

**Kentucky Retirement Systems Board of Trustees
Quarterly Board Meeting
December 5, 2023, 10:30 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 – November 14, 2023* | Lynn Hampton |
| 5. External Audit* | |
| a. Draft Fiscal Year Ended June 30, 2023 External Audit, includes Financial section of the Annual Report and GASB 67 and 74* | Adam Gordon |
| b. Discussion on Management Letter Comments | |
| c. Auditor Communications with those Charged with Governance | |
| 6. Approval of June 30, 2023 Actuarial Valuations for KERS Hazardous, KERS Non-Hazardous, and SPRS* | Danny White, GRS
Janie Shaw, GRS |
| 7. Approval of FY25-26 Contribution Rates* | John Chilton |
| 8. Quarterly Investment Performance Report | Steve Willer/Wilshire |
| 9. Quarterly Financial Statements | Mike Lamb |
| a. Quarterly Administrative Expenses to Budget | |
| b. Contribution Report | |
| c. Outstanding Invoices | |
| d. Penalty Waiver | |
| 10. Annuity Rates Discussion* | John Chilton |
| 11. KRS ByLaw Revisions* | Michael Board |
| 12. KRS CEO Update | John Chilton |
| 13. KPPA Update | David Eager |
| 14. New Business** | Lynn Hampton |
| 15. Closed Session ** | Lynn Hampton |
| 16. Adjourn* | Lynn Hampton |

**Board Action Required*

***Board Action May Be Required*

**MINUTES OF MEETING
KENTUCKY RETIREMENT SYSTEMS
BOARD OF TRUSTEES MEETING
NOVEMBER 14, 2023, AT 10:00 AM, E.T.
VIA LIVE VIDEO TELECONFERENCE**

At the Meeting of the Kentucky Retirement Systems Board of Trustees held on November 14, 2023 the following members were present: Lynn Hampton (Chair), Ramsey Bova, Mary Eaves, Prewitt Lane, Dr. Crystal Miller, Keith Percy and William Summers, V. Staff members present were CERS CEO Ed Owens, III, KRS CEO John Chilton, David Eager, Rebecca Adkins, Erin Surratt, Connie Pettyjohn, Michael Board, Victoria Hale, Leigh Ann Davis, Michael Lamb, Connie Davis, D’Juan Surratt, Steve Willer, Ashley Gabbard, Katie Park, Shaun Case, and Sherry Rankin. Others present included Tracey Garrison and Larry Loew with Humana, Chris Tessman and David Lindberg with Wilshire Advisors, and Danny White, Janie Shaw, and Krysti Kiesel with GRS.

Ms. Hampton called the meeting to order.

Mr. Board read the Legal Public Statement.

Ms. Rankin called roll.

There being no ***Public Comment*** submitted, Ms. Hampton introduced agenda item ***Approval of Minutes – September 7, 2023, and September 14, 2023 (Video 00:06:27 to 00:07:05)***. 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 ***Review of Draft 2023 Actuarial Valuation (Video 00:07:06 to 01:07:18)***. Ms. Shaw and Mr. White with GRS presented the 2023 Valuation Results.

****Ms. Eaves entered the meeting****

Mr. Chilton led a discussion of annuity rates. He stated that there was recent discussion regarding whether to increase the rate used for computing annuities from 5.25% to what was recently

suggested in what CERS adopted was 5.875% recently. Mr. Chilton recommended that the annuity rate be increased to 5.875% as adopted by The CERS Board of Trustees and that 7.50% rate charged when retirees recontribute funds that had been previously distributed be maintained.

Mr. White provided an overview of annuity factors and how they impact member benefits. He noted that the KPPA system is set-up to handle only one set of administrative factors for both systems. It would take a lot of a lot of effort to create two different sets of factors for use, said Mr. White.

Mr. Percy stated that the KRS Board of Trustees needs to follow the lead of the CERS Board of Trustees and adopt an annuity rate of 5.875% or disadvantage the KPPA employees as they will need to administer two separate benefit types for the same class of employees or disadvantage the KRS membership as it would be more valuable to work for a CERS employer. Therefore, Mr. Percy made a motion to follow the lead of CERS and adopt a 5.875% annuity rate. The motion was seconded by Mr. Lane.

Mr. Lane advised that he agreed with Mr. Percy's statement. Mr. Eager also supported Mr. Percy's statement. He stated that the KPPA strongly encouraged a single rate from an administrative and equity standpoint.

Ms. Eaves asked if the proposed interest rate assumption of 5.875% was in-line with other states. Mr. White stated that the proposed rate is low; however, the median return assumption utilized by other systems is 7.00%. However, 5.875% is consistent with the current return assumption used by CERS and KRS, said Mr. White.

Ms. Bova expressed that more information was needed for a decision and asked if there was an approval deadline. Ms. Surratt indicated that an effective date had not been established; the Boards of Trustees must first determine the rate to be used to determine the factors. Depending on when the factors are received from GRS, July 1, 2023, would be the earliest implementation date – if the same rate is utilized by both KRS and CERS, said Ms. Surratt.

Mr. Percy voiced that if KRS does not utilize the rate approved by CERS (5.875%), the Tier 3 annuity payout of KRS members would become less valuable than the CERS system.

The vote was taken, and Ms. Bova abstained; however, the motion to adopt a 5.875% annuity rate passed.

Ms. Hampton introduced the ***Joint Retiree Health Plan Committee Report*** (Video 01:07:19 to 01:15:50). Ms. Pettyjohn stated that the Joint CERS & KRS Retiree Health Plan (RHP) Committee met October 23, 2023. She advised that the Committee reviewed an informational presentation from Humana regarding 2024 Pharmacy Review, Pharmacogenomics, and Medication Therapy Management (MTM). She briefly discussed 2024 Formulary changes, open enrollment, and retiree engagement/outreach efforts. Mr. Larry Loew with Humana reported that contract negotiations continue between Humana and Baptist Health Medical Group (BHMG).

Ms. Hampton introduced agenda item ***Statutorily Required Reporting*** (Video 01:15:51 to 01:17:20). Ms. Adkins presented an informational memo illustrating the variety of reports that are statutorily required to be submitted to the Legislative Research Committee (LRC) annually. She advised that the listed reports would be submitted via email to the LRC on or before Nov 15, 2023.

Ms. Hampton introduced agenda item ***KRS 61.5991 Contract Reporting of quasi-Governmental Agencies*** (Video 01:17:21 to 01:21:11). Mr. D’Juan Surratt presented an informational memo regarding KRS 61.5991 Contract Reporting of Quasi-Governmental Agencies & Employer Audits. He stated that KRS 61.5991 requires certain KERS employers to report data on contracted employees to the KPPA for data reporting to the LRC and the Office of the State Budget Director (OSBD).

Mr. Surratt reported that all agencies submitted their Form 6756 and supporting documentation. KPPA staff provided this data to LRC and OSBD on August 28, 2023.

Mountain Comprehensive Care Center (MCCC) was marked as non-compliant on the report as they have not submitted contract employees whom KPPA has deemed to be employees pursuant to KRS 61.675. These employees should have been added to the monthly reports for FY23 as participating members, said Mr. Surratt.

He advised that KRS 61.5991 requires KPPA to perform audits each fiscal year to ensure employers subject to these requirements are reporting all eligible employees and contributions are being paid

in accordance with KRS 61.510 to 61.705. At the March 1, 2023, KRS Board of Trustees meeting, the KPPA Division of Employer Reporting, Compliance and Education (ERCE) was directed to annually audit 5% of the 102 agencies who are subject to KRS 61.5991 reporting. ERCE staff had completed four (4) agency audits thus far, reported Mr. Surratt.

Ms. Hampton introduced agenda item ***December Meeting Date Discussion*** (Video 01:21:12 to 01:25:03). The next KPPA meeting is scheduled for December 6, 2023, and the next KRS Board of Trustees meeting was scheduled for December 7, 2023. Ms. Hampton advised that there may be actions at the KRS Board of Trustees meeting requiring ratification by the KPPA. Therefore, the KRS Board of Trustees meeting was rescheduled as a special called meeting to Tuesday, December 5, 2023, at 10:30 a.m.

Ms. Hampton introduced agenda item ***KRS Update/CEO Report*** (Video 01:25:04 to 01:26:49). Mr. Chilton stated that he attended a recent Trustee Education Session and a meeting of the Public Pensions Oversight Board. Discussions about the KPPA Housekeeping Bill and other legislation that may arise during the upcoming 2024 Legislative Session continue, said Mr. Chilton. He also noted a memo drafted with the assistance of GRS regarding actuarial factors and interest rates. Mr. Chilton advised that the memo would be distributed to all KRS Trustees.

Ms. Hampton introduced agenda item ***New Business*** (Video 01:26:50 to 01:27:49). Ms. Hampton announced that the KPPA Ad Hoc Executive Director Search Committee comprised of CERS Trustees Bill O'Mara (Chair) and Betty Pendergrass and KRS Trustees Lynn Hampton and Keith Peercy. The Committee has been working diligently with KPPA Staff and the position opening will be posted in several locations soon; however, a search firm will not be utilized, said Ms. Hampton.

Ms. Hampton introduced agenda item ***Closed Session*** (Video 01:27:50 to 01:28:51) and requested a motion to enter closed session to discuss pending litigation pursuant to KRS 61.810(c). A motion was made by Mr. Summers and seconded by Mr. Lane. The motion passed unanimously.

Ms. Hampton 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.

Closed Session (Video - Part 2 - 00:00:14 to 00:00:30)

Ms. Hampton called the meeting back to open session and stated that there was no action taken by the KRS Board of Trustees as result of the Closed Session.

There being no further business, Ms. Hampton ***adjourned*** the meeting.

Copies of all documents presented are incorporated as part of the Minutes of the Board of Trustees held November 14, 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

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.

Recording Secretary

I, the Chair of the Board of Trustees of the Kentucky Retirement Systems, do certify that the Minutes of Meeting held on November 14, 2023, were approved on December 5, 2023.

Chair of the Board of Trustees

I have reviewed the Minutes of the November 14, 2023, Board of Trustees Meeting for content, form, and legality.

Executive Director
Office of Legal Services



Annual Comprehensive **Financial Report**

FOR THE FISCAL YEAR ENDED JUNE 30

2023

Prepared through the joint efforts of KPPA's team members.
Available online at kyret.ky.gov ☒

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For The Fiscal Year Ended
June 30, 2023**

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Management's Responsibility for Financial Reporting

Management has prepared the combining financial statements of Kentucky Public Pensions Authority (KPPA) and is responsible for the integrity and fairness of the information presented.

December 6, 2023: Management has prepared the combining financial statements of KPPA and is responsible for the integrity and fairness of the information presented. Some amounts included in the combining financial statements may be based upon estimates and judgments. These estimates and judgments were made utilizing the best business practices available. The accounting policies followed in the preparation of these combining financial statements conform to U.S. Generally Accepted Accounting Principles (GAAP). Financial information presented throughout the annual report is consistent with the combining financial statements.

Responsibility: Ultimate responsibility for the combining financial statements and Annual Comprehensive Financial Report (ACFR) rests with the KPPA Board (Board). The Executive Director and KPPA staff assist the Board in its responsibilities.

Systems of internal control and supporting procedures are maintained to provide assurance that transactions are authorized, assets safeguarded, and proper records maintained. These controls include standards in hiring and training employees, the establishment of an organizational structure, and the communications of policies and guidelines throughout the organization. The cost of a control should not exceed the benefits to be derived; the objective is to provide reasonable, rather than absolute, assurance that the combining financial statements are free of any material misstatements. These internal controls are reviewed by internal audit programs. All internal audit reports are submitted to the KPPA Audit Committee, KPPA, CERS and KRS Boards.

The Auditor of Public Accounts (APA) has conducted an independent audit of the combining financial statements in accordance with U.S. Generally Accepted Government Auditing Standards. This audit is described in their Independent Auditors' Report on pages 16 through 19 in the Financial Section. Management has provided the external auditors with full and unrestricted access to KPPA's staff to discuss their audit and related findings as to the integrity of the plan's financial reporting and the adequacy of internal controls for the preparation of combining financial statements.



A handwritten signature in black ink, appearing to read "David Eager".

David L. Eager
Executive Director

A handwritten signature in black ink, appearing to read "M. Lamb".

Michael B. Lamb, CPA
Chief Financial Officer

A handwritten signature in black ink, appearing to read "Rebecca Adkins".

Rebecca H. Adkins
Deputy Executive Director

A handwritten signature in black ink, appearing to read "Connie Davis".

Connie Davis, CIA, CGAP, CRMA
Director of Accounting

EXECUTIVE DIRECTOR'S MESSAGE



David Eager

David L. Eager
Executive Director

December 6, 2023

To the Trustees & Membership

On behalf of the Kentucky Public Pensions Authority and the Boards of the County Employees Retirement System (CERS) and the Kentucky Retirement Systems (KRS), it is my honor to present the Annual Comprehensive Financial Report for the Fiscal Year (FY) ended June 30, 2023. This report, and the Summary Annual Financial Report, are provided as a resource for understanding the KPPA structure and the financial status of the systems KPPA operates.

Total assets in the systems administered by the Kentucky Public Pensions Authority (KPPA) increased to a record \$24.9 billion in Fiscal Year (FY) 2023, buoyed by strong investment returns, General Fund appropriations authorized by the legislature, and employer contributions. The blended FY return for all of the CERS and KRS hazardous and nonhazardous pension funds was 9.54%, while the blended return for the CERS and KRS hazardous and nonhazardous insurance trust fund was 10.15%.

Investment performance by system can be found on page 129. More information can be found in the Investments section of the KPPA website.

Those strong investment returns exceeded the median peer pension fund return of 7.64%, the target returns for those portfolios, and the actuarially assumed rates of return, which were 5.25% for the Kentucky Employees Retirement System (KERS) Nonhazardous and State Police Retirement System (SPRS) pension funds and 6.25% for all other pension and insurance funds.

Funding Improves

Thanks to strong investment returns for FY 2023 and funding approved by the General Assembly over and above the actuarially determined contribution (ADC) for KERS Nonhazardous and SPRS, as well as changes in some actuarial assumptions for CERS, the funded ratio of all three pension systems improved from FY 2022.

Pension Funded Ratio						
	2018	2019	2020	2021	2022	2023
CERS NH	52.7%	49.1%	49.4%	51.8%	52.0%	56.1%
CERS H	48.4%	45.3%	45.1%	46.7%	47.6%	51.4%
KERS NH	12.9%	13.4%	14.2%	16.8%	18.5%	21.8%
KERS H	55.5%	54.8%	55.3%	60.4%	63.2%	65.4%
SPRS	27.1%	27.0%	28.1%	30.7%	52.5%	54.0%

Insurance Funded Ratio

	2018	2019	2020	2021	2022	2023
CERS NH	76.7%	70.7%	78.5%	85.4%	132.1%	131.5%
CERS H	74.6%	75.8%	78.2%	84.3%	101.0%	100.7%
KERS NH	36.4%	36.3%	42.7%	50.2%	79.1%	81.7%
KERS H	130.0%	123.1%	126.0%	135.5%	172.2%	170.4%
SPRS	71.6%	71.3%	75.0%	82.0%	100.6%	100.5%

Commitments by the General Assembly and the Governor to fully fund contributions, and provide additional allocations, combined with prudent management by the Office of Investments and other staff, have all five pension funds on track to be fully funded by 2049.

To read the full actuarial reports, visit the Actuarial Valuations page on our website, under the Publications & Forms tab.

Ratings Boosts

Both S&P Global Ratings and Fitch Ratings raised their credit ratings for the Commonwealth in FY 2023. Governor Andy Beshear said on June 29, "We're showing everyone that our economy is booming, our pension systems are strong and our fiscal house is in order due to strong management."

For Fiscal Year 2023, the General Assembly allocated the full actuarially recommended contribution. Additionally, legislation passed in the 2022 General Assembly made additional appropriations to the KERS Nonhazardous plan of \$240 million for FY 2023 and FY 2024, and to the State Police Retirement System (SPRS) of \$215 million.

Strategic Plan

In March 2023 Provaliant Retirement, LLC of Scottsdale, Arizona, was selected through an RFP process to assist KPPA in developing the agency's first strategic plan since 2009. Provaliant is tasked with helping KPPA identify ways to improve efficiency, productivity, the quality of service delivery, governance practices, retaining and motivating employees, and promoting the best interest of members and stakeholders.

KPPA will collaborate with the CEOs and Trustees of CERS and KRS to develop strategic plans that are specific to each entity but that also complement one another. This months-long process is expected to yield plans with actions that will be implemented over time, in some cases years.

EXECUTIVE DIRECTOR'S MESSAGE

Financial Management

KPPA hired its first Chief Financial Officer, Michael Lamb, who is responsible for oversight of the accounting, budgeting, cash management, risk management, and procurement for KPPA, and for developing and maintaining accounting controls, conducting financial operations, and producing financial reporting for all of the systems operated by KPPA. Previously Mr. Lamb was General Manager, Enterprise Risk Management and Audit at Toyota Tusho America (TAI) Inc., in Georgetown, KY.

Cybersecurity

KPPA continues to make the security of our members' information our highest priority. Nation-wide news reports of cyberattacks and data breaches at large companies and government agencies are unfortunately all too frequent. Our Enterprise and Technology Services staff monitor an ever-changing cyberthreat landscape and take a variety of proactive measures to protect both member information and KPPA resources. All KPPA staff are routinely trained in cybersecurity issues to ensure they recognize suspicious activity and work to keep KPPA data secure, and security topics are covered in KPPA member newsletters to increase member security awareness. KPPA also has ongoing agency-wide planning and readiness efforts in disaster recovery, business continuity, and incident response.

Report from CERS CEO Ed Owens III

This fiscal year has been an exciting one for the CERS Board of Trustees and its membership. Our FY 2023 Actuarial Valuation shows we had an estimated annual return on net assets of over 10% for both the pension and insurance plans. Those returns ranked in the top five for public pension systems nationwide.

The Board increased the assumed rate of return from 6.25% to 6.50% for all four plans. This has the effect of lowering the employer contribution rate and decreasing our unfunded liability. Our pension plans are now approximately 56% funded while our insurance plans are over 100% funded.

Although employer contributions were lowered, the pension plans received approximately the same dollar amount of contributions as in the prior fiscal year due to strong growth in active membership and covered payroll.

The CERS Investment Committee and the Board are now focused on reviewing the system's asset allocation and making changes where appropriate. The goal will be to target the same level of investment return while reducing the amount of risk in the portfolio.

The Board of Trustees and I remain focused on protecting the assets of the CERS Trust while we ensure excellent service to the CERS members.

Report from KRS CEO John Chilton

As a part of the FY 2023 and 2024 budgets, the General Assembly provided full funding for the actuarially determined pension and health insurance contributions, plus additional amounts totaling \$695 million over fiscal years 2022 through 2024. The progress toward fully funding the actuarial liabilities will continue.

The KRS trustees continue to follow the evolving world of Environmental, Social, and Governance (ESG) issues as they relate to investments. In response to legislation passed in the 2023 Regular Session, KRS' corporate proxy voting history will be posted quarterly on the KPPA website. (Many ESG issues are addressed in corporate governance proposals by the corporations in which we invest.) Additionally, and importantly, the KRS Board monitors ongoing litigation in anticipation of favorably resolving longstanding cases.

This year, the Investment Committee worked with the KPPA Office of Investments to monitor KRS investments with a view to maximizing investment returns while minimizing investment risks. In fiscal year 2023, KPPA, CERS, and KRS have worked to further upgrade the Office of Investments team by adding investment professionals. Further staff additions are planned for FY 2024.

A Personal Update

In 2023, I signed a one-year contract that will end with my retirement. KPPA has formed a search committee comprising members of the KRS and CERS boards, which is in the process of identifying candidates to be the next KPPA Executive Director.

It has been my great honor to have served as KPPA's Executive Director these past eight years. During that time, KPPA has worked hard to improve member servicing. We enhanced our relationships with key stakeholders including members of the State Legislature and the Executive Branch, as well as retiree groups, members of the media, and the general public. And, we successfully strengthened employee morale, with 94% of our employees agreeing that they feel part of the KPPA team. KPPA is like a family, and I have been fortunate to have been a part of that family. No matter who sits in the Executive Director's office, KPPA's commitment to our Six Mandates will not waver, nor will our commitment to serving the retirees of state and local government and the State Police. KPPA will never stop working for our Members.

Acknowledgments

The preparation of this report has been a collaborative effort of KPPA Executive Management and the Accounting Division, Communications Division, Office of Investments, and the CERS and KRS CEOs. The contents have been reviewed by the Internal Audit Division. KPPA is responsible for all the information in the report and confidently presents it as a basis for understanding the stewardship of the systems operated by KPPA.

AGENCY STRUCTURE

As of December 6, 2023

The Kentucky Public Pensions Authority oversees the operations of CERS, KERS, and SPRS by providing administrative support, investment management, and conducting daily activities on behalf of the CERS, KRS, and KPPA Boards. The 8-member KPPA Board is made up of elected and appointed representatives from the CERS and KRS Boards. KPPA is led by an Executive Director who is appointed by the KPPA Board to work with the CERS and KRS Chief Executive Officers to carry out the statutory provisions of the Systems.



KPPA BOARD
Four (4) CERS and Four (4) KRS
Board Representatives

*Elected to position by KPPA Board

Keith Peercy
KPPA Chair*
Selected by KRS Chair

Betty Pendergrass
CERS Board Chair

Dr. Merl Hackbart
CERS Investment
Committee Chair

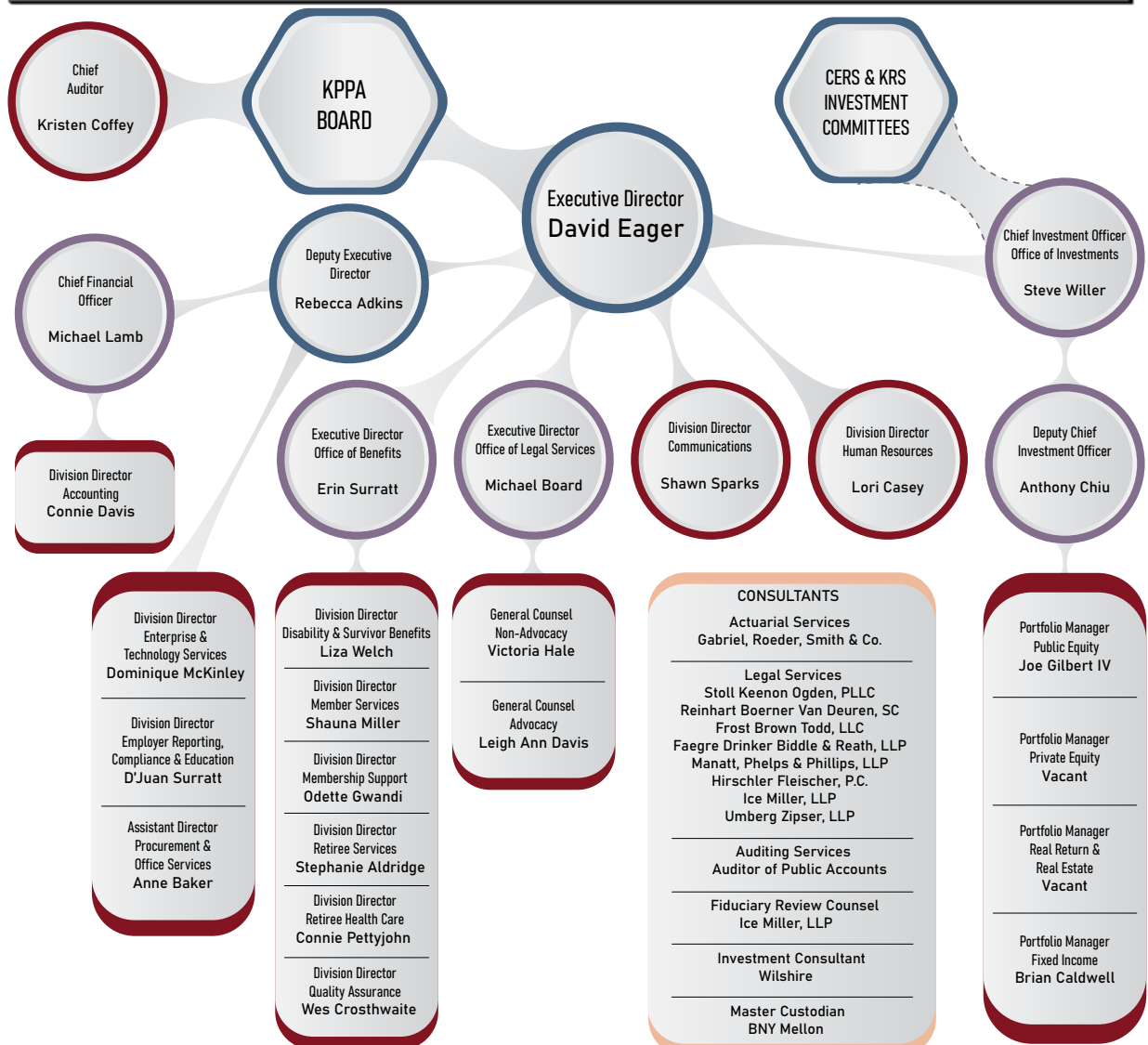
William O'Mara
CERS Trustee
Selected by CERS Chair

Jerry W. Powell
KPPA Vice Chair*
Selected by CERS Chair

Lynn Hampton
KRS Board Chair

C. Prewitt Lane
KRS Investment
Committee Chair

William Summers V
KRS Trustee
Selected by KRS Chair



Refer to the Investments Section for additional information regarding Investment Advisors (pages 137-142) and Schedules of Fees and Expenses (pages 143-144).

GOVERNANCE

As of December 6, 2023

The systems operated by KPPA are governed by two 9-member boards of trustees, each consisting of three elected members and six gubernatorial appointees serving four-year terms. The CERS Board of Trustees is responsible for governance of the CERS funds. The governance of the KERS funds and the SPRS funds are the responsibility of the KRS Board of Trustees. CERS and KRS each have a Chief Executive Officer who serves as a legislative and executive advisor to the respective boards and a General Counsel who provides legal services.

ELECTED BY MEMBERSHIP

APPOINTED BY GOVERNOR:
The Governor selects appointees from lists of candidates provided by the Kentucky Association of Counties (KACo), the Kentucky League of Cities (KLC), and the Kentucky School Boards Association (KSBA).

CERS BOARD OF TRUSTEES

Betty Pendergrass, Chair
George Cheatham, Vice Chair

General Counsel: Johnson Bowman Branco, LLP
Three (3) Elected Trustees
Six (6) Appointed by Governor



Ed Owens III
CERS Chief Executive Officer



Betty Pendergrass
Chair
Term ends March 31, 2025



Jerry Wayne Powell
Term ends March 31, 2025



Dr. Patricia P. Carver
Term ends March 31, 2025



George Cheatham
Vice Chair
Term ends March 31, 2025



J. Michael Foster
Term ends July 1, 2021*
Nominated by KACo



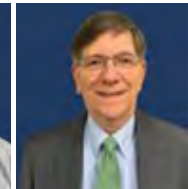
J.T. Fulkerson
Term ends July 1, 2021*
Nominated by KLC



Dr. Merl Hackbart
Term ends March 31, 2025
Nominated by KACo



Dr. Martin Milkman
Term ends July 1, 2025
Nominated by KSBA



William O'Mara
Term ends March 31, 2025
Nominated by KLC

*Trustee continues to serve until the Governor makes an appointment to fill the trustee position.

ELECTED BY MEMBERSHIP

APPOINTED BY GOVERNOR

KRS BOARD OF TRUSTEES

Lynn Hampton, Chair
C. Prewitt Lane, Vice Chair

General Counsel: Dentons Bingham Greenebaum
Three (3) Elected Trustees
Six (6) Appointed by Governor



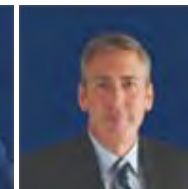
John E. Chilton
KRS Chief Executive Officer



Keith Peercy
Term ends March 31, 2027
Elected by SPRS



Dr. Crystal Miller
Term ends March 31, 2026
Elected by KERS



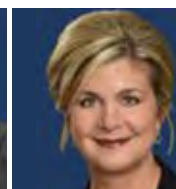
David Adkins
Term ends March 31, 2026
Elected by KERS



Lynn Hampton
Chair
Term ends June 17, 2026



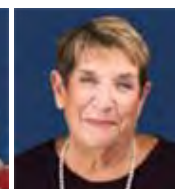
C. Prewitt Lane
Vice Chair
Term ends June 17, 2027



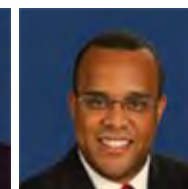
Pamela F. Thompson
Term ends June 17, 2027



Ramsey Bova
Term ends June 17, 2026



Mary G. Eaves
Term ends June 21, 2027

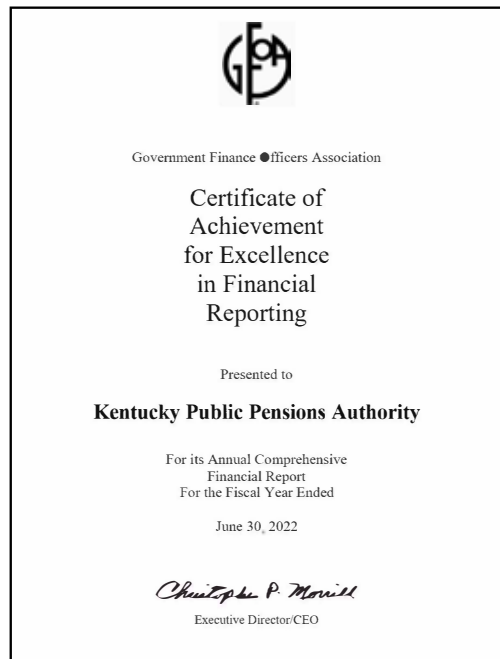


William Summers V
Term ends June 17, 2026

Professional Awards

CERTIFICATE OF ACHIEVEMENT FOR EXCELLENCE IN FINANCIAL REPORTING

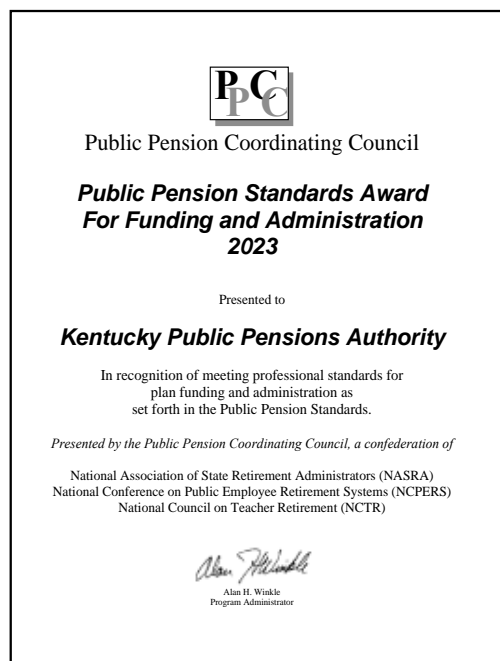
The Government Finance Officers Association (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Kentucky Public Pensions Authority for its Annual Comprehensive Financial Report for the Fiscal Year ended June 30, 2022. The Certificate of Achievement is a prestigious national award recognizing excellence in the preparation of state and local government financial reports and is valid for a period of one year. This is the 24th award earned by Kentucky Public Pensions Authority (formerly the Kentucky Retirement Systems). In order to be awarded a Certificate of Achievement, a government unit must publish an easily readable and efficiently organized document. The report must satisfy both generally accepted accounting principles and applicable legal requirements. We believe our 2023 report will continue to meet the Certificate of Achievement Program's requirements, and we will be submitting it to the GFOA for their consideration.



PUBLIC PENSIONS STANDARDS AWARD FOR FUNDING AND ADMINISTRATION

The Public Pension Coordinating Council awarded the Public Pensions Standards Award for Funding and Administration to the Kentucky Public Pensions Authority (KPPA) for 2023. This is the second award earned by KPPA.

The Public Pension Coordinating Council established the Public Pension Standards to reflect minimum expectations for public retirement system management, administration, and funding. The Standards serve as a benchmark to measure public defined benefit plans. The Award for Funding and Administration is a distinguished national award recognizing pension programs meeting professional standards for plan design and administration as set forth in the Public Pension Standards. This award is valid for a period of one year. We believe KPPA will continue to meet these standards, and we will be applying for the award next year.



