0.06	2.64	
<b>Amerra AGRI Fund II</b>	<b>-1.45</b>	<b>-1.45</b>	<b>7.36</b>	<b>12.08</b>	<b>8.52</b>	<b>7.92</b>	<b>6.32</b>	<b>12/1/2012</b>
<b>Amerra AGRI Holdings</b>	<b>3.55</b>	<b>3.55</b>	<b>-0.26</b>	<b>2.59</b>	<b>-1.33</b>	<b>-1.22</b>	<b>-1.17</b>	<b>8/1/2015</b>
<b>BTG Pactual</b>	<b>0.85</b>	<b>0.85</b>	<b>7.56</b>	<b>23.30</b>	<b>6.22</b>	<b>4.12</b>	<b>-1.84</b>	<b>12/1/2014</b>
<b>IFM Infrastructure</b>	<b>2.02</b>	<b>3.82</b>	<b>6.20</b>	<b>7.21</b>	<b>5.48</b>		<b>5.14</b>	<b>7/1/2019</b>
<b>Magnetar MTP EOF II</b>	<b>-2.12</b>	<b>-2.12</b>	<b>5.68</b>	<b>135.62</b>	<b>68.73</b>	<b>40.48</b>	<b>25.61</b>	<b>8/1/2015</b>
<b>Oberland Capital</b>	<b>3.34</b>	<b>3.34</b>	<b>7.79</b>	<b>9.92</b>	<b>15.32</b>		<b>13.41</b>	<b>8/1/2018</b>
<b>Taurus Mine Finance</b>	<b>3.21</b>	<b>3.21</b>	<b>31.17</b>	<b>70.20</b>	<b>19.39</b>	<b>16.32</b>	<b>15.55</b>	<b>4/1/2015</b>
<b>TPF II</b>	<b>-4.23</b>	<b>-4.23</b>	<b>-6.85</b>	<b>-6.92</b>	<b>3.89</b>	<b>4.87</b>	<b>-0.81</b>	<b>10/1/2008</b>
<b>Blackstone Strat Opp</b>	<b>0.35</b>	<b>0.11</b>	<b>-2.50</b>	<b>-0.25</b>	<b>-4.25</b>	<b>-3.24</b>	<b>-2.34</b>	<b>8/1/2017</b>
<b>Luxor Capital</b>	<b>-0.04</b>	<b>-0.08</b>	<b>3.25</b>	<b>3.99</b>	<b>1.64</b>	<b>-1.20</b>	<b>-0.03</b>	<b>4/1/2014</b>
<b>Myriad Opportunities</b>	<b>0.00</b>	<b>-0.28</b>	<b>-7.31</b>	<b>-7.65</b>	<b>-23.79</b>	<b>-16.58</b>	<b>-9.69</b>	<b>5/1/2016</b>
<b>Pine River</b>	<b>1.31</b>	<b>-7.43</b>	<b>-3.84</b>	<b>-16.63</b>	<b>-4.81</b>	<b>2.76</b>	<b>1.65</b>	<b>5/1/2014</b>
<b>PRISMA Capital</b>	<b>0.34</b>	<b>0.98</b>	<b>0.39</b>	<b>0.45</b>	<b>0.01</b>	<b>0.42</b>	<b>2.39</b>	<b>9/1/2011</b>
<b>SRS Partners US</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>4.37</b>	<b>6.19</b>	<b>7.94</b>	<b>8/1/2017</b>
<b>Tricadia Select</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>-4.33</b>	<b>-4.48</b>	<b>9/1/2017</b>

Kentucky Public Pensions Authority

## KERS, KERS-Hazardous, & SPRS Unit Holdings

Quarter Ending: March 31, 2023

KRS Board Meeting - Investment Committee Report

Kentucky Public Pensions Authority						
Pension: KERS, KERS-H, & SPRS Unit Holdings						
Quarter Ended March 31, 2023						
UNIT OF PARTICIPATION	KERS		KERS-H		SPRS	
	Shares/Par	Base Market Value	Shares/Par	Base Market Value	Shares/Par	Base Market Value
Grand Total	21,844,917.916	3,357,135,905.51	4,987,709.447	868,027,996.95	3,867,762.682	573,781,273.92
KRS ABSOLUTE RETURN UNIT	149,632.690	18,280,959.87	39,040.046	4,769,609.60	16,198.153	1,978,964.52
KRS ADAMS STREET A1 UNIT	172,280.136	25,411,257.18	51,232.258	7,556,739.36	21,363.620	3,151,126.15
KRS ADAMS STREET B1 UNIT	195,409.496	25,135,616.88	58,110.419	7,474,770.97	24,231.779	3,116,945.32
KRS AMERRA AGRI UNIT	-	-	27,682.558	2,531,241.23	14,005.924	1,280,675.44
KRS AMERRA UNIT	-	-	7,456.869	1,430,386.23	3,772.782	723,699.91
KRS ARROWMARK UNIT	405,599.625	83,242,636.32	125,747.662	25,807,634.55	50,099.456	10,282,087.40
KRS BLACKROCK UNIT	688,147.351	112,374,029.57	243,181.056	39,711,313.48	98,831.528	16,139,126.36
KRS BLUE TORCH UNIT	157,476.048	23,979,398.76	47,314.490	7,204,733.91	19,521.195	2,972,556.94
KRS BNYM CUSTODY FEE UNIT	-119,857.671	-119,857.67	-31,077.208	-31,077.21	-20,558.520	-20,558.52
KRS BTG UNIT	-	-	17,210.185	1,508,611.33	7,965.109	698,205.95
KRS CASH UNIT	6,179,469.228	609,473,387.42	608,429.314	60,008,628.79	1,268,549.028	125,115,417.63
KRS DIVCOWEST IV UNIT	-	-	133.876	70,123.40	48.148	25,219.62
KRS DOMESTIC EQUITY UNIT	662,339.247	166,633,982.95	232,995.484	58,617,944.93	110,172.803	27,717,718.77
KRS GLOBAL FIXED UNIT	272,075.105	36,242,343.34	133,290.615	17,755,260.01	55,817.030	7,435,226.26
KRS GREENFIELD UNIT	-	-	265.191	3,376.51	95.376	1,214.36
KRS GREENFIELD VII UNIT	-	-	514.746	171,208.28	185.129	61,575.26
KRS HARRISON UNIT	229,149.436	52,223,784.79	56,783.798	12,941,183.27	27,092.529	6,174,461.65
KRS IFM INFRAST DEBT UNIT	78,848.461	11,579,278.44	24,284.713	3,566,327.74	9,413.397	1,382,402.95
KRS INTERNAL EQUITY UNIT	1,539,608.276	460,774,346.66	547,505.330	163,857,530.94	275,851.123	82,556,792.50
KRS INTERNATIONAL EQUITY UNIT	1,992,437.750	337,910,042.49	706,064.960	119,745,994.89	376,297.085	63,818,588.05
KRS L-A VII UNIT	-	-	13,032.050	1,138,210.74	4,685.431	409,222.48
KRS LIQUID CORE FIXED UNIT	5,249,563.491	658,046,259.23	872,745.322	109,400,866.45	927,017.642	116,204,041.08
KRS LIQUID CREDIT FIXED UNIT	10,020.517	0.76	3,470.982	0.26	1,638.453	0.12
KRS LIQUID HY FI UNIT	873,301.403	136,120,562.24	191,170.265	29,797,506.18	141,713.019	22,088,657.77
KRS MAGNETAR MTP UNIT	159.328	82,702.73	28.401	14,742.17	14.098	7,317.88
KRS MESA WEST CORE UNIT	30,939.768	5,650,981.27	18,362.356	3,353,785.00	5,427.457	991,295.66
KRS MESA WEST IV UNIT	34,892.283	3,382,450.59	9,544.948	925,285.25	4,034.654	391,118.51
KRS MULTI SECTOR CREDIT FI	787,166.869	126,833,059.95	132,990.502	21,428,229.49	71,068.687	11,451,014.26
KRS OBERLAND UNIT	-	-	4,426.833	321,759.06	-	-
KRS PE 2010 UNIT	458,894.366	137,464,588.69	58,033.513	17,384,290.56	30,205.308	9,048,183.09
KRS PE 2011 UNIT	-	-	15,176.919	4,654,499.95	-	-
KRS PE 2012 A UNIT	-	-	540.071	329,959.43	81.106	49,552.17
KRS PE 2012 B UNIT	-	-	5,071.521	818,249.40	761.621	122,881.46
KRS PE 2013 UNIT	0.009	3.20	23,613.596	8,395,898.10	7,444.115	2,646,781.58
KRS PE 2014 UNIT	-	-	19,618.015	3,209,216.42	6,184.520	1,011,695.79
KRS PE 2015 UNIT	-	-	15,156.362	3,953,445.63	4,778.011	1,246,315.36
KRS PE 2016 UNIT	-	-	29,825.756	7,512,786.89	-	-
KRS PE 2017 UNIT	-	-	15,602.932	2,447,646.48	-	-
KRS PE 2018 UNIT	-	-	18,101.357	3,080,530.80	-	-
KRS PE 2019 UNIT	-	-	20,993.440	4,730,082.88	-	-
KRS PE 2021 UNIT	153,210.133	17,874,396.98	44,048.835	5,138,996.67	17,626.624	2,056,425.83
KRS PERIMETER PARK UNIT	19,205.499	1,879,916.69	15,740.350	1,540,733.03	3,731.088	365,214.91
KRS POST-2015 REAL ESTATE UNIT	210,286.501	30,244,655.78	57,524.852	8,273,566.49	24,315.783	3,497,240.59
KRS PRIVATE CREDIT FI UNIT	387,608.086	75,400,767.62	139,221.121	27,082,457.18	35,982.489	6,999,614.79
KRS PROLOGIS UNIT	246,066.872	60,265,088.03	67,312.722	16,485,791.38	28,453.125	6,968,553.18
KRS REAL RETURN UNIT	231,618.532	40,542,467.08	58,014.768	10,154,894.78	23,166.179	4,055,003.89
KRS RUBENSTEIN PF II UNIT	-	-	4,735.076	865,418.87	1,702.973	311,248.43
KRS SHENKMAN UNIT	152,600.408	24,200,516.90	126,249.506	20,021,593.28	58,713.808	9,311,275.91
KRS STOCKBRIDGE UNIT	123,246.396	27,814,940.28	24,535.920	5,537,404.51	11,887.258	2,682,783.29
KRS TAURUS UNIT	-	-	685.318	216,812.95	216.045	68,349.81
KRS TPF II UNIT	255.889	27,151.80	39.538	4,195.29	18.128	1,923.52
KRS WALTON VI UNIT	22,864.485	4,266,701.33	4,997.614	932,595.96	1,657.353	309,275.73
KRS WALTON VII UNIT	-	-	3,196.765	547,328.35	1,149.716	196,846.55
KRS WATERFALL UNIT	250,401.903	43,897,487.36	77,735.559	13,627,674.86	95,135.317	16,677,993.76

KRS Board Meeting - Investment Committee Report

Kentucky Public Pensions Authority						
Insurance: KERS INS, KERS-H INS, & SPRS INS Unit Holdings						
Quarter Ended March 31, 2023						
UNIT OF PARTICIPATION	KERS INS		KERS-H INS		SPRS INS	
	Shares/Par	Base Market Value	Shares/Par	Base Market Value	Shares/Par	Base Market Value
Grand Total	10,411,206.978	1,395,354,854.16	4,835,707.671	600,584,560.64	1,786,771.423	238,907,431.93
KR3 ARROWMARK UNIT	198,111.345	41,096,008.20	123,155.934	25,547,336.90	45,477.526	9,433,809.97
KRS INS PE 2014 UNIT	-	-	12,709.808	2,081,456.57	7,909.809	1,295,371.57
KRS INS ABSOLUTE RETURN UNIT	53,386.200	6,525,699.37	35,449.546	4,333,199.96	13,293.771	1,624,973.36
KRS INS ADAMS STREET A1 UNIT	71,577.090	10,557,594.79	38,505.911	5,679,607.89	14,874.106	2,193,925.24
KRS INS ADAMS STREET B1 UNIT	81,175.384	10,443,073.61	43,669.450	5,617,999.67	16,868.687	2,170,127.59
KRS INS AMERRA AGRI UNIT	32,066.434	2,932,365.75	26,002.812	2,377,868.25	9,773.392	893,743.28
KRS INS AMERRA UNIT	6,443.202	1,241,117.75	5,224.818	1,006,427.29	1,963.795	378,274.78
KRS INS BLACKROCK UNIT	735,968.976	47,953,638.02	408,777.073	26,634,747.43	154,203.321	10,047,448.30
KRS INS BLUE TORCH UNIT	66,616.664	10,143,939.80	35,017.303	5,332,200.57	13,564.966	2,065,582.25
KRS INS BNYM CUSTODY FEE UNIT	-71,242.846	-71,242.85	-30,980.696	-30,980.70	-12,325.179	-12,325.18
KRS INS BTG UNIT	20,001.053	1,753,253.38	13,560.021	1,188,645.05	5,144.451	450,952.56
KRS INS CASH UNIT	1,544,158.241	161,214,604.60	127,139.051	13,273,686.14	43,328.215	4,523,591.47
KRS INS DB PRIVATE EQ UNIT	8,272.330	2,684,585.11	6,867.415	2,228,653.84	1,537.665	499,012.07
KRS INS DIVCOWEST IV UNIT	139.491	73,481.38	104.545	55,072.45	39.377	20,743.10
KRS INS DOMESTIC EQUITY UNIT	393,640.000	99,005,567.09	170,278.113	42,827,154.61	68,927.738	17,336,220.38
KRS INS GLOBAL FIXED UNIT	171,877.939	22,467,290.86	7,404.155	967,845.58	38,959.849	5,092,696.97
KRS INS GREENFIELD UNIT	277.542	3,517.08	208.010	2,635.95	78.297	992.20
KRS INS GREENFIELD VII UNIT	535.338	178,065.59	401.220	133,454.90	151.021	50,233.02
KRS INS HARRISON UNIT	77,338.977	17,237,063.24	56,020.957	12,485,771.29	21,455.354	4,781,900.51
KRS INS IFM INFRASTR DEBT UNIT	34,930.160	5,065,755.22	19,654.433	2,850,389.08	6,621.606	960,300.07
KRS INS INTERNAL EQUITY UNIT	846,772.363	254,008,266.01	376,370.643	112,900,773.08	147,907.274	44,368,087.39
KRS INS INTL EQ UNIT	1,263,802.341	211,890,600.63	524,570.646	87,950,137.17	211,794.741	35,509,757.68
KRS INS L-A-VII UNIT	13,548.550	1,183,603.35	10,154.240	887,075.92	3,824.578	334,115.70
KRS INS LIQUID CORE FIXED UNIT	1,319,569.046	163,792,117.48	578,073.306	71,753,616.18	226,847.066	28,157,496.87
KRS INS LIQUID CREDIT FIXED UN	1,738,367.727	1.74	1,337,212.672	1.34	401,179.551	0.40
KRS INS LIQUID HY FI UNIT	240,001.875	36,409,207.48	105,997.810	16,080,275.44	41,242.730	6,256,680.76
KRS INS MAGNETAR MTP	28.007	14,465.12	22.063	11,536.95	8.389	4,386.69
KRS INS MESA WEST CORE UNIT	32,110.702	5,741,490.04	27,534.291	4,923,214.00	10,315.876	1,844,509.64
KRS INS MESA WEST IV UNIT	10,669.816	999,519.78	7,979.816	747,527.78	3,050.668	285,778.41
KRS INS MULTI SECTOR CREDIT FI	212,837.305	33,709,637.20	127,352.658	20,170,392.11	43,970.794	6,964,190.39
KRS INS OBERLAND UNIT	12,641.059	948,895.85	3,571.765	268,113.06	836.161	62,766.08
KRS INS PE 2010 UNIT	35,221.201	10,386,307.41	16,776.255	4,947,115.28	7,460.501	2,200,011.77
KRS INS PE 2011 UNIT	-	-	18,357.916	5,745,875.01	8,741.854	2,736,127.59
KRS INS PE 2012 A UNIT	-	-	292.129	179,061.34	181.803	111,436.69
KRS INS PE 2012 B UNIT	-	-	3,507.405	568,539.68	2,165.695	351,052.57
KRS INS PE 2013 UNIT	-	-	18,685.220	6,564,656.57	11,628.529	4,085,437.55
KRS INS PE 2015 UNIT	-	-	12,706.847	3,293,368.53	7,907.963	2,049,590.78
KRS INS PE 2016 UNIT	88,850.729	22,379,687.50	54,189.185	13,649,151.11	20,992.220	5,287,512.31
KRS INS PE 2017 UNIT	46,807.096	7,302,799.40	28,547.314	4,453,925.27	11,058.781	1,725,380.68
KRS INS PE 2018 UNIT	57,875.158	10,133,803.23	16,352.743	2,863,326.61	3,828.198	670,308.41
KRS INS PE 2019 UNIT	125,601.844	28,299,647.26	8,971.563	2,021,403.99	3,588.626	808,561.78
KRS INS PE 2021 UNIT	71,679.459	8,400,932.01	33,784.927	3,959,640.30	13,235.978	1,551,274.98
KRS INS POST-2015 REAL ESTATE	67,983.454	9,747,110.79	50,843.940	7,289,737.24	19,437.537	2,786,852.03
KRS INS PRIVATE CREDIT FI UNIT	204,971.257	39,213,470.34	123,770.482	23,678,784.02	44,560.326	8,524,927.09
KRS INS PROLOGIS UNIT	46,483.481	18,119,820.00	34,764.411	13,551,585.55	13,290.350	5,180,738.29
KRS INS REAL RETURN UNIT	68,564.884	11,797,011.54	31,352.250	5,394,348.15	12,238.077	2,105,636.69
KRS INS RUBENSTEIN PF II UNIT	4,991.951	906,859.22	3,741.344	679,668.59	1,409.174	255,996.59
KRS INS SHENKMAN UNIT	287,660.031	45,189,448.30	69,062.617	10,849,270.75	24,044.300	3,777,197.16
KRS INS STOCKBRIDGE UNIT	38,327.097	8,612,540.38	27,034.753	6,075,020.55	10,358.286	2,327,626.23
KRS INS TAURUS UNIT	-	-	366.303	116,114.17	227.965	72,262.49
KRS INS TPF II UNIT	17.081	1,812.30	9.178	973.79	3.998	424.19
KRS INS WALTON VI UNIT	1,735.306	321,890.28	992.318	184,069.85	424.189	78,684.86
KRS INS WALTON VII UNIT	3,329.973	570,135.21	2,495.727	427,301.32	939.400	160,837.65
KRS INS WATERFALL UNIT	145,484.665	24,768,216.32	81,093.055	13,805,787.22	26,222.078	4,464,210.03