2023 Total Fiscal Year KPPA Pension Benefits Paid by County (in whole \$)								
County	Payees*	Total	County	Payees*	Total	County	Payees*	Total
Adair	546	\$9,450,928	Grant	663	\$12,632,492	McLean	328	\$4,697,725
Allen	453	6,195,939	Graves	970	15,499,440	Meade	515	7,651,712
Anderson	1,453	36,414,367	Grayson	860	13,876,998	Menifee	229	3,427,101
Ballard	264	3,853,581	Green	349	5,063,164	Mercer	826	14,965,991
Barren	1,176	17,713,891	Greenup	716	10,407,642	Metcalfe	328	4,381,967
Bath	423	6,687,345	Hancock	233	3,276,736	Monroe	301	3,655,016
Bell	708	11,491,733	Hardin	2,445	41,805,463	Montgomery	710	12,011,878
Boone	2,082	44,361,813	Harlan	660	10,033,044	Morgan	675	11,712,383
Bourbon	566	9,387,391	Harrison	502	8,199,335	Muhlenberg	840	11,257,321
Boyd	1,093	18,279,869	Hart	375	5,674,876	Nelson	1,194	21,582,376
Boyle	901	16,000,603	Henderson	1,180	20,061,538	Nicholas	223	3,215,898
Bracken	243	3,455,552	Henry	950	21,528,225	Ohio	681	7,987,304
Breathitt	528	8,309,077	Hickman	99	1,760,173	Oldham	1,438	30,825,732
Breckinridge	528	8,071,368	Hopkins	1,338	21,150,807	Owen	528	12,294,709
Bullitt	1,786	33,646,001	Jackson	354	4,683,606	Owsley	225	3,308,145
Butler	339	4,843,433	Jefferson	16,615	369,906,868	Pendleton	398	6,918,332
Caldwell	551	8,797,076	Jessamine	1,186	21,082,368	Perry	822	11,864,046
Calloway	1,148	16,849,921	Johnson	650	9,838,165	Pike	1,333	20,148,508
Campbell	1,633	32,119,113	Kenton	2,443	52,812,566	Powell	372	5,228,395
Carlisle	123	1,869,046	Knott	469	7,261,918	Pulaski	2,416	40,797,909
Carroll	336	5,602,948	Knox	650	10,158,452	Robertson	75	1,240,583
Carter	853	11,619,504	LaRue	409	6,665,674	Rockcastle	426	6,154,513
Casey	391	5,108,884	Laurel	1,367	22,660,418	Rowan	928	16,039,774
Christian	1,581	28,502,771	Lawrence	355	4,371,418	Russell	599	9,240,811
Clark	900	15,988,698	Lee	245	3,588,983	Scott	1,405	29,426,953
Clay	621	9,093,539	Leslie	278	4,182,851	Shelby	1,712	43,232,674
Clinton	319	4,220,477	Letcher	643	8,994,282	Simpson	321	4,046,578
Crittenden	233	3,368,253	Lewis	350	4,833,582	Spencer	581	13,361,441
Cumberland	202	2,968,583	Lincoln	730	9,573,329	Taylor	701	10,512,823
Daviess	2,889	52,148,288	Livingston	277	4,700,986	Todd	277	3,827,202
Edmonson	251	3,469,987	Logan	694	9,884,710	Trigg	566	9,423,519
Elliott	191	2,967,958	Lyon	363	7,412,991	Trimble	294	4,896,589
Estill	443	6,410,920	Madison	2,596	43,759,733	Union	392	4,650,980
Fayette	5,737	123,989,056	Magoffin	393	5,498,842	Warren	3,077	54,675,517
Fleming	507	8,412,462	Marion	587	8,611,210	Washington	369	5,922,484
Floyd	937	14,940,218	Marshall	965	14,691,500	Wayne	593	8,496,787
Franklin	6,277	194,303,907	Martin	278	3,274,633	Webster	382	5,098,924
Fulton	188	2,369,118	Mason	432	7,243,868	Whitley	1,219	17,591,520
Gallatin	129	2,255,537	McCracken	1,650	30,244,225	Wolfe	351	5,883,586
Garrard	474	\$7,007,182	McCreary	426	\$4,485,575	Woodford	1,125	\$28,324,791

Pension Benefits paid to retirees and beneficiaries of Kentucky Public Pensions Authority have a wide ranging impact on the state's economic health. In fiscal year 2023, KPPA paid over \$2 billion to its recipients. The majority, 92.79%, of these payments are issued to Kentucky residents. Each county in the Commonwealth receives at least \$1 million annually from KPPA, providing a stabilizing element for all local economies.

Total Retirement Payments For the Period ending June 30, 2023 (in Whole \$)			
	Payees	%	Payments
Retirement Eligible/Actuarial Refund **	636		\$9,453,983
Kentucky	116,523	92.79%	2,193,919,524
Out of State	9,843	7.21%	170,466,194
Grand Total	126,366	100.00%	\$2,364,385,718

*This table represents all payees receiving a monthly payment, retirement eligible refund, or actuarial refund during the fiscal year.

** Included in Kentucky and Out of State Payees and Payments, therefore, are not included in Grand Total Amount and percentage.

Benefit Tiers

KPPA administers three different benefit tiers. Each plan provides pension and insurance benefits based on the member's participation date:

- Tier 1: Members with a participation date prior to September 1, 2008.
- Tier 2: Members with a participation date of September 1, 2008 through December 31, 2013.
- Tier 3: Members with a participation date on or after January 1, 2014.

Membership as of June 30, 2023 (in Whole \$)						
Item	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS	KPPA Total 2023
Members	255,055	22,316	126,830	14,556	2,852	421,609
Active Membership	81,217	9,181	30,854	3,875	868	125,995
Tier 1	22,824	2,798	12,091	865	325	38,903
Tier 2	10,859	1,709	4,709	564	180	18,021
Tier 3	47,534	4,674	14,054	2,446	363	69,071
Average Annual Salary	\$36,782	\$73,654	\$51,489	\$54,452	\$75,937	-
Average Age	47.3	38.1	45.7	39.7	36.9	-
Retired Membership	66,935	9,448	44,975	3,459	1,552	126,369
Tier 1	65,221	9,407	44,447	3,390	1,550	124,015
Tier 2	1,553	32	473	60	1	2,119
Tier 3	161	9	55	9	1	235
Average Annual Benefit	\$12,284	\$29,602	\$21,206	\$16,123	\$39,738	-
Average Age	71.3	62.9	70.8	66.0	64.4	-
Inactive Members	106,903	3,687	51,001	7,222	432	169,245
Tier 1	47,781	1,371	29,859	1,767	167	80,945
Tier 2	17,893	605	8,565	1,255	69	28,387
Tier 3	41,229	1,711	12,577	4,200	196	59,913

CERS was established on July 1, 1958 by the State Legislature.

CERS Nonhazardous - Fiduciary Net Position* (\$ in Thousands)			
Year	Pension	Insurance	Total
2014	\$6,528,146	\$1,878,711	\$8,406,857
2015	6,440,800	1,920,946	8,361,746
2016	6,141,396	1,908,550	8,049,946
2017	6,739,142	2,160,553	8,899,695
2018	7,086,322	2,346,767	9,433,089
2019	7,242,975	2,486,458	9,729,433
2020	7,110,889	2,498,051	9,608,940
2021	8,670,667	3,141,786	11,812,453
2022	8,062,346	2,981,224	11,043,570
2023	\$8,781,440	\$3,289,533	\$12,070,973

CERS Hazardous - Fiduciary Net Position* (\$ in Thousands)			
Year	Pension	Insurance	Total
2014	\$2,087,002	\$1,030,303	\$3,117,305
2015	2,078,202	1,056,480	3,134,682
2016	2,010,177	1,056,097	3,066,274
2017	2,227,679	1,179,313	3,406,992
2018	2,361,047	1,268,272	3,629,319
2019	2,429,613	1,324,809	3,754,422
2020	2,395,688	1,305,132	3,700,820
2021	2,934,421	1,607,811	4,542,232
2022	2,736,928	1,503,977	4,240,905
2023	\$3,055,797	1,613,586	\$4,669,383

KERS was established on July 1, 1956 by the State Legislature.

KERS Nonhazardous - Fiduciary Net Position* (\$ in Thousands)			
Year	Pension	Insurance	Total
2014	\$2,578,290	\$646,905	\$3,225,195
2015	2,327,782	665,639	2,993,421
2016	1,980,292	668,318	2,648,610
2017	2,092,781	781,406	2,874,187
2018	2,048,890	846,762	2,895,652
2019	2,286,625	942,136	3,228,761
2020	2,362,231	1,006,498	3,368,729
2021	3,085,014	1,353,123	4,438,137
2022	3,076,743	1,301,522	4,378,265
2023	\$3,607,206	\$1,465,489	\$5,072,695

KERS Hazardous - Fiduciary Net Position* (\$ in Thousands)			
Year	Pension	Insurance	Total
2014	\$561,484	\$433,525	\$995,009
2015	552,468	439,113	991,581
2016	527,880	437,397	965,277
2017	605,921	484,442	1,090,363
2018	651,173	513,384	1,164,557
2019	687,877	527,108	1,214,985
2020	697,366	514,740	1,212,106
2021	874,928	624,889	1,499,817
2022	819,237	579,902	1,399,139
2023	\$902,567	\$616,322	\$1,518,889

SPRS was established on July 1, 1958 by the State Legislature.

SPRS - Fiduciary Net Position* (\$ in Thousands)			
Year	Pension	Insurance	Total
2014	\$260,974	\$164,958	\$425,932
2015	247,229	164,714	411,943
2016	218,013	160,949	378,962
2017	256,383	178,191	434,574
2018	268,425	189,994	458,419
2019	287,242	200,128	487,370
2020	295,044	200,245	495,289
2021	357,660	246,004	603,664
2022	552,926	230,015	782,941
2023	\$592,826	\$246,797	\$839,623

KPPA Total Fiduciary Net Position

Fiduciary Net Position (\$ in Thousands)			
Year	Pension	Insurance	Total
2014	\$12,015,897	\$4,154,401	\$16,170,298
2015	11,646,481	4,246,892	15,893,373
2016	10,877,758	4,231,311	15,109,069
2017	11,921,906	4,783,905	16,705,811
2018	12,415,856	5,165,179	17,581,035
2019	12,934,332	5,480,639	18,414,971
2020	12,861,218	5,524,666	18,385,884
2021	15,922,690	6,973,613	22,896,303
2022	15,248,180	6,596,640	21,844,820
2023	\$16,939,836	\$7,231,727	\$24,171,563

* The Fiduciary Net Positions are the resources accumulated and held in trust to pay benefits.

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MIKE HARMON
AUDITOR OF PUBLIC ACCOUNTS

Independent Auditor's Report

To the Members
 Kentucky Public Pensions Authority

Report on the Audit of the Financial Statements

Opinion

We have audited the accompanying financial statements of **Kentucky Public Pensions Authority (KPPA)**, a (discretely presented) component unit of the Commonwealth of Kentucky, **as of and for the year ended June 30, 2023**, and the related notes to the financial statements, which collectively comprise KPPA's financial statements as listed in the table of contents.

In our opinion, the financial statements referred to above **present fairly**, in all material respects, the fiduciary net position of KPPA as of **June 30, 2023**, and the changes in its fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of KPPA and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Emphasis-of-Matter - Reporting Entity

As discussed in Note A, the financial statements present only the KPPA, and are not intended to present fairly the financial position of the Commonwealth of Kentucky, or the results of its operations in conformity with accounting principles generally accepted in the United States of America. Our opinion is not modified with respect to this matter.

Responsibilities of Management for the Financial Statements

KPPA's management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about KPPA's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS, we

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of KPPA's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about KPPA's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Other Matter - Summarized Comparative Information

The financial statements of KPPA for the year ended June 30, 2022, were audited by another auditor, who expressed an unmodified opinion on those statements on December 7, 2022. In our opinion, the summarized comparative information presented herein as of and for the year ended June 30, 2022 is consistent, in all material respects, with the audited financial statements from which it has been derived.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis on pages XXXX through XXXX and the defined benefit pension plan and other post-employment benefit supplemental schedules on pages XXXX through XXXX, be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information

Our audit was conducted for the purpose of forming an opinion on the financial statements as a whole. The accompanying schedules of administrative expense, direct investment expense, and professional consultant fees are presented for purposes of additional analysis and are not a required part of the financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is fairly stated, in all material respects, in relation to the financial statements as a whole.

Other Information

Management is responsible for the other information included in the annual comprehensive annual report. The other information comprises the introductory, investment, actuarial and statistical sections but does not include the financial statements and our auditor's report thereon. Our opinions on the financial statements do not cover the other information, and we do not express an opinion or any form of assurance thereon. In connection with our audit of the financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the financial statements, or the other information otherwise appears to be materially misstated. If, based on

the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated November 27, 2023 on our consideration of KPPA's internal control over financial reporting and on our test of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering KPPA's internal control over financial reporting and compliance.

Respectfully Submitted,

Farrah Petter, CPA
Assistant Auditor of Public Accounts
Frankfort, Ky

November 27, 2023

Management's Discussion & Analysis (Unaudited)

This section provides a discussion and analysis of the financial performance of the retirement and OPEB plans administered by the Kentucky Public Pensions Authority (KPPA) for the year ended June 30, 2023. The discussion and analysis of the plans' financial performance is within the context of the accompanying basic financial statements, notes to the financial statements, required supplementary schedules, and additional information following this section.

KPPA is responsible for administering cost-sharing, multiple-employer defined benefit pension plans for various employer agencies of Kentucky, along with a single-employer defined benefit pension plan and defined benefit OPEB plans. All plans are fiduciary plans.

The defined benefit pension plans include:

County Employees Retirement System (includes CERS Nonhazardous and CERS Hazardous)
Kentucky Employees Retirement System (includes KERS Nonhazardous and KERS Hazardous)
State Police Retirement System

The defined benefit OPEB plans are in the Kentucky Retirement System Insurance Trust Fund. The Insurance Fund provides health benefits for CERS Nonhazardous, CERS Hazardous, KERS Nonhazardous, KERS Hazardous, and SPRS plans for retired members and beneficiaries.

The Management Discussion and Analysis is the KPPA leadership summary of the management of the CERS, KERS, and SPRS Fiduciary Pension Plans (collectively the Pension Funds) and Insurance Trust Fund. KPPA is a component unit of the Commonwealth of Kentucky, (the Commonwealth) for financial and reporting purposes.

PENSION FUNDS

The following highlights are explained in more detail later in this report.

Total Pension Funds Fiduciary Net Position was \$15.2 billion at the beginning of the fiscal year and increased by 11.18% to \$16.9 billion as of June 30, 2023. The \$1.7 billion increase is primarily attributable to the appreciation in the fair value of investments.

CONTRIBUTIONS

Total contributions reported for fiscal year 2023 were \$2,723.8 million compared to \$2,653.1 million in fiscal year 2022. The increase is the result of a General Fund appropriation to KERS Nonhazardous in the amount of \$240.0 million; the increase in employer contribution rates for CERS Nonhazardous and CERS Hazardous; as well as an increase in covered payroll for all funds. These increases were offset by a General Fund appropriation to SPRS of \$215.0 million as well as Employer Cessation contributions of \$63.1 million in 2022.

INVESTMENTS

The investment portfolio for the Pension Funds reported a net return of 9.54% for fiscal year 2023 compared to a net negative return of 5.73% for fiscal year 2022.

The net appreciation in the fair value of investments for fiscal year 2023 was \$1,073.5 million compared to net depreciation of \$1,175.9 million for the previous fiscal year.

Interest, dividends, and net securities lending income for fiscal year 2023 was \$471.2 million compared to \$431.2 million in fiscal year 2022. All investment returns are reported net of fees and investment expenses, including carried interests. Investment expenses totaled \$171.6 million for fiscal year 2022 compared to \$108.9 million in the current fiscal year. The decrease in fees is the result of 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. in fiscal year 2023.

DEDUCTIONS

Pension benefits paid to retirees and beneficiaries for fiscal year 2023 totaled \$2,380.1 million compared to \$2,328.6 million in fiscal year 2022, a 2.21% increase. The increase was due to a 1.63% increase in the number of retirees to 126,369. Refunded contributions paid to former members upon termination of employment for fiscal year 2023 totaled \$45.9 million compared to \$42.9 million in fiscal year 2022, a 6.99% increase, as more members elected a refund at employment termination.

Management's Discussion & Analysis (Unaudited)

KPPA's fiscal year 2023 Pension administrative expense totaled \$41.9 million compared to \$39.7 million in the prior year. The increase was mainly due to the state pay increase in salaries and employee retirement benefits.

INSURANCE FUND

The following highlights are explained in more detail later in this report.

The combined fiduciary net position of the Insurance Fund increased by \$635.1 million during fiscal year 2023. Total combined net position for the fiscal year was \$7,231.7 million. Total contributions and net investment income of \$997.8 million offset deductions of \$362.7 million which resulted in the net position increase.

CONTRIBUTIONS

Employer contributions of \$282.5 million were received in fiscal year 2023 compared to \$319.0 million in fiscal year 2022. Total contributions changed (11.44)% primarily due to a decrease in Employer Contribution Rates, Humana Gain Share Payment, and Employer Cessation Contributions.

The reimbursement of retired/reemployed health insurance for fiscal year 2023 totaled \$13.9 million compared to \$12.7 million in the prior fiscal year. The increase is due to an increase in retired/re-employed members for whom employers are paying health insurance reimbursements.

INVESTMENTS

Interest, dividends, and net securities lending income for fiscal year 2023 was \$200.5 million compared to \$193.5 million in fiscal year 2022. The increase in income and dividends is the result of an increase in allocation to the public equities and fixed income asset classes.

The investment portfolio reported a net return of 10.15% for the fiscal year, which was higher than fiscal year 2022's net negative return of 5.34%. The investment return was above the 6.25% assumed rate of return used for actuarial calculations.

The net appreciation in the fair value of investments for fiscal year 2023 was \$508.6 million compared to net depreciation of \$(482.5) million for the previous fiscal year. This \$991 million increase in fiscal year 2023 was due to favorable market returns compared to fiscal year 2022.

Investment expenses totaled \$51.9 million for fiscal year 2023 compared to \$84.0 million in the prior fiscal year. The decrease in fees is the result of 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 in fiscal year 2023.

DEDUCTIONS

Total insurance premiums, plus self-funded reimbursements were \$360.2 million for fiscal year 2023. The fiscal year 2023 insurance premiums were \$22.0 million less compared to fiscal year 2022, the number of covered lives only increased approximately 1% year-over-year.

Insurance administrative expenses for retirees under age 65, decreased from \$2.45 million in fiscal year 2022 to \$2.43 million in fiscal year 2023.

Management's Discussion & Analysis (Unaudited)

Using This Financial Report

Because of the long-term nature of a defined benefit pension plan and post-employment healthcare benefit plan, the combining financial statements alone cannot provide sufficient information to properly reflect the Plans' ongoing financial perspective. This financial report consists of three combining financial statements and two schedules of historical trend information. All plans within KPPA are included in the aforementioned combining financial statements. The Combining Statement of Fiduciary Net Position for the Pension Funds on page [29](#) and the Combining Statement of Fiduciary Net Position for the Insurance Fund on page [31](#) provide a snapshot of the financial position of each of the three systems as of fiscal year end 2023. The Combining Statement of Changes in Fiduciary Net Position for the Pension Funds on page [30](#), and the Combining Statement of Changes in Fiduciary Net Position for the Insurance Fund on page [31](#), summarize the additions and deductions that occurred for each of the ten funds during fiscal year 2023.

The economic assumptions for the Pension Funds and Insurance Fund for fiscal year 2023 are on page [75](#), the Schedules of Changes in Employers' Total Pension Liability on pages [95-99](#), the Schedules of the Employer Net Pension Liability on pages [93-94](#); the Schedule of Changes in Employers' Total Other Post-Employment Benefits (OPEB) Liability are on pages [106-110](#); and, the Schedule of the Employers' Net OPEB Liabilities are on pages [104-105](#). These schedules include current and historical trend information about the actuarially funded status of each plan from a long-term, ongoing plan perspective and the progress made in accumulating sufficient assets to pay benefits and insurance premiums when due. The Schedules of the Employers' Contributions – Pensions are on pages [101-103](#), and the Schedules of the Employers' Contributions – OPEB are on pages [113-115](#). These schedules present current and historical trend information about the annual required contributions and the contributions made in relation to the requirement. These schedules provide information that contributes to understanding the changes over time in the funded status of the plans.

Kentucky Public Pensions Authority Combined

KPPA's combined fiduciary net position changed by \$2,327 million in fiscal year 2023, compared to the fiduciary net position for the previous fiscal year. The increase in fiduciary net position for the fiscal year 2023 is primarily attributable to positive investment performance. This analysis focuses on the net position table and changes in the fiduciary net position table for KPPA's Pension and Insurance Funds.

Management's Discussion & Analysis (Unaudited)

Fiduciary Net Position As of June 30 (\$ in Thousands)

	Pension Plans			Insurance Plans			Total		
	2023	2022	2021	2023	2022	2021	2023	2022	2021
Cash & Invest.	\$17,097,461	\$15,418,077	\$16,391,137	\$7,338,673	\$6,766,874	\$7,184,408	\$24,436,134	\$22,184,951	\$23,575,545
Receivables	361,735	337,832	361,429	87,154	77,410	122,132	448,889	415,242	483,561
Capital Assets	-	323	677	-	-	-	-	323	677
Total Assets	17,459,196	15,756,232	16,753,243	7,425,827	6,844,284	7,306,540	24,885,023	22,600,516	24,059,783
Total Liabilities	(519,360)	(508,052)	(830,553)	(194,100)	(247,644)	(332,927)	(713,460)	(755,696)	(1,163,480)
Fiduciary Net Position	\$16,939,836	\$15,248,180	\$15,922,690	\$7,231,727	\$6,596,640	\$6,973,613	\$24,171,563	\$21,844,820	\$22,896,303
<i>Capital Assets include capital assets, intangible assets, depreciation and amortization.</i>									

Pension Plan Activities

Member contributions increased by \$46.6 million. This is primarily due to an increase in covered payroll across all funds. Retirement contributions are calculated by applying a percentage factor to salary and are remitted by each employer on behalf of members. Nonhazardous Tier 1 members pay pension contributions of 5.00% of creditable compensation and Hazardous Tier 1 members contribute 8.00% of creditable compensation; whereas, Nonhazardous Tier 2 and 3 members pay contributions of 6.00% of creditable compensation and Hazardous Tier 2 and 3 members contribute 9% of creditable compensation.

Employer contributions increased by \$62.0 million for fiscal year 2023. The increase in contributions was the result of the increase in covered payroll for all funds, and an increase in the employer contribution rates for CERS Nonhazardous and CERS Hazardous.

Total Pension Plans deductions increased by \$56.6 million. The 2.35% increase was primarily driven by the normal increase in retirements across all plans.

Net investment income increased by \$2,352.0 million. This is illustrated in the Investment Income Pension table on the next page. The increase in fair value of investments during fiscal year 2023 was the driving force of the increase in net investment income when compared to fiscal year 2022.

Overall, KPPA reported a net positive return of 9.54% for the fiscal year. This outperformed both the IPS policy benchmark return of 8.88% and the actuarial assumed rate of return of 6.25% used by CERS Nonhazardous, CERS Hazardous and KERS Hazardous, and 5.25% used by KERS Nonhazardous and SPRS.

Management's Discussion & Analysis (Unaudited)

Changes in Fiduciary Net Position For the fiscal year ending June 30 (\$ in Thousands)									
	Pension Plans			Insurance Plans			Total		
	2023	2022	2021	2023	2022	2021	2023	2022	2021
Additions:									
Member Cont.	\$312,045	\$290,471	\$274,533	\$-	\$-	\$-	\$312,045	\$290,471	\$274,533
Employer Cont.	1,167,276	1,091,160	1,724,309	194,788	217,318	346,026	1,362,064	1,308,478	2,070,335
Employer Pay Credit	105,738	80,710	68,447	-	-	-	105,738	80,710	68,447
Heath Ins. Cont.	(77)	(208)	(4)	32,378	27,791	24,409	32,301	27,583	24,405
Humana Gain Share	-	-	-	12,308	18,382	42,897	12,308	18,382	42,897
Pension Spiking Cont.	277	122	222	-	-	-	277	122	222
General Fund Appro.	240,000	215,000	384	-	-	-	240,000	215,000	384
Employer Cessation Cont.	-	63,113	175,600	-	2,405	28,400	-	65,518	204,000
Premiums Rec'd	-	-	-	(479)	364	563	(479)	364	563
Retired Reemp Ins.	-	-	-	13,870	12,667	12,535	13,870	12,667	12,535
Medicare Subsidy	-	-	-	4	2	3	4	2	3
AAL Contributions	898,545	912,705	-	87,674	101,637	-	986,219	1,014,342	-
Invest. Inc. (net)	1,435,702	(916,320)	3,150,288	657,211	(372,900)	1,377,531	2,092,913	(1,289,220)	4,527,819
Total Additions	4,159,506	1,736,753	5,393,779	997,754	7,666	1,832,364	5,157,260	1,744,419	7,226,143
Deductions:									
Benefit payments	2,380,090	2,328,594	2,263,388	-	-	-	2,380,090	2,328,594	2,263,388
Refunds	45,885	42,927	32,130	-	-	-	45,885	42,927	32,130
Admin. Exp.	41,875	39,742	36,789	2,427	2,454	2,354	44,302	42,196	39,143
Healthcare Costs	-	-	-	360,240	382,167	381,063	360,240	382,167	381,063
Excise Tax	-	-	-	-	18	-	-	18	-
Total Deductions	2,467,850	2,411,263	2,332,307	362,667	384,639	383,417	2,830,517	2,795,902	2,715,724
Increase (Decrease) in Fiduciary Net Position	1,691,656	(674,510)	3,061,472	635,087	(376,973)	1,448,947	2,326,743	(1,051,483)	4,510,419
Beginning of Period	15,248,180	15,922,690	12,861,218	6,596,640	6,973,613	5,524,666	21,844,820	22,896,303	18,385,884
End of Period	\$16,939,836	\$15,248,180	\$15,922,690	\$7,231,727	\$6,596,640	\$6,973,613	\$24,171,563	\$21,844,820	\$22,896,303

Management's Discussion & Analysis (Unaudited)

CERS			
As of June 30 (\$ in Thousands)			
CERS Nonhazardous Investment Income - Pension	2023	2022	2021
Increase (decrease) in fair value of investments	\$633,997	\$(1,011,822)	\$1,331,722
Investment income net of investment expense	178,004	136,769	135,711
Gain on sale of investments	3,416	374,057	316,798
Total Investment Income(loss) from Investing Activity	\$815,417	\$(500,996)	\$1,784,231
CERS Hazardous Investment Income - Pension	2023	2022	2021
Increase (decrease) in fair value of investments	\$220,000	\$(350,070)	\$447,895
Investment income net of investment expense	62,725	48,654	45,850
Gain on sale of investments	(760)	125,985	106,985
Total Investment Income (loss) from Investing Activity	\$281,965	\$(175,431)	\$600,730
KERS			
As of June 30 (\$ in Thousands)			
KERS Nonhazardous Investment Income - Pension	2023	2022	2021
Increase (decrease) in fair value of investments	\$153,469	\$(310,014)	\$380,850
Investment income net of investment expense	85,482	52,680	50,630
Gain on sale of investments	(18,693)	91,430	96,959
Total Investment Income (loss) from Investing Activity	\$220,258	\$(165,904)	\$528,439
KERS Hazardous Investment Income - Pension	2023	2022	2021
Increase (decrease) in fair value of investments	\$58,019	\$(102,300)	\$129,806
Investment income net of investment expense	20,658	15,111	13,943
Gain on sale of investments	(1,416)	35,348	31,173
Total Investment Income (loss) from Investing Activity	\$77,261	\$(51,841)	\$174,922
SPRS			
As of June 30 (\$ in Thousands)			
Investment Income - Pension	2023	2022	2021
Increase (decrease) in fair value of investments	\$29,536	\$(39,791)	\$45,055
Investment income net of investment expense	15,380	6,347	5,885
Gain on sale of investments	(4,115)	11,296	11,026
Total Investment Income (loss) from Investing Activity	\$40,801	\$(22,148)	\$61,966

Insurance Plan Activities

Employer contributions paid into the Insurance Plans decreased by \$36.5 million in fiscal year 2023 over the prior fiscal year. The decrease in employer contributions is directly related to a decrease in the employer contribution rate for the Insurance Plans.

Income from investment activities increased by \$1,030.1 million in fiscal year 2023 compared to fiscal year 2022. Overall, KPPA reported a net positive return of 10.15% for the fiscal year. This outperformed both the IPS policy benchmark of 9.27% and the actuarial assumed rate of return of 6.25% used by all of the Insurance Plan Funds.

Management's Discussion & Analysis (Unaudited)

CERS

As of June 30 (\$ in Thousands)

CERS Nonhazardous Investment Income - Insurance	2023	2022	2021
Increase (decrease) in fair value of investments	\$239,418	\$(360,292)	\$469,201
Investment income net of investment expense	65,959	51,633	41,009
Gain on sale of investments	626	137,960	109,383
Total Investment Income (loss) from Investing Activities	\$306,003	\$(170,699)	\$619,593
CERS Hazardous Investment Income - Insurance	2023	2022	2021
Increase (decrease) in fair value of investments	\$114,496	\$(177,397)	\$245,549
Investment income net of investment expense	32,131	24,818	20,284
Gain on sale of investments	2,112	74,126	56,984
Total Investment Income (loss) from Investing Activities	\$148,739	\$(78,453)	\$322,817

KERS

KERS Nonhazardous Investment Income - Insurance	2023	2022	2021
Increase (decrease) in fair value of investments	\$103,144	\$(146,482)	\$195,110
Investment income net of investment expense	32,069	20,023	18,478
Gain on sale of investments	(7,161)	40,904	45,007
Total Investment Income (loss) from Investing Activities	\$128,052	\$(85,555)	\$258,595
KERS Hazardous Investment Income - Insurance	2023	2022	2021
Increase (decrease) in fair value of investments	\$39,760	\$(63,789)	\$96,312
Investment income net of investment expense	13,089	9,471	8,372
Gain on sale of investments	142	26,912	21,791
Total Investment Income (loss) from Investing Activities	\$52,991	\$(27,406)	\$126,475

SPRS

Investment Income - Insurance	2023	2022	2021
Increase (decrease) in fair value of investments	\$16,156	\$(25,758)	\$38,253
Investment income net of investment expense	5,328	3,632	3,060
Gain on sale of investments	(58)	11,339	8,738
Total Investment Income (loss) from Investing Activities	\$21,426	\$(10,787)	\$50,051

Management's Discussion & Analysis (Unaudited)

Historical Trends

Accounting standards require that the Combining Statement of Fiduciary Net Position state asset values at fair value and include benefits and refunds due plan members and beneficiaries; unrealized investment income (loss); and administrative expenses as of the reporting date. Information regarding the actuarial funding status of the Pension and Insurance Funds is provided in the Schedules of Net Pension Liability (NPL) on page [93-94](#) and Net OPEB Liability on pages [104-105](#). The asset values stated in the Schedules of Changes in Employers' Total Pension Liability (TPL) on pages [95-99](#) and Total OPEB Liability on pages [106-110](#) are the actuarial value of assets. The actuarial value of assets recognizes a portion of the difference between the fair value of assets and the expected fair value of assets based on the investment return assumption. The amount recognized each year is 20% of the difference between fair value and expected fair value. The actuarial accrued liability is calculated using the entry age normal cost funding method. This actuarial accrued liability is the measure of the cost of benefits that have been earned to date by CERS, KERS and SPRS' members, but not yet paid. The difference in value between the actuarial accrued liability and the actuarial value of assets is defined as the unfunded actuarial accrued liability.

The unfunded actuarial accrued liability from the June 30, 2023, actuarial valuation in the Pension Plans decreased by \$1,823.0 million for a total unfunded amount of \$23,278.5 million in fiscal year 2023, compared to an unfunded amount of \$25,101.5 million in fiscal year 2022. The overall decrease in the unfunded actuarial accrued liability is the result of an increase in the fair value of the assets due to favorable market conditions, an increase in employee salaries, and General Fund Appropriations during fiscal year 2023.

The Insurance Plan's unfunded actuarial accrued liability from the June 30, 2023, actuarial valuation for fiscal year 2023, was negative \$730.1 million compared to negative \$663.0 million for fiscal year 2022. This is a decrease in the unfunded actuarial accrued liability of \$67.1 million. The decrease in the unfunded actuarial accrued liability is the result of an increase in the fair value of the assets due to favorable market conditions and an increase in employee salaries during fiscal year 2023. Please see the charts on the following page for the unfunded actuarial accrued liability.

Annual required actuarially determined contributions by the employers and actual contributions made by employers and other contributing entities in relation to the required contributions, are provided in the Schedules of Employer Contributions - Pension on pages [101-103](#), and in the Schedules of Contributions - OPEB on pages [113-115](#). The difference in the annual required contributions and actual contributions made by employers and other contributing entities in the KERS and SPRS funds is attributable to the fact that the employer contribution rate set by the Kentucky General Assembly was less than the rate recommended by the KPPA actuary in prior years and adopted by the Board.