Kentucky Public Pensions Authority

# Security Litigation Report

Quarter Ending: March 31, 2023

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Claims Filed during the Quarter (pg 3):

**10**

Proceeds Received during the Quarter (pg 4):

**\$45,908.81**

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KRS Board Meeting - Investment Committee Report

<b>Kentucky Retirement Systems</b>	
Quarterly Securities Litigation Report	
Quarter Ended 03/31/23	
<b>Total Claims Filed</b>	
No Claim on File	9
Fiscal Year 1997	1
Fiscal Year 1998	2
Fiscal Year 1999	5
Fiscal Year 2000	9
Fiscal Year 2001	8
Fiscal Year 2002	33
Fiscal Year 2003	45
Fiscal Year 2004	38
Fiscal Year 2005	89
Fiscal Year 2006	150
Fiscal Year 2007	70
Fiscal Year 2008	73
Fiscal Year 2009	85
Fiscal Year 2010	65
Fiscal Year 2011	69
Fiscal Year 2012	54
Fiscal Year 2013	48
Fiscal Year 2014	65
Fiscal Year 2015	80
Fiscal Year 2016	224
Fiscal Year 2017	140
Fiscal Year 2018	74
Fiscal Year 2019	55
Fiscal Year 2020	42
Fiscal Year 2021	43
Fiscal Year 2022	49
Fiscal Year 2023	42
<b>Total Filed</b>	<b>1,667</b>
<b>Proceeds Received</b>	
Fiscal Year 1998	\$67,682
Fiscal Year 1999	\$233,370
Fiscal Year 2000	\$303,918
Fiscal Year 2001	\$415,502
Fiscal Year 2002	\$387,318
Fiscal Year 2003	\$519,059
Fiscal Year 2004	\$1,080,920
Fiscal Year 2005	\$1,645,440
Fiscal Year 2006	\$797,535
Fiscal Year 2007	\$5,398,363
Fiscal Year 2008	\$5,402,336
Fiscal Year 2009	\$3,504,682
Fiscal Year 2010	\$2,776,544
Fiscal Year 2011	\$1,292,484
Fiscal Year 2012	\$468,657
Fiscal Year 2013	\$1,070,427
Fiscal Year 2014	\$308,704
Fiscal Year 2015	\$23,639,565
Fiscal Year 2016	\$2,417,957
Fiscal Year 2017	\$1,886,532
Fiscal Year 2018	\$2,247,966
Fiscal Year 2019	\$1,702,272
Fiscal Year 2020	\$1,743,474
Fiscal Year 2021	\$286,420
Fiscal Year 2022	\$616,557
Fiscal Year 2023	\$232,095
<b>Total Proceeds</b>	<b>\$60,445,781</b>

KRS Board Meeting - Investment Committee Report

Class Action Name	TNT Status Code	Status as of Date	Class Period Start Date	Class Period End Date	Class Account Id	Claimed Account Name
TEXTRON INC., Securities Litigation	FILED	1/18/2023	1/31/2018	12/6/2018	956596	KRS KRS INTERNAL EQUITY
TEXTRON INC., Securities Litigation	FILED	1/18/2023	1/31/2018	12/6/2018	956599	KRS S P 500 INDEX
TEXTRON INC., Securities Litigation	FILED	1/18/2023	1/31/2018	12/6/2018	956772	KRS INS KRS INTERNAL EQUITY
TEXTRON INC., Securities Litigation	FILED	1/18/2023	1/31/2018	12/6/2018	956774	KRS INS S P 500 INDEX
ORACLE CORPORATION, Securities Litigation (18CV04844BLF)	FILED	1/31/2023	5/10/2017	6/20/2018	956774	KRS INS S P 500 INDEX
ORACLE CORPORATION, Securities Litigation (18CV04844BLF)	FILED	1/31/2023	5/10/2017	6/20/2018	956772	KRS INS KRS INTERNAL EQUITY
ORACLE CORPORATION, Securities Litigation (18CV04844BLF)	FILED	1/31/2023	5/10/2017	6/20/2018	956596	KRS KRS INTERNAL EQUITY
ORACLE CORPORATION, Securities Litigation (18CV04844BLF)	FILED	1/31/2023	5/10/2017	6/20/2018	956599	KRS S P 500 INDEX
PEABODY ENERGY CORP. SECURITIES LITIGATION	FILED	1/31/2023	4/3/2017	10/28/2019	956588	KRS NTGI STRUCTURED
PEABODY ENERGY CORP. SECURITIES LITIGATION	FILED	1/31/2023	4/3/2017	10/28/2019	956765	KRS INS NTGI STRUCTURED
PORTOLA PHARMACEUTICALS INC. Securities Litigation	FILED	2/9/2023	1/8/2019	2/28/2020	956588	KRS NTGI STRUCTURED
PORTOLA PHARMACEUTICALS INC. Securities Litigation	FILED	2/9/2023	1/8/2019	2/28/2020	956765	KRS INS NTGI STRUCTURED
SUPER MICRO COMPUTER, INC., Securities Litigation (18CV00838)	FILED	2/23/2023	8/5/2016	1/30/2018	956765	KRS INS NTGI STRUCTURED
SUPER MICRO COMPUTER, INC., Securities Litigation (18CV00838)	FILED	2/23/2023	8/5/2016	1/30/2018	956588	KRS NTGI STRUCTURED
U.S STEEL, Securities Litigation	FILED	2/25/2023	1/27/2016	4/25/2017	956766	KRS INS SYSTEMATIC
U.S STEEL, Securities Litigation	FILED	2/25/2023	1/27/2016	4/25/2017	956589	KRS SYSTEMATIC
U.S STEEL, Securities Litigation	FILED	2/25/2023	1/27/2016	4/25/2017	956765	KRS INS NTGI STRUCTURED
U.S STEEL, Securities Litigation	FILED	2/25/2023	1/27/2016	4/25/2017	956588	KRS NTGI STRUCTURED
NEWELL BRANDS INC. Securities Litigation	FILED	3/2/2023	12/14/2015	4/18/2016	956768	KRS INS WESTFIELD CAPITAL
NEWELL BRANDS INC. Securities Litigation	FILED	3/2/2023	12/14/2015	4/18/2016	KR2F1901002	STATE STREET TRANSITION
NEWELL BRANDS INC. Securities Litigation	FILED	3/2/2023	12/14/2015	4/18/2016	956766	KRS INS SYSTEMATIC
NEWELL BRANDS INC. Securities Litigation	FILED	3/2/2023	12/14/2015	4/18/2016	956774	KRS INS S P 500 INDEX
NEWELL BRANDS INC. Securities Litigation	FILED	3/2/2023	12/14/2015	4/18/2016	956589	KRS SYSTEMATIC
NEWELL BRANDS INC. Securities Litigation	FILED	3/2/2023	12/14/2015	4/18/2016	956591	KRS WESTFIELD CAPITAL
PROPETRO HOLDING CORP., Securities Litigation	FILED	3/15/2023	2/8/2017	3/13/2020	956765	KRS INS NTGI STRUCTURED
OMEGA HEALTHCARE INVESTORS, INC., Securities Litigation (17CV08983NRB)	FILED	3/22/2023	2/8/2017	10/31/2017	956816	KRS INS NUVEEN REAL ASSET
OMEGA HEALTHCARE INVESTORS, INC., Securities Litigation (17CV08983NRB)	FILED	3/22/2023	2/8/2017	10/31/2017	956642	KRS NUVEEN REAL ASSET
DEUTSCHE BANK AKTIENGESELLSCHAFT, Securities Litigation	FILED	3/28/2023	3/14/2017	9/18/2020	956801	KRS INS LSV ASSET MGMT



**Transaction Detail**  
**Reported By Transaction Category**

Report ID: IACS0008

Base Currency: USD

KR2G0000000 - TOTAL FUND

12/31/2022 - 3/31/2023

Status: PRELIMINARY

Trans Code	Shares/Par	Description	Trade Date	Price	Cost	Amount	Net Gain/Loss
Link Ref	Security Id	Broker	C. Settle Date	Local/Base	Local/Base	Local/Base	Local/Base
		Transaction No./Client Ref No.	Reported Date				
<b>CLASS ACTIONS</b>							
<b>CASH &amp; CASH EQUIVALENTS</b>							
<b>U.S. DOLLAR</b>							
CD	0.000	16-1224 (KM)(MAH)PTC THERAPEUT	1/19/2023	0.000000	329.21	329.21	329.21
	NA9123459	ICS, INC. Distribution 2ND DIS		0.000000	329.21	329.21	329.21
		20230119S000020 / 000000000008	1/19/2023				
		KR2F10060002 : WESTFIELD CAPITAL					Gain/Loss Local Amounts: 329.21 Long Gain/Loss Base Amounts: 329.21 Long
CD	0.000	24358LADENBURG THALMANN FINANC	1/19/2023	0.000000	33.95	33.95	33.95
	NA9123459	IAL SERVICES INC. (2020) Distr		0.000000	33.95	33.95	33.95
		20230119S000190 / 000000001530	1/19/2023				
		KR2F10020002 : NTGI STRUCTURED					Gain/Loss Local Amounts: 33.95 Long Gain/Loss Base Amounts: 33.95 Long
CD	0.000	23548Wells Fargo & Company (SE	2/2/2023	0.000000	22,884.64	22,884.64	22,884.64
	NA9123459	C) Distribution 1ST DISTRIBUTI		0.000000	22,884.64	22,884.64	22,884.64
		20230203S000050 / 000000000008	2/2/2023				
		KR2F10120002 : RIVER ROAD FAV					Gain/Loss Local Amounts: 22,884.64 Long Gain/Loss Base Amounts: 22,884.64 Long
CD	0.000	APPLIED MICRO CIRCUITS CORPS S	2/8/2023	0.000000	223.90	223.90	223.90
	NA9123459	EC LIT PROCEEDS		0.000000	223.90	223.90	223.90
		20230210S000010 / DFEACAFDBE6F	2/8/2023				
		KR2F90010002 : CASH ACCOUNT KR2					Gain/Loss Local Amounts: 223.90 Long Gain/Loss Base Amounts: 223.90 Long
CD	0.000	24000GTT Communications, Inc.	3/10/2023	0.000000	880.47	880.47	880.47
	NA9123459	(2021) Distribution 1ST DISTRI		0.000000	880.47	880.47	880.47
		20230310S000260 / 000000000000	3/10/2023				
		KR2F10020002 : NTGI STRUCTURED					Gain/Loss Local Amounts: 880.47 Long Gain/Loss Base Amounts: 880.47 Long
CD	0.000	3-17-CV-2616-MBSSCANNA Corporat	3/14/2023	0.000000	8,020.25	8,020.25	8,020.25
	NA9123459	ion (2017)(D.S.C) Distribution		0.000000	8,020.25	8,020.25	8,020.25
		20230314S000320 / 000000000002	3/14/2023				
		KR2F10110002 : KRS INTERNAL EQUITY					Gain/Loss Local Amounts: 8,020.25 Long Gain/Loss Base Amounts: 8,020.25 Long



**Transaction Detail  
Reported By Transaction Category**

Report ID: IACS0008

Base Currency: USD

Status: PRELIMINARY

KR2G0000000 - TOTAL FUND

12/31/2022 - 3/31/2023

Trans Code	Shares/Par	Description	Trade Date	Price	Cost	Amount	Net Gain/Loss
Link Ref	Security Id	Broker	C. Settle Date	Local/Base	Local/Base	Local/Base	Local/Base
		Transaction No./Client Ref No.	Reported Date				
CD	0.000	COMPUTER SCIENCES CORP (SEC NA9123459 FAIR FUND)	3/10/2023	0.000000	127.56	127.56	127.56
		20230317A000150	3/10/2023	0.000000	127.56	127.56	127.56
		KR2F19020002 : S&P 500 INDEX					Gain/Loss Local Amounts: 127.56 Long Gain/Loss Base Amounts: 127.56 Long
CD	0.000	COMPUTER SCIENCES CORP (SEC NA9123459 FAIR FUND)	3/10/2023	0.000000	41.97	41.97	41.97
		20230317A000160	3/10/2023	0.000000	41.97	41.97	41.97
		KR2F19020002 : S&P 500 INDEX					Gain/Loss Local Amounts: 41.97 Long Gain/Loss Base Amounts: 41.97 Long
CD	0.000	20721HONEYWELL INTERNATIONAL, NA9123459 INC. (2018) Distribution 1ST D	3/31/2023	0.000000	141.80	141.80	141.80
		20230331S000270 / 000000000087	3/31/2023	0.000000	141.80	141.80	141.80
		KR2F10110002 : KRS INTERNAL EQUITY					Gain/Loss Local Amounts: 141.80 Long Gain/Loss Base Amounts: 141.80 Long
CD	0.000	22119NETAPP, INC., Securities NA9123459 Litigation Distribution 1ST DI	3/31/2023	0.000000	67.44	67.44	67.44
		20230331S000420 / 000000000000	3/31/2023	0.000000	67.44	67.44	67.44
		KR2F19020002 : S&P 500 INDEX					Gain/Loss Local Amounts: 67.44 Long Gain/Loss Base Amounts: 67.44 Long
<b>TOTAL U.S. DOLLAR CASH &amp; CASH EQUIVALENTS:</b>					<u>32,751.19</u>	<u>32,751.19</u>	<u>32,751.19</u>
					<b>32,751.19</b>	<b>32,751.19</b>	<b>32,751.19</b>
<b>TOTAL CASH &amp; CASH EQUIVALENTS CLASS ACTIONS:</b>					<u>32,751.19</u>	<u>32,751.19</u>	<u>32,751.19</u>
<b>TOTAL CLASS ACTIONS:</b>					<b>32,751.19</b>	<b>32,751.19</b>	<b>32,751.19</b>
<b>TOTAL TRANSACTIONS BASE:</b>					<u>32,751.19</u>	<u>32,751.19</u>	<u>32,751.19</u>



**Transaction Detail**  
**Reported By Transaction Category**

Report ID: IACS0008

Base Currency: USD

KR3G0000000 - TOTAL FUND

12/31/2022 - 3/31/2023

Status: PRELIMINARY

Trans Code	Shares/Par	Description	Trade Date	Price	Cost	Amount	Net Gain/Loss
Link Ref	Security Id	Broker	C. Settle Date	Local/Base	Local/Base	Local/Base	Local/Base
		Transaction No./Client Ref No.	Reported Date				
<b>CLASS ACTIONS</b>							
<b>CASH &amp; CASH EQUIVALENTS</b>							
<b>U.S. DOLLAR</b>							
CD	0.000	16-1224 (KM)(MAH)PTC THERAPEUT	1/19/2023	0.000000	132.32	132.32	132.32
	NA9123459	ICS, INC. Distribution 2ND DIS		0.000000	132.32	132.32	132.32
		20230119S000020 / 000000000008	1/19/2023				Gain/Loss Local Amounts: 132.32 Long
		KR3F10060002 : WESTFIELD CAPITAL					Gain/Loss Base Amounts: 132.32 Long
CD	0.000	24358LADENBURG THALMANN FINANC	1/19/2023	0.000000	11.32	11.32	11.32
	NA9123459	IAL SERVICES INC. (2020) Distr		0.000000	11.32	11.32	11.32
		20230119S000190 / 000000001530	1/19/2023				Gain/Loss Local Amounts: 11.32 Long
		KR3F10020002 : NTGI STRUCTURED					Gain/Loss Base Amounts: 11.32 Long
CD	0.000	8-14-cv-02004-DOC-KESxALLERGAN	1/31/2023	0.000000	172.94	172.94	172.94
	NA9123459	, INC. (2014) (C.D. CAL.) (SEC		0.000000	172.94	172.94	172.94
		20230131S000150 / 000000000985	1/31/2023				Gain/Loss Local Amounts: 172.94 Long
		KR3F19020002 : S&P 500 INDEX					Gain/Loss Base Amounts: 172.94 Long
CD	0.000	23548Wells Fargo & Company (SE	2/2/2023	0.000000	8,125.24	8,125.24	8,125.24
	NA9123459	C) Distribution 1ST DISTRIBUTI		0.000000	8,125.24	8,125.24	8,125.24
		20230203S000040 / 000000000008	2/2/2023				Gain/Loss Local Amounts: 8,125.24 Long
		KR3F10120002 : RIVER ROAD FAV					Gain/Loss Base Amounts: 8,125.24 Long
CD	0.000	412-CV-01332 (HARMON, J.)HOUST	2/7/2023	0.000000	18.62	18.62	18.62
	NA9123459	ON AMERICAN ENERGY CORP Distri		0.000000	18.62	18.62	18.62
		20230207S000250 / 000000000010	2/7/2023				Gain/Loss Local Amounts: 18.62 Long
		KR3F10020002 : NTGI STRUCTURED					Gain/Loss Base Amounts: 18.62 Long
CD	0.000	24000GTT Communications, Inc.	3/10/2023	0.000000	388.34	388.34	388.34
	NA9123459	(2021) Distribution 1ST DISTRI		0.000000	388.34	388.34	388.34
		20230310S000250 / 000000000000	3/10/2023				Gain/Loss Local Amounts: 388.34 Long
		KR3F10020002 : NTGI STRUCTURED					Gain/Loss Base Amounts: 388.34 Long



**Transaction Detail**  
**Reported By Transaction Category**

Report ID: IACS0008

Base Currency: USD

KR3G0000000 - TOTAL FUND

12/31/2022 - 3/31/2023

Status: PRELIMINARY

Trans Code	Shares/Par	Description	Trade Date	Price	Cost	Amount	Net Gain/Loss
Link Ref	Security Id	Broker	C. Settle Date	Local/Base	Local/Base	Local/Base	Local/Base
		Transaction No./Client Ref No.	Reported Date				
CD	0.000	3-17-CV-2616-MBSSCANA Corporat	3/14/2023	0.000000	4,220.86	4,220.86	4,220.86
	NA9123459	ion (2017)(D.S.C) Distribution		0.000000	4,220.86	4,220.86	4,220.86
		20230314S000320 / 000000000002	3/14/2023				Gain/Loss Local Amounts: 4,220.86 Long
		KR3F10110002 : KRS INTERNAL EQUITY					Gain/Loss Base Amounts: 4,220.86 Long
CD	0.000	20721HONEYWELL INTERNATIONAL,	3/31/2023	0.000000	58.93	58.93	58.93
	NA9123459	INC. (2018) Distribution 1ST D		0.000000	58.93	58.93	58.93
		20230331S000260 / 000000000087	3/31/2023				Gain/Loss Local Amounts: 58.93 Long
		KR3F10110002 : KRS INTERNAL EQUITY					Gain/Loss Base Amounts: 58.93 Long
CD	0.000	22119NETAPP, INC., Securities	3/31/2023	0.000000	29.05	29.05	29.05
	NA9123459	Litigation Distribution 1ST DI		0.000000	29.05	29.05	29.05
		20230331S000400 / 000000000000	3/31/2023				Gain/Loss Local Amounts: 29.05 Long
		KR3F19020002 : S&P 500 INDEX					Gain/Loss Base Amounts: 29.05 Long
<b>TOTAL U.S. DOLLAR CASH &amp; CASH EQUIVALENTS:</b>					<u>13,157.62</u>	<u>13,157.62</u>	<u>13,157.62</u>
					<u>13,157.62</u>	<u>13,157.62</u>	<u>13,157.62</u>
<b>TOTAL CASH &amp; CASH EQUIVALENTS CLASS ACTIONS:</b>					<u>13,157.62</u>	<u>13,157.62</u>	<u>13,157.62</u>
<b>TOTAL CLASS ACTIONS:</b>					<u>13,157.62</u>	<u>13,157.62</u>	<u>13,157.62</u>
<b>TOTAL TRANSACTIONS BASE:</b>					<u>13,157.62</u>	<u>13,157.62</u>	<u>13,157.62</u>

Kentucky Retirement Systems

# Capital Calls and Distributions

Quarter Ending: March 31, 2023

KRS Board Meeting - Investment Committee Report

Kentucky Public Pensions Authority  
Capital Calls and Distributions  
For the period January 1, 2023 thru March 31, 2023

Pension Funds Managers	Total Pension Funds Commitments	Kentucky Employees Retirement System					Kentucky Employees Hazardous Retirement System					State Police Employees Retirement System				
		Commitment	Beginning Valuation	Period Contributions	Period Distributions	Ending Valuation	Commitment	Beginning Valuation	Period Contributions	Period Distributions	Ending Valuation	Commitment	Beginning Valuation	Period Contributions	Period Distributions	Ending Valuation
Adams Street SPC II A1	175,000,000	31,747,734	25,701,026	0	289,768	25,411,257	9,441,066	7,642,910	0	86,171	7,556,739	3,936,882	3,187,059	0	35,933	3,151,126
Adams Street SPC II B1	175,000,000	31,747,734	22,959,941	2,465,445	289,768	25,135,617	9,441,067	6,827,773	733,168	86,171	7,474,771	3,936,882	2,847,150	305,728	35,933	3,116,945
AMERRA Agri Fund II, LP	40,100,000	0	0	0	0	0	2,477,739	1,430,386	0	0	1,430,386	1,253,605	723,700	0	0	723,700
AMERRA-KRS Agri Holding Company, LP	65,000,000	0	0	0	0	0	4,016,284	2,561,337	0	30,096	2,531,241	2,032,029	1,295,902	0	15,227	1,280,675
Arcano KRS Fund I, L.P.	36,000,000	13,050,524	5,673,570	0	0	5,673,570	1,650,419	717,501	0	0	717,501	859,011	373,445	0	0	373,445
Arcos Sports Partners Fund II	85,000,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ares Special Situations Fund IV, L.P.	26,192,000	0	0	0	0	0	1,622,790	1,228,037	0	64,215	1,163,821	511,579	387,135	0	20,244	366,891
Barings Euro Real Estate II	161,609,438	30,188,645	5,748,774	0	5,852,196	8,258,244	1,572,604	0	0	1,600,895	3,490,764	664,741	0	0	676,699	
Barings Real Estate European Value Add I SCSp	114,077,250	21,309,632	8,059,752	0	943,083	7,258,748	5,829,349	2,204,783	0	257,985	1,985,664	2,464,069	931,963	0	109,050	839,341
Bay Hills Capital I, L.P.	67,500,000	24,469,733	1,828,544	0	42,414	1,786,130	3,094,535	231,245	0	5,364	225,881	1,610,645	120,358	0	2,792	117,567
Bay Hills Capital III, L.P.	51,250,000	1	1	0	0	1	3,175,320	3,014,078	0	0	3,014,078	1,001,010	950,179	0	0	950,179
Bay Hills Emerging Partners II LP	45,000,000	16,313,156	32,694,681	0	215,334	32,479,347	2,063,023	4,134,693	0	27,232	4,107,461	1,073,764	2,152,027	0	14,174	2,137,854
Bay Hills Emerging Partners II-B LP	45,000,000	16,313,156	22,367,693	0	701,466	21,666,227	2,063,023	2,828,703	0	88,710	2,739,993	1,073,764	1,472,285	0	46,172	1,426,113
BDCM Opportunity Fund IV, L.P.	35,580,000	0	0	0	0	0	2,204,447	3,528,034	0	20,948	3,507,085	694,947	1,112,205	0	6,604	1,105,601
Blackstone Capital Partners V, L.P.	47,174,735	17,101,529	56,835	0	0	56,835	2,162,724	7,188	0	7,188	1,125,656	3,741	0	0	3,741	
Blackstone Capital Partners VI, L.P.	60,000,000	0	0	0	0	0	3,299,994	1,333,730	6,590	12,991	1,327,330	0	0	0	0	0
Blue Torch Credit Opportunities Fund II LP	140,000,000	25,356,966	24,918,986	0	0	24,918,986	7,618,631	7,487,038	0	0	7,487,038	3,143,324	3,089,031	0	0	3,089,031
BSP Co-Invest Vehicle K LP	0	0	5,677,608	0	102,675	5,574,933	0	2,039,284	0	36,879	2,002,405	0	527,065	0	9,532	517,533
BSP Private Credit Fund	100,000,000	14,833,350	13,709,573	0	355,388	13,354,185	5,327,845	4,924,206	0	127,648	4,796,558	1,377,012	1,272,689	0	32,991	1,239,698
BTG Pactual Brazil Timberland Fund I	34,500,000	0	0	0	0	0	2,058,030	1,508,611	0	0	1,508,611	952,485	698,206	0	0	698,206
Camelot Opportunities Fund, L.P.	23,400,000	8,482,841	2,347,503	0	0	2,347,503	1,072,772	296,874	0	0	296,874	558,357	154,517	0	0	154,517
Cerberus KRS Levered Loan Opportunities Fund, L.P.	140,000,000	20,766,690	26,507,983	0	0	26,970,059	7,458,982	9,521,141	0	0	9,687,109	1,927,816	2,460,793	0	0	2,503,688
Ceres Farms	100,000,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Columbia Capital Equity Partners IV, L.P.	27,000,000	9,787,893	1,154,612	0	0	1,154,612	1,237,814	146,017	0	0	146,017	644,258	75,999	0	0	75,999
Crestview Partners II, L.P.	67,500,000	24,469,733	11,702,016	0	1,076,420	10,625,597	3,094,535	1,479,881	0	136,128	1,343,753	1,610,645	770,249	0	70,852	699,397
Crestview Partners III, L.P.	39,000,000	0	0	0	0	0	2,416,341	2,160,291	75,557	190,453	2,045,395	761,744	681,025	23,819	60,040	644,805
CS Adjacent Investment Partners Parallel LP	140,000,000	20,766,690	10,757,117	0	391,877	10,365,240	7,458,982	3,863,743	0	140,754	3,722,988	1,927,816	998,606	0	36,379	962,227
CVC European Equity Partners VI, L.P.	23,815,820	1	1	0	0	1	1,475,568	1,679,810	4,390	81,074	1,633,738	465,168	529,555	1,384	25,558	515,031
DAG Ventures II, L.P.	27,000,000	9,787,893	698,137	0	0	698,137	1,237,814	88,289	0	0	88,289	644,258	45,953	0	0	45,953
DAG Ventures III, L.P.	27,000,000	9,787,893	132,557	0	0	132,557	1,237,814	16,764	0	0	16,764	644,258	8,725	0	0	8,725
DAG Ventures IV, L.P.	90,000,000	32,626,311	14,110,101	0	6,454,020	7,656,080	4,126,046	1,784,417	0	816,200	968,217	2,147,527	928,754	0	424,816	503,938
DAG Ventures V, L.P.	8,000,000	0	0	0	0	0	439,999	2,485	0	0	2,485	0	0	0	0	0
DCM VI, L.P.	13,500,000	4,893,947	1,727,266	0	254,048	1,473,219	618,907	218,437	0	32,128	186,309	322,129	113,692	0	16,722	96,970
DivcoWest Fund IV	20,800,000	0	0	0	0	0	1,244,069	79,810	0	9,686	70,123	447,430	28,704	0	3,484	25,220
Essex Woodlands Fund VIII, L.P.	22,500,000	8,156,578	-626,596	0	0	-626,596	1,031,512	-79,242	0	0	-79,242	536,882	-41,244	0	0	-41,244
Fundamental Partners III LP	70,000,000	13,076,001	12,128,655	0	395,045	11,733,609	3,577,001	3,317,850	0	108,066	3,209,784	1,512,000	1,402,457	0	45,680	1,356,777
Green Equity Investors V, L.P.	90,000,000	32,626,311	564,983	0	0	564,983	4,126,046	71,450	0	0	71,450	2,147,527	37,188	0	0	37,188
Green Equity Investors VI, L.P.	32,000,000	0	0	0	0	0	1,759,997	1,853,801	2,671	0	1,856,472	0	0	0	0	0
Green Equity Investors VII LP	25,000,000	0	0	0	0	0	1,525,000	1,907,983	0	48,766	1,859,217	0	0	0	0	0
Greenfield Acquisition Partners VI, L.P.	38,100,000	0	0	0	0	0	2,278,801	2,691	0	0	2,691	819,568	968	0	0	968
Greenfield Acquisition Partners VII, L.P.	27,800,000	0	0	0	0	0	1,662,744	201,256	0	55,650	145,606	598,005	72,382	0	20,014	52,367
H.I.G. BioVentures II, L.P.	13,500,000	0	0	0	0	0	742,499	521,825	0	88,042	433,783	0	0	0	0	0
H.I.G. Capital Partner V, L.P.	13,100,000	0	0	0	0	0	811,643	735,729	0	135,336	600,393	255,868	231,936	0	42,664	189,272
H.I.G. Ventures II, L.P.	18,000,000	6,525,262	1,193,289	0	0	1,193,289	825,209	150,908	0	150,908	429,505	78,545	0	0	78,545	
H&F Spock I LP	3,250,153	1,178,228	3,759,722	0	0	3,759,722	149,003	475,469	0	0	475,469	77,553	247,472	0	0	247,472
Harvest Partners V, L.P.	36,000,000	13,050,524	-63,477	0	-63,477	1,650,419	-8,028	0	0	0	-8,028	859,011	-4,178	0	0	-4,178
Harvest Partners VI, L.P.	28,400,000	0	0	0	0	0	1,607,440	491,032	423	161,496	329,960	241,400	73,742	64	24,253	49,552
Harvest Partners VII LP	20,000,000	0	0	0	0	0	1,220,000	1,843,615	0	0	1,843,615	0	0	0	0	0
Hellman and Friedman Capital Partners VI, L.P.	20,000,000	7,250,291	110	0	0	110	916,899	14	0	0	14	477,228	7	0	0	7
Horsley Bridge International Fund V, L.P.	45,000,000	16,313,156	36,701,196	0	628,248	36,072,948	2,063,023	4,641,372	0	79,451	4,561,921	1,073,764	2,415,744	0	41,352	2,374,391
IFM US Infrastructure Debt Fund	70,000,000	11,678,693	11,008,864	570,414	197,419	11,579,278	3,596,947	3,390,645	175,683	60,804	3,566,328	1,394,272	1,314,304	68,099	23,569	1,382,403
Institutional Venture Partners XII, L.P.	27,000,000	9,787,893	125,475	0	0	125,475	1,237,814	15,868	0	0	15,868	644,258	8,259	0	0	8,259
Kayne Anderson Energy Fund VII LP	50,000,000	0	0	0	0	0	3,050,000	1,742,992	0	0	1,742,992	0	0	0	0	0
KCP IV Co-Invest	12,885,297	0	0	0	0	0	798,341	205,050	27,425	3,703	232,908	251,675	64,641	8,646	1,167	73,424
Keyhaven Capital Partners Fund III, L.P.	27,413,514	9,937,798	3,851,419	0	89,701	3,830,151	1,256,771	487,065	0	11,344	484,375	654,125	253,508	0	5,904	252,108
Keyhaven Capital Partners IV LP	12,885,297	0	0	0	0	0	798,341	660,274	45,371	0	717,418	251,675	208,150	14,303	0	226,164
Levine Leichtman Capital Partners V, L.P.	46,000,000	1	1	0	0	1	2,850,043	1,360,935	7,906	11,575	1,357,266	898,468	429,031	2,492	3,649	427,874

KRS Board Meeting - Investment Committee Report

Kentucky Public Pensions Authority  
 Capital Calls and Distributions  
 For the period January 1, 2023 thru March 31, 2023

Pension Funds Managers	Total Pension Funds Commitments	Kentucky Employees Retirement System					Kentucky Employees Hazardous Retirement System					State Police Employees Retirement System				
		Commitment	Beginning Valuation	Period Contributions	Period Distributions	Ending Valuation	Commitment	Beginning Valuation	Period Contributions	Period Distributions	Ending Valuation	Commitment	Beginning Valuation	Period Contributions	Period Distributions	Ending Valuation
Levine Leichtman Capital Partners VI LP	37,500,000	0	0	0	0	0	2,287,504	2,623,591	19,468	5,028	2,638,031	0	0	0	0	0
Lubert Adler VII	34,750,000	0	0	0	0	0	2,078,050	1,138,211	0	0	1,138,211	747,124	409,222	0	0	409,222
Lubert-Adler Real Estate Fund VII-B LP	36,750,000	6,864,900	1,878,045	0	0	1,878,045	1,877,925	513,748	0	0	513,748	793,800	217,162	0	0	217,162
Magentar MTP Energy Opportunities Fund II LLC	37,500,000	0	0	0	0	0	2,242,500	19,328	0	0	19,328	806,249	6,949	0	0	6,949
Maritime Partners LP	175,000,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MatlinPatterson Global Opportunities Partners II	45,000,000	16,313,156	314,561	0	0	314,561	2,063,023	39,781	0	0	39,781	1,073,764	20,705	0	0	20,705
MatlinPatterson Global Opportunities Partners III	45,000,000	16,313,156	38,048	0	0	38,048	2,063,023	4,812	0	0	4,812	1,073,764	2,504	0	0	2,504
Merit Mezzanine Fund IV, L.P.	27,000,000	9,787,893	145,153	0	0	145,153	1,237,814	18,357	0	0	18,357	644,258	9,554	0	0	9,554
Mesa West Core Lending Fund, LP	57,500,000	5,474,001	5,650,981	121,127	121,127	5,650,981	3,248,749	3,353,785	71,887	71,887	3,353,785	960,250	991,296	21,248	21,248	991,296
Mesa West Real Estate Income Fund IV LP	36,000,000	13,050,524	6,564,173	0	0	6,564,173	1,650,419	830,130	0	0	830,130	859,011	432,067	0	0	432,067
MiddleGround Partners I LP	50,000,000	0	0	0	0	0	2,925,000	4,047,708	683,647	1,273	4,730,083	0	0	0	0	0
MiddleGround Partners II LP	50,000,000	9,584,069	6,980,545	0	0	6,980,545	2,755,477	2,006,949	0	0	2,006,949	1,102,634	803,102	0	0	803,102
MiddleGround Partners II-X LP	25,000,000	4,792,034	3,276,216	0	0	3,276,216	1,377,739	941,932	0	0	941,932	551,317	376,924	0	0	376,924
Mill Road Capital I, L.P.	27,000,000	9,787,893	1,033,416	0	0	1,033,416	1,237,814	130,690	0	0	130,690	644,258	68,021	0	0	68,021
New Mountain Partners II, L.P.	25,000,000	9,062,864	-148	0	0	-148	1,146,124	-19	0	0	-19	596,535	-10	0	0	-10
New Mountain Partners III, L.P.	32,337,197	11,722,705	516,722	0	0	516,722	1,482,498	65,347	0	0	65,347	771,611	34,012	0	0	34,012
New Mountain Partners IV, L.P.	32,800,000	1	0	0	0	0	2,032,204	689,132	26,098	32,970	683,171	640,647	217,247	8,227	10,394	215,368
New State Capital Partners Fund III LP	17,500,000	3,354,424	708,784	19,891	0	728,674	964,417	203,780	5,719	0	209,498	385,922	81,545	2,288	0	83,833
Oak Hill Capital Partners II, L.P.	67,500,000	24,469,733	61,952	0	0	61,952	3,094,535	7,835	0	0	7,835	1,610,645	4,078	0	0	4,078
Oak Hill Capital Partners III, L.P.	33,750,000	12,234,867	5,658	0	0	5,658	1,547,267	716	0	0	716	805,323	372	0	0	372
Oberland Capital Healthcare LP	3,450,000	0	0	0	0	0	201,825	408,583	0	0	74,118	334,465	0	0	0	0
Patron Capital V LP	39,112,200	7,306,159	3,668,889	31,808	241,983	3,522,057	1,998,634	1,003,642	8,701	66,196	963,475	844,824	424,240	3,678	27,981	407,261
Riverside Capital Appreciation Fund VI, L.P.	35,500,000	0	0	0	0	0	2,009,300	572,439	0	0	572,439	301,749	85,967	0	0	85,967
Rubenstein Properties Fund II	20,800,000	0	0	0	0	0	1,244,066	714,012	0	0	714,012	447,429	256,795	0	0	256,795
Secondary Opportunities Fund III, L.P.	25,000,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Strategic Value Special Situations Fund IV LP	43,300,000	0	0	0	0	0	2,533,050	3,004,917	0	2,171	3,002,746	0	0	0	0	0
Strategic Value Special Situations Fund V LP	70,000,000	13,417,696	5,773,574	1,336,738	1,727	7,110,312	3,857,668	1,659,937	384,320	497	2,044,257	1,543,688	664,242	153,790	199	818,032
Taurus Mining Finance Fund LLC	45,100,000	0	0	0	0	0	2,794,280	240,957	0	24,144	216,813	880,891	75,961	0	7,611	68,350
Tenaska Power Fund II, L.P.	27,000,000	8,824,749	26,003	0	0	26,003	1,363,534	4,018	0	0	4,018	625,175	1,842	0	0	1,842
Triton Fund IV, L.P.	27,333,911	1	0	0	0	0	1,693,540	1,158,875	0	0	1,179,723	533,883	365,332	0	0	371,904
VantagePoint Venture Partners 2006, L.P.	27,000,000	9,787,893	2,108,016	0	0	2,108,016	1,237,814	266,588	0	0	266,588	644,258	138,754	0	0	138,754
VantagePoint Venture Partners IV, L.P.	36,000,000	13,050,524	21,249	0	0	21,249	1,650,419	2,687	0	0	2,687	859,011	1,399	0	0	1,399
Vista Equity Partners III, L.P.	45,000,000	16,313,156	1,237,032	1,867	0	1,238,899	2,063,023	156,440	236	0	156,676	1,073,764	81,424	123	0	81,547
Vista Equity Partners IV, L.P.	27,000,000	0	0	0	0	0	1,484,997	1,026,237	4,791	0	1,031,028	0	0	0	0	0
Vista Equity Partners VI LP	25,000,000	0	0	0	0	0	1,525,000	2,036,985	6,358	0	2,043,343	0	0	0	0	0
Walton Street Real Estate Fund VI, LP	36,000,000	10,001,992	4,266,701	0	0	4,266,701	2,186,190	932,596	0	0	932,596	725,004	309,276	0	0	309,276
Walton Street Real Estate Fund VII, LP	38,120,000	0	0	0	0	0	2,279,995	547,328	0	0	547,328	820,000	196,847	0	0	196,847
Warburg, Pincus Private Equity IX, L.P.	50,000,000	18,125,728	7,174	0	0	7,174	2,292,248	907	0	0	907	1,193,071	472	0	0	472
Warburg, Pincus Private Equity X, L.P.	38,750,000	14,047,440	313,153	0	56,471	256,683	1,776,492	39,603	0	7,141	32,461	924,630	20,612	0	3,717	16,895
Wayzata Opportunities Fund II, L.P.	67,500,000	24,469,733	529	0	0	529	3,094,535	67	0	0	67	1,610,645	35	0	0	35
Wayzata Opportunities Fund III, L.P.	35,500,000	0	0	0	0	0	2,009,300	285,112	0	0	285,112	301,749	42,817	0	0	42,817
White Oak Yield Spectrum Parallel Fund LP	100,000,000	14,833,350	20,503,042	0	1,366,690	19,136,351	5,327,845	7,364,285	0	490,888	6,873,397	1,377,012	1,903,341	0	126,873	1,776,468