Information Requests

This financial report is designed to provide a general overview of the CERS, KERS, SPRS, and Insurance Fund finances. Questions concerning any of the information provided in this report or requests for additional information should be directed to:

ATTN: Director of Accounting
Kentucky Public Pensions Authority
1260 Louisville Road
Frankfort, KY. 40601
(502) 696-8800

Management's Discussion & Analysis (Unaudited)

**Schedule of Unfunded Actuarial Accrued Liability CERS
As of June 30 (\$ in Millions)**

Item	CERS Nonhazardous				CERS Hazardous			
	Pension		Insurance		Pension		Insurance	
	2023	2022	2023	2022	2023	2022	2023	2022
Actuarial Accrued Liability (AAL)	\$15,296	\$15,674	\$2,560	\$2,392	\$5,850	\$5,862	\$1,604	\$1,538
Actuarial Value of Assets	8,585	8,149	3,366	3,160	3,008	2,789	1,615	1,554
Unfunded AAL	\$6,711	\$7,525	\$(806)	\$(768)	\$2,842	\$3,073	\$(11)	\$(16)
Funded Ratio	56.12%	51.99%	131.48%	132.11%	51.42%	47.58%	100.70%	101.02%

**Schedule of Unfunded Actuarial Accrued Liability KRS
As of June 30 (\$ in Millions)**

Item	KERS Nonhazardous				KERS Hazardous				SPRS			
	Pension		Insurance		Pension		Insurance		Pension		Insurance	
	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022
Actuarial Accrued Liability (AAL)	\$16,304	\$16,576	\$1,877	\$1,782	\$1,363	\$1,316	\$364	\$347	\$1,092	\$1,067	\$244	\$233
Actuarial Value of Assets	3,552	3,065	1,533	1,409	891	832	620	598	590	560	245	234
Unfunded AAL	\$12,752	\$13,511	\$344	\$373	\$472	\$484	\$(256)	\$(251)	\$502	\$507	\$(1)	\$(1)
Funded Ratio	21.79%	18.49%	81.66%	79.08%	65.40%	63.22%	170.43%	172.23%	54.03%	52.46%	100.46%	100.62%

Combining Statement of Fiduciary Net Position - Pension

As of June 30, 2023, with Comparative Totals as of June 30, 2022 (\$ in Thousands)

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS	Pension Total 2023	Pension Total 2022
ASSETS							
CASH AND SHORT-TERM INVESTMENTS							
Cash Deposits	\$662	\$262	\$375	\$141	\$35	\$1,475	\$367
Short-term Investments	303,178	134,692	648,780	89,143	133,780	1,309,573	1,116,933
Total Cash and Short-term Investments	303,840	134,954	649,155	89,284	133,815	1,311,048	1,117,300
RECEIVABLES							
Accounts Receivable	92,043	50,052	87,362	4,216	5,340	239,013	255,799
Accounts Receivable - Investments	58,587	20,435	31,172	6,728	5,800	122,722	82,033
Total Receivables	150,630	70,487	118,534	10,944	11,140	361,735	337,832
INVESTMENTS, AT FAIR VALUE							
Core Fixed Income	862,405	299,149	708,383	106,016	118,419	2,094,372	2,030,334
Public Equities	4,327,129	1,494,663	1,169,731	389,000	190,147	7,570,670	6,193,221
Private Equities	689,017	229,764	159,836	63,179	16,596	1,158,392	1,289,931
Specialty Credit	1,717,669	591,592	604,758	179,012	99,764	3,192,795	3,097,829
Derivatives	(2,478)	(862)	(2,045)	(306)	(342)	(6,033)	(2,864)
Real Return	268,971	89,758	72,726	24,325	10,693	466,473	417,816
Real Estate	545,935	173,707	179,034	50,564	21,466	970,706	882,759
Total Investments, at Fair Value	8,408,648	2,877,771	2,892,423	811,790	456,743	15,447,375	13,909,026
Securities Lending Collateral Invested	176,126	60,803	71,804	18,277	12,028	339,038	391,751
CAPITAL/INTANGIBLE ASSETS							
Capital Assets	1,701	153	929	91	11	2,885	2,885
Intangible Assets	9,961	827	5,920	494	100	17,302	17,300
Accumulated Depreciation	(1,701)	(153)	(929)	(91)	(11)	(2,885)	(2,885)
Accumulated Amortization	(9,961)	(827)	(5,920)	(494)	(100)	(17,302)	(16,977)
Total Capital Assets	-	-	-	-	-	-	323
Total Assets	9,039,244	3,144,015	3,731,916	930,295	613,726	17,459,196	15,756,232
LIABILITIES							
Accounts Payable	5,091	815	2,566	599	56	9,127	7,048
Investment Accounts Payable	76,587	26,600	50,340	8,852	8,816	171,195	109,253
Securities Lending Collateral	176,126	60,803	71,804	18,277	12,028	339,038	391,751
Total Liabilities	257,804	88,218	124,710	27,728	20,900	519,360	508,052
Total Fiduciary Net Position Restricted for Pension Benefits	\$8,781,440	\$3,055,797	\$3,607,206	\$902,567	\$592,826	\$16,939,836	\$15,248,180

See accompanying notes which are an integral part of these combining financial statements.

Note: The displayed fair values include investable assets held by each System and its associated contributions, payables, equipment and intangible assets; unlike those found in the Investment Section, which include only those investable assets held by each System.

Combining Statement of Changes In Fiduciary Net Position - Pension

For the fiscal year ending June 30, 2023, with Comparative Totals as of June 30, 2022 (\$ in Thousands)

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS	Pension Total 2023	PensionTotal 2022
ADDITIONS							
Member Contributions	\$147,769	\$56,988	\$84,579	\$17,459	\$5,250	\$312,045	\$290,471
Employer Contributions	645,940	286,353	114,427	64,020	56,536	1,167,276	1,091,160
Employer Pay Credit	51,694	21,683	22,018	8,758	1,585	105,738	80,710
Actuarially Accrued Liability Contributions	-	-	898,545	-	-	898,545	912,705
General Fund Appropriations	-	-	240,000	-	-	240,000	215,000
Pension Spiking Contributions	46	186	16	29	-	277	122
Health Insurance Contributions (HB1)	(30)	(20)	(12)	(7)	(8)	(77)	(208)
Employer Cessation Contributions	-	-	-	-	-	-	63,113
Total Contributions	845,419	365,190	1,359,573	90,259	63,363	2,723,804	2,653,073
INVESTMENT INCOME							
From Investing Activities							
Net Appreciation (Depreciation) in FV of Investments	637,413	219,240	134,776	56,603	25,421	1,073,453	(1,175,881)
Interest/Dividends	239,709	83,235	102,220	26,388	17,889	469,441	429,376
Total Investing Activities Income (loss)	877,122	302,475	236,996	82,991	43,310	1,542,894	(746,505)
Less: Investment Expense	52,170	17,541	15,206	4,915	2,227	92,059	75,187
Less: Performance Fees	10,465	3,295	1,866	910	336	16,872	96,462
Net Income (loss) from Investing Activities	814,487	281,639	219,924	77,166	40,747	1,433,963	(918,154)
From Securities Lending Activities							
Securities Lending Income	8,998	3,143	2,918	867	489	16,415	1,652
Less: Securities Lending Borrower Rebates (Income)/Expense	7,904	2,760	2,525	755	426	14,370	(505)
Less: Securities Lending Agent Fees	164	57	59	17	9	306	323
Net Income from Securities Lending	930	326	334	95	54	1,739	1,834
Net Investment Income (loss)	815,417	281,965	220,258	77,261	40,801	1,435,702	(916,320)
Total Additions	1,660,836	647,155	1,579,831	167,520	104,164	4,159,506	1,736,753
DEDUCTIONS							
Benefit Payments	894,351	319,594	1,023,704	78,636	63,805	2,380,090	2,328,594
Refunds	23,263	6,568	11,847	4,041	166	45,885	42,927
Administrative Expenses	24,128	2,124	13,817	1,513	293	41,875	39,742
Total Deductions	941,742	328,286	1,049,368	84,190	64,264	2,467,850	2,411,263
Net Increase (Decrease) in Fiduciary Net Position Restricted for Pension Benefits	719,094	318,869	530,463	83,330	39,900	1,691,656	(674,510)
Total Fiduciary Net Position Restricted for Pension Benefits							
Beginning of Period	8,062,346	2,736,928	3,076,743	819,237	552,926	15,248,180	15,922,690
End of Period	\$8,781,440	\$3,055,797	\$3,607,206	\$902,567	\$592,826	\$16,939,836	\$15,248,180

See accompanying notes, which are an integral part of these combining financial statements.

Combining Statement of Fiduciary Net Position - Insurance

As of June 30, 2023, with Comparative Totals as of June 30, 2022 (\$ in Thousands)

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS	Insurance Total 2023	Insurance Total 2022
ASSETS							
CASH AND SHORT-TERM INVESTMENTS							
Cash Deposits	\$259	\$8	\$105	\$9	\$8	\$389	\$255
Short-term Investments	132,269	31,789	170,091	29,906	10,868	374,923	431,687
Total Cash and Short-term Investments	132,528	31,797	170,196	29,915	10,876	375,312	431,942
RECEIVABLES							
Accounts Receivable	14,558	7,560	13,244	334	956	36,652	39,915
Investment Accounts Receivable	22,443	10,253	11,749	4,294	1,763	50,502	37,495
Total Receivables	37,001	17,813	24,993	4,628	2,719	87,154	77,410
INVESTMENTS, AT FAIR VALUE							
Core Fixed Income	327,065	148,991	171,536	72,740	27,887	748,219	753,513
Public Equities	1,633,030	807,897	637,103	268,599	108,362	3,454,991	2,871,633
Specialty Credit	641,632	318,176	289,421	129,503	51,505	1,430,237	1,401,886
Private Equities	268,195	150,750	94,390	53,885	23,922	591,142	625,455
Derivatives	(908)	(412)	(478)	(200)	(78)	(2,076)	(934)
Real Return	82,403	43,561	31,681	17,472	6,563	181,680	164,241
Real Estate	196,683	107,912	60,926	45,368	17,319	428,208	372,994
Total Investments, at Fair Value	3,148,100	1,576,875	1,284,579	587,367	235,480	6,832,401	6,188,788
Securities Lending Cash Collateral Invested	59,513	29,266	26,420	11,270	4,491	130,960	146,144
Total Assets	3,377,142	1,655,751	1,506,188	633,180	253,566	7,425,827	6,844,284
LIABILITIES							
Accounts Payable	223	22	118	-	1	364	57,501
Investment Accounts Payable	27,873	12,877	14,161	5,588	2,277	62,776	43,999
Securities Lending Cash Collateral	59,513	29,266	26,420	11,270	4,491	130,960	146,144
Total Liabilities	87,609	42,165	40,699	16,858	6,769	194,100	247,644
Total Fiduciary Net Position Restricted for OPEB	\$3,289,533	\$1,613,586	\$1,465,489	\$616,322	\$246,797	\$7,231,727	\$6,596,640

See accompanying notes, which are an integral part of these combining financial statements.

Note: The displayed fair values include investable assets held by each System and its associated contributions, payables, equipment and intangible assets; unlike those found in the Investment Section, which include only those investable assets held by each System.

Combining Statement of Changes In Fiduciary Net Position - Insurance

For the fiscal year ending June 30, 2023, with Comparative Totals as of June 30, 2022 (\$ in Thousands)

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS	Insurance Total 2023	Insurance Total 2022
ADDITIONS							
Employer Contributions	\$101,121	\$48,792	\$35,549	\$37	\$9,289	\$194,788	\$217,318
Actuarially Accrued Liability Contributions	-	-	87,674	-	-	87,674	101,637
Medicare Drug Reimbursement	-	-	4	-	-	4	2
Insurance Premiums	294	(546)	(27)	(69)	(131)	(479)	364
Humana Gain Share Payment	5,951	914	4,851	368	224	12,308	18,382
Retired Reemployed Healthcare	4,922	1,611	5,885	1,452	-	13,870	12,667
Health Insurance Contributions (HB1)	17,782	4,278	8,370	1,592	356	32,378	27,791
Employer Cessation Contributions	-	-	-	-	-	-	2,405
Total Contributions	130,070	55,049	142,306	3,380	9,738	340,543	380,566
INVESTMENT INCOME							
From Investing Activities							
Net Appreciation (Depreciation) in FV of Investments	240,044	116,608	95,983	39,902	16,098	508,635	(482,477)
Interest/Dividends	88,629	43,939	42,258	17,802	7,164	199,792	192,803
Total Investing Activities Income (loss)	328,673	160,547	138,241	57,704	23,262	708,427	(289,674)
Less: Investment Expense	19,478	10,174	7,451	3,946	1,559	42,608	34,478
Less: Performance Fees	3,499	1,782	2,870	819	299	9,269	49,494
Net Income (loss) from Investing Activities	305,696	148,591	127,920	52,939	21,404	656,550	(373,646)
From Securities Lending Activities							
Securities Lending Income	2,775	1,336	1,124	460	195	5,890	679
Less: Securities Lending Borrower Rebates (Income)/Expense	2,414	1,162	969	399	169	5,113	(199)
Less: Securities Lending Agent Fees	54	26	23	9	4	116	132
Net Income (loss) from Securities Lending	307	148	132	52	22	661	746
Net Investment Income (loss)	306,003	148,739	128,052	52,991	21,426	657,211	(372,900)
Total Additions	436,073	203,788	270,358	56,371	31,164	997,754	7,666
DEDUCTIONS							
Healthcare Premiums Subsidies	123,587	93,485	103,952	19,748	14,290	355,062	377,014
Administrative Expenses	937	522	771	123	74	2,427	2,454
Self-Funded Healthcare Costs	3,240	172	1,668	80	18	5,178	5,153
Excise Tax Insurance	-	-	-	-	-	-	18
Total Deductions	127,764	94,179	106,391	19,951	14,382	362,667	384,639
Net Increase (Decrease) in Fiduciary Net Position Restricted for OPEB	308,309	109,609	163,967	36,420	16,782	635,087	(376,973)
Total Fiduciary Net Position Restricted for OPEB							
Beginning of Period	2,981,224	1,503,977	1,301,522	579,902	230,015	6,596,640	6,973,613
End of Period	\$3,289,533	\$1,613,586	\$1,465,489	\$616,322	\$246,797	\$7,231,727	\$6,596,640
See accompanying notes, which are an integral part of these combining financial statements.							

Combining Statement of Fiduciary Net Position

As of June 30, 2023 with Comparative Totals as of June 30, 2022 (\$ in Thousands)

ASSETS	Pension	Insurance	KPPA Total 2023	KPPA Total 2022
CASH AND SHORT-TERM INVESTMENTS				
Cash Deposits	\$1,475	\$389	\$1,864	\$622
Short-term Investments	1,309,573	374,923	1,684,496	1,548,620
Total Cash and Short-term Investments	1,311,048	375,312	1,686,360	1,549,242
RECEIVABLES				
Accounts Receivable	239,013	36,652	275,665	295,714
Accounts Receivable - Investments	122,722	50,502	173,224	119,528
Total Receivables	361,735	87,154	448,889	415,242
INVESTMENTS, AT FAIR VALUE				
Core Fixed Income	2,094,372	748,219	2,842,591	2,783,847
Public Equities	7,570,670	3,454,991	11,025,661	9,064,854
Private Equities	1,158,392	591,142	1,749,534	1,915,386
Specialty Credit	3,192,795	1,430,237	4,623,032	4,499,715
Derivatives	(6,033)	(2,076)	(8,109)	(3,798)
Real Return	466,473	181,680	648,153	582,057
Real Estate	970,706	428,208	1,398,914	1,255,753
Total Investments, at Fair Value	15,447,375	6,832,401	22,279,776	20,097,814
Securities Lending Cash Collateral Invested	339,038	130,960	469,998	537,895
CAPITAL/INTANGIBLE ASSETS				
Capital Assets	2,885	-	2,885	2,885
Intangible Assets	17,302	-	17,302	17,300
Accumulated Depreciation	(2,885)	-	(2,885)	(2,885)
Accumulated Amortization	(17,302)	-	(17,302)	(16,977)
Total Capital Assets	-	-	-	323
Total Assets	17,459,196	7,425,827	24,885,023	22,600,516
LIABILITIES				
Accounts Payable	9,127	364	9,491	64,549
Investment Accounts Payable	171,195	62,776	233,971	153,252
Securities Lending Cash Collateral	339,038	130,960	469,998	537,895
Total Liabilities	519,360	194,100	713,460	755,696
Total Fiduciary Net Position Restricted for Benefits	\$16,939,836	\$7,231,727	\$24,171,563	\$21,844,820

See accompanying notes which are an integral part of these combining financial statements.

Note: The displayed fair values include investable assets held by each System and its associated contributions, payables, equipment and intangible assets; unlike those found in the Investment Section, which include only those investable assets held by each System.

Combining Statement of Changes In Fiduciary Net Position

For the fiscal year ending June 30, 2023, with Comparative Totals as of June 30, 2022 (\$ in Thousands)

	Pension	Insurance	KPPA Total 2023	KPPA Total 2022
ADDITIONS				
Member Contributions	\$312,045	\$-	\$312,045	\$290,471
Employer Contributions	1,167,276	194,788	1,362,064	1,308,478
Employer Pay Credit	105,738	-	105,738	80,710
Actuarially Accrued Liability Contributions	898,545	87,674	986,219	1,014,342
Medicare Drug Reimbursement	-	4	4	2
Insurance Premiums	-	(479)	(479)	364
Humana Gain Share	-	12,308	12,308	18,382
General Fund Appropriations	240,000	-	240,000	215,000
Pension Spiking Contributions	277	-	277	122
Retired Reemployed Healthcare	-	13,870	13,870	12,667
Health Insurance Contributions (HB1)	(77)	32,378	32,301	27,583
Employer Cessation Contributions	-	-	-	65,518
Total Contributions	2,723,804	340,543	3,064,347	3,033,639
INVESTMENT INCOME				
From Investing Activities				
Net Appreciation (Depreciation) in FV of Investments	1,073,453	508,635	1,582,088	(1,658,358)
Interest/Dividends	469,441	199,792	669,233	622,179
Total Investing Activities Income (loss)	1,542,894	708,427	2,251,321	(1,036,179)
Less: Investment Expense	92,059	42,608	134,667	109,665
Less: Performance Fees	16,872	9,269	26,141	145,956
Net Income (loss) from Investing Activities	1,433,963	656,550	2,090,513	(1,291,800)
Securities Lending Income	16,415	5,890	22,305	2,331
Less: Securities Lending Borrower Rebates (Income)/Expense	14,370	5,113	19,483	(704)
Less: Securities Lending Agent Fees	306	116	422	455
Net Income from Securities Lending	1,739	661	2,400	2,580
Net Investment Income/Loss	1,435,702	657,211	2,092,913	(1,289,220)
Total Additions	4,159,506	997,754	5,157,260	1,744,419
DEDUCTIONS				
Benefit Payments	2,380,090	-	2,380,090	2,328,594
Refunds	45,885	-	45,885	42,927
Healthcare Premiums Subsidies	-	355,062	355,062	377,014
Self Funded Healthcare Costs	-	5,178	5,178	5,153
Administrative Expenses	41,875	2,427	44,302	42,196
Excise Tax Insurance	-	-	-	18
Total Deductions	2,467,850	362,667	2,830,517	2,795,902
Net Increase (Decrease) in Fiduciary Net Position Restricted for Benefits	1,691,656	635,087	2,326,743	(1,051,483)
Total Fiduciary Net Position Restricted for Benefits				
Beginning of Period	15,248,180	6,596,640	21,844,820	22,896,303
End of Period	\$16,939,836	\$7,231,727	\$24,171,563	\$21,844,820

See accompanying notes, which are an integral part of these combining financial statements.

NOTE A. Summary of Significant Accounting Policies

Kentucky Retirement Systems (KRS) is responsible for the administration of the Kentucky Employees Retirement System (KERS) and the State Police Retirement System (SPRS). HB 484, passed in the 2020 Legislative Session, also created a separate governing board in Kentucky Revised Statutes 78.782, County Employees Retirement System (CERS), to administer the statewide cost-sharing plans for local government employers. KPPA is responsible for administering the single personnel system for the pension plans, a system of accounting, day-to-day administrative needs of CERS and KRS, selecting consulting and service contractors to provide administrative services including an external auditor. KPPA is also responsible for promulgating administrative regulations on behalf of KRS and CERS, individually or collectively. It is additionally tasked with administering and operating any jointly held assets for KRS and CERS including, but not limited to real estate, office space, equipment, and supplies. KPPA staff manages assets in accordance with investment policies developed by the CERS and KRS Investment Committees and approved by each Board. KPPA staff recommends to the Boards the hiring, retention and termination of investment managers. Each Board is responsible for selection of investment services for the management and custody of the assets while KPPA is responsible for the remaining investment services.

This summary of KPPA's significant accounting policies is presented to assist in understanding the combining financial statements for CERS and KRS. The combining financial statements and notes are representations of KPPA's management, which is responsible for their integrity and objectivity. These accounting policies conform to Generally Accepted Accounting Principles (GAAP) and have been consistently applied in the preparation of the combining financial statements.

Basis of Accounting

KPPA's combining financial statements are prepared using the accrual basis of accounting. Plan member contributions are recognized in the period in which contributions are due. Employer contributions to the plan are recognized when due and the employer has made a formal commitment to provide the contributions. Benefits and refunds are recognized when due and payable in accordance with the terms of the plan. Premium payments are recognized when due and payable in accordance with the insurance terms of the plan. Administrative and investment expenses are recognized when incurred. The net position represents the five funds of CERS, KERS, SPRS and the five funds of the Kentucky Retirement Insurance Trust Fund (Insurance Fund) that have accumulated thus far to pay pension benefits for retirees, active and inactive members, and health care premiums for current and future employees.

Method Used to Value Investments

Investments are reported at fair value. Fair value is the price that would be received upon selling an asset or the amount paid to transfer a liability in an orderly transaction between market participants at the measurement date. Short-term investments are reported at cost, which approximates fair value. See Investments Note D for further discussion of fair value measurements. Purchases and sales of securities are recorded on a trade-date basis. Interest income is recorded on the accrual basis. Dividends are recorded on the dividend date. Gain (loss) on investments includes gains and losses on investments bought and sold as well as held during the fiscal year. Investment returns are recorded in all plans net of investment fees.

Investment Unitization

Within the plan accounting structure there are two primary types of accounts: Plan Accounts and Pool Accounts. Plan Accounts are the owners of the investment pool. An account is established for each plan/fund and these accounts hold Units of Participation that represent the plan's/fund's invested value of the investment pool. Pool Accounts are accounts that hold the assets of the investment pool where all investment related activity and earnings occur. The pooled accounts are the investment strategies of the pool. Units of Participation are bought and sold as each plan/fund contributes or withdraws cash or assets from the investment pool. The investment pool earnings are then allocated to plans utilizing a cost distribution method that allows for fluctuating prices experienced in capital markets. This involves earnings allocated to the plan accounts with an increase or decrease in cost on the Unit of Participation Holdings of the Plan Accounts. Correspondingly, the price of the Unit of Participation Holdings is updated to reflect change in fair value in the investment pool. Earnings are allocated based on the daily weighted average of Master Trust Units held by each plan/fund account during each monthly earnings period. This method is commonly used when plans make multiple contributions or withdrawals from the investment pool throughout the month as it eliminates allocation distortion due to large end of month cash flows.

Estimates

The preparation of financial statements in accordance with GAAP requires management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

Equipment

Office equipment is valued at historical cost and depreciation is computed utilizing the straight-line method over the estimated useful lives of the assets ranging from three to ten years. Improvements, which increase the useful life of the equipment, are capitalized. Maintenance and repairs are charged as an expense when incurred. The capitalization threshold used in fiscal year 2023 was \$3,000 (see Equipment Note J for further information).

Intangible Assets

Intangible assets, currently computer software, are valued at historical cost and amortization is computed utilizing the straight-line method over the estimated useful lives of the assets which is ten years. The capitalization threshold used in fiscal year 2023 was \$3,000 (see Intangible Assets Note K for further information).

Accounts Receivable

Accounts Receivable consist of amounts due from employers. KPPA management considers accounts receivable to be fully collectible; accordingly, no allowance for doubtful accounts is considered necessary. If amounts become uncollectible, they will be charged to operations when that determination is made. If amounts previously written off are collected, they will be credited to income when received.

The Investment Accounts Receivable and Investment Accounts Payable consist of investment management earnings and fee accruals, as well as all buys and sells of securities which have not closed as of the reporting date.

Payment of Benefits

Benefits are recorded when paid.

Expense Allocation

KPPA administrative expenses are allocated based on a hybrid allocation developed by the Boards. The hybrid allocation is based on a combination of plan membership and direct plan expenses. All investment related expenses are allocated in proportion to the percentage of investment assets held by each plan.

Component Unit

KPPA is a component unit of the Commonwealth of Kentucky (the Commonwealth) for financial reporting purposes.

CERS was created by the Kentucky General Assembly on July 1, 1958, pursuant to Kentucky Revised Statutes 78.520, and the separate governing board was created in 2021. KERS was created by the Kentucky General Assembly on July 1, 1956, pursuant to Kentucky Revised Statutes 61.515. SPRS was created by the Kentucky General Assembly on July 1, 1958, pursuant to Kentucky Revised Statutes 16.510. The KRS Insurance Trust Fund was created by the Kentucky General Assembly pursuant to Kentucky Revised Statutes 61.701. KPPA's administrative budget is subject to approval by the Kentucky General Assembly. Employer contribution rates for KERS and SPRS are also subject to legislative approval. Employer contribution rates for CERS are determined by the Board of CERS without further legislative review. The methods used to determine the employer rates for CERS and KRS (KERS and SPRS) are specified in Kentucky Revised Statutes 78.635 and 61.565. Employee contribution rates are set by statute and may be changed only by the Kentucky General Assembly.

Perimeter Park West, Incorporated (PPW) is governed by a three-member board selected by shareholders. Although it is legally separate from KPPA, PPW is reported as part of KPPA, because its sole ownership is Kentucky Retirement Systems, and therefore through unitization is owned by KERS, CERS, and SPRS. PPW functions as a real estate holding company for the offices used by the plans administered by KPPA.

Recent Accounting Pronouncements

In June 2017, the Governmental Accounting Standards Board (GASB) issued *Statement Number 87 Leases*. The objective of this Statement is to address government lessee's recognition of lease liabilities, intangible assets, and report amortization expense for using the leased asset, interest expense on the lease liability, and note disclosures about the lease. Another objective of this Statement is to address government lessor's recognition of a lease receivable, deferred inflow, and report lease revenue, interest income, and note disclosures about the lease. Due to COVID-19, *Statement Number 87 Leases* was updated by GASB to extend the requirement of this standard to take effect for financial statements starting with the fiscal year that ends June 30, 2022. KPPA determined that the KPPA lease agreements are not material to the overall financial statements. Therefore, KPPA did not report the leases according to *Statement Number 87 Leases*.

GASB *Statement Number 96, Subscription-Based Information Technology Arrangements (SBITAs)* established standards of accounting and financial reporting for SBITAs by a government end user (a government). The requirements of this Statement apply to financial statements of all state and local governments. The underlying accounting principles for SBITAs are similar to the standards established in *Statement Number 87, Leases*, as amended. The requirements of this Statement will take effect for financial statements starting with the fiscal year that ends June 30, 2023. KPPA determined that the KPPA SBITAs lease agreements are not material to the overall financial statements. Therefore, KPPA did not report the SBITAs leases according to Statement Number 96 SBITAs.

GASB *Statement Number 100, Accounting Changes and Error Corrections* - an amendment of GASB *Statement No. 62*. The requirements of this Statement will take effect for financial statements starting with the fiscal year that ends June 30, 2024. KPPA is evaluating the impact of the Statement to the financial report.

GASB *Statement Number 101, Compensated Absences*. The requirements of the Statement will take effect for financial statements starting with the fiscal year that ends December 31, 2024. KPPA is evaluating the impact of the Statement to the financial report.

Note B. Descriptions & Contribution Information

CERS Membership Combined As of June 30

Members	2023		
	Nonhazardous	Hazardous	Total
Retirees and Beneficiaries Receiving Benefits	66,935	9,448	76,383
Inactive Memberships	106,903	3,687	110,590
Active Members	81,217	9,181	90,398
Total	255,055	22,316	277,371
Number of Participating Employers			1,120

KERS Membership Combined As of June 30

Members	2023		
	Nonhazardous	Hazardous	Total
Retirees and Beneficiaries Receiving Benefits	44,975	3,459	48,434
Inactive Memberships	51,001	7,222	58,223
Active Members	30,854	3,875	34,729
Total	126,830	14,556	141,386
Number of Participating Employers			333

SPRS Membership As of June 30

Members	2023		
	Nonhazardous	Hazardous	Total
Retirees and Beneficiaries Receiving Benefits	-	1,552	1,552
Inactive Memberships	-	432	432
Active Members	-	868	868
Total	-	2,852	2,852
Number of Participating Employers			1

Note: Each person is only counted once in the Membership by System report. A member who has both a membership account and a retired account is included in the retired count. Members who have multiple membership accounts are included under the system where they most recently contributed. Members who have more than one retirement account are included in the system with the greatest service credit. If the retired accounts have equal service credit, they are counted first in SPRS, CERS Hazardous, KERS Hazardous, CERS Nonhazardous, then KERS Nonhazardous.

Retiree Medical Insurance Coverage As of June 30, 2023

	Single	Couple/ Family	Parent	Medicare Without Prescription	Medicare With Prescription
CERS Nonhazardous	8,721	524	234	1,921	29,542
CERS Hazardous	1,893	3,047	491	138	4,455
CERS Total	10,614	3,571	725	2,059	33,997
KERS Nonhazardous	6,693	553	433	957	22,976
KERS Hazardous	653	470	118	72	1,796
KERS Total	7,346	1,023	551	1,029	24,772
SPRS	230	434	92	17	1,022
Total	18,190	5,028	1,368	3,105	59,791

The total number of Participating Employers is 1,454.

Note: Medical Insurance coverage is provided based on the member's initial participation date and length of service. Members receive either a percentage or dollar amount for insurance coverage. The counts are the number of medical plans contracted with the Department of Employee Insurance or Medicare vendor and are not representative of the number of persons.

Plan Descriptions

The County Employees Retirement System (CERS), the Kentucky Employees Retirement System (KERS), and the State Police Retirement System (SPRS) provide retirement, disability, and death benefits to system members. Retirement benefits may be extended to beneficiaries of members under certain circumstances. KPPA provides administrative support to CERS, KERS, SPRS, and Kentucky Retirement System Insurance Trust Fund (Insurance Fund). In addition to executive management, the CERS, KERS, SPRS, and Insurance Fund share investment management, accounting, and information system services, the costs of which are allocated to the plans on an equitable basis.

CERS - County Employees Retirement System

CERS was established by Kentucky Revised Statutes 78.520. The CERS system is comprised of two plans - CERS Nonhazardous plan and CERS Hazardous plan. The CERS Nonhazardous plan was established to provide retirement benefits to all regular full-time members employed in positions of each participating county, city, school board, and any additional eligible local agencies electing to participate in CERS. The membership of the CERS Hazardous plan includes employees whose position is considered hazardous with principal job duties including, but are not limited to, active law enforcement, probation and parole officers, detectives, pilots, paramedics, and emergency medical technicians, with duties that require frequent exposure to a high degree of danger and also require a high degree of physical condition.

The responsibility for the general administration and operation of the plans within CERS is vested in the CERS Board of Trustees. The CERS Board of Trustees consists of 9 members. Six trustees are appointed by the governor and three are elected by CERS members (active, inactive, and/or retired). The six appointed trustees are selected from a list of candidates provided to the Governor's Office by one of three employer advocacy groups: Kentucky League of Cities, Kentucky Association of Counties, or Kentucky School Board Association. Of the six appointed trustees, three must have investment experience and three must have retirement experience as defined by statute. All appointments by the governor are subject to Senate confirmation.

KERS - Kentucky Employees Retirement System

KERS was established by Kentucky Revised Statutes 61.515. The KERS system is comprised of two plans - KERS Nonhazardous plan and KERS Hazardous plan. The KERS Nonhazardous plan was established to provide retirement benefits to all regular full-time members employed in positions of any state department, board, or agency directed by Executive Order to participate in KERS. The membership of the KERS Hazardous plan includes employees whose position is considered hazardous with principal job duties including, but are not limited to, active law enforcement, probation and parole officer, detective, pilots, paramedics, and emergency medical technicians, with duties that require frequent exposure to a high degree of danger and also require a high degree of physical condition.

The responsibility for the general administration and operation of KERS is vested with the Kentucky Retirement Systems (KRS) Board of Trustees. The KRS Board of Trustees consist of 9 members. Six trustees are appointed by the governor and three are elected. Of the elected trustees, two are elected by KERS members and one is elected by SPRS members. Active, inactive and retired members of the appropriate system are invited to participate in the election of trustees. Of the six appointed trustees, three must have investment experience and three must have retirement experience as defined by statute. All appointments by the governor are subject to Senate confirmation. The two trustees elected by the KERS membership must be members of or retired from KERS. The one trustee elected by the SPRS membership must be a member of or retired from SPRS.