KRS Board Meeting - Investment Committee Report

Kentucky Public Pensions Authority  
Capital Calls and Distributions

For the period January 1, 2023 thru March 31, 2023

Insurance Funds Managers	Total Insurance Funds Commitments	Kentucky Employees Retirement System					Kentucky Employees Hazardous Retirement System					State Police Employees Retirement System				
		Commitment	Beginning Valuation	Period Contributions	Period Distributions	Ending Valuation	Commitment	Beginning Valuation	Period Contributions	Period Distributions	Ending Valuation	Commitment	Beginning Valuation	Period Contributions	Period Distributions	Ending Valuation
Adams Street SPC II A1	75,000,000	13,190,205	10,677,984	0	120,390	10,557,595	7,095,858	5,744,373	0	64,765	5,679,608	2,740,996	2,218,943	0	25,018	2,193,925
Adams Street SPC II B1	75,000,000	13,190,205	9,539,147	1,024,316	120,390	10,443,074	7,095,858	5,131,720	551,045	64,765	5,618,000	2,740,996	1,982,287	212,858	25,018	2,170,128
AMERRA Agri Fund II, LP	16,200,000	2,153,555	1,241,117	0	0	1,241,117	1,746,327	1,006,427	0	0	1,006,427	656,373	378,275	0	0	378,275
AMERRA-KRS Agri Holding Company, LP	35,000,000	4,652,745	2,967,232	0	34,865	2,932,367	3,772,929	2,406,140	0	28,272	2,377,868	1,418,089	904,369	0	10,626	893,743
Arcano KRS Fund I, L.P.	4,000,000	903,884	392,954	0	0	392,954	430,530	187,168	0	0	187,168	191,459	83,235	0	0	83,235
Arcos Sports Partners Fund II	40,000,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ares Special Situations Fund IV, L.P.	13,808,000	0	0	0	0	0	1,038,363	785,775	0	41,089	744,686	646,214	489,019	0	25,571	463,447
Barings Euro Real Estate II	69,261,188	9,835,090	1,872,880	0	0	1,906,574	7,355,536	1,400,703	0	0	1,425,902	2,812,007	535,486	0	0	545,119
Barings Real Estate European Value Add I SCSp	48,890,250	6,942,417	2,625,768	0	307,245	2,364,811	5,192,143	1,963,778	0	229,784	1,768,611	1,984,946	750,748	0	87,846	676,137
Bay Hills Capital I, L.P.	7,500,000	1,694,783	126,646	0	2,938	123,708	807,244	60,323	0	1,399	58,924	358,986	26,826	0	622	26,204
Bay Hills Capital III, L.P.	48,750,000	0	0	0	0	0	3,666,009	3,130,180	0	0	3,130,180	2,281,498	1,948,031	0	0	1,948,031
Bay Hills Emerging Partners II LP	5,000,000	1,129,855	2,264,446	0	14,914	2,249,532	538,163	1,078,581	0	7,104	1,071,478	239,324	479,652	0	3,159	476,492
Bay Hills Emerging Partners II-B LP	5,000,000	910,000	1,247,741	0	39,130	1,208,611	555,000	760,985	0	23,865	737,120	215,000	294,796	0	9,245	285,551
BDCM Opportunity Fund IV, L.P.	24,420,000	0	0	0	0	0	1,836,387	2,938,984	0	17,451	2,921,533	1,142,854	1,829,043	0	10,860	1,818,183
Blackstone Capital Partners V, L.P.	12,414,403	2,805,296	9,261	0	0	9,261	1,336,194	4,411	0	4,411	594,214	1,962	0	0	1,962	
Blackstone Capital Partners VI, L.P.	40,000,000	0	0	0	0	0	3,360,001	1,357,981	6,710	13,228	1,351,464	1,599,998	646,657	3,195	6,299	643,553
Blue Torch Credit Opportunities Fund II LP	60,000,000	10,726,688	10,541,411	0	0	10,541,411	5,638,524	5,541,133	0	0	5,541,133	2,184,246	2,146,518	0	0	2,146,518
BSP Co-Invest Vehicle K LP	0	0	2,979,689	0	52,197	2,927,492	0	1,799,265	0	31,519	1,767,746	0	647,778	0	11,348	636,431
BSP Private Credit Fund	50,000,000	8,493,880	7,850,382	0	203,503	7,646,879	5,128,971	4,740,399	0	122,884	4,617,515	1,846,552	1,706,657	0	44,241	1,662,416
BTG Pactual Brazil Timberland Fund I	15,500,000	2,391,768	1,753,253	0	0	1,753,253	1,621,536	1,188,645	0	0	1,188,645	615,184	450,953	0	0	450,953
Camelot Opportunities Fund, L.P.	2,600,000	587,525	162,588	0	0	162,588	279,845	77,443	0	0	77,443	124,449	34,439	0	0	34,439
Cerberus KRS Levered Loan Opportunities Fund, L.P.	60,000,000	10,192,656	13,010,583	0	0	13,237,378	6,154,765	7,856,351	0	0	7,993,299	2,215,862	2,828,474	0	0	2,827,779
Ceres Farms	50,000,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Columbia Capital Equity Partners IV, L.P.	3,000,000	677,913	79,969	0	0	79,969	322,898	38,090	0	0	38,090	143,595	16,939	0	0	16,939
Crestview Partners II, L.P.	7,500,000	1,694,783	810,481	0	74,551	735,931	807,244	386,041	0	35,509	350,532	358,986	171,675	0	15,791	155,884
Crestview Partners III, L.P.	21,000,000	0	0	0	0	0	1,579,203	1,411,861	49,381	124,471	1,336,770	982,799	878,656	30,731	77,463	831,924
CS Adjacent Investment Partners Parallel LP	60,000,000	10,192,656	5,279,782	0	192,340	5,087,442	6,154,765	3,188,160	0	116,143	3,072,017	2,215,862	1,147,814	0	41,814	1,105,999
CVC European Equity Partners VI, L.P.	13,146,262	0	0	0	0	0	988,601	1,077,324	2,816	51,996	1,047,777	615,245	670,460	1,752	32,359	652,072
DAG Ventures II, L.P.	3,000,000	677,913	48,351	0	0	48,351	322,898	23,030	0	0	23,030	143,595	10,242	0	0	10,242
DAG Ventures III, L.P.	3,000,000	677,913	9,178	0	0	9,178	322,898	4,372	0	0	4,372	143,595	1,944	0	0	1,944
DAG Ventures IV, L.P.	10,000,000	2,259,711	977,271	0	447,008	530,263	1,076,326	465,485	0	212,915	252,570	478,649	207,004	0	94,685	112,320
DAG Ventures V, L.P.	7,000,000	0	0	0	0	0	588,000	3,321	0	0	3,321	280,000	1,581	0	0	1,581
DCM VI, L.P.	1,500,000	338,957	119,631	0	17,595	102,036	161,449	56,982	0	8,381	48,601	71,797	25,340	0	3,727	21,613
DivcoWest Fund IV	9,200,000	1,303,635	83,632	0	10,150	73,481	977,043	62,680	0	7,607	55,073	368,004	23,608	0	2,865	20,743
Essex Woodlands Fund VIII, L.P.	5,000,000	1,129,855	-86,797	0	0	-86,797	538,163	-41,342	0	-41,342	239,324	-18,385	0	0	-18,385	
Fundamental Partners III LP	30,000,000	4,260,001	3,951,368	0	128,701	3,822,667	3,185,999	2,955,177	0	96,254	2,858,923	1,218,001	1,129,758	0	36,798	1,092,961
Green Equity Investors V, L.P.	10,000,000	2,259,711	39,131	0	0	39,131	1,076,326	18,639	0	0	18,639	478,649	8,289	0	0	8,289
Green Equity Investors VI, L.P.	28,000,000	0	0	0	0	0	2,352,000	2,477,359	3,569	0	2,480,928	1,119,999	1,179,693	1,700	0	1,181,393
Green Equity Investors VII LP	25,000,000	4,550,000	5,692,672	0	145,499	5,547,173	2,775,000	3,471,905	0	88,738	3,383,166	1,075,001	1,344,973	0	34,376	1,310,597
Greenfield Acquisition Partners VI, L.P.	16,700,000	2,367,209	2,803	0	0	2,803	1,774,156	2,101	0	0	2,101	667,811	791	0	0	791
Greenfield Acquisition Partners VII, L.P.	12,200,000	1,729,339	209,317	0	57,879	151,438	1,296,093	156,878	0	43,379	113,499	487,855	59,049	0	16,328	42,721
H.I.G. BioVentures II, L.P.	11,500,000	0	0	0	0	0	966,000	678,901	0	114,544	564,357	459,999	323,286	0	54,545	268,741
H.I.G. Capital Partner V, L.P.	6,900,000	0	0	0	0	0	518,881	470,350	0	86,520	383,830	322,920	292,717	0	53,845	238,872
H.I.G. Ventures II, L.P.	2,000,000	451,942	82,647	0	0	82,647	215,265	39,366	0	0	39,366	95,730	17,506	0	17,506	
H&F Spock I LP	1,794,672	405,544	878,849	0	0	878,849	193,165	418,606	0	0	418,606	85,902	186,156	0	0	186,156
Harvest Partners V, L.P.	4,000,000	903,884	-4,397	0	0	-4,397	430,530	-2,094	0	0	-2,094	191,459	-931	0	0	-931
Harvest Partners VI, L.P.	11,600,000	0	0	0	0	0	872,320	266,472	230	87,640	179,061	542,879	165,836	143	54,542	111,437
Harvest Partners VII LP	20,000,000	3,640,000	5,500,622	0	0	5,500,622	2,220,000	3,354,775	0	0	3,354,775	860,001	1,299,598	0	0	1,299,598
Hellman and Friedman Capital Partners VI, L.P.	7,500,000	1,694,783	26	0	0	26	807,244	12	0	0	12	358,986	5	0	0	5
Horsley Bridge International Fund V, L.P.	5,000,000	1,129,855	2,541,939	0	43,513	2,498,426	538,163	1,210,754	0	20,726	1,190,029	239,324	538,430	0	9,217	529,213
IFM US Infrastructure Debt Fund	30,000,000	5,109,247	4,816,208	249,547	86,368	5,065,755	2,874,861	2,709,974	140,415	48,597	2,850,389	968,545	912,994	47,306	16,373	960,300
Institutional Venture Partners XII, L.P.	3,000,000	677,913	8,660	0	0	8,660	322,898	4,125	0	0	4,125	143,595	1,834	0	0	1,834
Kayne Anderson Energy Fund VII LP	50,000,000	9,100,000	5,200,404	0	0	5,200,404	5,550,000	3,171,675	0	0	3,171,675	2,150,001	1,228,668	0	0	1,228,668
KCP IV Co-Invest	8,843,703	0	0	0	0	0	665,047	170,814	22,846	3,084	194,021	413,885	106,304	14,218	1,920	120,747
Keyhaven Capital Partners Fund III, L.P.	3,042,060	687,418	266,751	0	6,213	265,278	327,425	127,057	0	2,959	126,355	145,608	56,503	0	1,316	56,191
Keyhaven Capital Partners IV LP	8,843,703	0	0	0	0	0	665,047	550,033	37,796	0	597,636	413,885	342,307	23,522	0	371,932
Levine Leichtman Capital Partners V, L.P.	24,000,000	0	0	0	0	0	1,804,804	861,819	5,006	7,330	859,496	1,123,199	536,343	3,116	4,562	534,897
Levine Leichtman Capital Partners VI LP	37,500,000	6,824,999	7,827,748	58,084	15,001	7,870,831	4,162,518	4,774,087	35,425	9,149	4,800,364	1,612,494	1,849,406	13,723	3,544	1,859,585
Lubert Adler VII	15,250,000	2,160,925	1,183,603	0	0	1,183,603	1,619,550	887,076	0	0	887,076	610,001	334,116	0	0	334,116