SPRS - State Police Retirement System

SPRS is a single employer defined benefit pension plan and was established by Kentucky Revised Statutes 16.510 to provide retirement benefits to all full-time state troopers employed in positions by the Kentucky State Police. The responsibility for the general administration and operation of the SPRS is vested with the KRS Board of Trustees (see KERS - Kentucky Employees Retirement System for KRS Board composition).

Kentucky Retirement System Insurance Trust Fund

The Insurance Fund was established by Kentucky Revised Statutes 61.701 for the purpose of providing hospital and medical insurance benefits for eligible members receiving benefits from CERS Nonhazardous, CERS Hazardous, KERS Nonhazardous, KERS Hazardous, and SPRS (collectively the Insurance Fund). The responsibility for the general administration and operation of the Insurance Fund is vested with both the CERS Board of Trustees and the KRS Boards of Trustees. Each of the OPEB funds: CERS Nonhazardous, CERS Hazardous, KERS Nonhazardous, KERS Hazardous, and SPRS is legally separated with benefits only eligibility to be paid for each of the respective membership groups.

Cost of Living Adjustment (COLA)

Prior to July 1, 2009, COLAs were provided to retirees annually equal to the percentage increase in the annual average of the consumer price index (CPI) for all urban consumers for the most recent calendar year, not to exceed 5% in any plan year. After July 1, 2009, the COLAs were to be limited to 1.50%.

In 2013 the General Assembly created a new law to govern how COLAs will be granted. Language included in Senate Bill 2 during the 2013 Regular Session states COLAs will only be granted in the future if the Systems' Boards determine that assets of the Systems are greater than 100% of the actuarial liabilities and legislation authorizes the use of surplus funds for the COLA; or the General Assembly fully prefunds the COLA or directs the payment of funds in the year the COLA is provided. Kentucky Revised Statutes 78.5518 governs how COLAs may be granted for members of CERS. The granting of COLAs for the KERS and SPRS membership is covered under Kentucky Revised Statutes 61.691.

No COLA has been granted since July 1, 2011.

Employer Contributions

Local government participating employers are required to contribute an actuarially determined rate for CERS pension contributions, per the Kentucky Revised Statutes 78.635. The CERS Board of Trustees establishes the employer contribution rate based on Kentucky Revised Statutes 78.454(33) each year following the annual actuarial valuation as of July 1 and prior to July 1 of the succeeding fiscal year for local governments in Kentucky.

The Commonwealth is required to contribute at an actuarially determined rate for KERS and SPRS pensions. The KRS Board of Trustees recommends the rates each year following the annual actuarial valuation, but the rates are set by the legislature within the budget bill for each biennium. The contribution rates from July 1, 2022, through June 30, 2023, were set within HB 1, passed in the 2022 Regular Legislative Session, for KERS Nonhazardous, KERS Hazardous and SPRS employers.

The KERS Nonhazardous employer contribution rate shall include, (1) the normal cost contribution and (2) the prorated amount of the actuarially accrued liability assigned to each individual nonhazardous employer in accordance with Kentucky Revised Statutes 61.565(1)(d). Each employer pays the normal cost as a percentage of reported payroll plus a flat amount to cover the employer-specific actuarially accrued liability contribution for the fiscal year as determined by the annual valuation.

Per Kentucky Revised Statutes 61.565 and 16.645(18), normal contribution and past service contribution rates shall be determined by the KRS Board on the basis of the last annual valuation preceding July 1 of a new biennium. The KRS Board may amend contribution rates as of the first day of July of the second year of a biennium, if it is determined on the basis of a subsequent actuarial valuation that amended contribution rates are necessary to satisfy requirements determined in accordance with actuarial bases adopted by the KRS Board. However, formal commitment to provide the contributions by the employer is made through the biennial budget for KERS and SPRS.

For the fiscal year ended June 30, 2023, participating employers of CERS Nonhazardous, CERS Hazardous, KERS Hazardous, and SPRS contributed a percentage of each employee's creditable compensation. The actuarially determined rates set by the Boards for the fiscal year is a percentage of each employee's creditable compensation. Administrative costs of KPPA are financed through employer contributions and investment earnings. See the charts on the following page for the fiscal year employer contribution rates, including the actuarially recommended rates.

Contribution Rate Breakdown by Fund As of June 30, 2023

Fund	Pension		Insurance		Combined Total	
	Employer Contribution Rates	Actuarially Recommended Rates	Employer Contribution Rates	Actuarially Recommended Rates	Employer Contribution Rates	Actuarially Recommended Rates
CERS Nonhazardous**	23.40%	23.40%	3.39%	3.39%	26.79%	26.79%
CERS Hazardous**	42.81%	42.81%	6.78%	6.78%	49.59%	49.59%
KERS Nonhazardous *	7.82%	7.82%	2.15%	2.15%	9.97%	9.97%
KERS Hazardous	31.82%	31.82%	0.00%	0.00%	31.82%	31.82%
SPRS ***	85.32%	126.40%	14.11%	14.11%	99.43%	140.51%

* House Bill 8 passed during the 2021 legislative session required, beginning July 1, 2021, the KERS Nonhazardous employers pay the normal cost for all employees plus a flat amount which is equal to their assigned percentage of the annual dollar amount that is sufficient to amortize the total unfunded actuarial accrued liability of the system over a closed period. The percentage is based on the liability that was attributable to the agency as of June 30, 2019.

**House Bill 362 passed during the 2018 legislative session caps CERS employer contribution rate increases up to 12% per year over the prior fiscal year for the period of July 1, 2018 to June 30, 2028.

*** House Bill 1 passed during the 2022 legislative session included \$215 million in FY 2021-2022 for SPRS pension fund to be applied to the unfunded liability, which immediately lowered the SPRS contribution rate from the Fiscal Year 2022 146.06% rate to 99.43% for Fiscal Year 2023.

As of June 30, 2023, the date of the most recent actuarial valuation, membership consisted of:

TIER 1:

Tier 1 plan members who began participating prior to September 1, 2008, are required to contribute 5% (Nonhazardous) or 8% (Hazardous) of their annual creditable compensation. These members are classified in the Tier 1 structure of benefits. Interest is paid each June 30 on members' accounts at a rate of 2.5%. If a member terminates employment and applies to take a refund, the member is entitled to a full refund of contributions and interest.

TIER 2:

Tier 2 plan members, who began participating on or after September 1, 2008, and before January 1, 2014, are required to contribute 6% (Nonhazardous) or 9% (Hazardous) of their annual creditable compensation. Further, 1% of these contributions are deposited to an account created for the payment of health insurance benefits under 26 USC Section 401(h) in the Insurance Fund (see Kentucky Administrative Regulation (KAR) 105 KAR 1:420). These members are classified in the Tier 2 structure of benefits. Interest is paid each June 30 on members' accounts at a rate of 2.5%. If a member terminates employment and applies to take a refund, the member is entitled to a full refund of contributions and interest; however, the 1% Health Insurance Contribution (HIC) to the 401(h) account is non-refundable and is forfeited.

TIER 3:

Tier 3 plan members, who began participating on or after January 1, 2014, are required to contribute to the Cash Balance Plan. The Cash Balance Plan is known as a hybrid plan because it has characteristics of both a defined benefit plan and a defined contribution plan. Members contribute 5% (Nonhazardous) or 8% (Hazardous) of their monthly creditable compensation which is deposited into their account, and an additional 1% which is deposited to an account created for payment of health insurance benefits under 26 USC Section 401(h) in the Insurance Fund (see 105 KAR1:420), which is not refundable. Tier 3 member accounts are also credited with an employer pay credit in the amount of 4% (Non-Hazardous) or 7.5% (Hazardous) of the member's monthly creditable compensation. The employer pay credit amount is deducted from the total employer contribution rate paid on the member's monthly creditable compensation. If a vested (60 months of service) member terminates employment and applies to take a refund, the member is entitled to the members contributions (less HIC) plus employer pay credit plus interest (for both employee contributions and employer pay). If a non-vested (less than 60 months) member terminates employment and applies to take a refund, the member is entitled to receive employee contributions (less HIC) plus interest (on employee contributions only).

Tier 3

Interest is paid into the Tier 3 member's account. The account currently earns 4% interest credit on the member's accumulated account balance as of June 30 of the previous year. The member's account may be credited with additional interest if the fund's five-year Geometric Average Net Investment Return (GANIR) exceeded 4%. If the member was actively employed and participating in the fiscal year, and if KPPA's GANIR for the previous five years exceeds 4%, then the member's account will be credited with 75% of the amount of the returns over 4% on the account balance as of June 30 of the previous year (Upside Sharing Interest). It is possible that one fund in KPPA may get an Upside Sharing Interest, while another may not.

Upside Sharing Interest

Upside Sharing Interest is credited to both the member contribution balance and Employer Pay Credit balance. Upside Sharing Interest is an additional interest credit. Member accounts automatically earn 4% interest annually. The GANIR is calculated on an individual fund basis.

The chart below shows the interest calculated on the members' balances as of June 30, 2022, and credited to each member's account on June 30, 2023.

(A-B) = C x 75% = D then B + D = Interest (\$ in Thousands)						
	A	B	C	D		
Fund	5-Year Geometric Average Return	Less Guarantee Rate of 4%	Upside Sharing Interest	Upside Sharing Interest X 75% = Upside Gain	Interest Rate Earned (4% + Upside)	Total Interest Credited to Member Accounts
CERS Nonhazardous	6.52%	4.00%	2.52%	1.89%	5.89%	\$25,233
CERS Hazardous	6.68%	4.00%	2.68%	2.01%	6.01%	\$8,761
KERS Nonhazardous	5.61%	4.00%	1.61%	1.21%	5.21%	\$9,667
KERS Hazardous	6.40%	4.00%	2.40%	1.80%	5.80%	\$3,186
SPRS	6.09%	4.00%	2.09%	1.57%	5.57%	\$513

Insurance Fund Description

The Insurance Fund was established to provide hospital and medical insurance for eligible members receiving benefits from CERS, KERS, and SPRS. The eligible non-Medicare retirees are covered by the Department of Employee Insurance (DEI) plans. The KPPA Board contracts with Humana to provide health care benefits to the eligible Medicare retirees through a Medicare Advantage Plan. KPPA submits the premium payments to DEI and Humana. The Insurance Fund pays a prescribed contribution for whole or partial payment of required premiums to purchase hospital and medical insurance. For the fiscal year ended June 30, 2023, insurance premiums withheld from benefit payments for KPPA's members were \$23.7 million and \$4.0 million for CERS Nonhazardous and Hazardous, respectively; \$19.5 million and \$1.4 million for KERS Nonhazardous and Hazardous, respectively; and, \$0.4 million for SPRS.

The amount of benefit paid by the Insurance Fund is based on years of service. For members who began participating prior to July 1, 2003, a percentage of the contribution rate is paid based on years of service with 100% of the contribution rate being paid with 20 years of service. Since the passage of House Bill 290 (2004 Kentucky General Assembly), medical insurance benefits have been calculated differently for members who began participating on or after July 1, 2003. Once members reach a minimum vesting period of 10 years, Nonhazardous employees whose participation began on or after July 1, 2003, earn \$10 per month for insurance benefits at retirement for every year of earned service. Hazardous employees whose participation began on or after July 1, 2003 earn \$15 per month for insurance benefits at retirement for every year of earned service without regard to a maximum dollar amount. Upon death of a Hazardous employee, the employee's spouse receives \$10 per month for insurance benefits for each year of the deceased employee's earned Hazardous service. This dollar amount is subject to adjustment annually, which is currently 1.5%, based upon Kentucky Revised Statutes. House Bill 1 (2008 Kentucky General Assembly) changed the minimum vesting requirement for participation in the health insurance plan to 15 years for members whose participation began on or after September 1, 2008. This benefit is not protected under the inviolable contract provisions of Kentucky Revised Statutes 16.652, 61.692 and 78.852. The Kentucky General Assembly reserves the right to suspend or reduce this benefit if, in its judgment, the welfare of the Commonwealth so demands. The Insurance Plan pays 100% of the contribution rate for hospital and medical insurance premiums for the spouse and dependents of members who die as a direct result of an act in the line of duty or from a duty-related injury.

For members participating prior to July 1, 2003, years of service and respective percentages of the maximum benefit are as follows:

Portion Paid by Insurance Fund As of June 30, 2023	
Years of Service	Paid by Insurance Fund (%)
20+ years	100.00%
15-19 years	75.00%
10-14 years	50.00%
4-9 years	25.00%
Less than 4 years	0.00%

The amount of benefit paid by the Insurance Fund is based on years of service. For members participating on or after July 1, 2003, the dollar amounts of the benefit per year of service are as follows:

Dollar Contribution for Fiscal Year 2023 For Member participation date on or after July 1, 2003	
	(in Whole \$)
CERS Nonhazardous	\$14.20
CERS Hazardous	\$21.30
KERS Nonhazardous	\$14.20
KERS Hazardous	\$21.30
SPRS	\$21.30

Note C. Cash, Short-Term Investments & Securities Lending Collateral

The provisions of GASB *Statement No. 28 Accounting and Financial Reporting for Securities Lending Transactions* require that cash received as collateral on securities lending transactions and investments made with that cash must be reported as assets on the financial statements. The non-cash collateral is not reported because the securities received as collateral are unable to be pledged or sold unless the borrower defaults. In accordance with GASB No. 28, KPPA classifies certain other investments, not related to the securities lending program, as short-term. Cash and short-term investments consist of the following:

Cash, Short-Term Investments, & Securities Lending Collateral As of June 30, 2023 (\$ in Thousands)

CERS	Pension	Insurance
CERS Nonhazardous		
Cash	\$662	\$259
Short-Term Investments	303,178	132,269
Securities Lending Collateral Invested	176,126	59,513
Total	\$479,966	\$192,041
CERS Hazardous		
Cash	\$262	\$8
Short-Term Investments	134,692	31,789
Securities Lending Collateral Invested	60,803	29,266
Total	\$195,757	\$61,063

KERS	Pension	Insurance
KERS Nonhazardous		
Cash	\$375	\$105
Short-Term Investments	648,780	170,091
Securities Lending Collateral Invested	71,804	26,420
Total	\$720,959	\$196,616
KERS Hazardous		
Cash	\$141	\$9
Short-Term Investments	89,143	29,906
Securities Lending Collateral Invested	18,277	11,270
Total	\$107,561	\$41,185

SPRS	Pension	Insurance
Cash	\$35	\$8
Short-Term Investments	133,780	10,868
Securities Lending Collateral Invested	12,028	4,491
Total	\$145,843	\$15,367

Note D. Investments

Kentucky Revised Statutes 61.650 and 78.790 specifically state that the Board of Trustees for the respective retirement Plan(s) shall have the full and exclusive power to invest and reinvest the funds of the Plan(s) they govern. In addition, Kentucky Revised Statutes 61.645 and 78.782 require three (3) members of each Board to have at least ten (10) years of investment experience as defined by the statutes. The Boards of Trustees are required to establish Investment Committees who are specifically charged with implementing the investment policies adopted by the Board of Trustees and to act on behalf of the Board of Trustees on all investment-related matters. The Board of Trustees and the Investment Committee members are required to discharge their duty to invest the funds of the Plans in accordance with the "Prudent Person Rule" as set forth in Kentucky Revised Statutes 61.650 and 78.790 and to manage those funds consistent with the long-term nature of the trusts and solely in the interest of the members and beneficiaries. All internal investment staff of the Kentucky Public Pensions Authority, and investment consultants must adhere to the Code of Ethics and Standards of Professional Conduct of the CFA Institute and all board trustees must adhere to the Code of Conduct for Members of a Pension Scheme Governing Body of the CFA Institute. The Boards of Trustees are authorized to adopt policies. The Boards of Trustees have adopted Investment Policy Statements (IPS) which define the framework for investing the assets of the Plans. The IPS is intended to provide general principles for establishing the investment goals of the Plans, the allocation of assets, employment of outside asset management, and monitoring the results of the respective Plans. A copy of each Board's IPS can be found on the KPPA website. By statutes, the Boards, through adopted written policies, shall maintain ownership and control over its assets held in its unitized managed custodial account. Additionally, the Investment Committees establish specific investment guidelines that are summarized below and are included in the Investment Management Agreement (IMA) for each investment management firm.

Equity

Public Equity

Investments may be made in common stock; securities convertible into common stock; preferred stock of publicly traded companies on stock markets; asset class relevant Exchange Traded Funds (ETFs); or any other type of security contained in a manager's benchmark. Each individual equity account has a comprehensive set of investment guidelines, which contains a listing of permissible investments, portfolio restrictions, and standards of performance.

Private Equity

Subject to the specific approval of the Investment Committees, Private Equity investments may be made for the purpose of creating a diversified portfolio of alternative investments under the Equity umbrella. Private equity investments are expected to achieve attractive risk-adjusted returns and, by definition, possess a higher degree of risk with a higher return potential than traditional investments. Accordingly, total rates of return from private equity investments are expected to be greater than those that might be obtained from conventional public equity or debt investments.

Fixed Income

Core Fixed Income

The Core Fixed Income accounts may include, but are not limited to, the following securities: U.S. government and agency bonds; investment grade U.S. corporate credit; investment grade non-U.S. corporate credit; mortgages, including residential mortgage-backed securities; commercial mortgage-backed securities and whole loans; asset-backed securities; and, asset class relevant ETFs.

Specialty Credit

The Specialty Credit accounts may include, but are not limited to, the following types of securities and investments: non-investment grade U.S. corporate credit including both bonds and bank loans; non-investment grade non-U.S. corporate credit including bonds and bank loans; private debt; municipal bonds; non-U.S. sovereign debt; mortgages, including residential mortgage-backed securities; commercial mortgage backed securities and whole loans; asset-backed securities and emerging market debt (EMD), including both sovereign EMD and corporate EMD; and asset class relevant ETFs. Each individual Specialty Credit account shall have a comprehensive set of investment guidelines which contains a listing of permissible investments, portfolio restrictions, risk parameters, and standards of performance for the account.

Cash and Cash Equivalent Securities

The following short-term investment vehicles are considered acceptable: Publicly traded investment grade corporate bonds; variable rate demand notes; government and agency bonds; mortgages, municipal bonds, and collective short-term investment funds (STIFs), money market funds or instruments (including, but not limited to certificates of deposit, bank notes, deposit notes, bankers' acceptance and commercial paper) and repurchase agreements relating to the above instruments. Instruments may be selected from among those having an investment grade rating at the time of purchase by at least one recognized bond rating service. In cases where the instrument has a split rating, the lower of the two ratings shall prevail. All instruments shall have a maturity at the time of purchase that does not exceed 397 days.

Fixed income managers, who utilize cash equivalent securities as an integral part of their investment strategy, are exempt from the permissible investments contained in the preceding paragraph. Permissible short-term investments for Fixed Income managers shall be included in the investment manager's investment guidelines.

Inflation Protected

Real Estate and Real Return

Subject to the specific approval of the corresponding Investment Committee, investments may be made to create a diversified portfolio of alternative investments. Investments are made in equity and debt real estate for the purpose of achieving the highest total rate of return possible consistent with a prudent level of risk. The purpose of the Real Return investments are to identify strategies that provide both favorable stand-alone risk-adjusted returns as well as the benefit of hedging inflation for the broader plans.

Investment Expenses

In accordance with GASB *Statement No. 67 and No. 74, Financial Reporting for Pension Plans and Other Postemployment Benefit Plans other than Pension Plans*, KPPA has exercised professional judgment to report investment expenses. It is not cost-beneficial to separate certain investment expenses from either the related investment income or the general administrative expenses. In fiscal year 2015, KPPA changed Private Equity investment fees from a gross basis to a net basis. The Boards made the decision to enhance transparency reporting. Prior to 2015, the majority of the trusts' Private Equity investment fees were netted against investment activity which is the standard used within the Private Equity sector. Trusts' net investment income has always included these fees regardless of the reporting method used. During the 2017 Regular Session of the Kentucky General Assembly, legislators passed SB 2 which requires the reporting of all investment fees and expenses. KPPA staff continues to work with managers to enhance fee and expense reporting.

Derivatives

Derivative instruments are financial contracts that have various effective dates and maturity dates and whose values depend on the values of one or more underlying assets, reference rates, or financial indices. External managers and KPPA Investment Staff are permitted to invest in derivative securities, or strategies which make use of derivative investments, for exposure, cost efficiency and risk management purposes, if such investments do not cause the portfolio to be leveraged beyond a 100% invested position. Any derivative security shall be sufficiently liquid that it can be expected to be sold at, or near, its most recently quoted market price. Examples of such derivatives include, but are not limited to the following securities: foreign currency forward contracts; futures; options; and swaps.

For accounting and financial reporting purposes, all derivative instruments are considered investment derivative instruments. The derivatives have been segregated on the Combining Statement of Fiduciary Net Position for both the Pension and Insurance Funds.

In accordance with GASB *Statement No. 53, Accounting and Financial Reporting for Derivative Instruments*, KPPA provides additional disclosure regarding its derivatives. The charts included represent the derivatives by types as of June 30, 2023. The chart shows the change in fair value of derivative types as well as the current fair value and notional value. The notional value is the reference amount of the underlying asset times its current spot price. The trusts hold investments in options, commitments, futures, and forward foreign exchange contracts.

CERS Pension and Insurance Derivative Instruments - GASB 53
As of June 30, 2023 (\$ in Thousands)

Derivatives (by Type)	Net Appreciation (Depreciation) in Fair Value	Classification	Fair Value	Notional
CERS Nonhazardous - Pension				
FX Spots and Forwards	\$(855)	Investment	\$(21)	-
Futures	(528)	Investment	(2,457)	252,519
Commits and Options	(1)	Investment	-	-
Swaps	-	Investment	-	-
CERS Nonhazardous - Insurance				
FX Spots and Forwards	\$(263)	Investment	\$(5)	-
Futures	(253)	Investment	(902)	91,565
Commits and Options	(1)	Investment	-	-
Swaps	-	Investment	-	-
CERS Hazardous - Pension				
FX Spots and Forwards	\$(287)	Investment	\$(9)	-
Futures	(200)	Investment	(853)	87,554
Commits and Options	(1)	Investment	-	-
Swaps	-	Investment	-	-
CERS Hazardous - Insurance				
FX Spots and Forwards	\$(143)	Investment	\$(2)	-
Futures	(84)	Investment	(410)	41,897
Commits and Options	-	Investment	-	-
Swaps	-	Investment	-	-

KERS Pension and Insurance Derivative Instruments - GASB 53
As of June 30, 2023 (\$ in Thousands)

Derivatives (by Type)	Net Appreciation (Depreciation) in Fair Value	Classification	Fair Value	Notional
KERS Nonhazardous - Pension				
FX Spots and Forwards	\$(152)	Investment	\$(3)	-
Futures	(816)	Investment	(2,042)	202,061
Commits and Options	-	Investment	-	-
Swaps	-	Investment	-	-
KERS Nonhazardous - Insurance				
FX Spots and Forwards	\$(95)	Investment	\$(2)	-
Futures	(181)	Investment	(476)	47,464
Commits and Options	-	Investment	-	-
Swaps	-	Investment	-	-
KERS Hazardous - Pension				
FX Spots and Forwards	\$(75)	Investment	\$(2)	-
Futures	(89)	Investment	(304)	30,667
Commits and Options	-	Investment	-	-
Swaps	-	Investment	-	-
KERS Hazardous - Insurance				
FX Spots and Forwards	\$(3)	Investment	\$1	-
Futures	(70)	Investment	(202)	20,138
Commits and Options	-	Investment	-	-
Swaps	-	Investment	-	-

SPRS Pension and Insurance Derivative Instruments - GASB 53
As of June 30, 2023 (\$ in Thousands)

Derivatives (by Type)	Net Appreciation (Depreciation) in Fair Value	Classification	Fair Value	Notional
SPRS Pension				
FX Spots and Forwards	\$(32)	Investment	\$(1)	-
Futures	(127)	Investment	(341)	33,776
Commits and Options	-	Investment	-	-
Swaps	-	Investment	-	-
SPRS Insurance				
FX Spots and Forwards	\$(22)	Investment	\$(1)	-
Futures	(26)	Investment	(77)	7,732
Commits and Options	-	Investment	-	-
Swaps	-	Investment	-	-

Derivative Instruments Subject to Counterparty Credit Risk - GASB 53
As of June 30, 2023

Pension						
Counterparty	S & P Ratings	CERS Percentage of Net Exposure	CERS Haz Percentage of Net Exposure	KERS Percentage of Net Exposure	KERS Haz Percentage of Net Exposure	SPRS Percentage of Net Exposure
Derivative Instruments - Pension						
Australia & New Zealand Banking Group Ltd	AA-	0.40%	0.15%	0.08%	0.04%	0.02%
The Bank of New York Mellon Corp	A	1.98%	0.69%	0.55%	0.19%	0.10%
Barclays PLC	BBB+	4.86%	1.90%	1.02%	0.50%	0.21%
Brown Brothers Harriman & Co	NR	0.45%	0.15%	0.12%	0.04%	0.02%
Canadian Imperial Bank of Commerce	A+	4.68%	1.83%	0.99%	0.48%	0.20%
Citigroup Inc	BBB+	9.64%	3.76%	2.03%	0.99%	0.42%
The Goldman Sachs Group Inc	BBB+	5.12%	2.00%	1.08%	0.53%	0.22%
HSBS Holding PLC	A-	6.30%	2.37%	1.46%	0.63%	0.28%
JPMorgan Chase & Co	A-	9.29%	3.54%	2.08%	0.94%	0.41%
Morgan Stanley	A-	4.94%	1.93%	1.04%	0.51%	0.21%
Royal Bank of Canada	AA-	2.63%	1.03%	0.55%	0.27%	0.11%
State Street Corp	A	2.97%	1.16%	0.62%	0.31%	0.13%
The Toronto-Dominion Bank	AA-	0.04%	0.01%	0.01%	0.00%	0.00%
UBS Group AG	A-	3.88%	1.52%	0.82%	0.40%	0.17%
TOTAL		57.18%	22.04%	12.45%	5.83%	2.50%

Derivative Instruments Subject to Counterparty Credit Risk - GASB 53
As of June 30, 2023

Insurance						
Counterparty	S & P Ratings	CERS Percentage of Net Exposure	CERS Haz Percentage of Net Exposure	KERS Percentage of Net Exposure	KERS Haz Percentage of Net Exposure	SPRS Percentage of Net Exposure
Derivative Instruments - Insurance						
Australia & New Zealand Banking Group Ltd	AA-	0.37%	0.15%	0.08%	0.04%	0.02%
The Bank of New York Mellon Corp	A	2.97%	1.03%	0.82%	0.28%	0.15%
Barclays PLC	BBB+	4.68%	1.83%	0.98%	0.48%	0.20%
Brown Brothers Harriman & Co	NR	0.57%	0.20%	0.16%	0.05%	0.03%
Canadian Imperial Bank of Commerce	A+	4.42%	1.72%	0.93%	0.46%	0.19%
Citigroup Inc	BBB+	9.10%	3.55%	1.91%	0.94%	0.39%
The Goldman Sachs Group Inc	BBB+	4.85%	1.90%	1.02%	0.50%	0.21%
HSBS Holding PLC	A-	6.71%	2.50%	1.59%	0.66%	0.31%
JPMorgan Chase & Co	A-	9.71%	3.67%	2.21%	0.97%	0.43%
Morgan Stanley	A-	4.68%	1.83%	0.98%	0.48%	0.20%
Royal Bank of Canada	AA-	2.51%	0.98%	0.53%	0.26%	0.11%
State Street Corp	A	2.80%	1.09%	0.59%	0.29%	0.12%
The Toronto-Dominion Bank	AA-	0.04%	0.01%	0.01%	0.00%	0.00%
UBS Group AG	A-	3.75%	1.46%	0.79%	0.39%	0.16%
TOTAL		57.16%	21.92%	12.60%	5.80%	2.52%

Custodial Credit Risk for Deposits

Custodial credit risk for deposits is the risk that may occur as a result of a financial institution's failure, whereby KPPA deposits may not be returned. All non-investment related bank balances are held by JP Morgan Chase and each individual account is insured by the Federal Deposit Insurance Corporation (FDIC). None of these balances were exposed to custodial credit risk as they were either insured or collateralized at required levels.

Custodial Credit Risk for Deposits - GASB 40	
As of June 30, 2023 (\$ in Thousands)	
CERS Nonhazardous Pension	\$1,282
CERS Hazardous Pension	238
KERS Nonhazardous Pension	739
KERS Hazardous Pension	120
SPRS Pension	41
CERS Nonhazardous Insurance	267
CERS Hazardous Insurance	9
KERS Nonhazardous Insurance	122
KERS Hazardous Insurance	9
SPRS Insurance	15
Clearing	420
Excess Benefit	\$-
<i>Note: All the above balances are held at JPM Chase</i>	

Custodial Credit Risk for Investments

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, KPPA will not be able to recover the value of an investment or collateral securities that are in the possession of an outside party. As of June 30, 2023, the currencies in the chart below were uninsured and unregistered, with securities held by the counterparty or by its trust department or agent but not in Trust's name. Below are total cash and securities held by Global Managers and consist of various currencies.

Custodial Credit Risk for Investments - GASB 40	
As of June 30, 2023 (\$ in Thousands)	
CERS	
CERS Nonhazardous Pension Fund Foreign Currency	\$1,139,262
CERS Hazardous Pension Fund Foreign Currency	394,304
CERS Nonhazardous Insurance Fund Foreign Currency	422,566
CERS Hazardous Insurance Fund Foreign Currency	208,415
KERS	
KERS Nonhazardous Pension Fund Foreign Currency	309,136
KERS Hazardous Pension Fund Foreign Currency	106,312
KERS Nonhazardous Insurance Fund Foreign Currency	181,188
KERS Hazardous Insurance Fund Foreign Currency	73,852
SPRS	
SPRS Pension Fund Foreign Currency	54,518
SPRS Insurance Fund Foreign Currency	31,668

Pension Plans Securities

CERS Pension Investment Summary - GASB 40 As of June 30, 2023 (\$ in Thousands)

Type	Fair Value	
	Nonhazardous	Hazardous
Core Fixed Income	\$862,405	\$299,149
Public Equities	4,327,129	1,494,663
Private Equities	689,017	229,764
Specialty Credit	1,717,669	591,592
Derivatives	(2,478)	(862)
Real Return	268,971	89,758
Real Estate	545,935	173,707
Short-Term Investments	303,178	134,692
Accounts Receivable (Payable), Net	(18,000)	(6,165)
Total	\$8,693,826	\$3,006,298

KERS Pension Investment Summary - GASB 40 As of June 30, 2023 (\$ in Thousands)

Type	Fair Value	
	Nonhazardous	Hazardous
Core Fixed Income	\$708,383	\$106,016
Public Equities	1,169,731	389,000
Private Equities	159,836	63,179
Specialty Credit	604,758	179,012
Derivatives	(2,045)	(306)
Real Return	72,726	24,325
Real Estate	179,034	50,564
Short-Term Investments	648,780	89,143
Accounts Receivable (Payable), Net	(19,168)	(2,124)
Total	\$3,522,035	\$898,809

SPRS Pension Investment Summary - GASB 40 As of June 30, 2023 (\$ in Thousands)

Type	Fair Value	
	Nonhazardous	Hazardous
Core Fixed Income		\$118,419
Public Equities		190,147
Private Equities		16,596
Specialty Credit		99,764
Derivatives		(342)
Real Return		10,693
Real Estate		21,466
Short-Term Investments		133,780
Accounts Receivable (Payable), Net		(3,016)
Total		\$587,507

Insurance Plans Securities

CERS Insurance Investment Summary - GASB 40 As of June 30, 2023 (\$ in Thousands)

Type	Fair Value	
	Nonhazardous	Hazardous
Core Fixed Income	\$327,065	\$148,991
Public Equities	1,633,030	807,897
Private Equities	268,195	150,750
Specialty Credit	641,632	318,176
Derivatives	(908)	(412)
Real Return	82,403	43,561
Real Estate	196,683	107,912
Short-Term Investments	132,269	31,789
Accounts Receivable (Payable), Net	(5,430)	(2,624)
Total	\$3,274,939	\$1,606,040

KERS Insurance Investment Summary - GASB 40 As of June 30, 2023 (\$ in Thousands)

Type	Fair Value	
	Nonhazardous	Hazardous
Core Fixed Income	\$171,536	\$72,740
Public Equities	637,103	268,599
Private Equities	94,390	53,885
Specialty Credit	289,421	129,503
Derivatives	(478)	(200)
Real Return	31,681	17,472
Real Estate	60,926	45,368
Short-Term Investments	170,091	29,906
Accounts Receivable (Payable), Net	(2,412)	(1,294)
Total	\$1,452,258	\$615,979

SPRS Insurance Investment Summary - GASB 40 As of June 30, 2023 (\$ in Thousands)

Type	Fair Value	
	Nonhazardous	Hazardous
Core Fixed Income		\$27,887
Public Equities		108,362
Private Equities		23,922
Specialty Credit		51,505
Derivatives		(78)
Real Return		6,563
Real Estate		17,319
Short-Term Investments		10,868
Accounts Receivable (Payable), Net		(514)
Total		\$245,834

Credit Risk Debt Securities

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The debt security portfolios are managed by the Office of Investments staff and by external investment management firms. All portfolio managers are required by the CERS IPS and/or the KRS IPS to maintain diversified portfolios. Each portfolio is also required to be in compliance with risk management guidelines that are assigned to them based upon the portfolio's specific mandate. In total, the Pension and Insurance Funds' debt securities portfolios are managed using the following guidelines adopted by the Board:

- Bonds, notes, or other obligations issued or guaranteed by the U.S. Government, its agencies or instrumentalities are permissible investments and may be held without restrictions.
- The duration of the core fixed income portfolios combined shall not vary from that of the system's Fixed Income Index by more than +/- 25% duration as measured by effective duration, modified duration or dollar duration except when the system's Investment Committee has determined a target duration to be used for an interim basis.
- The amount invested in the debt of a single corporation shall not exceed 5% of the total fair value of CERS' and KRS' assets.
- No public Fixed Income manager shall invest more than 5% of the fair value of assets held in any single issue Short-Term instrument with the exception of U.S. Government issued, guaranteed or agency obligations.