KRS Board Meeting - Investment Committee Report

Kentucky Public Pensions Authority  
Capital Calls and Distributions

For the period January 1, 2023 thru March 31, 2023

Insurance Funds Managers	Total Insurance Funds Commitments	Kentucky Employees Retirement System					Kentucky Employees Hazardous Retirement System					State Police Employees Retirement System				
		Commitment	Beginning Valuation	Period Contributions	Period Distributions	Ending Valuation	Commitment	Beginning Valuation	Period Contributions	Period Distributions	Ending Valuation	Commitment	Beginning Valuation	Period Contributions	Period Distributions	Ending Valuation
Lubert-Adler Real Estate Fund VII-B LP	15,750,000	2,236,500	611,844	0	0	611,844	1,672,649	457,590	0	0	457,590	639,451	174,936	0	0	174,936
Magentar MTP Energy Opportunities Fund II LLC	12,500,000	1,699,157	14,645	0	0	14,645	1,338,541	11,537	0	0	11,537	508,953	4,387	0	0	4,387
Maritime Partners LP	75,000,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MatlinPatterson Global Opportunities Partners II	5,000,000	1,129,855	21,787	0	0	21,787	538,163	10,377	0	0	10,377	239,324	4,615	0	0	4,615
MatlinPatterson Global Opportunities Partners III	5,000,000	1,129,855	2,638	0	0	2,638	538,163	1,257	0	0	1,257	239,324	559	0	0	559
Merit Mezzanine Fund IV, L.P.	3,000,000	677,913	10,053	0	0	10,053	322,898	4,789	0	0	4,789	143,595	2,130	0	0	2,130
Mesa West Core Lending Fund, LP	29,600,000	3,759,201	5,741,490	123,072	123,072	5,741,490	3,223,440	4,923,214	105,532	105,532	4,923,214	1,207,680	1,844,510	39,538	39,538	1,844,510
Mesa West Real Estate Income Fund IV LP	14,000,000	1,988,001	999,520	0	0	999,520	1,486,800	747,528	0	0	747,528	568,400	285,778	0	0	285,778
MiddleGround Partners I LP	25,000,000	17,500,000	24,217,065	4,090,196	7,613	28,299,647	1,250,000	1,729,791	292,157	544	2,021,404	500,000	691,916	116,863	218	808,562
MiddleGround Partners II LP	25,000,000	4,796,517	3,493,537	0	0	3,493,537	2,260,759	1,646,621	0	0	1,646,621	885,701	645,100	0	0	645,100
MiddleGround Partners II-X LP	12,500,000	2,398,258	1,639,640	0	0	1,639,640	1,130,379	772,817	0	0	772,817	442,851	302,768	0	0	302,768
Mill Road Capital I, L.P.	3,000,000	677,913	71,575	0	0	71,575	322,898	34,092	0	0	34,092	143,595	15,161	0	0	15,161
New Mountain Partners II, L.P.	5,000,000	1,129,855	9	0	0	9	538,163	4	0	0	4	239,324	2	0	0	2
New Mountain Partners III, L.P.	7,186,045	1,623,838	71,576	0	0	71,576	773,453	34,093	0	0	34,093	343,959	15,161	0	0	15,161
New Mountain Partners IV, L.P.	17,200,000	0	0	0	0	0	1,293,443	438,613	16,610	20,948	434,819	804,959	272,966	10,337	13,037	270,605
New State Capital Partners Fund III LP	7,500,000	1,438,955	304,049	8,533	0	312,582	678,228	143,308	4,022	0	147,330	265,710	56,144	1,576	0	57,720
Oak Hill Capital Partners II, L.P.	7,500,000	1,694,783	4,291	0	0	4,291	807,244	2,044	0	0	2,044	358,986	909	0	0	909
Oak Hill Capital Partners III, L.P.	12,500,000	2,824,638	1,306	0	0	1,306	1,345,407	622	0	0	622	598,311	277	0	0	277
Oberland Capital Healthcare LP	15,500,000	5,951,995	1,204,947	0	218,581	986,366	1,681,752	340,461	0	61,761	278,700	393,703	79,703	0	14,458	65,245
Patron Capital V LP	15,210,300	2,159,863	1,084,621	9,403	71,535	1,041,215	1,615,333	811,174	7,033	53,500	778,711	617,539	310,110	2,689	20,453	297,700
Riverside Capital Appreciation Fund VI, L.P.	18,712,500	0	0	0	0	0	1,396,123	397,744	0	0	397,744	862,056	245,592	0	0	245,592
Rubenstein Properties Fund II	9,200,000	1,303,637	748,202	0	0	748,202	977,044	560,759	0	0	560,759	368,003	211,209	0	0	211,209
Secondary Opportunities Fund III, L.P.	75,000,000	10,548,299	2,684,585	0	0	2,684,585	8,756,849	2,228,654	0	0	2,228,654	1,960,724	499,012	0	0	499,012
Strategic Value Special Situations Fund IV LP	21,700,000	8,332,800	9,885,059	0	7,142	9,877,917	2,354,450	2,793,043	0	2,018	2,791,025	551,180	653,855	0	472	653,383
Strategic Value Special Situations Fund V LP	30,000,000	5,755,820	2,476,703	573,424	741	3,050,127	2,712,910	1,167,353	270,274	349	1,437,627	1,062,842	457,336	105,886	137	563,222
Taurus Mining Finance Fund LLC	19,900,000	0	0	0	0	0	1,496,479	129,045	0	12,930	116,114	931,319	80,310	0	8,047	72,263
Tenaska Power Fund II, L.P.	3,000,000	588,919	1,736	0	0	1,736	316,438	933	0	0	933	137,845	406	0	0	406
Triton Fund IV, L.P.	14,063,009	0	0	0	0	0	1,057,541	741,434	0	0	754,773	658,148	461,423	0	0	469,724
VantagePoint Venture Partners 2006, L.P.	3,000,000	677,913	146,002	0	0	146,002	322,898	69,542	0	0	69,542	143,595	30,926	0	0	30,926
VantagePoint Venture Partners IV, L.P.	4,000,000	903,884	1,472	0	0	1,472	430,530	701	0	0	701	191,459	312	0	0	312
Vista Equity Partners III, L.P.	5,000,000	1,129,855	85,679	129	0	85,808	538,163	40,810	62	0	40,871	239,324	18,148	27	0	18,176
Vista Equity Partners IV, L.P.	23,000,000	0	0	0	0	0	1,932,000	1,335,148	6,233	0	1,341,380	919,999	635,784	2,968	0	638,752
Vista Equity Partners VI LP	25,000,000	4,550,000	6,077,561	18,969	35,512	6,061,019	2,775,000	3,706,645	11,569	21,658	3,696,556	1,075,001	1,435,908	4,482	8,390	1,432,000
Walton Street Real Estate Fund VI, LP	4,000,000	754,575	321,890	0	0	321,890	431,496	184,070	0	0	184,070	184,453	78,685	0	0	78,685
Walton Street Real Estate Fund VII, LP	16,755,000	2,375,001	570,135	0	0	570,135	1,780,001	427,301	0	0	427,301	669,998	160,838	0	0	160,838
Warburg, Pincus Private Equity IX, L.P.	10,000,000	2,259,711	894	0	0	894	1,076,326	426	0	0	426	478,649	189	0	0	189
Warburg, Pincus Private Equity X, L.P.	7,500,000	1,694,783	37,768	0	6,813	30,955	807,244	17,989	0	3,245	14,744	358,986	8,000	0	1,443	6,557
Wayzata Opportunities Fund II, L.P.	7,500,000	1,694,783	37	0	0	37	807,244	17	0	0	17	358,986	8	0	0	8
Wayzata Opportunities Fund III, L.P.	18,712,500	0	0	0	0	0	1,396,123	198,105	0	0	198,105	862,056	122,323	0	0	122,323
White Oak Yield Spectrum Parallel Fund LP	50,000,000	8,493,880	11,050,839	0	736,560	10,314,279	5,128,971	6,672,973	0	444,767	6,228,206	1,846,552	2,402,429	0	160,127	2,242,303

Kentucky Public Pensions Authority

# Commissions Report

Quarter Ending: March 31, 2023

**Reports can be found:**

<https://kyret.ky.gov/Investments/Investments-Library/Pages/Commissions-Reports.aspx>

Kentucky Public Pensions Authority

# Internal Asset Holdings Report & Internal Asset Transaction Report

Quarter Ending: March 31, 2023

**Reports can be found:**

<https://kyret.ky.gov/Investments/Investments-Library/Pages/Internal-Reports.aspx>

Kentucky Retirement Systems

# Compliance Report

Quarter Ending: March 31, 2023



Compliance Guideline Review for the Period Ended March 31, 2023	Compliance Status	Legend
Total assets assigned to the selected manager shall not exceed 25% of that firm's total assets under management and shall not exceed 25% of a firm's total assets under management in a commingled product.	●	<ul style="list-style-type: none"> <li><span style="color: green;">●</span> In Compliance</li> <li><span style="color: yellow;">●</span> To be determined</li> <li><span style="color: red;">●</span> Not In Compliance</li> </ul>
The assets managed by any one active or passive investment manager shall not exceed 15% of the overall assets in the Pension and Insurance funds.	●	
No more than 20% of the total net assets of the Real Return portfolio may be invested in any single closed-end or open-end limited partnership or other unregistered investment vehicle.	●	
Securities issued by the state of Kentucky, its subsidiaries, or affiliates are prohibited.	●	
An investment in any single domestic or international equity allocation in any single corporation cannot exceed 5% of the market value of total assets.	●	
The systems in aggregate shall not hold in excess of 3% of the outstanding shares of any single corporation.	●	

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The amount of stock in any one industry in the domestic equity allocation shall not exceed 10% of the aggregate market value of the System's assets.



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Investment in "frontier" markets shall not exceed 5% of the System's international equity assets.



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The duration of the total fixed income portfolio shall not deviate from the Barclays Aggregate Index by more than 25%.



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The duration of the TIPS portfolio shall not deviate from the Barclay's TIPS Index by more than 10%.



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The amount invested in the debt of a single corporation shall not exceed 5% of the total market value of the System's Assets.



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50% of the fixed income assets must have liquidity that is T+3 (trade date plus three days) or better.



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No public fixed income manager shall invest more than 5% of the total market value of assets held in any single issue, short-term instruments, with the exception of U.S. Government issued, guaranteed, or agency obligations.



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No more than 50% of the total net assets of the Real Return portfolio may be invested in any one registered investment vehicle, mutual fund, or separately managed account.



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No more than 20% of the total net assets of the Real Return portfolio may be invested in any single closed-end or open-end limited partnership or other unregistered investment vehicle.



Kentucky Retirement Systems

# Investment Budget Update

Quarter Ending: March 31, 2023

KRS Board Meeting - Investment Committee Report

KENTUCKY PUBLIC PENSIONS AUTHORITY									
Investment Budget									
For the nine month period ending March 31, 2023									
Account Name	FY 2019	FY 2020	FY 2021	FY 2022	Trust Budget FY 2023	Q3 2023	FYTD 2023	Remaining	Percentage Spent
<b>CONSULTING SERVICES</b>									
Wilshire Associates	\$ 1,021,799	\$ 1,238,170	\$ 1,225,671	\$ 1,021,175	\$ 1,190,000	\$ 274,600	\$ 563,572	\$ 626,428	47%
Albourne	-	-	-	-	270,000	67,500	239,250	30,750	89%
MercerInsight	-	-	-	-	160,000			160,000	0%
<b>SUBTOTAL</b>	<b>1,021,799</b>	<b>1,238,170</b>	<b>1,225,671</b>	<b>1,021,175</b>	<b>1,620,000</b>	<b>342,100</b>	<b>802,822</b>	<b>817,178</b>	<b>50%</b>
<b>LEGAL &amp; AUDITING SERVICES</b>									
Faegre Drinker			96,039	202,502	375,000	6,897	15,618	359,382	4%
Intelligent Management Solutions (IMS)	620,001	202,140	155,700	69,884	75,000	8,022	81,880	(6,880)	109%
McClain/Goldberg			891	-	25,000			25,000	0%
Reinhart	317,909	671,269	663,689	619,509	437,500	8,614	65,682	371,818	15%
Stoll-Keenon-Ogden	10,314	135,353	254,211	463,560	250,000	6,045	356,453	(106,453)	143%
Haystack			-	-	140,000	55,892	55,892	84,108	40%
Umberg Zipser			289,100	498,058	360,000	94,880	242,564	117,436	67%
Frost Brown Todd			-	-	50,000			50,000	0%
Swansburg & Smith	-	-	-	-	-	1,013	5,288	(5,288)	
Eddins Domine	-	-	-	-	-	26,482	40,305	(40,305)	
Taft	-	-	-	-	-	-	66,916	(66,916)	
Miscellaneous					200,000			200,000	0%
<b>SUBTOTAL</b>	<b>948,225</b>	<b>1,008,762</b>	<b>1,459,630</b>	<b>1,853,513</b>	<b>1,912,500</b>	<b>207,843</b>	<b>930,597</b>	<b>981,903</b>	<b>49%</b>
<b>CONTRACTURAL SERVICES</b>									
Bloomberg	68,722	71,810	98,163	102,243	150,000	26,105	77,530	72,470	52%
BNYM Custodial Fees	2,056,390	2,088,475	2,379,838	2,565,169	4,000,000	554,497	1,684,683	2,315,317	42%
eVestment (Solovis RMS)			-	30,000	35,000		33,800	1,200	97%
Solovis (Reporting & Analytics)			-	245,000	265,000		257,250	7,750	97%
FactSet	222,476	162,295	109,662	140,098	150,000	31,657	93,754	56,246	63%
Russell Index Subscription	1,075	1,250	1,000	1,000	1,500	250	500	1,000	33%
S&P Global		94,500	26,250	68,250	75,000			75,000	0%
TradeWeb			-	6,000	7,500	2,000	5,600	1,900	75%
State Street/Elkins McSherry	10,000	5,000	15,000	10,000	10,000	5,000	10,000	-	100%
ISS	32,050	32,050	28,288	35,813	37,000	15,838	31,863	5,138	86%
MSCI	1,000	1,000	1,000	1,000	1,000		1,000	-	100%
KPMG Tax Guarantor Services		7,606	22,050	7,350	7,500			7,500	0%
Jayant Ghevaria and CO		10,050	-	52,085	55,000			55,000	0%
India Renewal Fee (SEBI)			-	3,000	3,000			3,000	0%
With Intelligence	-	-	-	-	-		9,520	(9,520)	0%
Miscellaneous & New Services	-	-	-	-	250,000			250,000	0%
<b>SUBTOTAL</b>	<b>2,391,713</b>	<b>2,474,036</b>	<b>2,681,251</b>	<b>3,267,008</b>	<b>5,047,500</b>	<b>635,346</b>	<b>2,205,499</b>	<b>2,842,001</b>	<b>44%</b>

KRS Board Meeting - Investment Committee Report

KENTUCKY PUBLIC PENSIONS AUTHORITY Investment Budget For the nine month period ending March 31, 2023									
Account Name	FY 2019	FY 2020	FY 2021	FY 2022	Trust Budget FY 2023	Q3 2023	FYTD 2023	Remaining	Percentage Spent
<b>INACTIVE CONTRACTURAL SERVICES</b>									
Dean Dorton	9,719		-	-	-		250	(250)	
Hirschler		4,794	-	-	-				
INFORMA	12,904		-	-	-				
Lighthouse Solutions	3,093		-	-	-				
London Stock Exchange GBP (GREAT BRITISH POUNDS)	6,467	3,544	-	-	-				
Deutsche Bank Trust	3,000		3,000	-	-				
Morris James LLP	94,192	20,154	-	-	-				
Calcaterra Pollack			1,200,000	-	-				
Manatt		90,798	30,757	-	-				
ORG	162,344		-	-	-				
<b>SUBTOTAL</b>	<b>291,718</b>	<b>119,290</b>	<b>1,233,757</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>250</b>	<b>(250)</b>	
<b>TOTAL</b>	<b>\$ 4,653,455</b>	<b>\$ 4,840,258</b>	<b>\$ 6,600,309</b>	<b>\$ 6,141,696</b>	<b>\$ 8,580,000</b>	<b>\$ 1,185,289</b>	<b>\$ 3,939,169</b>	<b>\$ 4,640,831</b>	<b>46%</b>

KRS Board Meeting - Investment Committee Report

**INVESTMENT BUDGET**

<b>CONSULTING SERVICES</b>	
Wilshire Associates	General Investment Consulting Services, Manager Research and Due Dilligence, Reporting, Asset Allocation
Albourne	Investment Consultant Research database - Private Markets Manager Research, Private Markets Research, Pension Markets Research
MercerInsight	Investment Consultant Research database - Public Markets Manager Research, Public Markets Research, Pension Markets Research
<b>LEGAL &amp; AUDITING SERVICES</b>	
Faegre Drinker	Delaware litigation counsel
Intelligent Management Solutions (IMS)	IMS is an expert witness in the Bay Hills case.
McClain/Goldberg	Blackstone litigation counsel for the Trustees and Officers
Reinhart	Bay Hills counsel and investment counsel for contract negotiations
Stoll-Keenon-Ogden	Mayberry counsel
Haystack	Conduct Mayberry eDiscovery
Umberg Zipser	PAAMCO-Prisma (California litigation)
Frost Brown Todd	Currently has no investment-related cases
Swansburg & Smith	Reimbursement of Fiduciary Legal Expenses (KKR)
Eddins Domine	Reimbursement of Fiduciary Legal Expenses (KKR)
Taft	Reimbursement of Fiduciary Legal Expenses (Calcaterra Pollack)
<b>CONTRACTURAL SERVICES</b>	
Bloomberg	Bloomberg Professional Services, Data Analytics and Tools, Market Information and News, Research Portal
BNYM Custodial Fees	Full Service Custodial Services, Investment Accounting, Investment Operations, Transaction Services, Performance and Attribution, Reporting
eVestment (Solovis RMS)	Research Management Program organizing internal and external research
Solovis (Reporting & Analytics)	Portfolio and Risk Analytics, Perfomance Measurement and Attribution, Reporting
FactSet	Workstation and Quant/Risk Applications for managing Public Equity Portfolios
Russell Index Subscription	Access to Russell Indexes for Portfolio Management, Reporting and Performance
S&P Global	Data on the S & P US Index / License to 10,000 Identifiers for Portfolio Management, Reporting and Performance
TradeWeb	Electronic Trading Platform for Internal Management
State Street/Elkins McSherry	Public Equity Trade Cost Analysis
ISS	Portfolio Monitoring and Proxy Voting Services
MSCI	International Public Equity Data Package
KPMG Tax Guarantor Services	Tax Accounting Services - Taiwan
Jayant Ghevaria and CO	Tax Accounting Services - India
India Renewal Fee (SEBI)	Registration of India Local Market Accounts