As of June 30, 2023, the Pension portfolio had \$831.5 million in debt securities rated below BBB- which does not include not rated (NR) or withdrawn (WD) securities.

Pension Debt Securities - GASB 40 As of June 30, 2023 (\$ in Thousands)					
Rating	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
AAA	\$207,873	\$72,715	\$162,203	\$25,275	\$27,227
AA+	8,740	3,126	5,859	1,031	997
AA	13,162	4,691	9,055	1,561	1,537
AA-	11,015	3,886	8,130	1,324	1,371
A+	15,385	5,343	12,412	1,892	2,083
A	26,441	9,236	20,812	3,221	3,491
A-	70,663	24,589	56,839	8,654	9,522
BBB+	88,622	30,861	71,103	10,839	11,908
BBB	81,093	28,561	60,285	9,801	10,186
BBB-	129,030	45,808	87,168	15,908	15,253
BB+	73,558	27,385	39,259	9,653	7,738
BB	59,932	22,588	30,788	8,588	6,646
BB-	64,488	24,051	34,781	9,481	7,526
B+	56,325	20,793	27,879	8,339	6,266
B	60,175	22,163	29,712	8,999	6,743
B-	46,043	16,790	21,348	7,039	5,069
CCC+	20,780	7,738	11,903	3,175	2,600
CCC	5,823	2,252	3,991	943	857
CCC-	416	163	310	68	65
D	183	62	34	28	13
NR	1,284,348	427,196	436,582	118,631	60,178
WD	1,012	384	207	115	50
Total Credit Risk Debt Securities	2,325,107	800,381	1,130,660	254,565	187,326
Government Agencies	9,824	3,540	6,204	1,147	1,061
Government Mortgage-Backed Securities	89,076	31,107	70,230	10,854	11,779
Government Issued Commercial Mortgage Backed	4,051	1,405	3,328	498	556
Government Collateralized Mortgage Obligations	12,474	4,510	7,678	1,449	1,317
Government Bonds	139,542	49,798	95,041	16,515	16,144
Total	\$2,580,074	\$890,741	\$1,313,141	\$285,028	\$218,183
<p><i>Note: These ratings are based on Standard & Poor's (S&P) Global Ratings. Where S&P ratings are unavailable, equivalent Fitch and Moody's Ratings are used as proxies.</i></p> <p><i>Differences due to rounding.</i></p> <p><i>Government Agencies, Government Mortgage-Backed Securities, Government Issued Commercial Mortgage Backed and Government Bonds are highly rated securities since they are backed by the US Government.</i></p> <p><i>The NR reported indicate a rating has not been assigned.</i></p>					

As of June 30, 2023, the Insurance portfolio had \$363.8 million in debt securities rated below BBB- which does not include not rated (NR) or withdrawn (WD) securities.

Insurance Debt Securities - GASB 40 As of June 30, 2023 (\$ in Thousands)					
Rating	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
AAA	\$54,971	\$24,966	\$28,440	\$11,503	\$4,717
AA+	1,695	759	821	252	150
AA	5,165	2,333	2,605	957	448
AA-	3,564	1,619	1,845	748	306
A+	5,911	2,686	3,117	1,300	504
A	9,236	4,197	4,791	1,955	792
A-	27,333	12,433	14,283	5,944	2,335
BBB+	32,388	14,733	16,921	7,045	2,767
BBB	30,076	13,615	15,500	6,035	2,589
BBB-	48,037	21,299	25,788	9,282	4,081
BB+	28,444	11,759	15,716	4,402	2,318
BB	25,065	9,815	15,003	4,060	1,928
BB-	26,617	10,328	16,604	4,684	2,011
B+	24,389	9,432	15,810	4,387	1,839
B	25,002	9,618	16,552	4,583	1,873
B-	19,162	7,233	13,410	3,642	1,408
CCC+	8,805	3,372	5,658	1,652	651
CCC	2,659	995	1,607	494	190
CCC-	203	76	118	37	15
D	86	32	75	18	6
NR	495,136	263,007	198,103	111,031	40,267
WD	316	132	169	22	28
Total Credit Risk Debt Securities	874,260	424,439	412,936	184,033	71,223
Government Agencies	4,076	1,833	2,017	683	357
Government Mortgage-Backed Securities	35,946	16,344	18,693	7,700	3,077
Government Issued Commercial Mortgage Backed	1,708	778	896	380	146
Government Collateralized Mortgage Obligations	4,646	2,088	2,290	762	407
Government Bonds	48,061	21,685	24,125	8,685	4,182
Total	\$968,697	\$467,167	\$460,957	\$202,243	\$79,392
<i>Differences due to rounding.</i>					
<i>Government Agencies, Government Mortgage-Backed Securities, Government Issued Commercial Mortgage Backed and Government Bonds are highly rated securities since they are backed by the US Government.</i>					
<i>The NR reported indicate a rating has not been assigned.</i>					
<i>The WD reported are ratings which have been withdrawn.</i>					

Concentration of Credit Risk Debt Securities

Concentration of credit risk is the risk of loss attributed to the magnitude of an entity's exposure in a single issuer. The total debt securities portfolio is managed using the following general guidelines adopted by the CERS and KRS Boards: bonds, notes, or other obligations issued or guaranteed by the U.S. Government, its agencies, or instrumentalities are permissible investments and may be held without restrictions. The amount invested in the debt of a single issuer shall not exceed 5% of the total fair value of the Plans' fixed income assets.

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. Duration measures the sensitivity of the market prices of fixed income securities to changes in the yield curve and can be measured using two methodologies: effective or modified duration. Effective duration uses the present value of cash flows, weighted for those cash flows as a percentage of the investment's full price, and makes adjustments for any bond features that would retire the bonds prior to maturity. The modified duration, similar to effective duration, measures the sensitivity of the market prices to changes in the yield curve, but does not assume the securities will be called prior to maturity.

Below are the fair values and modified durations for the combined fixed income securities.

Interest Rate Risk - Modified Duration - GASB 40				
As of June 30, 2023 (\$ in Thousands)				
CERS Pension				
TYPE	Fair Value	Weighted Avg Modified Duration	Fair Value	Weighted Avg Modified Duration
	Nonhazardous		Hazardous	
Asset Backed Securities	\$171,506	1.25	\$59,618	1.26
Financial Institutions	262,165	2.13	91,755	2.16
Collateralized Mortgage Obligations	26,945	1.70	9,655	1.68
Commercial Mortgage Backed Securities	72,219	2.41	25,294	2.42
Corporate Bonds - Industrial	463,720	3.28	170,564	3.36
Corporate Bonds - Utilities	61,802	3.24	21,870	3.26
Agencies	9,824	3.10	3,541	3.13
Government Bonds - Sovereign Debt	2,286	7.82	876	7.70
Mortgage Back Securities Pass-through - Not CMO's	89,885	6.25	31,412	6.24
Local Authorities - Municipal Bonds	11,852	8.92	4,470	9.04
Supranational - Multi-National Bonds	3,297	3.02	1,287	3.02
Treasuries	139,542	5.39	49,798	5.40
Unclassified	1,261,557	0.05	419,345	0.06
Other	3,474	3.38	1,256	3.46
Total	\$2,580,074	1.66	\$890,741	1.74

Interest Rate Risk - Modified Duration - GASB 40				
As of June 30, 2023 (\$ in Thousands)				
KERS Pension				
TYPE	Fair Value	Weighted Avg Modified Duration	Fair Value	Weighted Avg Modified Duration
	Nonhazardous		Hazardous	
Asset Backed Securities	\$136,084	1.22	\$21,123	1.23
Financial Institutions	181,697	2.21	33,993	2.11
Collateralized Mortgage Obligations	17,802	1.85	3,171	1.73
Commercial Mortgage Backed Securities	55,900	2.36	8,766	2.40
Corporate Bonds - Industrial	276,560	3.28	63,518	3.26
Corporate Bonds - Utilities	47,629	3.21	7,744	3.28
Agencies	6,204	2.83	1,147	3.05
Government Bonds - Sovereign Debt	719	9.83	243	8.01
Mortgage Back Securities Pass-through - Not CMO's	70,551	6.30	10,942	6.26
Local Authorities - Municipal Bonds	4,697	7.30	1,292	8.73
Supranational - Multi-National Bonds	693	3.02	340	3.02
Treasuries	95,041	5.29	16,515	5.37
Unclassified	417,566	0.03	115,805	0.08
Other	1,998	3.24	429	3.26
Total	\$1,313,141	2.15	\$285,028	1.90

Interest Rate Risk - Modified Duration - GASB 40**As of June 30, 2023 (\$ in Thousands)****SPRS Pension**

TYPE	Fair Value	Weighted Avg
		Modified Duration
Asset Backed Securities	\$22,936	1.22
Financial Institutions	32,687	2.18
Collateralized Mortgage Obligations	3,032	1.84
Commercial Mortgage Backed Securities	9,389	2.37
Corporate Bonds - Industrial	54,513	3.27
Corporate Bonds - Utilities	8,182	3.25
Agencies	1,061	2.86
Government Bonds - Sovereign Debt	135	9.47
Mortgage Back Securities Pass-through - Not CMO's	11,837	6.30
Local Authorities - Municipal Bonds	851	7.54
Supranational - Multi-National Bonds	142	3.02
Treasuries	16,144	5.30
Unclassified	56,909	0.07
Other	365	3.19
Total	\$218,183	2.33

Interest Rate Risk - Modified Duration - GASB 40**As of June 30, 2023 (\$ in Thousands)****CERS Insurance**

TYPE	Fair Value	Weighted Avg	Fair Value	Weighted Avg
		Modified Duration		Modified Duration
	Nonhazardous		Hazardous	
Asset Backed Securities	\$61,877	1.28	\$28,032	1.28
Financial Institutions	102,479	2.17	44,549	2.17
Collateralized Mortgage Obligations	9,684	1.64	4,363	1.65
Commercial Mortgage Backed Securities	28,368	2.34	12,888	2.34
Corporate Bonds - Industrial	185,723	3.32	75,902	3.31
Corporate Bonds - Utilities	24,215	3.28	10,779	3.25
Agencies	4,076	3.31	1,834	3.30
Government Bonds - Sovereign Debt	775	8.78	341	8.83
Mortgage Back Securities Pass-through - Not CMO's	36,242	6.23	16,475	6.23
Local Authorities - Municipal Bonds	4,125	8.68	1,825	8.62
Supranational - Multi-National Bonds	1,098	2.93	477	2.93
Treasuries	48,061	5.58	21,685	5.58
Unclassified	460,740	0.05	247,482	0.04
Other	1,234	3.34	535	3.35
Total	\$968,697	1.72	\$467,167	1.54

Interest Rate Risk - Modified Duration - GASB 40**As of June 30, 2023 (\$ in Thousands)****KERS Insurance**

TYPE	Fair Value	Weighted Avg	Fair Value	Weighted Avg
		Modified Duration		Modified Duration
		Nonhazardous		Hazardous
Asset Backed Securities	\$32,848	1.25	\$13,486	1.22
Financial Institutions	59,642	2.06	21,686	2.08
Collateralized Mortgage Obligations	4,829	1.67	1,691	1.78
Commercial Mortgage Backed Securities	14,699	2.33	5,977	2.29
Corporate Bonds - Industrial	108,115	3.12	33,008	3.02
Corporate Bonds - Utilities	12,733	3.29	5,012	3.23
Agencies	2,017	3.27	683	3.09
Government Bonds - Sovereign Debt	343	9.05	55	11.96
Mortgage Back Securities Pass-through - Not CMO's	18,826	6.24	7,723	6.28
Local Authorities - Municipal Bonds	1,880	8.39	392	6.13
Supranational - Multi-National Bonds	455	2.93	20	2.93
Treasuries	24,125	5.57	8,686	5.53
Unclassified	179,784	0.10	103,623	0.03
Other	661	3.06	201	2.81
Total	\$460,957	1.92	\$202,243	1.48

Interest Rate Risk - Modified Duration - GASB 40**As of June 30, 2023 (\$ in Thousands)****SPRS Insurance**

TYPE	Weighted Avg	
	Fair Value	Modified Duration
Asset Backed Securities	\$5,269	1.29
Financial Institutions	8,450	2.18
Collateralized Mortgage Obligations	845	1.63
Commercial Mortgage Backed Securities	2,433	2.35
Corporate Bonds - Industrial	14,707	3.34
Corporate Bonds - Utilities	2,037	3.26
Agencies	357	3.33
Government Bonds - Sovereign Debt	71	8.68
Mortgage Back Securities Pass-through - Not CMO's	3,104	6.23
Local Authorities - Municipal Bonds	374	8.79
Supranational - Multi-National Bonds	103	2.93
Treasuries	4,182	5.59
Unclassified	37,355	0.05
Other	105	3.40
Total	\$79,392	1.74

Foreign Currency Risk

Foreign currency risk is the risk that occurs if exchange rates adversely affect the value of a non-U.S. dollar based investment or deposit within the portfolios. Currency risk exposure, or exchange rate risk, primarily resides with the portfolios Non-U.S. equity holdings, but also affects other asset classes. Neither KRS or CERS have a formal policy to limit foreign currency risk; however, some individual managers are given the latitude to hedge some currency exposures. All foreign currency transactions are classified as Short-Term Investments. All gains and losses associated with these transactions are recorded in the Net Appreciation (Depreciation) in Fair Value of Investments on the combining financial statements.

Foreign Currency Risk for the Pension - GASB 40

As of June 30, 2023 (\$ in Thousands)

	CERS		KERS		SPRS
	Nonhazardous	Hazardous	Nonhazardous	Hazardous	
Australian Dollar	\$29,149	\$10,121	\$8,031	\$2,722	\$1,423
Brazilian Real	20,506	7,154	5,598	1,922	996
Canadian Dollar	50,291	17,464	13,855	4,696	2,454
Chinese Yuan Renminbi	198	77	41	20	8
Colombian Peso	-	-	-	-	-
Czech Koruna	55	19	15	5	3
Danish Krone	47,598	16,512	13,137	4,441	2,325
Egyptian Pound	515	179	142	48	25
Euro	361,146	123,415	95,825	33,496	16,631
Hong Kong Dollar	92,125	31,959	25,426	8,596	4,501
Hungarian Forint	5,200	1,804	1,435	485	254
Indian Rupee	35,782	12,447	9,824	3,346	1,744
Indonesian Rupiah	24,579	8,754	6,439	2,344	1,171
Israeli Shekel	4,070	1,412	1,123	380	199
Japanese Yen	126,906	44,207	34,748	11,882	6,176
Malaysian Ringgit	3,041	1,159	682	307	135
Mexican Peso	7,577	2,701	1,981	723	361
New Taiwan Dollar	43,250	15,004	11,937	4,036	2,113
New Zealand Dollar	(112)	(44)	(24)	(12)	(5)
Norwegian Krone	6,436	2,357	1,588	628	298
Philippine Peso	1,809	706	380	186	78
Pound Sterling	119,679	41,516	33,033	11,167	5,847
Singapore Dollar	7,167	2,435	2,056	657	357
South African Rand	5,762	1,999	1,590	538	281
South Korean Won	33,021	11,570	8,940	3,107	1,598
Swedish Krona	23,430	8,128	6,468	2,186	1,144
Swiss Franc	72,398	25,115	19,985	6,756	3,537
Thai Baht	15,169	5,262	4,187	1,415	741
Turkish Lira	649	225	179	61	32
UAE Dirham	1,866	647	515	174	91
Total Foreign Investment Securities	1,139,262	394,304	309,136	106,312	54,518
U.S. Dollar	7,554,564	2,611,994	3,212,899	792,497	532,989
Total Investment Securities	\$8,693,826	\$3,006,298	\$3,522,035	\$898,809	\$587,507

Foreign Currency Risk for the Insurance Funds- GASB 40
As of June 30, 2023 (\$ in Thousands)

	CERS		KERS		SPRS
	Nonhazardous	Hazardous	Nonhazardous	Hazardous	
Australian Dollar	\$10,814	\$5,295	\$4,868	\$1,896	\$800
Brazilian Real	7,409	3,616	3,327	1,265	553
Canadian Dollar	19,578	9,586	8,813	3,432	1,449
Chinese Yuan Renminbi	67	29	27	1	6
Czech Koruna	24	12	11	4	2
Danish Krone	17,696	8,671	7,970	3,120	1,308
Egyptian Pound	144	71	65	25	11
Euro	134,745	67,764	51,812	24,195	10,259
Hong Kong Dollar	33,352	16,342	15,021	5,880	2,465
Hungarian Forint	1,881	922	847	332	139
Indian Rupee	12,901	6,309	5,802	2,238	958
Indonesian Rupiah	8,717	4,181	3,867	1,279	677
Israeli Shekel	1,534	752	691	270	113
Japanese Yen	47,660	23,280	21,416	8,193	3,549
Malaysian Ringgit	963	431	407	55	86
Mexican Peso	2,660	1,274	1,179	386	207
New Taiwan Dollar	15,611	7,649	7,031	2,752	1,154
New Zealand Dollar	(34)	(15)	(14)	(1)	(3)
Norwegian Krone	2,207	1,031	961	247	181
Philippine Peso	610	265	253	11	57
Pound Sterling	45,183	22,140	20,349	7,966	3,339
Singapore Dollar	2,631	1,310	1,198	523	187
South African Rand	2,076	1,017	935	366	153
South Korean Won	12,345	6,004	5,530	2,047	929
Swedish Krona	8,715	4,270	3,925	1,537	644
Swiss Franc	26,515	12,993	11,942	4,675	1,960
Thai Baht	5,596	2,742	2,520	987	414
Turkish Lira	235	115	106	42	17
UAE Dirham	731	359	329	129	54
Total Foreign Investment Securities	422,566	208,415	181,188	73,852	31,668
U.S. Dollar	2,852,373	1,397,625	1,271,070	542,127	214,166
Total Investment Securities	\$3,274,939	\$1,606,040	\$1,452,258	\$615,979	\$245,834

Fair Value Measurement and Applications (GASB 72)

In accordance with GASB *Statement No. 72, Fair Value Measurement and Application*, KPPA provides this additional disclosure regarding the fair value of its Pension and Insurance investments. KPPA categorizes its fair value measurements within the fair value hierarchy established by GAAP.

KPPA defined the Fair Value Hierarchy and Levels as follows:

Level 1

Quoted prices (unadjusted) in an active market for identical assets or liabilities that KPPA has the ability to access at the measurement date (e.g., prices derived from NYSE, NASDAQ, Chicago Board of Trade, and Pink Sheets). Debt and equity securities classified in Level 1 of the fair value hierarchy are valued using quoted prices (unadjusted) in an active market for identical assets or liabilities that KPPA has the ability to access at the measurement date.

Level 2

Inputs (other than quoted prices included within Level 1) that are observable for an asset or liability, either directly or indirectly. These inputs can include matrix pricing, market corroborated pricing and inputs such as yield curves and indices.

Level 3

Unobservable inputs for an asset or liability, which generally results in using the best information available for the valuation of the assets or liabilities being reported.

Net Asset Value (NAV)

The remaining investments not categorized under the fair value hierarchy are shown at net asset value (NAV). These are investments in non-governmental entities for which a readily determinable fair value is not available, such as member units or an ownership interest in partners' capital to which a proportionate share of net assets is attributed.

Fair Value Measurements and Application (GASB 72) Pension As of June 30, 2023 (\$ in Thousands)

Asset Type	CERS Nonhazardous			Total	CERS Hazardous			Total
	Level			Fair Value	Level			Fair Value
	1	2	3		1	2	3	
Public Equity								
Emerging Markets	\$175,403	\$-	\$-	\$175,403	\$60,848	\$-	\$-	\$60,848
US Equity	2,611,245	-	-	2,611,245	897,812	-	-	897,812
Non-US Equity	1,043,031	-	502,197	1,545,228	361,831	-	175,812	537,643
Total Public Equity	3,829,679	-	502,197	4,331,876	1,320,491	-	175,812	1,496,303
Fixed Income								
Agencies	187	1,579	-	1,766	65	548	-	613
Asset-Backed	-	173,835	-	173,835	-	60,393	-	60,393
Bank & Finance	-	162,772	131,959	294,731	-	57,000	45,375	102,375
Cash & Cash Equivalent	14,956	12,892	-	27,848	5,188	4,470	-	9,658
Corporate	1,638	536,483	3,192	541,313	639	197,216	1,119	198,974
Healthcare	-	28,351	-	28,351	-	10,216	-	10,216
Insurance	-	5,231	-	5,231	-	1,873	-	1,873
Municipals	-	56,023	-	56,023	-	19,885	-	19,885
Sovereign Debt	-	35,889	-	35,889	-	13,983	-	13,983
US Government	114,528	98,071	-	212,599	40,012	34,229	-	74,241
Total Fixed Income	131,309	1,111,126	135,151	1,377,586	45,904	399,813	46,494	492,211
Derivatives								
Futures	(2,457)	-	-	(2,457)	(853)	-	-	(853)
Total Derivatives	(2,457)	-	-	(2,457)	(853)	-	-	(853)
Options	-	-	-	-	-	-	-	-
Real Return								
Real Return	101,240	-	296	101,536	34,864	-	94	34,958
Total Real Return	101,240	-	296	101,536	34,864	-	94	34,958
Total Investments at Fair Value	4,059,771	1,111,126	637,644	5,808,541	1,400,406	399,813	222,400	2,022,619
Investments Measured at NAV								
Specialty Credit	-	-	-	1,255,568	-	-	-	417,587
Private Equity	-	-	-	694,388	-	-	-	232,064
Real Estate	-	-	-	545,935	-	-	-	173,707
Real Return	-	-	-	167,200	-	-	-	54,268
Fixed Income	-	-	-	24,552	-	-	-	8,517
Non US Equity	-	-	-	20,497	-	-	-	7,110
Emerging Markets	-	-	-	4,748	-	-	-	1,647
US Equity	-	-	-	25,435	-	-	-	8,723
Total Investments Measured at NAV	-	-	-	2,738,323	-	-	-	903,623
Cash and Accruals	-	-	-	146,962	-	-	-	80,056
Total Investments	\$4,059,771	\$1,111,126	\$637,644	\$8,693,826	\$1,400,406	\$399,813	\$222,400	\$3,006,298

Note: Cash Equivalents include publicly traded investment grade corporate bonds; variable rate demand notes; government and agency bonds; mortgages; municipal bonds; Short Term Investment Funds (STIF); money market funds or instruments (including, but not limited to, certificates of deposit, bank notes, deposit notes, bankers' acceptances and commercial paper); and repurchase agreements.

Fair Value Measurements and Application (GASB 72) Pension As of June 30, 2023 (\$ in Thousands)

Asset Type	KERS Nonhazardous			Total	KERS Hazardous			Total	SPRS			Total
	Level			Fair Value	Level			Fair Value	Level			Fair Value
	1	2	3		1	2	3		1	2	3	
Public Equity												
Emerging Markets	\$48,410	\$-	\$-	\$48,410	\$16,366	\$-	\$-	\$16,366	\$8,569	\$-	\$-	\$8,569
US Equity	719,671	-	-	719,671	235,016	-	-	235,016	114,894	-	-	114,894
Non-US Equity	287,869	-	115,076	402,945	97,322	-	40,727	138,049	50,956	-	15,947	66,903
Total Public Equity	1,055,950	-	115,076	1,171,026	348,704	-	40,727	389,431	174,419	-	15,947	190,366
Fixed Income												
Agencies	154	1,297	-	1,451	23	194	-	217	26	217	-	243
Asset-Backed	-	137,491	-	137,491	-	21,374	-	21,374	-	23,246	-	23,246
Bank & Finance	-	130,260	41,264	171,524	-	20,209	18,949	39,158	-	22,045	10,885	32,930
Cash & Cash Equivalent	12,285	10,610	-	22,895	1,839	1,585	-	3,424	2,054	1,773	-	3,827
Corporate	344	355,946	2,248	358,538	169	71,641	394	72,204	71	66,574	389	67,034
Healthcare	-	19,261	-	19,261	-	3,524	-	3,524	-	3,392	-	3,392
Insurance	-	3,678	-	3,678	-	639	-	639	-	634	-	634
Sovereign Debt	-	7,935	-	7,935	-	3,708	-	3,708	-	1,608	-	1,608
US Government	90,080	77,606	-	167,686	13,949	11,960	-	25,909	15,111	13,012	-	28,123
Utilities	-	39,634	-	39,634	-	6,726	-	6,726	-	6,741	-	6,741
Total Fixed Income	102,863	783,718	43,512	930,093	15,980	141,560	19,343	176,883	17,262	139,242	11,274	167,778
Derivatives												
Futures	(2,042)	-	-	(2,042)	(304)	-	-	(304)	(341)	-	-	(341)
Total Derivatives	(2,042)	-	-	(2,042)	(304)	-	-	(304)	(341)	-	-	(341)
Real Return												
Real Return	40,264	-	95	40,359	10,085	-	25	10,110	4,027	-	10	4,037
Total Real Return	40,264	-	95	40,359	10,085	-	25	10,110	4,027	-	10	4,037
Total Investments at Fair Value	1,197,035	783,718	158,683	2,139,436	374,465	141,560	60,095	576,120	195,367	139,242	27,231	361,840
Investments Measured at NAV												
Specialty Credit	-	-	-	420,006	-	-	-	115,042	-	-	-	57,080
Private Equity	-	-	-	162,337	-	-	-	63,245	-	-	-	17,235
Real Estate	-	-	-	179,034	-	-	-	50,564	-	-	-	21,466
Real Return	-	-	-	31,917	-	-	-	14,661	-	-	-	6,222
Fixed Income	-	-	-	20,167	-	-	-	3,018	-	-	-	3,371
Non US Equity	-	-	-	5,657	-	-	-	1,913	-	-	-	1,001
Emerging Markets	-	-	-	1,310	-	-	-	443	-	-	-	232
US Equity	-	-	-	6,196	-	-	-	2,133	-	-	-	1,018
Total Investments Measured at NAV	-	-	-	826,624	-	-	-	251,019	-	-	-	107,625
Cash and Accruals	-	-	-	555,975	-	-	-	71,670	-	-	-	118,042
Total Investments	\$1,197,035	\$783,718	\$158,683	\$3,522,035	\$374,465	\$141,560	\$60,095	\$898,809	\$195,367	\$139,242	\$27,231	\$587,507

Note: The fair value hierarchies do not reflect cash and accruals thus totals differ from the Investment Summaries.

Note: Cash Equivalents include publicly traded investment grade corporate bonds; variable rate demand notes; government and agency bonds; mortgages; municipal bonds; Short Term Investment Funds (STIF); money market funds or instruments (including, but not limited to, certificates of deposit, bank notes, deposit notes, bankers' acceptances and commercial paper); and repurchase agreements.

The investments measured at net asset value (NAV) are presented in the chart below:

Fair Value Measurements and Application (GASB 72) Pension
As of June 30, 2023 (\$ in Thousands)

Asset Type	CERS Nonhazardous				CERS Hazardous			
	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Specialty Credit ⁽¹⁾	\$1,255,568	\$150,428	Daily - Quarterly	90 Days	\$417,587	\$50,178	Daily - Quarterly	90 Days
Real Estate ⁽²⁾	545,935	132,577			173,707	41,887		
Real Return ⁽³⁾	167,200	69,118	Daily	30 - 60 Days	54,268	26,345	Daily	30 - 60 Days
Private Equity ⁽⁴⁾	694,388	192,519			232,064	62,173		
Fixed Income ⁽⁵⁾	24,552	-	Daily		8,517	-	Daily	
Non US Equity ⁽⁵⁾	20,497	-	Daily		7,110	-	Daily	
US Equity ⁽⁵⁾	25,435	-	Daily		8,723	-	Daily	
Emerging Markets ⁽⁵⁾	4,748	-	Daily		1,647	-	Daily	
Total Investments Measured at NAV	\$2,738,323	\$544,642			\$903,623	\$180,583		

⁽¹⁾ This type includes 13 high yield specialty credit managers with multiple strategies. These managers may invest in U.S. or non-U.S. investment grade corporate credit, U.S. or non U.S. non-investment grade corporate credit, including both bonds and bank loans, municipal bonds, non-U.S. sovereign debt, mortgages including residential mortgage backed securities, commercial mortgage backed securities and whole loans, asset-backed securities and emerging market debt.

⁽²⁾ This type includes 12 real estate funds that invest primarily in U.S. commercial real estate; however, there is one manager who invests solely in non-U.S. commercial real estate. The fair value of the investments have been determined using the NAV per share of the Plan's ownership interest and in the partners' capital. Distributions from each fund will be received as the underlying investments of the funds are liquidated. It is expected that the funds will be liquidated over the next 7 to 10 years. Because it is not probable that any individual investment will be sold, the fair value of each individual investment has been determined using the NAV per share of the Plan's ownership interest in the partners' capital. Due to restrictions in the contract, redemptions are not likely until the assets of the fund are liquidated.

⁽³⁾ This type includes 11 real return managers that invest in multiple strategies such as infrastructure, agriculture, royalties, commodities, and natural resources. These investments are intended to provide both favorable risk-adjusted returns and correlation with inflation to help with the hedging of inflation for the broader plan. This group of managers also includes any hedge fund managers remaining in the portfolio which have all been terminated and are only awaiting payouts.

⁽⁴⁾ This type includes 35 managers with multiple strategies. These investments cannot be redeemed. Instead, the investments are redeemed throughout the life of the investment. Distributions are received through the liquidation of the underlying assets of the fund. It is expected that each fund will remain invested for a period of 5 to 10 years. It is probable that all of the investments in this type will be sold at an amount different from the NAV per share of the Plan's ownership interest in partners' capital. Therefore, the fair values of the investment in this asset class have been determined using recent observable transaction information.

⁽⁵⁾ This type includes short-term commingled investment instruments issued by the US Government, Federal agencies, sponsored agencies or sponsored corporations.

The investments measured at net asset value (NAV) are presented in the chart below:

Fair Value Measurements and Application (GASB 72) Pension
As of June 30, 2023 (\$ in Thousands)

Asset Type	KERS Nonhazardous				KERS Hazardous				SPRS			
	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Specialty Credit ⁽¹⁾	\$420,006	\$42,235	Daily - Quarterly	90 Days	\$115,042	\$14,009	Daily - Quarterly	90 Days	\$57,080	\$4,514	Daily - Quarterly	90 Days
Real Estate ⁽²⁾	179,034	38,325			50,564	11,991			21,466	4,956		
Real Return ⁽³⁾	31,917	22,648	Daily	30 - 60 Days	14,661	3,212	Daily	30 - 60 Days	6,222	5,897	Daily	30 - 60 Days
Private Equity ⁽⁴⁾	162,337	37,797			63,245	16,422			17,235	4,884		
Fixed Income ⁽⁵⁾	20,167	-	Daily		3,018	-	Daily		3,371	-	Daily	
Non US Equity ⁽⁵⁾	5,657	-	Daily		1,913	-	Daily		1,001	-	Daily	
Emerging Markets ⁽⁵⁾	1,310	-	Daily		443	-	Daily		232	-	Daily	
US Equity ⁽⁵⁾	6,196	-	Daily		2,133	-	Daily		1,018	-	Daily	
Total Investments Measured at NAV	\$826,624	\$141,005			\$251,019	\$45,634			\$107,625	\$20,251		

⁽¹⁾ This type includes 13 high yield specialty credit managers with multiple strategies. These managers may invest in U.S. or non-U.S. investment grade corporate credit, U.S. or non U.S. non-investment grade corporate credit, including both bonds and bank loans, municipal bonds, non-U.S. sovereign debt, mortgages including residential mortgage backed securities, commercial mortgage backed securities and whole loans, asset-backed securities and emerging market debt.