<b>KENTUCKY PUBLIC PENSIONS AUTHORITY</b>						
<b>Investment Fees and Expenses</b>						
<b>For the nine month period ending March 31, 2023</b>						
<b>Pension</b>						
	<b>2023</b>		<b>2022</b>		<b>2021</b>	
	<b>FYTD Fees</b>	<b>Market Value</b>	<b>FYTD Fees</b>	<b>Market Value</b>	<b>FYTD Fees</b>	<b>Market Value</b>
<b>Core Fixed Income</b>	<b>1,961,961</b>	<b>2,021,010,684</b>	<b>2,153,340</b>	<b>2,131,886,569</b>	<b>2,031,618</b>	<b>2,263,311,450</b>
<i>Investment Advisory Fees</i>	1,081,599		1,773,298		1,902,240	
<i>Carried Interest</i>	313,985		327,140		81,121	
<i>Miscellaneous Fees and Expenses</i>	566,378		52,902		48,257	
<b>Opportunistic</b>	<b>Opportunistic was absorbed by Specialty Credit in December 2021</b>				<b>2,727,633</b>	<b>375,449,617</b>
<i>Investment Advisory Fees</i>					-	
<i>Carried Interest</i>					2,727,633	
<i>Miscellaneous Fees and Expenses</i>					-	
<b>Public Equity</b>	<b>9,871,250</b>	<b>7,364,652,759</b>	<b>10,884,478</b>	<b>6,939,548,432</b>	<b>9,171,752</b>	<b>6,619,150,686</b>
<i>Investment Advisory Fees</i>	9,712,159		10,658,036		8,995,110	
<i>Miscellaneous Fees and Expenses</i>	159,091		226,442		176,642	
<b>Specialty Credit Fixed Income</b>	<b>41,248,671</b>	<b>3,253,455,667</b>	<b>37,495,009</b>	<b>3,117,337,032</b>	<b>26,547,242</b>	<b>2,546,489,496</b>
<i>Investment Advisory Fees</i>	18,151,509		12,988,501		11,228,203	
<i>Carried Interest</i>	5,190,755		18,829,074		12,519,342	
<i>Miscellaneous Fees and Expenses</i>	17,906,407		5,677,434		2,799,697	
<b>Real Estate</b>	<b>4,469,109</b>	<b>929,393,252</b>	<b>25,637,587</b>	<b>844,241,655</b>	<b>5,303,814</b>	<b>589,400,002</b>
<i>Investment Advisory Fees</i>	3,627,098		3,454,869		3,254,551	
<i>Carried Interest</i>	42,187		20,336,478		(907,044)	
<i>Miscellaneous Fees and Expenses</i>	799,825		1,846,240		2,956,307	
<b>Real Return</b>	<b>3,159,066</b>	<b>460,465,548</b>	<b>3,848,329</b>	<b>568,603,601</b>	<b>6,282,116</b>	<b>1,011,388,853</b>
<i>Investment Advisory Fees</i>	1,799,568		2,738,748		3,527,345	
<i>Carried Interest</i>	473,651		1,049,935		2,329,614	
<i>Miscellaneous Fees and Expenses</i>	885,848		59,646		425,157	
<b>Private Equity</b>	<b>1,735,503</b>	<b>1,143,005,497</b>	<b>52,650,593</b>	<b>1,303,761,398</b>	<b>34,414,531</b>	<b>1,155,001,941</b>
<i>Investment Advisory Fees</i>	5,111,920		5,375,037		6,202,846	
<i>Carried Interest</i>	(5,910,958)		44,069,198		26,932,151	
<i>Miscellaneous Fees and Expenses</i>	2,534,541		3,206,358		1,279,534	
<b>Administrative Expense/Cash</b>	<b>2,349,103</b>	<b>980,437,717</b>	<b>3,087,180</b>	<b>1,088,261,843</b>	<b>1,932,601</b>	<b>285,262,649</b>
<b>Total Investment Mgmt Fees</b>	<b>64,794,664</b>	<b>16,152,421,124</b>	<b>135,756,516</b>	<b>15,993,640,530</b>	<b>88,411,307</b>	<b>14,845,454,694</b>

<b>KENTUCKY PUBLIC PENSIONS AUTHORITY</b> <b>Investment Fees and Expenses</b> <b>For the nine month period ending March 31, 2023</b> <b>Insurance</b>						
	2023		2022		2021	
	FYTD Fees	Market Value	FYTD Fees	Market Value	FYTD Fees	Market Value
<b>Core Fixed Income</b>	<b>737,251</b>	<b>738,513,799</b>	<b>810,054</b>	<b>802,476,521</b>	<b>813,678</b>	<b>864,872,800</b>
<i>Investment Advisory Fees</i>	612,135		673,659		766,735	
<i>Performance</i>	112,040		117,337		28,448	
<i>Miscellaneous Fees and Expenses</i>	13,075		19,058		18,495	
<b>Opportunistic</b>	<i>Opportunistic was absorbed by Specialty Credit in December 2021</i>				<b>1,388,928</b>	<b>191,181,257</b>
<i>Investment Advisory Fees</i>						
<i>Carried Interest</i>					1,388,928	
<i>Miscellaneous Fees and Expenses</i>						
<b>Public Equity</b>	<b>4,563,134</b>	<b>3,377,277,074</b>	<b>4,821,293</b>	<b>3,215,837,276</b>	<b>4,102,906</b>	<b>2,988,294,144</b>
<i>Investment Advisory Fees</i>	4,490,997		4,743,902		4,026,883	
<i>Miscellaneous Fees and Expenses</i>	72,137		77,391		76,023	
<b>Specialty Credit Fixed Income</b>	<b>18,849,336</b>	<b>1,464,234,371</b>	<b>16,639,635</b>	<b>1,409,325,113</b>	<b>11,135,696</b>	<b>1,134,227,766</b>
<i>Investment Advisory Fees</i>	8,360,965		5,791,524		5,087,579	
<i>Carried Interest</i>	2,645,586		8,397,118		4,960,086	
<i>Miscellaneous Fees and Expenses</i>	7,842,785		2,450,993		1,088,031	
<b>Real Estate</b>	<b>2,029,870</b>	<b>392,477,821</b>	<b>10,607,357</b>	<b>356,747,650</b>	<b>2,331,407</b>	<b>249,384,483</b>
<i>Investment Advisory Fees</i>	1,515,332		1,501,018		1,408,641	
<i>Carried Interest</i>	171,381		8,302,981		(290,973)	
<i>Miscellaneous Fees and Expenses</i>	343,157		803,358		1,213,739	
<b>Real Return</b>	<b>1,402,993</b>	<b>177,947,842</b>	<b>1,672,090</b>	<b>219,995,987</b>	<b>2,465,100</b>	<b>427,472,422</b>
<i>Investment Advisory Fees</i>	801,226		1,221,294		1,508,890	
<i>Carried Interest</i>	196,724		415,727		(139,583)	
<i>Miscellaneous Fees and Expenses</i>	405,042		35,069		1,095,793	
<b>Private Equity</b>	<b>2,034,850</b>	<b>584,914,353</b>	<b>32,266,953</b>	<b>621,666,942</b>	<b>22,861,402</b>	<b>561,073,081</b>
<i>Investment Advisory Fees</i>	3,350,796		3,739,853		4,149,597	
<i>Carried Interest</i>	(2,539,096)		27,332,502		18,202,847	
<i>Miscellaneous Fees and Expenses</i>	1,223,150		1,194,598		508,958	
<b>Administrative Expense/Cash</b>	<b>1,225,286</b>	<b>236,662,657</b>	<b>1,564,044</b>	<b>505,485,795</b>	<b>1,219,907</b>	<b>140,405,157</b>
<b>Total Investment Mgmt Fees</b>	<b>\$ 30,842,720</b>	<b>\$ 6,972,027,917</b>	<b>\$ 68,381,426</b>	<b>\$ 7,131,535,284</b>	<b>\$ 46,319,024</b>	<b>\$ 6,556,911,110</b>

<b>KENTUCKY PUBLIC PENSIONS AUTHORITY</b>						
<b>Investment Fees and Expenses</b>						
<b>For the nine month period ending March 31, 2023</b>						
<b>Pension</b>						
	<b>KERS</b>		<b>KERS Hazardous</b>		<b>SPRS</b>	
	<b>FYTD Fees</b>	<b>Market Value</b>	<b>FYTD Fees</b>	<b>Market Value</b>	<b>FYTD Fees</b>	<b>Market Value</b>
<b>Core Fixed Income</b>	<b>616,232</b>	<b>657,617,254</b>	<b>102,449</b>	<b>109,329,544</b>	<b>108,820</b>	<b>116,128,283</b>
<i>Investment Advisory Fees</i>	409,204		68,030		72,261	
<i>Performance</i>	99,147		16,483		17,508	
<i>Miscellaneous Fees and Expenses</i>	107,881		17,935		19,051	
<b>Public Equity</b>	<b>1,457,968</b>	<b>1,079,572,828</b>	<b>521,906</b>	<b>382,597,394</b>	<b>264,712</b>	<b>190,498,648</b>
<i>Investment Advisory Fees</i>	1,434,144		513,238		260,438	
<i>Miscellaneous Fees and Expenses</i>	23,825		8,669		4,274	
<b>Specialty Credit Fixed Income</b>	<b>7,204,950</b>	<b>614,065,920</b>	<b>2,223,968</b>	<b>183,154,528</b>	<b>901,623</b>	<b>95,543,279</b>
<i>Investment Advisory Fees</i>	3,212,882		979,038		433,687	
<i>Carried Interest</i>	834,861		279,024		89,027	
<i>Miscellaneous Fees and Expenses</i>	3,157,206		965,905		378,908	
<b>Real Estate</b>	<b>760,088</b>	<b>175,894,392</b>	<b>227,885</b>	<b>48,158,594</b>	<b>100,796</b>	<b>20,856,691</b>
<i>Investment Advisory Fees</i>	613,748		184,348		82,615	
<i>Carried Interest</i>	7,770		2,161		911	
<i>Miscellaneous Fees and Expenses</i>	138,570		41,376		17,270	
<b>Real Return</b>	<b>147,713</b>	<b>70,565,346</b>	<b>186,312</b>	<b>24,545,243</b>	<b>81,325</b>	<b>10,202,350</b>
<i>Investment Advisory Fees</i>	118,574		104,765		46,406	
<i>Carried Interest</i>	1,114		28,767		10,687	
<i>Miscellaneous Fees and Expenses</i>	28,026		52,781		24,233	
<b>Private Equity</b>	<b>(725,780)</b>	<b>155,150,167</b>	<b>150,886</b>	<b>62,368,687</b>	<b>15,941</b>	<b>16,367,925</b>
<i>Investment Advisory Fees</i>	303,596		294,253		67,735	
<i>Carried Interest</i>	(1,279,061)		(286,418)		(86,678)	
<i>Miscellaneous Fees and Expenses</i>	249,686		143,051		34,884	
<b>Administrative Expenses/Cash</b>	<b>485,735</b>	<b>609,312,497</b>	<b>127,089</b>	<b>59,969,656</b>	<b>84,481</b>	<b>125,087,282</b>
<b>Total Investment Mgmt Fees</b>	<b>9,946,906</b>	<b>3,362,178,404</b>	<b>3,540,495</b>	<b>870,123,646</b>	<b>1,557,699</b>	<b>574,684,458</b>

<b>KENTUCKY PUBLIC PENSIONS AUTHORITY</b>						
<b>Investment Fees and Expenses</b>						
<b>For the nine month period ending March 31, 2023</b>						
<b>Insurance</b>						
	<b>KERS</b>		<b>KERS Hazardous</b>		<b>SPRS</b>	
	<b>FYTD Fees</b>	<b>Market Value</b>	<b>FYTD Fees</b>	<b>Market Value</b>	<b>FYTD Fees</b>	<b>Market Value</b>
<b>Core Fixed Income</b>	<b>154,704</b>	<b>163,700,876</b>	<b>67,772</b>	<b>71,713,645</b>	<b>26,595</b>	<b>28,141,812</b>
<i>Investment Advisory Fees</i>	128,832		56,438		22,147	
<i>Performance</i>	23,169		10,150		3,983	
<i>Miscellaneous Fees and Expenses</i>	2,704		1,185		465	
<b>Public Equity</b>	<b>891,536</b>	<b>613,591,556</b>	<b>376,535</b>	<b>270,733,346</b>	<b>152,632</b>	<b>107,419,059</b>
<i>Investment Advisory Fees</i>	878,067		370,550		150,274	
<i>Miscellaneous Fees and Expenses</i>	13,468		5,985		2,359	
<b>Specialty Credit Fixed Income</b>	<b>3,334,022</b>	<b>282,512,968</b>	<b>1,826,007</b>	<b>134,442,708</b>	<b>688,063</b>	<b>53,442,622</b>
<i>Investment Advisory Fees</i>	1,496,202		814,402		304,318	
<i>Carried Interest</i>	462,019		259,994		96,819	
<i>Miscellaneous Fees and Expenses</i>	1,375,801		751,611		286,926	
<b>Real Estate</b>	<b>293,241</b>	<b>56,515,447</b>	<b>213,945</b>	<b>41,452,341</b>	<b>81,708</b>	<b>15,857,396</b>
<i>Investment Advisory Fees</i>	217,731		159,866		61,079	
<i>Carried Interest</i>	26,789		17,636		6,712	
<i>Miscellaneous Fees and Expenses</i>	48,720		36,443		13,917	
<b>Real Return</b>	<b>231,275</b>	<b>30,337,567</b>	<b>146,652</b>	<b>17,571,568</b>	<b>53,190</b>	<b>6,561,195</b>
<i>Investment Advisory Fees</i>	129,668		82,827		30,543	
<i>Carried Interest</i>	40,888		21,246		7,084	
<i>Miscellaneous Fees and Expenses</i>	60,720		42,578		15,564	
<b>Private Equity</b>	<b>1,274,588</b>	<b>89,906,552</b>	<b>124,019</b>	<b>53,312,512</b>	<b>57,703</b>	<b>23,790,252</b>
<i>Investment Advisory Fees</i>	367,756		314,147		138,545	
<i>Carried Interest</i>	614,815		(283,715)		(126,529)	
<i>Miscellaneous Fees and Expenses</i>	292,018		93,587		45,687	
<b>Administrative Expenses/Cash</b>	<b>238,079</b>	<b>161,130,860</b>	<b>104,103</b>	<b>13,238,081</b>	<b>61,081</b>	<b>4,489,698</b>
<b>Total Investment Mgmt Fees</b>	<b>\$ 6,417,445</b>	<b>\$ 1,397,695,826</b>	<b>\$ 2,859,033</b>	<b>\$ 602,464,201</b>	<b>\$ 1,120,972</b>	<b>\$ 239,702,034</b>

**KENTUCKY RETIREMENT SYSTEMS  
BOARD OF TRUSTEES**

**STATEMENT OF BYLAWS AND COMMITTEE ORGANIZATION**

As Amended: January 11, 2022

**Section 1.1 GENERAL ADMINISTRATION.**

This Statement of Bylaws and Committee Organization of the Board of Trustees of the Kentucky Retirement Systems is adopted pursuant to the authority of KRS 61.645. State and Federal law shall control any inconsistency that exists or may exist between the law and this Statement of Bylaws and Committee Organization.

a. **Definitions.**

1. **AAC:** “AAC” refers to the Joint CERS and Kentucky Retirement Systems Administrative Appeals Committee.
2. **Board:** “The Board” refers to the Board of Trustees of the Kentucky Retirement Systems.
3. **Board Year:** The Board Year shall be from April 1 of each calendar year through March 31 of the following year.
4. **Bylaws:** “Bylaws” refers to the Statement of Bylaws and Committee Organization.
5. **CEO:** “CEO” refers to Kentucky Retirement Systems’ Chief Executive Officer, as outlined in KRS 61.645 (9).
6. **CERS:** refers to the County Employees Retirement System
7. **CIO:** “CIO” refers to the KPPA Executive Director Office of Investments.
8. **Committee member:** “Committee member” or “member” used in relation to a Committee refers to a member of the Board of Trustees of the Kentucky Retirement Systems serving on its Standing or *ad hoc* Committees.
9. **DAC:** “DAC” refers to the Joint CERS and Kentucky Retirement Systems’ Disability Appeals Committee.
10. **KPPA:** “KPPA” refers to the Kentucky Public Pensions Authority.
11. **KRS:** “KRS” refers to the Kentucky Revised Statutes.
12. **Member:** “Member” or “members” used in relation to individuals participating in a system (or systems) administered by the Kentucky Retirement Systems refers to individuals who are active members (i.e., currently participating as an employee), inactive members (i.e., formerly participated as an employee, but is not currently participating as an employee, has not retired, and has not taken a refund), or retired.
13. **Retirement Office:** “Retirement Office” refers to the offices of the KPPA located at 1260 Louisville Road, Frankfort, Kentucky 40601.

14. **Take action on:** “Take action on” used in relation to the Board refers a motion being made, seconded, and voted upon by the Board in compliance with Robert’s Rules of Order. [RONR (11<sup>th</sup> ed., as amended)].
  15. **Trustee:** “Trustee” refers to a member of the Board of Trustees of the Kentucky Retirement Systems.
- b. **Quorum; Parliamentary Authority.**
1. **Board of Trustees:** As required by KRS 61.645(8)(c), a majority of the trustees shall constitute a quorum and all actions taken by the Board shall be by affirmative vote of a majority of the trustees present.
  2. **Committees of the Board of Trustees:** A majority of the trustees on any Committee of the Board appointed pursuant to Sections 2.1-2.5 of these Bylaws shall constitute a quorum of the Committee and all actions taken by the Committee shall be by affirmative vote of a majority of the Committee trustees present.
  3. The most recent edition of Robert’s Rules of Order shall be the parliamentary authority [RONR (11<sup>th</sup> ed., as amended)], except that if any Committee of the Board is comprised of five (5) or more trustees, the Committee shall not constitute a quorum of the Board and the Board shall be required to take action on all preliminary decisions made by the Committee, unless otherwise specified by these Bylaws.
- c. **Meetings.** Meetings of the Board and its Committees shall be conducted consistent with the Open Meetings Act, KRS 61.805 to 61.850. The Open Meetings Act shall control if any inconsistency exists between the Open Meetings Act and these Bylaws.
- d. **Annual Meeting.** The annual meeting of the Board shall be held on the third Thursday of April of each Board Year.
- e. **Regular Meetings.** The Board shall determine and approve, on an annual basis in advance, no later than the preceding December Board of Trustees’ meeting, the following years’ regular Board and Committee meeting schedule. This provision shall not apply to the Joint Disability Appeals Committee and Joint Administrative Appeals Committee meetings. Those meeting dates will be determined at committee meetings.
- f. **Special Meetings.**
1. Special meetings of the Board shall be held upon the call of the Chair of the Board or the CEO.
  2. Special meetings of a Standing or *ad hoc* Committee of the Board of Trustees shall be held upon the call of the Committee Chair or the CEO.
  3. A trustee may request that the CEO, Chair of the Board (in the case of a special meeting of the Board), or Committee Chair (in the case of a special meeting of a Committee) call a special meeting by email or other written means. Upon receipt of email or other written requests to call a special meeting from a majority of the trustees, the CEO, Board Chair, or Committee Chair shall call the requested special meeting.
- g. **Notice of Meetings.**
1. **Regular Meetings.** Notice of a regular meeting of the Board shall be posted at least

ten (10) days (inclusive of weekends and holidays) before the meeting is scheduled. The notice of a regular meeting shall include the date, time, and location of the meeting, and the agenda for the meeting. The agenda shall be determined under the direction of and approval by the Chair of the Board. Changes or revisions to the agenda may be proposed by the CEO or a trustee; provided such proposal shall be delivered to the Chair for approval not less than ninety-six (96) hours before the meeting is scheduled; and further provided that nothing in this sentence shall deprive a trustee from introducing new items of business during a regular meeting. Approved changes or revisions to the agenda shall be posted not less than seventy-two (72) hours before the meeting is scheduled.

2. **Special Meetings.** When circumstances warrant a special meeting of the Board or of a Committee, notice shall be posted as soon as reasonably possible, but not less than twenty-four (24) hours before the meeting is scheduled. The notice of a special meeting shall include the date, time, and location of the special meeting and the agenda for the meeting. Discussions and action at the meeting shall be limited to items listed on the agenda in the notice.
- h. **Change in Meeting Dates.** Any regular or special meeting of the Board may be changed by following the procedure prescribed in these Bylaws for calling special meetings.
- i. **Records of Proceedings.** All official acts of the Board shall be recorded in the minutes of the regular or special meeting at which the action was approved or adopted. The CEO shall cause the minutes to be transcribed and presented for approval or amendment at the next regular meeting. An electronic copy (certified by the Chair and the CEO) shall be on file in the Retirement Office for public inspection and posted on the KPPA website. Electronic copies are maintained on the KPPA Website for Board and Committee actions. Copies that have been archived from the website are available on request.
- j. **Chair and Vice-Chair of the Board.** The Board shall elect a Chair and a Vice-Chair at each annual meeting to hold office for the ensuing Board Year or until their successors are elected. The Chair shall not serve more than four (4) consecutive years as Chair or Vice-Chair (in combination) of the Board. The Vice-Chair shall not serve more than four (4) consecutive years as Chair or Vice-Chair (in combination) of the Board. A trustee who has served four (4) consecutive years as Chair or Vice-Chair of the Board may be elected Chair or Vice-Chair of the Board after an absence of two (2) years from both positions.
- k. **Committees.** The Board may create Committees with such powers and duties as established by the Board. The Chair of the Board, unless otherwise stipulated or determined by the Board, shall appoint the members of each Standing or *ad hoc* Committee, and such appointments shall be recorded in the minutes of the current or next-following regular Board meeting. Committee members shall serve concurrently with the appointing Chair.
- l. **Conflicts of Interest.**
  1. Trustees shall file a statement of financial disclosure with the Executive Branch Ethics Commission within thirty (30) days of taking office.
  2. Trustees shall also file a statement of financial disclosure by April 15 of each

calendar year, and within thirty (30) days following departure from office as a trustee, or as otherwise provided by law.

3. Trustees shall also file a written conflict of interest statement as required pursuant to the Kentucky Retirement Systems' Conflict of Interest Policy.
- m. **Confidentiality.** Trustees shall file a written confidentiality statement as required by the Kentucky Retirement Systems' Confidentiality Policy.
- n. **Travel Policy Guidelines.**
1. All travel for official business of Kentucky Retirement Systems must be done in accordance with the requirements of and be consistent with KRS Chapter 45A and the Kentucky Retirement Systems' Board of Trustees Per Diem and Reimbursement Policy.
  2. No more than four (4) trustees may be passengers in the same common carrier. A Maximum of one (1) executive staff of the Kentucky Retirement Systems may be a passenger in the same common carrier.
  3. To avoid an accidental violation of Kentucky Open Meetings Laws, other than for scheduled meetings, no more than four (4) Trustees may attend the same off-site conference, training, etc., at the same time. The CEO, or his or her designee, shall review Trustee travel requests to coordinate attendance and avoid noncompliance with Kentucky Open Meetings Laws.
- o. **Election Policy Guidelines.** All elections for elected trustees of the Board must be conducted in accordance with the provisions of KRS 61.645, 105 KAR 1:445 and the Kentucky Retirement Systems' Board of Trustees Election Policy and Procedures adopted by the Board.
- p. **Violations of Board Policies and Guidelines.** If a complaint is made that a trustee violated these Bylaws or any policy approved by the Board, the Board shall follow the procedure found in the Conflict of Interest Policy in investigating the complaint.

**Section 1.2 BOARD RESPONSIBILITIES.**

- a. The Board shall make and maintain Bylaws.
- b. The Board shall appoint a CEO and fix the CEO's salary.
- c. The Board shall appoint a General Counsel and fix the General Counsel's compensation.
- d. The Board shall adopt a Personnel Management policy to outline the job descriptions, qualifications, education, and skills for both the CEO and the General Counsel. This policy should also describe recruitment strategies, performance evaluations, and succession planning for these two positions.
- e. The Board may act on contracts for rental of office space, and professional services, including, but not limited to, the auditor, and legal counsel in accordance with the Chapter 45A).
- f. The Board shall consider and take action on changes to administrative regulations proposed by the staff of the Kentucky Retirement Systems or the KPPA.

- g. The Board shall consider and take action on its financial statements and external audits.
- h. The Board shall consider and take action on the recommendations of all of its Committees, except that the AAC and DAC shall have the authority to act upon the recommendations and reports of the hearing officer on behalf of the Board in accordance with KRS Chapter 13B.
- i. The Board shall work with an actuary, who shall be a Fellow of the Conference of Consulting Actuaries or a member of the American Academy of Actuaries. KPPA will select and contract with the actuary pursuant to KRS 61.645(2)(d) which allows the Board to carry out its obligations in accordance with KRS 61.670. The Board shall consider and act on the recommendations of its actuary.
- j. The Board shall adopt contribution rates toward medical insurance premiums.
- k. The Board shall provide oversight concerning programs and services for Kentucky Retirement Systems' members, beneficiaries, recipients, and participating employers.
- l. The Board shall select candidates for each trustee ballot as provided in KRS 61.645 and 105 KAR 1:445.
- m. The Board shall establish a formal trustee education program for all trustees of the Board, pursuant to the requirements of KRS 61.645(18) and 105 KAR 1:440, and ensure that CEO organizes process for this trustee education to occur.
- n. The Board, and individual trustees, should ordinarily refer all news media inquiries to the CEO and/or the Board Chair, and should not speak on behalf of the Board or Kentucky Retirement Systems with the news media. However, nothing in this subsection is intended to prevent individual trustees from speaking to the media concerning their actions, opinions, and decisions as individual trustees.
- o. The Board shall review the Kentucky Retirement Systems' biennial administrative budget and necessary budget amendments. The CEO (or designee) will schedule meetings, prepare budget documents and supporting schedules, and present them to Board members prior to the date of a meeting.
- p. The Board shall review and investigate the employees whose names have been certified by the applicable authority to meet the criteria of KRS 61.592 and 105 KAR 1:130 for hazardous duty, and also those employees who have been so certified who are not, or who no longer are, working in a hazardous duty position. The Board shall take action on all such employees in accordance with KRS 61.592 and 105 KAR 1:130.
- ~~q. The Board shall review and take action on the Joint Kentucky Retirement Systems and CERS Audit Committee findings related to the administration of the Kentucky Retirement Systems and take action as is necessary to insure the administration of the Kentucky Retirement Systems in compliance with all applicable laws and policies.~~

**Section 1.3 CEO RESPONSIBILITIES.**

- a. The CEO shall be responsible for working with the KPPA Executive Director to ensure compliance with Kentucky's Open Records laws. The CEO shall be responsible for designating a records custodian for the Kentucky Retirement Systems and the Board.
- b. The CEO shall develop a biennial budget and necessary budget amendments for approval by the Board. The CEO will coordinate approved budget requests with the KPPA Executive Director to ensure that Kentucky Retirement Systems budget requests

are integrated with the KPPA budget request for submission to the Governor's office. The CEO (or designee) shall present a budget-to-actual expenditure analysis to the Board at each regular quarterly meeting of the Board.

- c. The CEO shall coordinate with the KPPA staff to ensure that information and record management is comprehensive and efficient, and shall ensure that a disaster recovery plan, continuity of operations plan, and policies to ensure cyber-security are developed and maintained.
- d. The CEO shall be responsible for implementing a formal trustee education program for all trustees of the Board, pursuant to the requirements of KRS 61.645(18).
- e. The CEO shall develop recommendations for improvements and revisions of Board policies and submit such revisions for Board approval. The CEO shall ensure that approved policies are implemented in conformance with statutes, regulations and Board policies.
- f. The CEO shall collaborate with the KPPA legal staff to monitor litigation affecting Kentucky Retirement Systems' plans. The CEO and KPPA legal staff shall report significant developments to the Board.
- g. The CEO shall act as legislative liaison, and represent the Board at legislative hearings and other legislative meetings. The CEO and KPPA Legal staff will review proposed legislation that is likely to affect the Kentucky Retirement Systems' plans or administrative management and advise the Board about pending legislation.
- h. The CEO shall provide technical assistance to the members of the General Assembly, Governor's office, and state and local government officials, as well as members, recipients, and beneficiaries of the Kentucky Retirement Systems.
- i. The CEO shall recommend legislative or regulatory changes and propose draft language.
- j. The CEO shall work with the Executive Director of KPPA to obtain from the actuary any necessary actuarial analysis of legislation affecting the Kentucky Retirement Systems.

- k. The CEO shall implement any statutory or regulatory changes and take appropriate action to conform to federal law. The CEO shall also collaborate with the KPPA Executive Director to monitor implementation of any changes designated as KPPA's responsibilities.
- l. The CEO shall sign all documents necessary to promulgate or amend an administrative regulation on behalf of the Board as the head of the Kentucky Retirement Systems in accordance with KRS 13A.220.
- m. The CEO shall communicate with the mass media and other agencies, entities or institutions, including responding to correspondence or inquiries addressed to the Board.
- n. The CEO shall coordinate reciprocal benefits with the other state administered retirement systems in Kentucky.
- o. In the case of emergency conditions that threaten the functioning of the Kentucky Retirement Systems, the preservation or protection Kentucky Retirement Systems' property or assets, vital data, or the health and safety of any person, and where a quorum of the Board is unavailable, the Executive Director may take actions necessary to prevent or mitigate the threat, even if a vote of the Board would otherwise be necessary to take such action. When a quorum of the Board becomes available, any such actions taken by the Executive Director shall be reviewed and ratified as necessary.

**Section 2.1 STANDING COMMITTEES.**

The Board shall have the Standing Committees specified in Section 2.2, each of them to have the duties and responsibilities as therein set forth, together with such other duties and responsibilities as the Board may by resolution determine. In each Board Year, the Chair, elected at the annual meeting, shall appoint trustees to Committees as specified in Section 2.2, unless otherwise determined by the Board. Each Committee shall have a Chair and the Board Chair shall appoint the Chair of each Committee, unless otherwise determined by the Board. A Committee may (but is not required to) elect a Vice-Chair from among its Committee members by a majority vote of the Committee. A Vice-Chair so elected shall preside at meetings of the Committee in the absence or inability to act of the Committee Chair. Any trustee may attend any meeting of any Committee of which he or she is not a Committee member, but shall not have a vote.

**Section 2.2 STANDING COMMITTEES; DUTIES AND RESPONSIBILITIES.**

The Standing Committees of the Board are, and shall have respective duties and responsibilities, as follows:

- a. **Administrative Appeals Committee.** The Board shall collaborate with the CERS Board to develop a timely disability and administrative appeals process. The Board and the CERS Board will coordinate the Administrative Appeals process with two AAC between the two Boards. These AACs may be combined with the DACs, in compliance with KRS 61.645(16) and KRS 78.782(16). Consistent with the provisions of KRS Chapter 13B, the AACs shall meet in alternate months, as needed, to act in matters of administrative appeals. Each Committee shall consist of three (3) members; however, the members appointed to one Committee may also serve from time to time

on the other Committee. One of the AAC shall consist of two (2) CERS Trustees and one (1) Kentucky Retirement Systems Trustee. The other AAC shall consist of one (1) CERS Trustee and two (2) Kentucky Retirement Systems Trustees. The Committees shall ensure that the laws governing Kentucky Retirement Systems are administered impartially and uniformly, and that the actions of the Kentucky Retirement Systems resulting in the appeal were correct and fair under the applicable statutes and regulations.

1. **Committee Responsibilities.** In matters of administrative appeals, the Committee members shall consider the administrative record, including the recommended order and any exceptions filed in compliance with KRS 13B.120. The Committee shall act on behalf of the entire Board as the agency head in making a final order of the Board in accordance with KRS 13B.120. The Committee may adopt the hearing officer's recommended order; or it may reject or modify, in whole or in part, the recommended order; or it may remand the matter, in whole or in part, to the hearing officer for further proceedings as appropriate; or it may act on cases properly remanded by a court of competent jurisdiction. The Committee may also recommend legislative changes to improve the administration of the benefits. Any recommended legislative changes shall be referred to the CEO for study.
  2. **KPPA Executive Director Office of Benefits Responsibilities.** The KPPA Executive Director Office of Benefits or designated staff, in coordination with KPPA's Office of Legal Services staff, will coordinate meeting dates and determine which cases will be reviewed. Designated staff will compile the administrative records and distribute the files to the Committee members prior to each meeting. Staff may provide legal or technical advice to the Committee.
- b. **Disability Appeals Committee.** The Board shall collaborate with the CERS Board to develop a timely disability and administrative appeals process. The Board and the CERS Board will coordinate the Disability Appeals process with two DAC between the two Boards. The DACs may be combined with the AACs, in compliance with KRS 61.645(16) and KRS 78.782(16). Consistent with the provisions of KRS Chapter 13B, the Committees shall meet in alternate months, as needed, to act in matters of disability appeals. Each Committee shall consist of three (3) members; however, the members appointed to one Committee may serve from time to time on the other Committee. One of the DAC shall consist of two (2) CERS Trustees and one (1) Kentucky Retirement Systems Trustee. The other DAC shall consist of one (1) CERS Trustee and two (2) Kentucky Retirement Systems Trustees. The Committees shall ensure that the disability retirement laws are administered impartially and uniformly, that all members of Kentucky Retirement Systems who apply for disability retirement benefits and qualify under the applicable statutes are approved for benefits and that the actions of the Kentucky Retirement Systems resulting in the appeal were correct and fair under the applicable statutes and regulations.
1. **Committee Responsibilities.** In matters of disability appeals, the Committee members shall consider the administrative record, including the recommended order and any exceptions filed in compliance with KRS 13B.120. The Committee shall act on behalf of the entire Board as the agency head in making a final order of the Board in accordance with KRS 13B.120. The Committee may adopt the

hearing officer's recommended order; or it may reject or modify, in whole or in part, the recommended order; or it may remand the matter, in whole or in part, to the hearing officer for further proceedings as appropriate; or it may act on cases properly remanded by a court of competent jurisdiction. The Committee may also recommend legislative changes to improve the administration of the benefits. Any recommended legislative changes shall be referred to the CEO for study.

2. KPPA Executive Director Office of Benefits Responsibilities. The KPPA Executive Director, Office of Benefits, or designated staff, in coordination with KPPA Office of Legal Services staff, will coordinate meeting dates and determine which cases will be reviewed. Designated staff will compile the administrative records and distribute the files to the Committee members prior to each meeting. Staff may provide legal or technical advice to the Committee.
- d. Investment Committee. The Committee shall consist of five (5) members, as follows:
- (i) the three (3) trustees with investment experience appointed by the Governor pursuant to KRS 61.645(1)(c),
  - (ii) one (1) trustee with retirement experience appointed by the Governor pursuant to KRS 61.645(1)(c) appointed by the Board Chair, and
  - (iii) one (1) elected trustee pursuant to KRS 61.645(1)(a)-(b) appointed by the Board Chair.
1. Committee Responsibilities.
    - A. The Investment Committee shall have authority to implement the investment policies adopted by the Board, including without limitation the Board's Investment Policy Statement (pensions and health), and to recommend action on behalf of the Board on all investment-related matters, and to acquire, sell, safeguard, monitor, and manage the assets and securities of the several funds, subject to the Board's approval.
    - B. The Investment Committee will meet quarterly to review reports from investment staff, investment consultants, and investment managers with authority to convene additional meetings as circumstances require.
    - C. The Committee will monitor investment performance and management practices and make reports and recommendations to the Board. The Committee will recommend the selection and termination of investment managers, investment products, custodial relationship and investment consultants. The Committee will evaluate whether the Investment Policy, the investment activities, and management controls and processes continue to be consistent with meeting the Kentucky Retirement Systems' goals, and perform other duties specified in the Investment Policy Statement.
  - D. Actuarial Subcommittee.
    1. The Chair of the Investment Committee shall appoint an Actuarial Subcommittee comprised of three (3) members, with the concurrence of the Board Chair as to each appointee, as follows: (i) one (1) trustee appointed by the Governor pursuant to KRS 61.645(1)(c); (ii) one (1) trustee elected by members of the Kentucky Employees Retirement System; (iii) one (1)

trustee elected by members of the State Police Retirement System. The Investment Committee Chair shall appoint a Chair of the Actuarial Subcommittee. The Actuarial Subcommittee will meet as necessary upon call of the Chair of the Actuarial Subcommittee.

2. Upon appointment, the Subcommittee will review and evaluate actuarial assumptions, funding methods and tables proposed by the actuary (including without limitation all economic, mortality, disability, etc. assumptions) for each system within Kentucky Retirement Systems that affect: (i) the annual determination of the actuarial valuation of assets and liabilities of the systems within the meaning of KRS 61.670; (ii) the factors that apply to amounts payable to members (e.g., early commencement, commutation, repayment, etc.); and (iii) the actuarially recommended contribution rate for employers required under KRS 61.510 to 61.692 and KRS 16.505 to 16.652, except as otherwise determined by law or regulation.
  3. The Subcommittee will report its findings and recommendations of each such review or evaluation to the Investment Committee. Upon review and approval, the Investment Committee shall forward the results and its recommendations to the Board for ratification.
  - E. The Investment Committee may also recommend legislative changes to the Board to improve the administration of investment-related matters.
2. **KPPA Executive Director Office of Investments Responsibilities.**
- A. KPPA Executive Director, Office of Investments, also known as the Chief Investment Officer (CIO), shall administer the assets of the Kentucky Retirement Systems consistent with the policies, guidelines, and limits established by the law, the Investment Committee and the Investment Policy Statement.
  - B. The CIO shall provide members of the Investment Committee with assessments of service providers and performance reports and shall have authority, subject to the approval of the Chair of the Investment Committee or the Chair of the Board of Trustees, to reduce or increase assets assigned to an investment manager that has already been hired.
  - C. The CIO shall identify issues for consideration by the Investment Committee and prepare recommendations regarding those issues.
  - D. The CIO shall recommend changes to the Investment Committee regarding service providers, statutes, policies or guidelines, as needed, to maintain a productive relationship between the investment program and its goals.
  - E. The CIO shall communicate with the mass media and other agencies, entities, or institutions regarding investment related issues.
3. **Investment Policy.** The “Investment Policy Statement” and the “Investment Procurement Policy” are hereby incorporated by reference.