⁽²⁾ This type includes 12 real estate funds that invest primarily in U.S. commercial real estate; however, there is one manager who invests solely in non-U.S. commercial real estate. The fair value of the investments have been determined using the NAV per share of the Plan's ownership interest and in the partners' capital. Distributions from each fund will be received as the underlying investments of the funds are liquidated. It is expected that the funds will be liquidated over the next 7 to 10 years. Because it is not probable that any individual investment will be sold, the fair value of each individual investment has been determined using the NAV per share of the Plan's ownership interest in the partners' capital. Due to restrictions in the contract, redemptions are not likely until the assets of the fund are liquidated.

⁽³⁾ This type includes 11 real return managers that invest in multiple strategies such as infrastructure, agriculture, royalties, commodities, and natural resources. These investments are intended to provide both favorable risk-adjusted returns and correlation with inflation to help with the hedging of inflation for the broader plan. This group of managers also includes any hedge fund managers remaining in the portfolio which have all been terminated and are only awaiting payouts.

⁽⁴⁾ This type includes 35 managers with multiple strategies. These investments cannot be redeemed. Instead, the investments are redeemed throughout the life of the investment. Distributions are received through the liquidation of the underlying assets of the fund. It is expected that each fund will remain invested for a period of 5 to 10 years. It is probable that all of the investments in this type will be sold at an amount different from the NAV per share of the Plan's ownership interest in partners' capital. Therefore, the fair values of the investment in this asset class have been determined using recent observable transaction information.

⁽⁵⁾ This type includes short-term commingled investment instruments issued by the US Government, Federal agencies, sponsored agencies or sponsored corporations.

Fair Value Measurements and Application (GASB 72) Insurance As of June 30, 2023 (\$ in Thousands)

Asset Type	CERS Nonhazardous			Total	CERS Hazardous			Total
	Level				Level			
	1	2	3	Fair Value	1	2	3	Fair Value
Public Equity								
Emerging Markets	\$63,601	\$-	\$-	\$63,601	\$31,165	\$-	\$-	\$31,165
US Equity	977,621	-	-	977,621	485,287	-	-	485,287
Non-US Equity	387,713	-	-	387,713	189,980	-	-	189,980
Total Public Equity	1,428,935	-	-	1,428,935	706,432	-	-	706,432
Fixed Income								
Agencies	197	628	-	825	90	286	-	376
Asset-Backed	-	62,606	-	62,606	-	28,399	-	28,399
Bank & Finance	-	63,438	50,686	114,124	-	28,579	19,772	48,351
Cash & Cash Equivalent	4,936	5,726	-	10,662	2,249	2,606	-	4,855
Corporate	552	215,180	1,158	216,890	240	90,053	515	90,808
Healthcare	-	10,450	-	10,450	-	4,575	-	4,575
Insurance	-	1,793	-	1,793	-	797	-	797
Mortgage-backed securities	-	-	-	-	-	-	-	-
Municipals	-	21,754	-	21,754	-	9,820	-	9,820
Sovereign Debt	-	11,274	-	11,274	-	4,904	-	4,904
US Government	40,447	39,550	-	79,997	18,383	17,986	-	36,369
Total Fixed Income	46,132	432,399	51,844	530,375	20,962	188,005	20,287	229,254
Derivatives								
Futures	(902)	-	-	(902)	(410)	-	-	(410)
Total Derivatives	(902)	-	-	(902)	(410)	-	-	(410)
Real Return								
Real Return	26,908	-	-	26,908	13,867	-	-	13,867
Total Real Return	26,908	-	-	26,908	13,867	-	-	13,867
Total Investments at Fair Value	1,501,073	432,399	51,844	1,985,316	740,851	188,005	20,287	949,143
Investments Measured at NAV								
Specialty Credit	-	-	-	459,238	-	-	-	246,881
Private Equity	-	-	-	273,481	-	-	-	153,655
Real Estate	-	-	-	196,683	-	-	-	107,911
Real Return	-	-	-	51,674	-	-	-	27,545
Fixed Income	-	-	-	7,551	-	-	-	3,440
Non US Equity	-	-	-	213,696	-	-	-	106,177
Emerging Markets	-	-	-	1,865	-	-	-	914
US Equity	-	-	-	9,664	-	-	-	4,884
Total Investments Measured at NAV	-	-	-	1,213,852	-	-	-	651,407
Cash and Accruals	-	-	-	75,771	-	-	-	5,490
Total Investments	\$1,501,073	\$432,399	\$51,844	\$3,274,939	\$740,851	\$188,005	\$20,287	\$1,606,040

Note: Cash Equivalents include publicly traded investment grade corporate bonds; variable rate demand notes; government and agency bonds; mortgages; municipal bonds; Short Term Investment Funds (STIF); money market funds or instruments (including, but not limited to, certificates of deposit, bank notes, deposit notes, bankers' acceptances and commercial paper); and repurchase agreements.

Fair Value Measurements and Application (GASB 72) Insurance As of June 30, 2023 (\$ in Thousands)

	KERS Nonhazardous			Total	KERS Hazardous			Total	SPRS			Total
	Level				Level				Level			
Asset Type	1	2	3	Fair Value	1	2	3	Fair Value	1	2	3	Fair Value
Public Equity												
Emerging Markets	\$28,644	\$-	\$-	\$28,644	\$11,214	\$-	\$-	\$11,214	\$4,700	\$-	\$-	\$4,700
US Equity	385,831	-	-	385,831	161,396	-	-	161,396	65,614	-	-	65,614
Non-US Equity	174,614	-	-	174,614	68,358	-	-	68,358	28,654	-	-	28,654
Total Public Equity	589,089	-	-	589,089	240,968	-	-	240,968	98,968	-	-	98,968
Fixed Income												
Agencies	104	329	-	433	44	140	-	184	17	54	-	71
Asset-Backed	-	33,205	-	33,205	-	13,684	-	13,684	-	5,324	-	5,324
Bank & Finance	-	33,301	39,480	72,781	-	13,665	10,181	23,846	-	5,372	3,889	9,261
Cash & Cash Equivalent	2,589	2,994	-	5,583	1,098	1,257	-	2,355	421	489	-	910
Corporate	229	118,023	633	118,885	10	38,859	232	39,101	52	17,350	98	17,500
Healthcare	-	5,462	-	5,462	-	1,904	-	1,904	-	881	-	881
Insurance	-	922	-	922	-	340	-	340	-	153	-	153
Mortgage-backed securities	-	-	-	-	-	-	-	-	-	-	-	-
Municipals	-	11,144	-	11,144	-	4,200	-	4,200	-	1,878	-	1,878
Sovereign Debt	-	4,708	-	4,708	-	277	-	277	-	1,055	-	1,055
US Government	20,994	20,583	-	41,577	8,589	8,500	-	17,089	3,466	3,385	-	6,851
Total Fixed Income	23,916	230,671	40,113	294,700	9,741	82,826	10,413	102,980	3,956	35,941	3,987	43,884
Derivatives												
Futures	(476)	-	-	(476)	(202)	-	-	(202)	(77)	-	-	(77)
Total Derivatives	(476)	-	-	(476)	(202)	-	-	(202)	(77)	-	-	(77)
Real Return												
Real Return	11,905	-	-	11,905	5,444	-	-	5,444	2,125	-	-	2,125
Total Real Return	11,905	-	-	11,905	5,444	-	-	5,444	2,125	-	-	2,125
Total Investments at Fair Value	624,434	230,671	40,113	895,218	255,951	82,826	10,413	349,190	104,972	35,941	3,987	144,900
Investments Measured at NAV												
Specialty Credit	-	-	-	177,828	-	-	-	103,315	-	-	-	37,223
Private Equity	-	-	-	96,192	-	-	-	55,107	-	-	-	24,386
Real Estate	-	-	-	60,926	-	-	-	45,368	-	-	-	17,319
Real Return	-	-	-	18,622	-	-	-	11,104	-	-	-	4,091
Fixed Income	-	-	-	3,960	-	-	-	1,679	-	-	-	644
Non US Equity	-	-	-	52,287	-	-	-	29,313	-	-	-	10,097
Emerging Markets	-	-	-	840	-	-	-	329	-	-	-	137
US Equity	-	-	-	3,598	-	-	-	1,543	-	-	-	625
Total Investments Measured at NAV	-	-	-	414,253	-	-	-	247,758	-	-	-	94,522
Cash and Accruals												
Cash and Accruals	-	-	-	142,787	-	-	-	19,031	-	-	-	6,412
Total Investments	\$624,434	\$230,671	\$40,113	\$1,452,258	\$255,951	\$82,826	\$10,413	\$615,979	\$104,972	\$35,941	\$3,987	\$245,834

Note: The fair value hierarchies do not reflect cash and accruals thus totals differ from the Investment Summaries.

Note: Cash Equivalents include publicly traded investment grade corporate bonds; variable rate demand notes; government and agency bonds; mortgages; municipal bonds; Short Term Investment Funds (STIF); money market funds or instruments (including, but not limited to, certificates of deposit, bank notes, deposit notes, bankers' acceptances and commercial paper); and repurchase agreements.

The investments measured at net asset value (NAV) are presented in the chart below:

Fair Value Measurements and Application (GASB 72) Insurance As of June 30, 2023 (\$ in Thousands)								
Asset Type	Fair Value	CERS Nonhazardous				CERS Hazardous		
		Unfunded Commitments	Redemption Frequency	Redemption Notice Period		Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Specialty Credit ⁽¹⁾	\$459,238	\$51,167	Daily - Quarterly	90 Days	\$246,881	\$27,542	Daily - Quarterly	90 Days
Real Estate ⁽²⁾	196,683	48,780			107,911	26,717		
Real Return ⁽³⁾	51,674	34,994	Daily	30 - 60 Days	27,545	12,901	Daily	30 - 60 Days
Private Equity ⁽⁴⁾	273,481	89,782			153,655	48,867		
Fixed Income ⁽⁵⁾	7,551	-	Daily		3,440	-	Daily	
Non US Equity ⁽⁵⁾	213,696	-	Daily		106,177	-	Daily	
Emerging Markets ⁽⁵⁾	1,865		Daily		914		Daily	
US Equity ⁽⁵⁾	9,664	-	Daily		4,884	-	Daily	
Total Investments Measured at NAV	\$1,213,852	\$224,723			\$651,407	\$116,027		
⁽¹⁾ This type includes 13 high yield specialty credit managers with multiple strategies. These managers may invest in U.S. or non-U.S. investment grade corporate credit, U.S. or non U.S. non-investment grade corporate credit, including both bonds and bank loans, municipal bonds, non-U.S. sovereign debt, mortgages including residential mortgage backed securities, commercial mortgage backed securities and whole loans, asset-backed securities and emerging market debt.								
⁽²⁾ This type includes 12 real estate funds that invest primarily in U.S. commercial real estate; however, there is one manager who invests solely in non-U.S. commercial real estate. The fair value of the investments have been determined using the NAV per share of the Plan's ownership interest and in the partners' capital. Distributions from each fund will be received as the underlying investments of the funds are liquidated. It is expected that the funds will be liquidated over the next 7 to 10 years. Because it is not probable that any individual investment will be sold, the fair value of each individual investment has been determined using the NAV per share of the Plan's ownership interest in the partners' capital. Due to restrictions in the contract, redemptions are not likely until the assets of the fund are liquidated.								
⁽³⁾ This type includes 11 real return managers that invest in multiple strategies such as infrastructure, agriculture, royalties, commodities, and natural resources. These investments are intended to provide both favorable risk-adjusted returns and correlation with inflation to help with the hedging of inflation for the broader plan. This group of managers also includes any hedge fund managers remaining in the portfolio which have all been terminated and are only awaiting payouts.								
⁽⁴⁾ This type includes 35 managers with multiple strategies. These investments cannot be redeemed. Instead, the investments are redeemed throughout the life of the investment. Distributions are received through the liquidation of the underlying assets of the fund. It is expected that each fund will remain invested for a period of 5 to 10 years. It is probable that all of the investments in this type will be sold at an amount different from the NAV per share of the Plan's ownership interest in partners' capital. Therefore, the fair values of the investment in this asset class have been determined using recent observable transaction information.								
⁽⁵⁾ This type includes short-term commingled investment instruments issued by the US Government, Federal agencies, sponsored agencies or sponsored corporations.								

The investments measured at net asset value (NAV) are presented in the chart below:

Fair Value Measurements and Application (GASB 72) Insurance As of June 30, 2023 (\$ in Thousands)													
Asset Type	KERS Nonhazardous				KERS Hazardous				SPRS				
	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period	
Specialty Credit ⁽¹⁾	\$177,828	\$19,647	Daily - Quarterly	90 Days	\$103,315	\$11,313	Daily - Quarterly	90 Days	\$37,223	\$4,186	Daily - Quarterly	90 Days	
Real Estate ⁽²⁾	60,926	15,082			45,368	11,274			17,319	4,299			
Real Return ⁽³⁾	18,622	15,410	Daily	30 - 60 Days	11,104	2,621	Daily	30 - 60 Days	4,091	1,359	Daily	30 - 60 Days	
Private Equity ⁽⁴⁾	96,192	18,026			55,107	16,208			24,386	7,407			
Fixed Income ⁽⁵⁾	3,960	-	Daily		1,679	-	Daily		644	-	Daily		
Non US Equity ⁽⁵⁾	52,287	-	Daily		29,313	-	Daily		10,097	-	Daily		
Emerging Markets ⁽⁵⁾	840	-	Daily		329	-	Daily		137	-	Daily		
US Equity ⁽⁵⁾	3,598	-	Daily		1,543	-	Daily		625	-	Daily		
Total Investments Measured at NAV	\$414,253	\$68,165			\$247,758	\$41,416			\$94,522	\$17,251			
⁽¹⁾ This type includes 13 high yield specialty credit managers with multiple strategies. These managers may invest in U.S. or non-U.S. investment grade corporate credit, U.S. or non U.S. non-investment grade corporate credit, including both bonds and bank loans, municipal bonds, non-U.S. sovereign debt, mortgages including residential mortgage backed securities, commercial mortgage backed securities and whole loans, asset-backed securities and emerging market debt.													
⁽²⁾ This type includes 12 real estate funds that invest primarily in U.S. commercial real estate; however, there is one manager who invests solely in non-U.S. commercial real estate. The fair value of the investments have been determined using the NAV per share of the Plan's ownership interest and in the partners' capital. Distributions from each fund will be received as the underlying investments of the funds are liquidated. It is expected that the funds will be liquidated over the next 7 to 10 years. Because it is not probable that any individual investment will be sold, the fair value of each individual investment has been determined using the NAV per share of the Plan's ownership interest in the partners' capital. Due to restrictions in the contract, redemptions are not likely until the assets of the fund are liquidated.													
⁽³⁾ This type includes 11 real return managers that invest in multiple strategies such as infrastructure, agriculture, royalties, commodities, and natural resources. These investments are intended to provide both favorable risk-adjusted returns and correlation with inflation to help with the hedging of inflation for the broader plan. This group of managers also includes any hedge fund managers remaining in the portfolio which have all been terminated and are only awaiting payouts.													
⁽⁴⁾ This type includes 35 managers with multiple strategies. These investments cannot be redeemed. Instead, the investments are redeemed throughout the life of the investment. Distributions are received through the liquidation of the underlying assets of the fund. It is expected that each fund will remain invested for a period of 5 to 10 years. It is probable that all of the investments in this type will be sold at an amount different from the NAV per share of the Plan's ownership interest in partners' capital. Therefore, the fair values of the investment in this asset class have been determined using recent observable transaction information.													
⁽⁵⁾ This type includes short-term commingled investment instruments issued by the US Government, Federal agencies, sponsored agencies or sponsored corporations.													

Money-Weighted Rates of Return

In accordance with GASB Statement No. 67, *Financial Reporting for Pension Plans*, and GASB Statement No. 74, *Financial Reporting for Post-Employment Benefit Plans Other than Pension Plans*, KPPA provides this additional disclosure regarding its money-weighted rate of return for the period of June 30, 2023. The money-weighted rate of return is a method of calculating period-by-period returns on the Pension and Insurance Funds' investments that adjusts for the changing amounts actually invested. For the purposes of this Statement, money-weighted rate of return is calculated as the internal rate of return on investments, net of investment expenses, then adjusted for the changing amounts actually invested.

Money-Weighted Rates of Return As of June 30 - Pension

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
2023	10.25%	10.35%	7.07%	9.46%	7.53%

Money-Weighted Rates of Return As of June 30 - Insurance

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
2023	10.32%	10.06%	9.89%	9.26%	9.44%

Note E. Securities Lending Transactions

Kentucky Revised Statutes 61.650 and 386.020(2) permit the Pension and Insurance Trust Funds to lend their securities to broker-dealers and other entities. KPPA utilizes a securities lending program to temporarily lend securities to qualified agents in exchange for either cash collateral or other securities with an initial fair value of 102% or 105% of the value of the borrowed securities. The borrowers of the securities simultaneously agree to return the borrowed securities in exchange for the collateral. The types of securities lent include U.S. Treasuries, U.S. Agencies, U.S. Corporate Bonds, U.S. Equities, Global Fixed Income Securities, and Global Equities Securities. Securities Lending transactions are accounted for in accordance with GASB 28. The net earnings for the Pension and Insurance Trust Funds was \$1.7 million and \$0.7 million, respectively.

The IPS does not address any restrictions on the amount of loans that can be made. As of June 30, 2023, KPPA had no credit risk exposure to borrowers because the collateral amounts received exceeded the amounts out on loan. The contracts with the custodial bank require them to indemnify KPPA if the borrowers fail to return the securities and one or both of the custodial banks have failed to live up to their contractual responsibilities relating to the lending of securities.

All securities loans can be terminated on demand by either party to the transaction. BNY Mellon invests cash collateral as permitted by state statute and Board policy. The agent, BNY Mellon, of the Funds cannot pledge or sell collateral securities received unless the borrower defaults. KPPA maintains a conservative approach to investing the cash collateral with BNY Mellon, emphasizing capital preservation, liquidity, and credit quality.

Cash collateral is invested in guaranteed, short-term obligations of the U.S. government, select government agencies and repurchase agreements with qualified agents. KPPA cannot pledge or sell collateral securities received unless the borrower defaults. BNY Mellon as the lending agent also indemnifies KPPA from any financial loss associated with a borrower's default and collateral inadequacy.

As of June 30, 2023, the average days to maturity for loans was one day, and the weighted average investment maturity of cash collateral investments was one day. The trusts had no credit risk exposure to borrowers because the amounts owed to borrowers exceeded the amounts the borrowers owed the trust, and no losses resulted during the period.

Security lending programs can entail interest rate risk and credit risk. KPPA minimizes interest rate risk by limiting the term of cash collateral investments to several days. The credit risk is controlled by investing cash collateral in securities with qualities similar to the credit worthiness of lent securities.

As of June 30, 2023, the cash collateral received for the securities on loan for the Pension and Insurance Trust Funds was \$339.0 million and \$131.0 million, respectively. The securities non-cash collateral received a total of \$142.8 million and \$64.6 million, respectively. The collateral volume of the total underlying securities was \$481.8 million for Pension and \$195.6 million for the Insurance Trust Funds, respectively.

Securities Lending Cash Collateral						
As of June 30, 2023						
	CERS	CERS	KERS	KERS	SPRS	Pension Total
	Nonhazardous	Hazardous	Nonhazardous	Hazardous		2023
Pension	\$176,126	\$60,803	\$71,804	\$18,277	\$12,028	\$339,038
Insurance	\$59,513	\$29,266	\$26,420	\$11,270	\$4,491	\$130,960

Note F. Risk of Loss

KPPA is exposed to various risks of loss related to torts; thefts of, damage to, and destruction of assets; errors and omissions; injuries to employees; and natural disasters. Under the provisions of the Kentucky Revised Statutes the Office of Claims and Appeals is vested with full power and authority to investigate, hear proof, and compensate persons for damages sustained to either person or property as a result of negligence of the agency or any of its employees. Awards are limited to \$250,000 for a single claim and \$400,000 in aggregate per occurrence. Awards and a pro rata share of the operating cost of the Office of Claims and Appeals are paid from the fund of the agency having a claim or claims before the Office of Claims and Appeals.

Claims against the CERS Board, KRS Board and the KPPA Board, or any of its staff as a result of an actual or alleged breach of fiduciary duty, are self-insured effective May 26, 2019.

Claims for job-related illnesses or injuries to employees are insured by the state's self-insured workers' compensation program. Payments approved by the program are not subject to maximum limitations. All medical expenses related to a work injury or illness are paid based upon appropriate statutory and regulatory reductions, and up to 66.67% of wages for temporary disability. Each agency pays premiums based on fund reserves and payroll. Settlements did not exceed insurance coverage in any of the past three fiscal years. Thus, no secondary insurance had to be utilized. There were no claims which were appealed to the Kentucky Workers' Compensation Board.

Note G. Contingencies

In the normal course of business, KPPA is involved in litigation concerning the right of participants, or their beneficiaries, to receive benefits. KPPA does not anticipate any material losses for CERS, KERS, SPRS or the Insurance Fund as a result of the contingent liabilities. KPPA is involved in other litigation; therefore, please see Note O. Litigation, for further information.

Note H. Defined Benefit Pension Plan

KPPA is an agency within the Executive branch of the Commonwealth of Kentucky. All regular full-time employees in nonhazardous positions of any Kentucky State Department, Board, or Agency are directed by Executive Order (EO) to participate in KERS. These employees participate in KERS Nonhazardous, a cost-sharing, multiple-employer defined pension fund that provides retirement, disability, and death benefits to fund members. Fund benefits are extended to beneficiaries of fund members under certain circumstances. Tier 1 Fund members contributed 5% of creditable compensation for the fiscal year ended June 30, 2023. Tier 2 and Tier 3 Fund members contributed 6% of creditable compensation for the fiscal year ended June 30, 2023.

The chart below includes the covered payroll and contribution amounts for the employees of KPPA:

Payroll and Contributions as of June 30, 2023 (\$ in Thousands)	
Covered Payroll	\$15,947
Required Employer Contributions	\$1,590
Employer Percentage Contributed	100.00%
<i>Note: KRS 61.565, as amended by the 2021 Regular Legislative Session House Bill 8, requires the employers to contribute a normal cost for retirement plus and actuarially determined unfunded liability contribution. The Office of the State Budget Director determined the percentage of the contribution for FY 2023 for the Executive Branch to be 68.03% for the actuarially determined unfunded liability and 9.97% for the normal cost.</i>	

Note I. Income Tax Status

The Internal Revenue Service (IRS) has ruled that plans administered by KPPA qualify under Section 401(a) of the Internal Revenue Code are, generally, not subject to tax. The plans are subject to income tax on any unrelated business income (UBI).

Note J. Equipment

Equipment as of June 30, 2023 (\$ in Thousands)	
Equipment, cost	\$2,885
Less Accumulated Depreciation	(2,885)
Equipment, net	\$0

Note K. Intangible Assets

The provisions of GASB *Statement No. 51, Accounting and Financial Reporting for Intangible Assets*, requires that intangible assets be recognized in the Combining Statement of Fiduciary Net Position only if they are considered identifiable. In accordance with the Statement, KPPA has capitalized software costs as indicated below for the Strategic Technology Advancements for the Retirement of Tomorrow (START) project.

Software Expenses as of June 30 2023 (\$ in Thousands)	
Software, cost	\$17,302
Less Accumulated Amortization	(17,302)
Intangible Assets, net	\$0

Note L. Actuarial Valuation

KPPA's actuary, Gabriel, Roeder, Smith & Co. (GRS), completed the actuarial valuation for the calculation of the employer contribution rates for the CERS, KERS, SPRS and Insurance Fund for the period ended June 30, 2023. The last experience study was conducted with experience through June 30, 2022, adopted by the Board of Trustees on June 5, 2023 for first use in this actuarial valuation.

Economic Assumptions - Pension as of June 30

	CERS				KERS				SPRS	
	Nonhazardous		Hazardous		Nonhazardous		Hazardous			
	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022
Assumed Investment Return	6.50%	6.25%	6.50%	6.25%	5.25%	5.25%	6.25%	6.25%	5.25%	5.25%
Inflation Factor	2.50%	2.30%	2.50%	2.30%	2.50%	2.30%	2.50%	2.30%	2.50%	2.30%
Payroll Growth	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Economic Assumptions - Insurance as of June 30

	CERS				KERS				SPRS	
	Nonhazardous		Hazardous		Nonhazardous		Hazardous			
	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022
Assumed Investment Return	6.50%	6.25%	6.50%	6.25%	6.50%	6.25%	6.50%	6.25%	6.50%	6.25%
Inflation Factor	2.50%	2.30%	2.50%	2.30%	2.50%	2.30%	2.50%	2.30%	2.50%	2.30%
Payroll Growth	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Note M. Financial Report for (GASB 67) Pension

Plans and (GASB 74) Postemployment Benefit Plans

The following details actuarial information and assumptions utilized in determining the unfunded (overfunded) actuarial accrued liabilities for CERS, KERS, SPRS and Insurance Fund. Please note that calculations for TPL, net fiduciary position, NPL, total OPEB liability, net OPEB fiduciary position, and net OPEB liability are reported in the Plans' Required Supplementary Information (RSI) on pages [93-110](#) are based on June 30, 2022, actuarial valuations, rolled forward to June 30, 2023. The prior year valuations are used as the basis for the roll forward method and are applied to complete the current year pension and OPEB valuations as of the measurement date, June 30, 2023, in accordance with GASB *Statement No. 67*, paragraph 37, and GASB *Statement No. 74*, paragraph 41.

Financial Report for Pension Plan (GASB 67)

Basis of Calculations

GRS completed reports by plan in compliance with GASB *Statement No. 67 Financial Reporting for Pension Plans*. The TPL, NPL, and sensitivity information are based on an actuarial valuation date of June 30, 2022. The TPL was rolled forward from the valuation date to the Plans' fiscal year ended June 30, 2023, using generally accepted actuarial principles. Information disclosed for years prior to June 30, 2017, were prepared by KPPA's prior actuary. GRS will provide separate reports at a later date with additional accounting information determined in accordance with GASB *Statement No. 68, Accounting and Financial Reporting for Pensions*.

Assumptions

The CERS and KRS Board of Trustees adopted new actuarial assumptions on May 9, 2023 and June 5, 2023, respectively. Based on the June 30, 2021, actuarial valuation report, the actuarial methods and assumptions used to calculate these contributions rates are:

- Investment Return - 6.25% for CERS Nonhazardous, and CERS Hazardous, KERS Hazardous, 5.25% for KERS Nonhazardous and SPRS.
- Inflation - 2.30% for all plans.
- Salary Increases - 3.30% to 10.30% for CERS Nonhazardous, 3.55% to 19.05% for CERS Hazardous, 3.30% to 15.30% for KERS Nonhazardous, 3.55% to 20.05% for KERS Hazardous, and 3.55% to 16.05% for SPRS, varies by service.
- Payroll Growth - 2% for CERS Nonhazardous and Hazardous, 0% for KERS Nonhazardous and Hazardous, and SPRS.
- Mortality - System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.

Plan Provisions

House Bill 506 passed during the 2023 legislative session and reinstated the Partial Lump-Sum Optional Form of payment for members who retire on and after January 1, 2024, with the lump-sum payment options expanded to include 48 or 60 times the member's monthly retirement allowance.

Since this optional form of payment results in a reduced, actuarial equivalent, monthly retirement allowance for members who elect a partial lump-sum option, this provision does not have a fiscal impact to the total pension liability of any of the plans.

House Bill 506 also adjusted the minimum required separation period before a retiree may become reemployed and continue to receive their retirement allowance to one month for all circumstances for each plan. This is a minimal change for members in the KERS hazardous, CERS hazardous, and SPRS plans, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe this provision of House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members and therefore have reflected no fiscal impact to the total pension liability of the KERS hazardous, CERS hazardous, or SPRS plans.

Similarly, this is a relatively small change for future retirees in the KERS and CERS non-hazardous plans. But as the minimum separation period was previously three months in almost every circumstance, we have assumed that

there would be a 1.0% increase in the rate of retirement for each of the first two years a non-hazardous member becomes retirement eligible under the age of 65, in order to reflect a shift in the retirement pattern. The total pension liability as of June 30, 2023 for the KERS non-hazardous and CERS non-hazardous plans is determined using these updated benefit provisions.

There have been no other plan provision changes that would materially impact the total pension liability since June 30, 2022. It is our opinion that these procedures for determining the information contained in these reports are reasonable, appropriate, and comply with applicable requirements under GASB No. 67.

Discount Rate

A single discount rate of 5.25% was used for the KERS Nonhazardous pension plan and SPRS pension plan, a single discount rate of 6.25% was used for the KERS Hazardous pension plan, and a single discount rate of 6.50% was used for the CERS Nonhazardous pension plan and CERS Hazardous pension plan to measure the total pension liability for the fiscal year ending June 30, 2023. The single discount rate for CERS Nonhazardous and CERS Hazardous increased by 0.25% from 6.25% in fiscal year 2022 to 6.50% in fiscal year 2023. These single discount rates were based on the expected rate of return on pension plan investments. Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the pension plan's fiduciary net position and future contributions were projected to be sufficient to finance all the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of the projected benefit payments to determine the total pension liability.

The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Except where noted below, future contributions are projected assuming that the entire actuarially determined employer contribution is received by each plan each future year, calculated in accordance with the current funding policy. The assumed future employer contributions for the CERS plans reflect the provisions of House Bill 362 (passed during the 2018 legislative session) which limit the increases to the employer contribution rates to 12% over the prior fiscal year through June 30, 2028.

Additional health care contributions (IRC 401(h) Subaccount)

Based on guidance issued by GASB in connection with GASB *Statement No. 74*, the 1% of pay member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered as an Other Post Employment Benefit (OPEB) asset. As a result, the reported pension fiduciary net positions as of June 30, 2017, and later are net of the 401(h) asset balance.

Additional Disclosures

These reports are based upon information furnished to us by the Kentucky Public Pensions Authority (KPPA), which includes benefit provisions, membership information, and financial data. We did not audit this data and information, but we did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KPPA. Please see the "Actuarial Valuation Report as of June 30, 2022" for each system and the reports titled "2022 Actuarial Experience Study for the Period Ending June 30, 2022" for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for the fiscal year ending June 30, 2023.

Financial Reporting for Postemployment Benefit Plans (GASB 74)

GRS completed reports by plan in compliance with GASB *Statement No. 74, Financial Reporting for Postemployment Benefit Plans Other than Pension Plans* for the fiscal year ended June 30, 2023. GRS will provide separate reports at a later date with additional accounting information determined in accordance with GASB *Statement No. 75, Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*.

Basis of Calculations

The total OPEB liability, net OPEB liability (NOL), and sensitivity information are based on an actuarial valuation date of June 30, 2022. The total OPEB liability was rolled forward from the valuation date to the plan's fiscal year ended June 30, 2023, using generally accepted actuarial principles.

Assumptions

The discount rates used to calculate the total OPEB liability increased for each fund since the prior year (see further discussion on the calculation of the single discount rates later in this section). There were no other material assumption changes and it is GRS' opinion that these procedures are reasonable and appropriate, and comply with applicable requirements under GASB No. 74.

The actuarially determined contribution rates effective for fiscal year ended 2023 that are documented in the schedules were calculated as of June 30, 2021. Based on the June 30, 2021, actuarial valuation reports the actuarial methods and assumptions used to calculate the required contributions are:

- Investment Return - 6.25%.
- Inflation - 2.30%.
- Salary Increases - 3.30% to 10.30% for CERS Nonhazardous, 3.55% to 19.05% for CERS Hazardous, 3.30% to 15.30% for KERS Nonhazardous, 3.55% to 20.05% for KERS Hazardous, 3.55% to 16.05% for SPRS, varies by service.
- Payroll Growth - 2.00% for CERS Nonhazardous and CERS Hazardous, 0.00% for KERS Nonhazardous, KERS Hazardous, and SPRS.
- Mortality - System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.
- Health Care Trend Rates:
 - Pre-65 - Initial trend starting at 6.30% on January 1, 2023, and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.
 - Post-65 - Initial trend starting at 6.30% on January 1, 2023, and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.

Plan Provisions

House Bill 506 passed during the 2023 legislative session and adjusted the minimum required separation period before a retiree may become reemployed to be one month for all circumstances for each plan. This is a minimal change for members in the KERS hazardous, CERS hazardous, and SPRS plans, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe this provision of House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members and therefore have reflected no fiscal impact to the total OPEB liability of the KERS hazardous, CERS hazardous, or SPRS plans. Similarly, this is a relatively small change for future retirees in the KERS and CERS non-hazardous plans. But as the minimum separation period was previously three months in almost every circumstance, we have assumed that there would be a 1.0% increase in the rate of retirement for each of the first two years a nonhazardous member becomes retirement eligible under the age of 65, in order to reflect a shift in the retirement pattern. The total OPEB liability as of June 30, 2023 for the KERS non-hazardous and CERS nonhazardous plans is determined using these updated benefit provisions. There were no other plan provision changes that would materially impact the total OPEB liability since June 30, 2022. It is our opinion that these procedures for determining the information contained in these reports are reasonable and appropriate, and comply with applicable requirements under GASB No. 74.

Implicit Employer Subsidy for non-Medicare retirees

The fully-insured premiums paid for the Kentucky Employees' Health Plan are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit employer subsidy for the non-Medicare eligible retirees. GASB No. 74 requires that the liability associated with this implicit subsidy be included in the calculation of the Total OPEB Liability.

Discount Rates

The following single discount rates were used to measure the total OPEB liability for the fiscal year ending June 30, 2023.

PLAN	FISCAL YEAR 2023	FISCAL YEAR 2022	CHANGE IN RATE
CERS Nonhazardous	5.93%	5.70%	0.23%
CERS Hazardous	5.97%	5.61%	0.36%
KERS Nonhazardous	5.94%	5.72%	0.22%
KERS Hazardous	5.94%	5.59%	0.35%
SPRS	6.02%	5.69%	0.33%

The single discount rates are based on the expected rate of return on OPEB plan investments of 6.50% and a municipal bond rate of 3.86%, as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2023. Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the plan's fiduciary net position and future contributions were projected to be sufficient to finance the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on insurance plan investments was applied to all periods of the projected benefit payments paid from the retirement system. However, the cost associated with the implicit employer subsidy is not currently being included in the calculation of the plan's actuarial determined contributions, and it is our understanding that any cost associated with the implicit subsidy will not be paid out of the plan's trust. Therefore, the municipal bond rate was applied to future expected benefit payments associated with the implicit subsidy.

The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Future contributions are projected assuming that the entire actuarially determined employer contribution is received by each plan each future year, calculated in accordance with the current funding policy.

Additional health care contributions (IRC 401(h) Subaccount)

Based on guidance issued by GASB in connection with GASB Statement No. 74, the 1% of pay member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered an OPEB asset. As a result, the reported fiduciary net position includes these 401(h) assets. Additionally, these member contributions and associated investment income and administrative expenses are included in the reconciliation of the fiduciary net position.

Additional Disclosures¹

The reports are based upon information furnished to GRS by the KPPA, which includes benefit provisions, membership information, and financial data. GRS did not audit this data and information, but GRS applied a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KPPA. Please see the "Actuarial Valuation Report as of June 30, 2022" for each system and the report titled "2022 Actuarial Experience Study for the Period Ending June 30, 2022" for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for fiscal year ending June 30, 2023.

Target Asset Allocation

The long-term (10-year) expected rates of return were determined by using a building block method in which best estimated ranges of expected future real rates of return were developed for each asset class. The ranges were combined by weighting the expected future real rate of return by the target asset allocation percentage. The target allocation and best estimates of arithmetic real rate of return for each major asset class are summarized in the tables on the following page.

¹ Note: Data and information regarding GASB 67 and GASB 74 reporting was provided by GRS Retirement Consulting.

Target Asset Allocation - CERS Pension and Insurance As of June 30, 2023

Allocations apply to CERS Pension and Insurance Funds

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Equity		
Public Equity	50.00%	5.90%
Private Equity	10.00%	11.73%
Fixed Income		
Core Fixed Income	10.00%	2.45%
Specialty Credit	10.00%	3.65%
Cash	0.00%	1.39%
Inflation Protected		
Real Estate	7.00%	4.99%
Real Return	13.00%	5.15%

Target Asset Allocation - Pension As of June 30, 2023

Allocations apply to KERS Nonhazardous and SPRS Pension Funds

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Equity		
Public Equity	32.50%	5.90%
Private Equity	7.00%	11.73%
Fixed Income		
Core Fixed Income	20.50%	2.45%
Specialty Credit	15.00%	3.65%
Cash	5.00%	1.39%
Inflation Protected		
Real Estate	10.00%	4.99%
Real Return	10.00%	5.15%

Target Asset Allocation - Pension and Insurance As of June 30, 2023

Allocations apply to KERS Hazardous Pension and all KRS Insurance Funds

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Equity		
Public Equity	43.50%	5.90%
Private Equity	10.00%	11.73%
Fixed Income		
Core Fixed Income	10.00%	2.45%
Specialty Credit	15.00%	3.65%
Cash	1.50%	1.39%
Inflation Protected		
Real Estate	10.00%	4.99%
Real Return	10.00%	5.15%

NOTE: Minor deviations are expected between the actuarial assumed rate of return and the expected rate of return reported in the above charts. The actuarial assumed rates of return are based on a review of economic assumptions completed periodically as warranted but not longer than every 2 years; whereas, the expected rate of return is calculated annually for GASB purposes by taking the current asset allocation and applying the most relevant long term market expectations (March 2023) for each asset class.

Sensitivity of the NPL to Changes in the Discount Rate Fiscal Year 2023
As of June 30, 2023 (\$ in Thousands)

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
	Current 6.50%	Current 6.50%	Current 5.25%	Current 6.25%	Current 5.25%
1% Decrease	\$8,101,230	\$3,404,287	\$14,159,095	\$580,511	\$577,298
Current Discount Rate	6,416,509	2,695,956	12,318,726	422,988	448,299
1% Increase	\$5,016,442	\$2,117,409	\$10,793,619	\$295,371	\$342,465

Sensitivity of the Net OPEB Liability to Changes in the Discount Rate and Healthcare Trend Rate
As of June 30, 2023 (\$ in Thousands)

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
	Single 5.93%	Single 5.97%	Single 5.94%	Single 5.94%	Single 6.02%
Sensitivity of the Net OPEB Liability to Changes in the Discount Rate					
1% Decrease	\$259,098	\$346,027	\$1,055,209	\$(155,851)	\$45,363
Single Discount Rate	(138,067)	136,823	784,592	(207,995)	15,341
1% Increase	\$(470,644)	\$(37,500)	\$557,024	\$(251,094)	\$(9,776)
Sensitivity of the Net OPEB Liability to Changes in the Current Healthcare Cost Trend Rate					
1% Decrease	\$(442,528)	\$1,559	\$575,159	\$(239,711)	\$(5,320)
Current Healthcare Cost Trend Rate	\$(138,067)	136,823	784,592	(207,995)	15,341
1% Increase	\$235,935	\$300,182	\$1,038,116	\$(169,294)	\$40,029

Development of Single Discount Rate for OPEB
As of June 30, 2023

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
2023					
Single Discount Rate	5.93%	5.97%	5.94%	5.94%	6.02%
Long-Term Expected Rate of Return	6.50%	6.50%	6.50%	6.50%	6.50%
Long-Term Municipal Bond Rate ⁽¹⁾	3.86%	3.86%	3.86%	3.86%	3.86%

Note: 1. Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2023.

Schedule of Employers' NPL - CERS Nonhazardous
As of June 30, 2023 (\$ in Thousands)

Total Pension Liability (TPL)	\$15,089,106
Plan Fiduciary Net Position	8,672,597
Net Pension Liability	\$6,416,509
Ratio of Plan Fiduciary Net Position to TPL	57.48%
Covered Payroll ⁽¹⁾	\$2,966,567
Net Pension Liability as a Percentage of Covered Payroll	216.29%

Schedule of Employers' NPL - CERS Hazardous
As of June 30, 2023 (\$ in Thousands)

Total Pension Liability (TPL)	\$5,731,148
Plan Fiduciary Net Position	3,035,192
Net Pension Liability	\$2,695,956
Ratio of Plan Fiduciary Net Position to TPL	52.96%
Covered Payroll ⁽¹⁾	\$714,837
Net Pension Liability as a Percentage of Covered Payroll	377.14%

Schedule of Employers' NPL - KERS Nonhazardous
As of June 30, 2023 (\$ in Thousands)

Total Pension Liability (TPL)	\$15,858,669
Plan Fiduciary Net Position	3,539,943
Net Pension Liability	\$12,318,726
Ratio of Plan Fiduciary Net Position to TPL	22.32%
Covered Payroll ⁽¹⁾	\$1,648,318
Net Pension Liability as a Percentage of Covered Payroll	747.35%

Schedule of Employers' NPL - KERS Hazardous
As of June 30, 2023 (\$ in Thousands)

Total Pension Liability (TPL)	\$1,316,521
Plan Fiduciary Net Position	893,533
Net Pension Liability	\$422,988
Ratio of Plan Fiduciary Net Position to TPL	67.87%
Covered Payroll ⁽¹⁾	\$223,922
Net Pension Liability as a Percentage of Covered Payroll	188.90%

Schedule of Employer's NPL - SPRS
As of June 30, 2023 (\$ in Thousands)

Total Pension Liability (TPL)	\$1,039,813
Plan Fiduciary Net Position	591,514
Net Pension Liability	\$448,299
Ratio of Plan Fiduciary Net Position to TPL	56.89%
Covered Payroll ⁽¹⁾	\$65,693
Net Pension Liability as a Percentage of Covered Payroll	682.42%

⁽¹⁾ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

Schedule of the Employers' Net OPEB Liability - CERS Nonhazardous
As of June 30, 2023 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2023	\$3,260,308	\$3,398,375	\$(138,067)	104.23%	\$2,982,960	(4.63)%

⁽¹⁾ Based on derived compensation using the provided employer contribution information.

Schedule of the Employers' Net OPEB Liability - CERS Hazardous
As of June 30, 2023 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2023	\$1,771,015	\$1,634,192	\$136,823	92.27%	\$719,666	19.01%

⁽¹⁾ Based on derived compensation using the provided employer contribution information.

Schedule of the Employers' Net OPEB Liability - KERS Nonhazardous
As of June 30, 2023 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2023	\$2,317,344	\$1,532,752	\$784,592	66.14%	\$1,653,492	47.45%

⁽¹⁾ Based on derived compensation using the provided employer contribution information.

Schedule of the Employers' Net OPEB Liability - KERS Hazardous
As of June 30, 2023 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2023	\$417,361	\$625,356	\$(207,995)	149.84%	\$223,922	(92.89)%

⁽¹⁾ Based on derived compensation using the provided employer contribution information. For 2021, 2022, and 2023, derived compensation based on pension contribution information, as there were no required employer contributions for the insurance fund for FYE 2021, FYE 2022, and FYE 2023.

Schedule of the Employer's Net OPEB Liability-SPRS Plan
As of June 30, 2023 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2023	\$263,450	\$248,109	\$15,341	94.18%	\$65,830	23.30%

⁽¹⁾ Based on derived compensation using the provided employer contribution information.

Note N. Pension Legislation

2023 Regular Session

The 2023 Regular Session of the Kentucky General Assembly adjourned on Thursday, March 30, 2023. Highlights of the 2023 Session include:

BILLS OF DIRECT INTEREST TO OUR MEMBERS AND RETIREES

House Bill 444: Pay Raise for Government Workers; Allocation to Conduct a Full Salary Classification Study for State Government

House Bill 444 provides a 6% raise for workers in all three branches of government, effective July 1, 2023. The bill also authorizes an additional \$2,000 pay raise for all employees and elected officials in the Judicial Branch and allocates \$500,000 to provide additional contractual resources for the Personnel Cabinet to complete a full salary classification study by November 1, 2023.

The General Assembly originally requested a full salary classification study from the executive branch in July 2021. However, the resulting study presented to the Interim Joint Committee on Appropriations and Revenue in July 2022 did not contain the level of detail that legislators said they needed to make informed decisions. Therefore, the General Assembly allocated money to hire an outside vendor with the industry experience and appropriate resources needed to perform such a complex study.

House Bill 506: Establish a Partial Lump Sum Option (PLSO) for retirees and reduce required break for employment after retirement

House Bill 506 establishes a Partial Lump Sum Option (PLSO), with and without survivor rights, as a payment option for retiring members of the County Employees Retirement System (CERS), Kentucky Employees Retirement System (KERS), or State Police Retirement System (SPRS).

State law previously offered a PLSO to members who retired on or before January 1, 2009. For retirement dates effective January 1, 2024 and after, members will again be allowed to choose a retirement payment option that offers a lump-sum payment equal to 12, 24, 36, 48 or 60 months of payments of the Basic/Annuity or Survivorship 100% payment options and a lifetime monthly benefit that is actuarially reduced to reflect the lump-sum payment.

The bill also changes the required break in service before a retiree may return to work with a participating employer and continue to receive their retirement allowance. Currently, in almost all reemployment situations, a three (3) calendar month break in service from the retired member's retirement date is required before returning to employment with a participating employer or their retirement benefit will be voided.

Under House Bill 506, the break in service is reduced to only one (1) month for retirees in most all reemployment situations. Prearranged agreements to return to employment with a participating employer made prior to a member's retirement date continue to be prohibited by law for all members. Additionally, all required forms must be completed if a retired member reemploys with a participating employer within twelve (12) months of their effective retirement date.

These changes take effect for retirement dates January 1, 2024 and after.

ADMINISTRATIVE BILLS FOR KPPA

House Bill 551: Legalize Sports Wagering in Kentucky and Create Wagering Administration Fund: Portion of Remaining Funds to go to KY Permanent Pension Fund

House Bill 551 legalizes sports wagering in Kentucky and creates the Wagering Administration Fund to pay for the administrative expenses involved with overseeing sports wagering activities. After administrative costs have been paid, a portion of any remaining funds in the Wagering Administration Fund will be deposited in the Kentucky Permanent Pension Fund established in Kentucky Revised Statutes 42.205. This fund was created in 2016 to address the Commonwealth's unfunded pension liabilities. Each system operated by KPPA is potentially eligible to receive funding from this account, if authorized by the General Assembly in an enacted biennial budget bill.

House Bill 587: Internal audit functions at KPPA

House Bill 587 requires the Kentucky Public Pensions Authority (KPPA) to appoint or contract for the services of an Internal Auditor who will report directly to the KPPA board. The Internal Auditor will be exempt from the hiring and employment provisions of Kentucky Revised Statutes Chapter 18A, Chapter 45A, and 64.640, and is authorized by the Authority to appoint employees under his or her direct supervision. The Internal Auditor will also have an annual performance review conducted by the Authority.

The Legislative Research Commission (LRC) did not request an Actuarial Analysis from KPPA for this bill; however, the Internal Auditor position has been in place at KPPA (the agency was then known as “Kentucky Retirement Systems”) since 2003 so there are no significant administrative cost increases expected.

House Bill 236: Fiduciary duties owed to the state-administered retirement systems

House Bill 236 amends Kentucky Revised Statutes 61.650 and 78.790 to stipulate that fiduciaries shall consider the sole interest of the systems’ members and beneficiaries using only factors with “... a direct and material connection to the financial risk or financial return of an investment.” In particular, the bill prohibits the consideration of environmental, social, and governance (ESG) interests in making investment decisions.

The bill also requires the CERS and KRS Boards to adopt proxy guidelines and ensure that all proxy votes are executed by either the Board or the Board’s designee in accordance with the Board’s proxy voting policy; or a proxy voting service that has acknowledged a fiduciary duty in writing and who commits to following the Board’s policy. Finally, House Bill 236 requires a report of proxy votes to be provided to the Boards at least once a quarter.

Because our systems are, and have always been, fiduciaries who are required to invest solely in the interest of our members and retirees, KPPA and the other state-administered retirement systems submitted Actuarial Analysis letters to the General Assembly that said there is no expected actuarial impact from this bill. However, the letters from each of the systems covered by this bill say there is an expected increase in administrative costs for each plan to cover the cost of compiling and reporting proxy votes on a quarterly basis.

State Senate Confirms Gubernatorial Appointments to KRS Board

State law requires that gubernatorial appointments to the KRS Board of Trustees receive Senate approval. On March 30, three (3) Senate Resolutions confirming Governor Andy Beshear’s recent appointments to the KRS board were unanimously adopted by a vote of 37-0:

1. **Senate Resolution 152**, sponsored by Senator Julie Raque Adams, confirmed the reappointment of E. Lynn Hampton to the Kentucky Retirement Systems Board of Trustees for a term expiring June 17, 2026;
2. **Senate Resolution 226**, sponsored by Senator Jimmy Higdon, confirmed the appointment of Ramsey Bova to the Kentucky Retirement Systems Board of Trustees for a term expiring June 17, 2026; and
3. **Senate Resolution 251**, sponsored by Senator Julie Raque Adams, confirmed the reappointment of William E. Summers V to the Kentucky Retirement Systems Board of Trustees for a term expiring June 17, 2026.

The Resolutions only required Senate confirmation and did not need to be adopted in the House.

Note O. Litigation

Seven Counties

Seven Counties Services, Inc. (Seven Counties) filed for Chapter 11 bankruptcy in the United States Bankruptcy Court for the Western District of Kentucky (the Bankruptcy Court) in April 2013. Seven Counties provides mental health services for the Cabinet for Health and Family Services for the greater Louisville, Kentucky area and surrounding counties. Seven Counties participated in KERS for approximately twenty-five years. Seven Counties identified KERS as a creditor with a primary objective of discharging its continuing obligation to remit retirement contributions for approximately 1,300 employees and to terminate its participation in KERS. If Seven Counties is successful in discharging its obligations to KERS, the estimated member pension and insurance actuarial accrued liability is in the range of \$145 to \$150 million.

KERS opposed Seven Counties' attempt to discharge its obligations and terminate its participation. KERS asserted that Seven Counties is a Governmental Unit properly participating in KERS by Executive Order issued in 1978 and thus ineligible for Chapter 11 relief. Consequently, Seven Counties would remain statutorily obligated to continue participation and remit contributions. On May 30, 2014, the Bankruptcy Court held that Seven Counties was not a Governmental Unit and could move forward with its Chapter 11 bankruptcy case. The Bankruptcy Court further held that Seven Counties' statutory obligation to participate in and remit contributions to KERS was a "contract" eligible for rejection. KRS appealed this decision.

On August 24, 2018, the U.S. Court of Appeals for the Sixth Circuit (the Sixth Circuit) issued a two to one Opinion affirming the decision that Seven Counties is eligible to file for bankruptcy under Chapter 11. However, the Sixth Circuit went on to state, "lacking state court precedent characterizing the nature of the relationship between Seven Counties and KERS, we certify that question to the Kentucky Supreme Court." KERS filed a petition to have the Opinion Reheard En Banc by the entire Sixth Circuit. On October 5, 2018, the Sixth Circuit issued an order holding the petition in abeyance pending a response from the Kentucky Supreme Court on the certified question of law. On November 1, 2018, the Supreme Court of Kentucky issued an Order granting certification of the question. The certified question of law was briefed by the parties and oral arguments were held before the Supreme Court of Kentucky on March 6, 2019. On August 29, 2019, the Supreme Court of Kentucky ruled that Seven Counties' participation in and its contributions to KERS are based on a statutory obligation. The Supreme Court of Kentucky's ruling was forwarded to the Sixth Circuit for further consideration.

On July 20, 2020, the Sixth Circuit Court of Appeals issued an Opinion stating that they affirmed their previous determination that Seven Counties was eligible to file a Chapter 11 bankruptcy case. The Sixth Circuit also reversed the conclusion that Seven Counties can reject its obligation to participate as an executory contract and that Seven Counties need not maintain its statutory contribution obligation during the pendency of the bankruptcy. The Sixth Circuit dismissed Seven Counties' cross appeal and remanded the case for further proceedings consistent with the opinion. KERS again filed a petition to have the Opinion regarding Seven Counties' ability to file a Chapter 11 bankruptcy Reheard En Banc by the entire Sixth Circuit. This petition was denied in an Order dated September 11, 2020. The case was remanded back to the Bankruptcy Court.

The parties were able to stipulate to the principal amount of Seven Counties unpaid employer contributions for the post-petition time-frame of April 6, 2014 through February 5, 2015. A limited hearing occurred in February 2022 regarding whether interest is applicable to the stipulated amount. The Bankruptcy Court entered an order that set the amount of the contributions, but did not order Seven Counties to pay that amount. The order was silent regarding the application of interest. Both Seven Counties and KERS appealed the Bankruptcy Court's order to the United States District Court where it will be joined with the pending appeal of the confirmation of Seven Counties' reorganization plan.

The United States District Court refused to hear the appeals stating that the Bankruptcy Court's order was not final and appealable. That left KERS in a position where no relief was possible; the Bankruptcy Court would not enter an order requiring payment, and the District Court would not hear an appeal. This forced KERS to once again appeal the United States Court of Appeals for the Sixth Circuit. The matter is now fully briefed before that court and parties are awaiting oral arguments.

Mayberry

In December 2017, certain members and beneficiaries of the Kentucky Retirement Systems filed litigation (Mayberry et al v. KKR et al) against certain Hedge Fund Sellers, Investment, Actuarial and Fiduciary Advisors, Annual Report Certifiers, and certain (past and present) Kentucky Retirement Systems' Trustees and Officers in Franklin Circuit Court. The litigation alleges (in summary) that actuarial assumptions, fees, statements and disclosures harmed the financial status of the Retirement Systems. While Kentucky Retirement Systems is designated a "Defendant," that designation is a technical formality in so much as Kentucky Retirement Systems is a "nominal defendant." On

April 20, 2018, the Kentucky Retirement Systems and the plaintiffs filed a joint notice with the Court advising that Kentucky Retirement Systems does not intend to challenge its status as a “nominal defendant.” Since then, the Franklin Circuit Court ruled on various Defendants’ Motions to Dismiss, denying nearly all of them. On January 10, 2019, KKR, Henry Kravis and George Roberts (collectively, “KKR Parties”) amended their Answer to assert cross claims against Kentucky Retirement Systems. Certain Officer and Trustee Defendants appealed the denial of their Motion to Dismiss on immunity grounds to the Court of Appeals, and that appeal was transferred to the Kentucky Supreme Court. The hedge fund defendants filed a Petition for Writ of Prohibition in the Court of Appeals, arguing the Plaintiffs lacked standing to bring the action. That Petition was granted on April 23, 2019. Plaintiffs promptly appealed the Court of Appeals’ decision to the Supreme Court of Kentucky. On July 9, 2020, the Supreme Court of Kentucky issued an Opinion stating that the plaintiffs, as beneficiaries of a defined-benefit plan who have received all of their vested benefits so far and are legally entitled to receive their benefits for the rest of their lives, do not have a concrete stake in this case and therefore lack standing to bring this claim. The case was remanded to the circuit court with directions to dismiss the complaint. Thereafter, plaintiffs filed a motion seeking to amend their complaint to add parties (Tier 3 members of the Retirement Systems) and claims that would purportedly correct the standing defect identified by the Supreme Court of Kentucky. Furthermore, the Attorney General of the Commonwealth of Kentucky sought leave to intervene in this action through a motion filed July 20, 2020, and an Intervening Complaint on July 22, 2020. The Defendants filed motions seeking to have the case dismissed. On December 28, 2020, Franklin Circuit Court issued an Order dismissing the Complaint filed by the Plaintiffs, denied Plaintiffs’ Motion to file a Second Amended Complaint, and granted the Office of the Attorney General’s Motion to Intervene. A variety of additional motions and pleadings were filed, including an original action by the Tier 3 Group. This original action is still in the initial stages and is pending with Franklin Circuit Court. (Tia Taylor, et al. v KKR & Co. L.P., et al.) On January 12, 2021, Franklin Circuit Court issued a scheduling Order granting the Attorney General until February 1, 2021 to file an Amended Intervening Complaint, granting the Tier 3 Group until February 11, 2021 to file a Motion to Intervene in this action. Additional extension orders were granted for the Attorney General intervention. The Attorney General filed an Amended Complaint on May 24, 2021. On June 14, 2021, the Tier 3 Group’s Motion to Intervene in the Attorney General action was denied. In the spring of 2022, Franklin Circuit Judge Phillip Shepherd recused and this matter was assigned to Judge Thomas Wingate.

Following the Attorney General’s intervention, the Defendant’s challenged the intervention as beyond the scope of the remand from the Supreme Court in July of 2020. Franklin Circuit Court denied that motion and the matter was on appeal when this case was assigned to Judge Thomas Wingate. Judge Wingate placed the matter in abeyance pending a decision on whether the Attorney General’s intervention was proper. The Court of Appeals held that the Attorney General should not have been allowed to intervene and the Attorney General is currently seeking Discretionary Review by the Supreme Court.

Simultaneously with his intervention, the Attorney General filed a separate, stand-alone case with an identical complaint to protect against the possibility that his intervention would be deemed improper. That matter is now proceeding.

A number of related cases have also developed based on issues raised in the above referenced Mayberry action. There has been an action filed by a number of the Trustees and Officers named in Mayberry seeking reimbursement by Kentucky Retirement Systems of legal fees. Kentucky Retirement Systems has also filed an action against Hallmark Specialty Insurance seeking a declaratory judgement that Hallmark has a duty to defend and indemnify Kentucky Retirement Systems in the Mayberry action. Two of the hedge fund Defendants in the Mayberry action have also filed an action in the United States District Court for the Eastern District of Kentucky naming individual members of the former KRS Board of Trustees as Defendants. This action is seeking a judgment declaring that the Trustees violated Plaintiffs’ right to due process as well as an award of costs and attorneys’ fees. Three actions have also been filed in Delaware regarding the Mayberry action. One filed by Prisma Capital Partners and one filed by Blackstone Alternative Asset Management allege breaches of warranties, representations and more relating to the Subscription Agreements signed by the Kentucky Retirement Systems. The third was filed by Prisma Capital Partners against the Daniel Boone Fund, LLC. Additionally, an action has been filed by PAAMCO against Kentucky Retirement Systems in California also alleging breaches of warranties, representations and more relating to the Subscription Agreements signed by the Kentucky Retirement Systems. Finally, on August 2, 2021, Blackstone Alternative Asset Management, L.P. (BAAM) filed an action against the Kentucky Public Pensions Authority, the Board of Trustees of the Kentucky Retirement Systems, the Board of Trustees of the County Employees Retirement System, the Kentucky Retirement Systems Insurance Fund, and the Kentucky Retirement Systems Pension Fund (collectively “Defendants”) for breach of contract. The Defendants filed a Motion to Dismiss on September 8, 2021. The last of these additional actions, the suit filed by BAAM, was dismissed by Franklin Circuit Court. The Court of Appeals upheld the dismissal, and BAAM is seeking Discretionary Review by the Supreme Court. The rest of these cases remain active in various stages of litigation.

Bayhills

In 2018, Kentucky Retirement Systems sued Bayhills for breach of contract seeking to terminate Bayhills as investment managers. Kentucky Retirement Systems filed the suit in Franklin Circuit Court, but Bayhills removed it to federal district court. Kentucky Retirement Systems successfully had the case remanded back to state court. The case is now pending before Franklin Circuit Court. The Court entered an injunction preventing Bayhills from paying themselves management and other fees during the litigation. Bayhills has appealed this ruling to the Court of Appeals. The Court of Appeals and the Kentucky Supreme Court denied Bayhills their requested relief on appeal. Litigation is still ongoing.

Kentucky State Lodge & Linda Cook

In January and February 2022, two complaints were filed on behalf of specific named plaintiffs and others similarly situated based on the same facts that gave rise to the former River City Fraternal Order of Police (FOP) complaint. KPPA was aware that the River City FOP case impacted more individuals than the named plaintiffs and had been working on legislative and regulatory solutions. Legislation passed by the 2022 General Assembly allows individuals negatively impacted by the Medicare Secondary Payer Act (MSPA) to receive their health insurance through the Kentucky Employees Health Plan, and KPPA has promulgated a regulation to reimburse those individuals who had to pay for health insurance consistent with the Sixth Circuit Opinion. The two lawsuits from January and February are currently in the discovery phase concerning class certification. In addition to the MSPA issue, the two new suits allege that requiring Medicare eligible members to pay for Medicare Part B violates their right to “free” health insurance under their inviolable contract.

Mountain Comprehensive Care Center & Adanta

In 2022, Mountain Comprehensive Care Center and Adanta filed separate suits challenging the actuarially accrued liability assigned these two entities via the process outlined in KRS 61.565, known as House Bill 8 from the 2021 Regular Session of the Kentucky General Assembly. The suits challenge not only the liability assigned to them, but they challenge the constitutionality of the statutory scheme. These suits are currently in the early stages of litigation.

Note P. Reciprocity Agreement

In accordance with Kentucky Revised Statutes 78.5536 and 61.702, CERS and KRS have reciprocity agreements with Teachers' Retirement System of Kentucky (TRS), and Judicial Form Retirement System (JFRS) for the payment of insurance benefits for those members who have creditable service in CERS, KERS, and/or SPRS, and TRS and/or JFRS systems.

Note Q. Reimbursement of Retired Re-Employed Health Insurance, Active Member Health Insurance Contributions, and Retired Re-Employed Employer Contributions

Reimbursement of Retired Re-Employed Health Insurance

If a retiree is re-employed in a regular full-time position and has chosen health insurance coverage through KPPA, the employer is required to reimburse KPPA for the health insurance premium paid on the retiree's behalf, not to exceed the cost of the single premium rate. Exceptions for retired members who re-employ as a police officer, sheriff or school resource officer exist which may exempt employers from paying employer contributions and health insurance reimbursements if certain requirements are met. For the fiscal year ended June 30, 2023, the reimbursement totaled \$13.9 million.

Active Member Health Insurance Contributions

For new plan participants after August 31, 2008, an active member contribution of 1% in addition to the member pension contribution is required. This 1% is applicable to all Nonhazardous and Hazardous funds, and reported in the Insurance Fund. For the fiscal year ended June 30, 2023, members paid into the Insurance Fund \$32.4 million.

Retired Re-Employed Employer Contributions

Employers are required to report employer contributions on retired members who are employed in a regular full-time position. These members are referred to as retired re-employed members. These are reported within the employer contributions on the financial statements. Please see the chart below for the breakdown.

Retired Reemployed Healthcare Contributions As of June 30, 2023 (\$ in Thousands)	CERS		KERS		SPRS	KPPA Total
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		
Amount	\$4,922	\$1,611	\$5,885	\$1,452	\$-	\$13,870

Retired Reemployed Employer Contributions As of June 30, 2023 (\$ in Thousands)	CERS		KERS		SPRS	KPPA Total
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		
Amount	\$20,057	\$8,001	\$5,797	\$2,940	\$-	\$36,795

Note R. General Fund Appropriations

During the 2022 Regular Session of the Kentucky General Assembly, HB1 allocated an additional \$485 million in general fund dollars to the KERS plans and the SPRS plan. This amount includes \$215 million in FY 2021-2022 for the SPRS pension fund to be applied to the unfunded liability, which immediately lowered the SPRS contribution rate from 146.06% to 99.43% for the 2022-2023 fiscal year. The rest of the \$485 million will consist of \$135 million in each fiscal year of the biennium (2022-23 and 2023-24) for the KERS Nonhazardous pension fund to be applied to the unfunded liability. Also, House Bill 604 allocated \$105 million in fiscal year 2023 and fiscal year 2024 to be applied to the unfunded liability of the KERS Nonhazardous pension plan.

General Fund Appropriations (\$ in Thousands)			
Fiscal Year	KERS	SPRS	KPPA Total
	Nonhazardous		
2021-2022	\$-	\$215,000	\$215,000
2022-2023	\$240,000	\$-	\$240,000
2023-2024	\$240,000	\$-	\$240,000
Total	\$480,000	\$215,000	\$695,000

Note S. Prisma Daniel Boone Fund

The funds invested with Prisma Daniel Boone Fund continue to be held in a contingency reserve to cover potential obligations arising from the Mayberry Action (see Note O for details of Mayberry Case). The total reported in reserve as of June 30, 2023, is \$97.7 million for the Pension Plans and \$40.6 million for the Insurance Plan. This is based on the May 31, 2023, report because Absolute Return managers are reported on a one month lag.

Note T. Subsequent Events

Management has evaluated the period June 30, 2023 to December 6, 2023 (the date the combining financial statements were available to be issued) for items requiring recognition or disclosure in the combining financial statements.