4. **KPPA Executive Director Responsibilities.**

The Executive Director of the KPPA shall be responsible for KPPA executing all aspects of the KPPA duties including the management of the assets for Kentucky Retirement Systems and CERS in accordance with their Investment Policy Statements and their Funding Policies. The Executive Director will coordinate with the CEO and the Chair of the Investment Committee of the Kentucky Retirement Systems and the CEO and Chair of the Investment Committee of the CERS to insure they are able to fully satisfy their fiduciary responsibilities and monitor their assets by providing the required information and reports from the KPPA custodian and consultant(s) and access to and meeting with the employees of the KPPA investment department,.

e. **Joint Kentucky Retirement Systems and CERS Retiree Health Plan Committee.**

The Committee shall consist of four (4) Trustees total, two (2) Trustees appointed from the CERS Board by the CERS Chair and two (2) Trustees appointed from the Kentucky Retirement Systems Board by the Kentucky Retirement Systems' Chair. The Committee shall elect a Chair and Vice Chair and shall assist the Board in providing a group hospital and medical insurance plan for present and future recipients of a retirement allowance from the systems administered by Kentucky Retirement Systems as required by KRS 61.702.

1. **Committee Responsibilities.**

A. The Committee will meet quarterly to review reports from KPPA staff and retiree health insurance consultants with authority to convene additional meetings, as circumstances require.

B. The Committee will monitor retiree health insurance matters and make reports and recommendations to the Board. The Committee will evaluate retiree health insurance issues and obligations set forth in state and federal law. The Committee may, as deemed necessary, evaluate health insurance companies, health maintenance organizations, self-insurance proposals, and other ways of providing a group hospital and medical insurance plan for retired members as provided in KRS 61.702.

C. The Committee may negotiate and recommend appropriate contracts for execution by the Board, in accordance with the requirements of the Commonwealth of Kentucky Model Procurement Act (KRS 45A). The Committee may solicit reports and actuarial analyses in order to analyze issues regarding retiree health insurance. The Committee may also recommend legislative changes to improve the administration of retiree health insurance related matters. Any recommended legislative changes shall be referred to the CEO for study.

2. **KPPA Executive Director Responsibilities.** The KPPA Executive Director and designated staff will maintain and provide the Committee with necessary information to execute its responsibilities. The KPPA Executive Director or designated staff will provide advice regarding state and federal laws and

regulations. Staff will identify issues for consideration by the Committee and prepare recommendations regarding those issues.

~~f. **Joint Kentucky Retirement Systems and CERS Audit Committee.** The Committee shall consist of four (4) Trustees total, two (2) Trustees appointed from the CERS Board by the CERS Chair and two (2) Trustees appointed from the Kentucky Retirement Systems Board by the Kentucky Retirement Systems' Chair and shall elect a Chair and Vice Chair. The Committee will act on behalf of the Board in fulfilling its oversight responsibilities for the system of internal control, the internal and external audit processes, and the process for monitoring compliance with laws, regulations and the code of conduct.~~

~~7. **Committee Responsibilities.** The Committee will meet quarterly, with authority to convene additional meetings, as circumstances require. The Committee shall have the authority to review reports by the Internal Auditor and to recommend appropriate policies and procedures. Additional responsibilities are enumerated in the Audit Committee Charter.~~

~~8. **Internal Auditor Responsibilities.** The KPPA Internal Auditor will be responsible for the planning, implementation, and reporting of audits and internal audit plans. The Internal Auditor will also be responsible for the functional control and audit activities in the relation to the objectives of the KPPA Division of Internal Audit. Additional responsibilities are enumerated in the KPPA Division of Internal Audit Charter.~~

~~9. **Audit Charters** The Audit Committee Charter and the KPPA Division of Internal Audit Charter are hereby incorporated by reference.~~

~~j.f.~~ In addition to the duties and responsibilities described in this Section 2.2, each Standing Committee may develop appropriate additional policies and proposals to be ratified by the Board.

**Section 2.3 DELEGATIONS OF AUTHORITY BY THE BOARD.**

**Delegation of Authority.** Except as may be prohibited by or inconsistent with law, the Board may delegate to any Standing Committee of the Board any power, authority, duty, or responsibility conferred on the Board by law. In the case of any such delegation, the decision or action of the Committee within the scope of its delegated authority shall constitute the decision or action of the Board. The Board may at any time rescind the delegated authority as a whole or in part, except that a rescission of authority with respect to quasi-judicial matters delegated to a Committee shall not operate to affect the proceedings or the final action of any such matter pending before the Committee when the Board acts to rescind. This exception is designed to preclude the Board from using its authority to rescind a delegation to interfere with the process or outcome of a quasi-judicial proceeding then in progress before a Committee which had properly commenced the proceeding within the scope of its authority.

**Section 2.4 AD HOC COMMITTEES.**

In addition to the Standing Committees specified in Section 2.2, the Chair or the Board may at any time establish an *ad hoc* Committee of the Board and fix its duties and responsibilities for any purpose which, in the judgment of the Chair or the Board, is better served by a temporary rather than Standing Committee. Each such Committee shall consist of such number of members as the Chair shall determine, and the Chair shall also then appoint the Chair and designate the other members of the Committee, unless otherwise determined by the Board.

**Section 2.5 LIMITATIONS ON AUTHORITY.**

No Committee shall have any power or authority, nor shall the Board delegate to itself, power or authority, as to any of the following:

- a. The amendment or repeal of any Board resolution.
- b. Action on other matters committed by Board resolution or by Kentucky law (including the common law of trusts respecting the delegation or the non-delegation of fiduciary responsibilities) to the Board under terms or provisions that make such action non-delegable.

**Section 2.6 AMENDMENT OF BYLAWS.**

These Bylaws may be amended at any regular or special meeting of the Board of Trustees by a vote of a majority of the entire membership of the Board. The Board shall be provided a copy of the proposed changes at least fifteen (15) calendar days prior to the meeting of the Board of Trustees where this vote shall be taken.

**Section 3.0 CERTIFICATION OF STATEMENT OF BYLAWS AND COMMITTEE ORGANIZATION.**

We, the Chair of the Board of Trustees and the Chief Executive Officer of the Kentucky Retirement Systems, do certify that this Statement of Bylaws and Committee Organization was approved and adopted by the Board on the ~~11<sup>th</sup> 5<sup>th</sup>~~ day of ~~January June~~, ~~2022 2023~~.

Formatted: Superscript

Chair of the Board of Trustees Kentucky Retirement Systems	Date

Chief Executive Officer Kentucky Retirement Systems	Date

**SECOND ADDENDUM TO PERSONAL SERVICES CONTRACT  
FOR  
CHIEF EXECUTIVE OFFICER**

Pursuant to **Section I, Scope of Agreement**, Subparagraph 6.E. (Waivers and Amendments), in the Personal Service Contract ("PSC") for a Chief Executive Officer entered into by and between the Kentucky Retirement Systems ("KRS") and John E. Chilton ("Employee") on or about June 28, 2021, the following amendments and terms and conditions are incorporated into and form a part of the PSC:

**I.  
Preamble**

The third paragraph of the preamble is hereby amended as follows:

This PSC is effective **July 1, 2023** and expires **June 30, 2025**. The KRS Board of Trustees reserves the right to renew this agreement per the authority granted to them in KRS 61.645 and by House Bill 9, which passed in the 2021 Regular Legislative Session.

**II.  
Section I. Scope of Agreement**

**Section I. Scope of Agreement**, Subparagraph 2. Contract Term, is hereby amended as follows:

The term of Employee's employment with KRS shall be for the period from **July 1, 2023**, through **June 30, 2025** (the "Contract Term"), unless earlier terminated pursuant to this Agreement. Nothing in this Agreement shall be construed to create any commitment, guarantee, agreement or understanding of any kind that KRS shall continue to employ Employee after the end of the Contract Term.

**III.  
Section I. Scope of Agreement**

**Section I. Scope of Agreement**, Subparagraph 4.A. Compensation (Salary) is hereby amended as follows:

KRS shall pay Employee, as compensation for the performance of his obligations under this Agreement, an annual salary of **\$81,000 for the period of July 1, 2023 through June 30, 2024**, and an annual salary of **\$85,860 for the period of July 1, 2024 through June 30, 2025**. Employee understands that no variable or performance linked compensation is envisioned during the term of this agreement. The salary shall be paid in such periodic installments as KPPA pays its employees.

**IV.**

**Section III. Pricing**

**Section III. Pricing**, Subparagraph 1. Salary is hereby amended as follows:

Kentucky Retirement Systems shall pay Employee, as compensation for the performance of his obligations under this Agreement, a base annual salary of \$81,000 for the period of July 1, 2023 through June 30, 2024, and an annual salary of \$85,860 for the period of July 1, 2024 through June 30, 2025, and benefits as determined and set forth herein. Employee understands that no variable or performance linked compensation may be paid during the term of this agreement. Any and all changes to this Agreement must be processed in the same manner as the original Agreement. The salary shall be paid in such periodic installments as KPPA pays its employees.

**V.**  
**EXHIBIT A**

Section I, Scope of Agreement, Subparagraph 1. Duties, authorizes KRS to amend the Employee's general duties from time to time. The Chief Executive Officer Job Description, referred to and incorporated into the June 28, 2021, PSC as Exhibit A, is hereby deleted and replaced with the amended Exhibit A, Chief Executive Office Job Description, attached hereto and incorporated herein by reference.

**All other terms and conditions of the June 28, 2021, PSC remain unchanged and in full force and effect.**

**IN WITNESS WHEREOF**, the parties have executed this Addendum as of the date of execution by both parties below.

**KRS:**

**Employee:**

KENTUCKY RETIREMENT SYSTEMS

JOHN E. CHILTON

By: \_\_\_\_\_  
Name: Lynn Hampton  
Title: KRS Board Chair  
Date: \_\_\_\_\_

By: \_\_\_\_\_  
Name: John E. Chilton  
Title: KRS Chief Executive Officer  
Date: \_\_\_\_\_

APPROVED AS TO FORM AND LEGALITY:  
KPPA's Office of Legal Services on behalf of KRS

By: \_\_\_\_\_  
Name: Michael Board  
Title: Executive Director, Office of Legal Services

## EXHIBIT A



### CHIEF EXECUTIVE OFFICER Kentucky Retirement Systems

#### Salary Range

<b>July 1, 2023-June 30, 2024:</b>	<b>\$6,750 Monthly</b>
	<b>\$81,000 Annually</b>
<b>July 1, 2024-June 30, 2025:</b>	<b>\$7,155 Monthly</b>
	<b>\$85,860 Annually</b>

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#### GENERAL DESCRIPTION OF POSITION:

This position is for the Chief Executive Officer (CEO) for the Kentucky Retirement Systems (KRS). KRS administers benefits for the Kentucky Employees Retirement System and the State Police Retirement System. KRS is governed by a nine (9) member Board (3 elected members, and 6 members appointed by the Governor). Per Kentucky Revised Statutes Section 61.645(9)(a), the CEO shall serve as the legislative, and executive adviser to the Board, and shall work with the Executive Director of the Kentucky Public Pensions Authority (KPPA) to carry out the statutory provisions applicable to KRS. The role of the CEO is to plan, manage, and oversee the activities and operations of KRS within the framework established by statute and in compliance with the policies, rules and regulations adopted by the Board.

#### ESSENTIAL DUTIES:

##### *Board of Trustees*

- Provide leadership to KRS by carefully working with the Board to identify the long-term strategic direction of the organization while working within existing and future statutory and regulatory constraints.
- Develop and implement effective responses to issues facing KRS and its membership.
- Act as the Board's primary adviser and assist the Trustees in meeting their fiduciary responsibilities.
- Work collaboratively with the Board Chair and Committee Chairs in developing meeting agendas and in the preparation of meeting materials.

- Attend all Board and Committee meetings and make presentations as required.
- Provide information and education to the Board on pertinent topics.
- Provide support to the Board and its Committees in establishing and revising all policies of the Board and Committees. Such support will include identifying and analyzing issues requiring Board policy, ensuring policies support the mission and goals of KRS and providing policy recommendations for consideration by the Board or its Committees. The CEO will be responsible for ensuring that all policies are implemented and adhered to. Provide the Board with relevant, appropriate, and timely information to enable it to properly carry out its oversight responsibilities.
- Apprise the Board in a timely manner of all significant issues, problems, or developments pertaining to KRS, and provide recommended courses of action as appropriate.
- Monitor the terms of appointments of Trustees, including (1) expiration dates of current terms and (2) statutory term limits.
- Monitor required financial and ethical reporting requirements.
- Provide orientation to new Trustees as they come on the Board, and ensure that all Board members receive appropriate educational opportunities or training in adherence with the education policy.
- Assure Board orders and requests are implemented.
- Serve as a spokesperson for KRS and respond to inquiries from the press regarding issues pertinent to KRS.
- Act as liaison between the Board, KPPA, member organizations, employers, the Legislature and the public.
- Coordinate with legal counsel, including KPPA legal staff, KRS General Counsel (or Conflicts General Counsel) and/or outside counsel as applicable, on all legal proceedings involving KRS.
- Track and ensure compliance with Board education requirements.
- Perform other duties and responsibilities as assigned by the Board.

#### *Fiscal Responsibility*

- Assist the Board in reviewing and adopting actuarial assumptions and funding methods for KRS.
- Work with KPPA's actuaries on projections, assumptions, and reports to the Board.
- Monitor the funded status of the pension plan and insurance trust plan.
- Assist the Board in coordinating the annual financial audit.

#### *Legislation*

- Maintain a positive relationship with the Legislative and Executive branches of state government.
- Review and, with the assistance of legal counsel, analyze proposed legislation and legislative developments affecting KRS.

- Make recommendations to the Board on administrative regulations and proposed legislation, including assisting KPPA in the introduction of regulations and legislation as necessary and appropriate.
- Interact with legislators as legislative liaison for KRS, and testify on proposed legislation affecting KRS.
- Ensure that an actuarial analysis has been completed and submitted to LRC for any legislation affecting KRS.
- Attend meetings of, and when required, address legislative committees (i.e., the Public Pension Oversight Board).
- Advocate for or oppose bills impacting KRS.

DRAFT



## KENTUCKY PUBLIC PENSIONS AUTHORITY

David L. Eager, Executive Director

1260 Louisville Road · Frankfort, Kentucky 40601  
kyret.ky.gov · Phone: 502-696-8800 · Fax: 502-696-8822



**To:** Kentucky Retirement Systems Board of Trustees

**From:** David Eager, Executive Director of KPPA

**Date:** June 5, 2023

**Subject:** KPPA Update

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**I. STAFFING:** We continue to have in the area of 250 staff members. While we have a number of open positions and are actively recruiting for many of them, I don't foresee any great jump in that number of staff before June 30th. Benefits administration, investments, legal and other areas which are short staffed, are performing their duties as required, although not without some pressure.

**II. ANNUAL BUDGET:** We are in the final stages of putting the FY 2024 Budget together for the KPPA Board approval. This year's process was very thorough thanks to Board Members, Bill O'Mara and Lynn Hampton, CEOs John Chilton and Ed Owens, and our CFO, Mike Lamb. Mike spent many hours assuring himself and the team that all the various account budgets were supported by history, upcoming plan year needs and reasonableness.

**III. STRATEGIC PLANNING:** We hosted the representatives from Provaliant, Ray Smith and Kris Valenta, for a launch meeting on May 4<sup>th</sup>. Various KPPA staff were involved in providing information that will be used to develop our strategic plan. The Provaliant staff will be onsite again on June 7<sup>th</sup> and 8<sup>th</sup> conducting more research about our agency. I will provide more updates as appropriate.

**IV. GOVERNMENT OFFICIALS NEWSLETTER:** This newsletter was recently sent to Kentucky government officials. It is an effective and efficient means of getting relevant information and using links to streamline the actual content. Key subjects in this issue included: Background on COLAs, links to our ACFR and SAFR, a link to our new Summary Plan Description, Plan funded statuses, Legislative news related to KPPA, CERS, and KRS, and Investment news. I encourage you to read it. Contact Ashley Gabbard if you need a copy.

**V. MEMBER NEWSLETTER:** The member newsletter went out last week to active members and retirees. In it we encouraged recipients to contact family members or friends who might be looking for a job, to go to the State website link to open positions in State government. We also covered several topics, including the fact that we are doing a Member Survey for which they can click to the link and participate. Other topics included encouraging members to use self service and to make sure their beneficiary information is up to date. Finally, members were advised of

the new board leadership that resulted from the CERS, KRS, and KPPA annual meetings and the election of Keith Peercy to the SPRS Board.

**VI. SUMMARY PLAN DESCRIPTION:** The Summary Plan Description has been updated thanks to the hard work by many staff members. Most notably, a thank you goes to Erin Surratt, Amy Fields, Carrie Bass, Shauna Miller, Liza Welch, Wes Crosthwaite, Connie Pettyjohn, Odette Gwandi, and Stephanie Aldridge.

**VII. FIXED INCOME PORTFOLIO MANAGER:** Brian Caldwell has been promoted to Fixed Income Portfolio Manager effective July 16. Brian had been the investment department's Senior Investment Analyst.

**VIII. CEM INVESTMENT DEPARTMENT BENCHMARKING:** Bill O'Mara, Steve Willer and I had a demonstration of CEM's Investment Benchmarking Study. I am putting it in the FY 2024 proposed budget for KPPA Board approval and plan to do the study every other year. The study will allow us to compare our investment management fees, carried interest, and expenses with a broad universe of other public funds and to a hand-picked peer group. It will also break that information into asset subcategories and compare with other funds and with passive alternatives to see if we are receiving competitive fees and spending prudently.

**IX. LOUISVILLE OFFICE:** We have officially vacated the Louisville office, removed all furnishings, and discontinued the rent. Securing new space is still in limbo. Investment staff, most of whom live in or near Louisville, are generally working remotely.