Note U. Employer Cessation

Kentucky Revised Statutes 61.522, 61.523 and 78.535 allow for an employer of KERS or CERS to make an election to cease participating in the systems operated by KPPA. The statutes require that the employer ceasing from the plan must pay the employer's portion of the unfunded liability as calculated by the actuary. HB 1 of the 2019 Regular Session established a one-time, voluntary cessation window for KERS Quasi-Governmental Employers, including universities and community colleges, to cease participation for its nonhazardous employees by June 30, 2020. SB 249 of the 2020 Regular session extended the cessation date to June 30, 2021. HB 1 also added additional parameters apart from the normal cessation process including a soft freeze option (Tier 1 and Tier 2 employees continue to earn service credit after the cessation date), created an installment payment option and established different discount rates for use in calculating the cost. Northern Kentucky University (NKU) and Kentucky Housing Corporation (KHC) elected to cease participation effective June 30, 2021, under HB 1. HB 8 of the 2021 Regular Session further adjusted the discount rate to be used to calculate the cessation cost for universities and community colleges. NKU elected a soft-freeze, lump sum payment option, and its actuarially determined estimated portion of the cessation cost was \$204.0 million. NKU paid \$175.6 million for the pension portion and \$28.4 million for the insurance portion of the cessation cost in the 2021 fiscal year. The final cost was calculated in early 2022, and NKU received refunds of \$(13.4) million for the pension portion, and \$(8.5) million for the insurance portion of the cessation cost. KHC did not make a payment in fiscal year 2021. KHC elected a hard freeze, lump sum payment option, and its actuarially determined estimated portion of the cessation cost was \$87.4 million. KHC paid \$76.5 million for the pension portion and \$10.9 million for the insurance portion of the cessation cost. The deadline has passed for Quasi-Governmental Employers to cease participation under special provisions, therefore, any future cessations will be calculated under normal parameters unless new legislation is enacted.

Note V. Related Party

Perimeter Park West, Incorporated (PPW) was established in 1998 as a 501(c) (25) corporation located at 1260 and 1270 Louisville Road, Frankfort, Kentucky. As such, PPW can only acquire and hold title to real property. The only source of revenue for the Corporation is rent paid from lessees, and interest on account balances. Currently, KPPA is the only lessee. When cash in excess of \$500,000 is on hand at PPW, the money is paid back to the PPW shareholders in the form of dividends. PPW's expenses are for the maintenance of the property. Title to the property is held in the name of PPW and there is no mortgage on the property. KPPA does not have title to the property, however, CERS and KRS maintains PPW as an investment on the financial statements and the Pension plans are the sole shareholders. PPW's market value was \$7.3 million as of June 30, 2023. PPW is audited annually and submits IRS Form 990 as required for this entity. The purposes of PPW are as an investment for the Pension plans; and to protect the Pension and Insurance Trusts of CERS, KERS, and SPRS should someone become injured on the property. If this occurred and a lawsuit was filed against the property, the suit would be filed against PPW instead of the KPPA, CERS or KRS.

The current lease between PPW and KPPA was entered into on December 5, 2019, and continued thereafter until altered by a new agreement or termination of the lease. The premises, consisting of 85,357 square feet, are rented for the fiscal year period of July 1 to June 30. The contractual lease payments through June 30, 2027, are:

FY 2023 - \$961,968

FY 2024 - \$961,968

FY 2025 - \$961,968

FY 2026 - \$961,968

FY 2027 - \$961,968

REQUIRED SUPPLEMENTARY INFORMATION

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Schedule of Employers' NPL - CERS Nonhazardous Pension
As of June 30 (\$ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll ⁽¹⁾	Net Pension Liability as a Percentage of Covered Payroll
2023	\$15,089,106	\$8,672,597	\$6,416,509	57.48%	\$2,966,567	216.29%
2022	15,192,599	7,963,586	7,229,013	52.42%	2,835,173	254.98%
2021	14,941,437	8,565,652	6,375,785	57.33%	2,446,612	260.60%
2020	14,697,244	7,027,327	7,669,917	47.81%	2,462,752	311.44%
2019	14,192,966	7,159,921	7,033,045	50.45%	2,424,796	290.05%
2018	13,109,268	7,018,963	6,090,305	53.54%	2,454,927	248.08%
2017	12,540,545	6,687,237	5,853,308	53.32%	2,376,290	246.32%
2016	11,065,013	6,141,395	4,923,618	55.50%	2,417,187	203.69%
2015	10,740,325	6,440,800	4,299,525	59.97%	2,296,716	187.20%
2014	\$9,772,522	\$6,528,146	\$3,244,376	66.80%	\$2,272,270	142.78%

⁽¹⁾ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

Schedule of Employers' NPL - CERS Hazardous Pension
As of June 30 (\$ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll ⁽¹⁾	Net Pension Liability as a Percentage of Covered Payroll
2023	\$5,731,148	\$3,035,192	\$2,695,956	52.96%	\$714,837	377.14%
2022	5,769,691	2,718,234	3,051,457	47.11%	666,346	457.94%
2021	5,576,567	2,914,408	2,662,159	52.26%	572,484	465.02%
2020	5,394,732	2,379,704	3,015,028	44.11%	559,551	538.83%
2019	5,176,003	2,413,708	2,762,295	46.63%	553,541	499.02%
2018	4,766,794	2,348,337	2,418,457	49.26%	562,853	429.68%
2017	4,455,275	2,217,996	2,237,279	49.78%	526,559	424.89%
2016	3,726,115	2,010,174	1,715,941	53.95%	526,334	326.02%
2015	3,613,308	2,078,202	1,535,106	57.52%	483,641	317.41%
2014	\$3,288,826	\$2,087,002	\$1,201,824	63.46%	\$479,164	250.82%

⁽¹⁾ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

Schedule of Employers' NPL - KERS Nonhazardous Pension
As of June 30 (\$ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll ⁽¹⁾	Net Pension Liability as a Percentage of Covered Payroll
2023	\$15,858,669	\$3,539,943	\$12,318,726	22.32%	\$1,648,318	747.35%
2022	16,281,188	3,013,845	13,267,343	18.51%	1,432,960	925.87%
2021	16,335,657	3,018,660	13,316,997	18.48%	1,441,337	923.93%
2020	16,472,733	2,308,080	14,164,653	14.01%	1,476,156	959.56%
2019	16,356,674	2,233,672	14,123,002	13.66%	1,485,854	950.50%
2018	15,608,221	2,004,446	13,603,775	12.84%	1,509,955	900.94%
2017	15,445,206	2,056,870	13,388,336	13.32%	1,602,396	835.52%
2016	13,379,781	1,980,292	11,399,489	14.80%	1,631,025	698.92%
2015	12,359,673	2,327,783	10,031,890	18.83%	1,544,234	649.64%
2014	\$11,550,110	\$2,578,291	\$8,971,819	22.32%	\$1,577,496	568.74%

⁽¹⁾ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

Schedule of Employers' NPL - KERS Hazardous Pension
As of June 30 (\$ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll ⁽¹⁾	Net Pension Liability as a Percentage of Covered Payroll
2023	\$1,316,521	\$893,533	\$422,988	67.87%	\$223,922	188.90%
2022	1,318,494	810,978	507,516	61.51%	188,648	269.03%
2021	1,311,767	866,140	445,627	66.03%	172,725	258.00%
2020	1,251,027	690,350	560,677	55.18%	171,840	326.28%
2019	1,227,226	680,932	546,294	55.49%	160,600	340.16%
2018	1,150,610	645,485	505,125	56.10%	152,936	330.29%
2017	1,098,630	601,529	497,101	54.75%	178,511	278.47%
2016	919,517	527,879	391,638	57.41%	158,828	246.58%
2015	895,433	552,468	342,965	61.70%	128,680	266.53%
2014	\$816,850	\$561,484	\$255,366	68.74%	\$129,076	197.84%

⁽¹⁾ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

Schedule of Employer's NPL - SPRS Pension
As of June 30 (\$ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll ⁽¹⁾	Net Pension Liability as a Percentage of Covered Payroll
2023	\$1,039,813	\$591,514	\$448,299	56.89%	\$65,693	682.42%
2022	1,057,752	551,699	506,053	52.16%	48,061	1,052.94%
2021	1,055,824	356,346	699,478	33.75%	47,873	1,461.11%
2020	1,049,237	293,949	755,288	28.02%	49,019	1,540.81%
2019	1,035,000	286,165	748,835	27.65%	49,515	1,512.34%
2018	969,622	267,572	702,050	27.60%	50,346	1,394.45%
2017	943,271	255,737	687,534	27.11%	54,065	1,271.68%
2016	795,421	218,012	577,409	27.41%	46,685	1,236.82%
2015	734,156	247,228	486,928	33.68%	45,765	1,063.97%
2014	\$681,118	\$260,974	\$420,144	38.32%	\$44,616	941.69%

⁽¹⁾ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

**Schedule of Changes in Employers' TPL - CERS Nonhazardous
As of June 30 (\$ in Thousands)**

Total Pension Liability (TPL)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Service Cost	\$283,633	\$272,250	\$280,165	\$280,092	\$254,643	\$254,169	\$193,082	\$209,101	\$207,400	\$192,482
Interest	\$920,862	906,401	892,309	861,720	794,935	760,622	803,555	780,587	733,002	710,526
Benefit Changes	\$3,862	-	4,106	-	-	15,708	-	-	-	-
Difference between Expected and Actual Experience	\$511,721	(49,439)	(91,776)	173,345	87,377	279,401	(208,015)	-	49,966	-
Changes of Assumptions	\$(905,957)	-	-	-	727,351	-	1,388,800	-	606,293	-
Benefit Payments	\$(917,614)	(878,050)	(840,611)	(810,879)	(780,608)	(741,177)	(701,891)	(665,000)	(628,858)	(597,136)
Net Change in TPL	(103,493)	251,162	244,193	504,278	1,083,698	568,723	1,475,532	324,687	967,803	305,872
TPL – Beginning	15,192,599	14,941,437	14,697,244	14,192,966	13,109,268	12,540,545	11,065,013	10,740,325	9,772,522	9,466,650
TPL – Ending (a)	\$15,089,106	\$15,192,599	\$14,941,437	\$14,697,244	\$14,192,966	\$13,109,268	\$12,540,545	\$11,065,013	\$10,740,325	\$9,772,522
Plan Fiduciary Net Position ⁽¹⁾										
Contributions – Employer	\$697,681	\$606,807	\$472,228	\$475,416	\$393,453	\$358,017	\$333,554	\$284,105	\$298,565	\$324,231
Contributions – Member ⁽²⁾	147,769	186,648	165,698	168,994	159,064	160,370	150,715	141,674	140,311	128,568
Refunds of Contributions	(23,263)	(19,789)	(13,862)	(14,918)	(14,387)	(14,608)	(14,430)	(13,753)	(13,523)	(14,286)
Retirement Benefit	(894,351)	(858,261)	(826,749)	(795,960)	(766,221)	(726,569)	(687,461)	(651,246)	(615,335)	(582,850)
Net Investment Income ⁽²⁾	805,303	(494,801)	1,762,739	56,178	390,664	573,829	825,900	(40,800)	110,568	895,530
Administrative Expense	(24,128)	(22,670)	(21,729)	(22,304)	(21,659)	(19,592)	(19,609)	(19,385)	(18,212)	(18,615)
Other	-	-	-	-	44 ⁽⁵⁾	361 ⁽⁵⁾	(42,827) ⁽⁴⁾	-	10,280	-
Net Change in Plan Fiduciary Net Position	709,011	(602,066)	1,538,325	(132,594)	140,958	331,808	545,843	(299,405)	(87,346)	732,578
Plan Fiduciary Net Position - Beginning	7,963,586	8,565,652	7,027,327	7,159,921	7,018,963	6,687,237	6,141,395	6,440,800	6,528,146	5,795,568
Prior Year Adjustment	-	-	-	-	-	(82)	-	-	-	-
Plan Fiduciary Net Position – Ending (b)	8,672,597	7,963,586	8,565,652	7,027,327	7,159,921	7,018,963	6,687,237	6,141,395	6,440,800	6,528,146
Net Pension Liability – Ending (a) – (b)	\$6,416,509	\$7,229,013	\$6,375,785	\$7,669,917	\$7,033,045	\$6,090,305	\$5,853,308	\$4,923,618	\$4,299,525	\$3,244,376
Plan Fiduciary Net Position as a Percentage	57.48%	52.42%	57.33%	47.81%	50.45%	53.54%	53.32%	55.50%	59.97%	66.80%
Covered Payroll ⁽³⁾	\$2,966,567	\$2,835,173	\$2,446,612	\$2,462,752	\$2,424,796	\$2,454,927	\$2,376,290	\$2,417,187	\$2,296,716	\$2,272,270
Net Pension Liability as a Percentage of Covered Payroll	216.29%	254.98%	260.60%	311.44%	290.05%	248.08%	246.32%	203.69%	187.20%	142.78%

⁽¹⁾ Does not include 401(h) assets for fiscal years 2017 and later. Assets totaled \$108,843,000 as of June 30, 2023.

⁽²⁾ Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later. For fiscal year 2023, 401(h) contributions equaled \$(30,000); and associated investment return equaled \$10,113,000.

⁽³⁾ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

⁽⁴⁾ Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later.

⁽⁵⁾ Northern Trust Settlement.

**Schedule of Changes in Employers' TPL - CERS Hazardous
As of June 30 (\$ in Thousands)**

Total Pension Liability (TPL)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Service Cost	\$115,389	\$109,683	\$109,350	\$109,887	\$77,426	\$81,103	\$58,343	\$66,249	\$71,934	\$66,761
Interest	350,413	338,799	327,963	314,762	289,741	270,694	270,860	262,886	247,008	238,665
Benefit Changes	-	-	333	-	-	2,172	-	-	-	-
Difference between Expected and Actual Experience	97,750	56,197	38,850	73,696	27,364	205,882	92,588	-	41,935	-
Changes of Assumptions	(275,934)	-	-	-	276,541	-	536,667	-	166,849	-
Benefit Payments	(326,161)	(311,555)	(294,661)	(279,616)	(261,863)	(248,332)	(229,299)	(216,327)	(203,244)	(192,299)
Net Change in TPL	(38,543)	193,124	181,835	218,729	409,209	311,519	729,159	112,807	324,482	113,127
TPL – Beginning	5,769,691	5,576,567	5,394,732	5,176,003	4,766,794	4,455,275	3,726,115	3,613,308	3,288,826	3,175,699
TPL – Ending (a)	\$5,731,148	\$5,769,691	\$5,576,567	\$5,394,732	\$5,176,003	\$4,766,794	\$4,455,275	\$3,726,115	\$3,613,308	\$3,288,826
Plan Fiduciary Net Position ⁽¹⁾										
Contributions – Employer	\$308,223	\$222,028	\$172,205	\$168,443	\$138,053	\$127,660	\$115,947	\$105,713	\$108,071	\$115,240
Contributions – Member ⁽²⁾	56,987	69,565	62,367	63,236	58,661	61,089	60,101	52,972	47,692	43,722
Refunds of Contributions	(6,568)	(5,766)	(4,662)	(3,814)	(2,854)	(4,214)	(2,315)	(2,879)	(3,111)	(2,664)
Retirement Benefit	(319,593)	(305,789)	(289,999)	(275,802)	(259,009)	(244,118)	(226,984)	(213,448)	(200,134)	(189,635)
Net Investment Income ⁽²⁾	280,033	(174,217)	596,641	15,914	132,232	191,324	270,473	(9,020)	37,104	288,490
Administrative Expense	(2,124)	(1,995)	(1,848)	(1,981)	(1,726)	(1,504)	(1,421)	(1,366)	(1,288)	(1,721)
Other	-	-	-	-	14 ⁽⁵⁾	111 ⁽⁵⁾	(7,979) ⁽⁴⁾	-	2,865	-
Net Change in Plan Fiduciary Net Position	316,958	(196,174)	534,704	(34,004)	65,371	130,348	207,822	(68,028)	(8,801)	253,432
Plan Fiduciary Net Position – Beginning	2,718,234	2,914,408	2,379,704	2,413,708	2,348,337	2,217,996	2,010,174	2,078,202	2,087,002	1,833,570
Prior Year Adjustment	-	-	-	-	-	(7)	-	-	-	-
Plan Fiduciary Net Position – Ending (b)	3,035,192	2,718,234	2,914,408	2,379,704	2,413,708	2,348,337	2,217,996	2,010,174	2,078,202	2,087,002
Net Pension Liability – Ending (a) – (b)	\$2,695,956	\$3,051,457	\$2,662,159	\$3,015,028	\$2,762,295	\$2,418,457	\$2,237,279	\$1,715,941	\$1,535,106	\$1,201,824
Plan Fiduciary Net Position as a Percentage	52.96%	47.11%	52.26%	44.11%	46.63%	49.26%	49.78%	53.95%	57.52%	63.46%
Covered Payroll ⁽³⁾	\$714,837	\$666,346	\$572,484	\$559,551	\$553,541	\$562,853	\$526,559	\$526,334	\$483,641	\$479,164
Net Pension Liability as a Percentage of Covered Payroll	377.14%	457.94%	465.02%	538.83%	499.02%	429.68%	424.89%	326.02%	317.41%	250.82%

⁽¹⁾ Does not include 401(h) assets for fiscal years 2017 and later. Assets totaled \$20,605,000 as of June 30, 2023.

⁽²⁾ Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later. For fiscal year 2023, 401(h) contributions equaled \$(20,000); and associated investment return equaled \$1,931,000.

⁽³⁾ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

⁽⁴⁾ Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later.

⁽⁵⁾ Northern Trust Settlement.

**Schedule of Changes in Employers' TPL - KERS Nonhazardous
As of June 30 (\$ in Thousands)**

Total Pension Liability (TPL)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Service Cost	\$163,563	\$165,616	\$171,472	\$179,702	\$184,988	\$195,681	\$143,858	\$139,631	\$143,847	\$133,361
Interest	827,579	830,440	838,084	832,178	793,163	785,123	870,725	891,897	859,509	853,653
Benefit Changes	2,024	-	2,091	-	-	9,624	-	-	-	-
Difference between Expected and Actual Experience	310,954	(15,034)	(130,268)	115,515	70,529	153,565	(134,379)	-	30,958	-
Changes of Assumptions	(691,088)	-	-	-	700,464	-	2,145,530	923,999	694,592	-
Benefit Payments	(1,035,551)	(1,035,491)	(1,018,455)	(1,011,336)	(1,000,691)	(980,978)	(960,309)	(935,419)	(919,343)	(903,564)
Net Change in TPL	(422,519)	(54,469)	(137,076)	116,059	748,453	163,015	2,065,425	1,020,108	809,563	83,450
TPL – Beginning	16,281,188	16,335,657	16,472,733	16,356,674	15,608,221	15,445,206	13,379,781	12,359,673	11,550,110	11,466,660
TPL – Ending (a)	\$15,858,669	\$16,281,188	\$16,335,657	\$16,472,733	\$16,356,674	\$15,608,221	\$15,445,206	\$13,379,781	\$12,359,673	\$11,550,110
Plan Fiduciary Net Position ⁽¹⁾										
Contributions – Employer Other ⁽⁶⁾	\$1,275,007	\$1,116,869	\$1,134,232	\$948,592	\$1,035,462	\$689,143	\$757,121	\$513,084	\$521,691	\$296,836
Contributions – Member ⁽²⁾	84,579	89,607	90,202	96,594	93,759	104,972	100,543	106,494	104,606	97,487
Refunds of Contributions	(11,847)	(12,116)	(8,953)	(11,523)	(12,342)	(13,603)	(11,819)	(12,130)	(13,552)	(13,627)
Retirement Benefit	(1,023,704)	(1,023,375)	(1,009,502)	(999,813)	(988,349)	(967,375)	(948,490)	(923,288)	(905,791)	(889,937)
Net Investment Income ⁽²⁾	215,880	(162,461)	516,223	52,499	112,371	144,881	220,985	(20,663)	44,570	337,923
Administrative Expense	(13,817)	(13,339)	(11,622)	(11,941)	(11,712)	(10,692)	(10,957)	(10,989)	(10,474)	(11,145)
Other	-	-	-	0	37 ⁽⁵⁾	301 ⁽⁵⁾	(30,805) ⁽⁴⁾	-	8,442	-
Net Change in Fiduciary Net Position	526,098	(4,815)	710,580	74,408	229,226	(52,373)	76,578	(347,491)	(250,508)	(182,463)
Plan Fiduciary Net Position – Beginning	3,013,845	3,018,660	2,308,080	2,233,672	2,004,446	2,056,870	1,980,292	2,327,783	2,578,291	2,760,754
Prior Year Adjustment	-	-	-	-	-	(51)	-	-	-	-
Plan Fiduciary Net Position – Ending (b)	3,539,943	3,013,845	3,018,660	2,308,080	2,233,672	2,004,446	2,056,870	1,980,292	2,327,783	2,578,291
Net Pension Liability – Ending (a) – (b)	\$12,318,726	\$13,267,343	\$13,316,997	\$14,164,653	\$14,123,002	\$13,603,775	\$13,388,336	\$11,399,489	\$10,031,890	\$8,971,819
Plan Fiduciary Net Position as a Percentage	22.32%	18.51%	18.48%	14.01%	13.66%	12.84%	13.32%	14.80%	18.83%	22.32%
Covered Payroll ⁽³⁾	\$1,648,318	\$1,432,960	\$1,441,337	\$1,476,156	\$1,485,854	\$1,509,955	\$1,602,396	\$1,631,025	\$1,544,234	\$1,577,496
Net Pension Liability as a Percentage of Covered Payroll	747.35%	925.87%	923.93%	959.56%	950.50%	900.94%	835.52%	698.92%	649.64%	568.74%

⁽¹⁾ Does not include 401(h) assets for fiscal years 2017 and later. Assets totaled \$67,263,000 as of June 30, 2023.

⁽²⁾ Does not include 401(h) contributions or associated investment income for fiscal year 2017 and later. For fiscal year 2023 401(h) contributions equaled \$(12,000); and associated investment return equaled \$4,378,000.

⁽³⁾ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

⁽⁴⁾ Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later.

⁽⁵⁾ Northern Trust Settlement.

⁽⁶⁾ Includes \$63.1 million and \$175.6 million employer cessation contributions for fiscal year 2022 and 2021, respectively.

**Schedule of Changes in Employers' TPL - KERS Hazardous
As of June 30 (\$ in Thousands)**

Total Pension Liability (TPL)	2023	2022	2021	2020	2019	2018	2017	2016	2015
Service Cost	\$26,852	\$26,885	\$28,450	\$25,568	\$27,117	\$28,641	\$21,081	\$20,751	\$18,729
Interest	79,822	79,422	75,743	74,357	69,657	66,536	66,589	64,851	61,005
Benefit Changes	-	-	26	-	-	705	-	-	-
Difference between Expected and Actual Experience	(1,773)	(17,557)	34,789	(1,095)	1,395	24,215	26,902	-	6,067
Changes of Assumptions	(24,197)	-	-	-	50,658	-	127,878	-	52,165
Benefit Payments	(82,677)	(82,023)	(78,268)	(75,029)	(72,211)	(68,117)	(63,338)	(61,518)	(59,383)
Net Change in TPL	(1,973)	6,727	60,740	23,801	76,616	51,980	179,112	24,084	78,583
TPL – Beginning	1,318,494	1,311,767	1,251,027	1,227,226	1,150,610	1,098,630	919,517	895,433	816,850
TPL – Ending (a)	\$1,316,521	\$1,318,494	\$1,311,767	\$1,251,027	\$1,227,226	\$1,150,610	\$1,098,630	\$919,517	\$895,433
Plan Fiduciary Net Position ⁽¹⁾									
Contributions – Employer	\$72,807	\$59,055	\$62,200	\$59,115	\$55,259	\$43,661	\$52,974	\$23,759	\$28,536
Contributions - Member ⁽²⁾	17,459	20,588	19,961	19,769	17,118	17,891	17,524	15,739	13,207
Refunds of Contributions	(4,041)	(4,976)	(4,380)	(3,168)	(2,684)	(2,501)	(2,106)	(2,211)	(2,610)
Retirement Benefit	(78,636)	(77,047)	(73,888)	(71,861)	(69,527)	(65,616)	(61,231)	(59,306)	(56,773)
Net Investment Income ⁽²⁾	76,479	(51,317)	173,152	6,739	36,380	51,467	70,994	(1,653)	8,701
Administrative Expense	(1,513)	(1,465)	(1,255)	(1,176)	(1,103)	(975)	(919)	(916)	(844)
Other	-	-	-	-	4 ⁽⁵⁾	33 ⁽⁵⁾	(3,586) ⁽⁴⁾	-	767
Net Change in Plan Fiduciary Net Position	82,555	(55,162)	175,790	9,418	35,447	43,960	73,650	(24,588)	(9,016)
Plan Fiduciary Net Position – Beginning	810,978	866,140	690,350	680,932	645,485	601,529	527,879	552,468	561,484
Prior Year Adjustment	-	-	-	-	-	(4)	-	-	-
Fiduciary Net Position – Ending (b)	893,533	810,978	866,140	690,350	680,932	645,485	601,529	527,879	552,468
Net Pension Liability – Ending (a) – (b)	\$422,988	\$507,516	\$445,627	\$560,677	\$546,294	\$505,125	\$497,101	\$391,638	\$342,965
Plan Fiduciary Net Position as a Percentage	67.87%	61.51%	66.03%	55.18%	55.49%	56.10%	54.75%	57.41%	61.70%
Covered Payroll ⁽³⁾	\$223,922	\$188,648	\$172,725	\$171,840	\$160,600	\$152,936	\$178,511	\$158,828	\$128,680
Net Pension Liability as a Percentage of Covered Payroll	188.90%	269.03%	258.00%	326.28%	340.16%	330.29%	278.47%	246.58%	266.53%

⁽¹⁾ Does not include 401(h) assets for fiscal years 2017 and later. Assets totaled \$9,034,000 as of June 30, 2023.

⁽²⁾ Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later. For fiscal years 2023, 401(h) contributions equaled \$(7,000); and associated investment return equaled \$781,000.

⁽³⁾ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

⁽⁴⁾ Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later.

⁽⁵⁾ Northern Trust Settlement.

Schedule of Changes in Employer's TPL - SPRS
As of June 30 (\$ in Thousands)

Total Pension Liability (TPL)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Service Cost	\$13,229	\$12,158	\$12,530	\$13,192	\$11,726	\$11,890	\$8,297	\$8,402	\$7,695	\$7,142
Interest	53,853	53,740	53,417	52,697	49,301	47,978	51,769	52,951	50,661	50,391
Benefit Changes	-	3,130	35	-	-	184	-	-	-	-
Difference between Expected and Actual Experience	10,204	(2,700)	4,127	10,859	20,952	25,126	8,143	-	9,331	-
Changes of Assumptions	(31,255)	-	-	0	44,510	-	136,602	56,191	40,201	-
Benefit Payments	(63,970)	(64,400)	(63,522)	(62,511)	(61,111)	(58,827)	(56,960)	(56,279)	(54,850)	(53,239)
Net Change in TPL	(17,939)	1,928	6,587	14,237	65,378	26,351	147,850	61,265	53,038	4,294
TPL - Beginning	1,057,752	1,055,824	1,049,237	1,035,000	969,622	943,271	795,421	734,156	681,118	676,824
TPL - Ending (a)	\$1,039,813	\$1,057,752	\$1,055,824	\$1,049,237	\$1,035,000	\$969,622	\$943,271	\$795,421	\$734,156	\$681,118
Plan Fiduciary Net Position ⁽¹⁾										
Contributions - Employer	\$58,120	\$277,341	\$59,650	\$59,453	\$60,048	\$46,877	\$63,239	\$25,822	\$31,990	\$20,279
Contributions - Member ⁽²⁾	5,250	4,773	4,752	4,767	5,062	5,522	5,348	5,263	5,244	5,075
Refunds of Contributions	(166)	(280)	(273)	(88)	(162)	(22)	(26)	(11)	(85)	(213)
Retirement Benefit	(63,804)	(64,120)	(63,249)	(62,423)	(60,949)	(58,805)	(56,934)	(56,268)	(54,765)	(53,026)
Net Investment Income ⁽²⁾	40,708	(22,088)	61,729	6,341	14,816	18,437	26,795	(3,843)	3,426	40,374
Administrative Expense	(293)	(273)	(212)	(266)	(225)	(194)	(181)	(178)	(201)	(215)
Other	-	-	-	-	3 ⁽⁵⁾	21 ⁽⁵⁾	(517) ⁽⁴⁾	-	645	-
Net Change in Plan Fiduciary Net Position	39,815	195,353	62,397	7,784	18,593	11,836	37,724	(29,215)	(13,746)	12,274
Plan Fiduciary Net Position - Beginning	551,699	356,346	293,949	286,165	267,572	255,737	218,012	247,228	260,974	248,700
Prior Year Adjustment	-	-	-	-	-	(1)	-	-	-	-
Plan Fiduciary Net Position - Ending (b)	591,514	551,699	356,346	293,949	286,165	267,572	255,737	218,012	247,228	260,974
Net Pension Liability - Ending (a) - (b)	\$448,299	\$506,053	\$699,478	\$755,288	\$748,835	\$702,050	\$687,534	\$577,409	\$486,928	\$420,144
Plan Fiduciary Net Position as a Percentage	56.89%	52.16%	33.75%	28.02%	27.65%	27.60%	27.11%	27.41%	33.68%	38.32%
Covered Payroll ⁽³⁾	\$65,693	\$48,061	\$47,873	\$49,019	\$49,515	\$50,346	\$54,065	\$46,685	\$45,765	\$44,616
Net Pension Liability as a Percentage of Covered Payroll	682.42%	1,052.94%	1,461.11%	1,540.81%	1,512.34%	1,394.45%	1,271.68%	1,236.82%	1,063.97%	941.69%

⁽¹⁾ Does not include 401(h) assets for fiscal years 2017 and later. Assets totaled \$1,312,000 as of June 30, 2023.

⁽²⁾ Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later. For fiscal year 2023, 401(h) contributions equaled (\$8,000); and associated investment return equaled \$93,000.

⁽³⁾ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

⁽⁴⁾ Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later.

⁽⁵⁾ Northern Trust Settlement.

The actuarially determined contributions effective for fiscal year ending 2023 that are documented in the schedules on the following pages, were calculated as of June 30, 2021. Based on the June 30, 2021, actuarial valuation report, the actuarial methods and assumptions used to calculate these contribution rates are below:

Notes to Schedule of Employers' Contribution					
Item	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
Determined by the Actuarial Valuation as of:	June 30, 2021	June 30, 2021	June 30, 2021	June 30, 2021	June 30, 2021
Actuarial Cost Method:	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal
Asset Valuation Method:	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay
Amortization Period:	30-year closed period at June 30, 2019, Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases	30-year closed period at June 30, 2019, Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases	30-year closed period at June 30, 2019, Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases	30-year closed period at June 30, 2019, Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases	30-year closed period at June 30, 2019, Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases
Payroll Growth	2.00%	2.00%	0.00%	0.00%	0.00%
Investment Return:	6.25%	6.25%	5.25%	6.25%	5.25%
Inflation:	2.30%	2.30%	2.30%	2.30%	2.30%
Salary Increase:	3.30% to 10.30%, varies by service	3.55% to 19.05%, varies by service	3.30% to 15.30%, varies by service	3.55% to 20.05%, varies by service	3.55% to 16.05%, varies by service
Mortality:	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019
Phase-In provision	Board certified rate is phased into the actuarially determined rate in accordance with HB 362 enacted in 2018.	Board certified rate is phased into the actuarially determined rate in accordance with HB 362 enacted in 2018.	N/A	N/A	N/A

Schedule of Employers' Contributions Pension - CERS Nonhazardous
As of June 30 (\$ in Thousands)

Fiscal Year Ending	Actuarially Determined Contribution ⁽¹⁾	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll ⁽²⁾	Actual Contributions as a Percentage of Covered Payroll
2023	\$697,634	\$697,681	\$(47)	\$2,966,567	23.52%
2022	636,071	606,807	29,264	2,835,173	21.40%
2021	582,538	472,228	110,310	2,446,612	19.30%
2020	554,612	475,416	79,196	2,462,752	19.30%
2019	529,575	393,453	136,122	2,424,796	16.23%
2018	355,473	358,017	(2,544)	2,454,927	14.58%
2017	331,492	333,554	(2,062)	2,376,290	14.04%
2016	282,767	284,106	(1,339)	2,417,187	11.75%
2015	297,715	298,566	(851)	2,296,716	13.00%
2014	\$324,231	\$324,231	\$-	\$2,272,270	14.27%

⁽¹⁾ Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

⁽²⁾ Based on derived compensation using the provided employer contribution information for fiscal years 2017, and later.

Schedule of Employers' Contributions Pension - CERS Hazardous
As of June 30 (\$ in Thousands)

Fiscal Year Ending	Actuarially Determined Contribution ⁽¹⁾	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll ⁽²⁾	Actual Contributions as a Percentage of Covered Payroll
2023	\$308,037	\$308,223	\$(186)	\$714,837	43.12%
2022	269,542	222,028	47,514	666,346	33.32%
2021	240,558	172,205	68,353	572,484	30.08%
2020	206,922	168,443	38,479	559,551	30.10%
2019	197,559	138,053	59,506	553,541	24.94%
2018	124,953	127,660	(2,707)	562,853	22.68%
2017	114,316	115,947	(1,631)	526,559	22.02%
2016	104,952	105,713	(761)	526,334	20.08%
2015	107,514	108,071	(557)	483,641	22.35%
2014	\$115,240	\$115,240	\$-	\$479,164	24.05%

⁽¹⁾ Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

⁽²⁾ Based on derived compensation using the provided employer contribution information for fiscal years 2017, and later.

Schedule of Employers' Contributions Pension - KERS Nonhazardous As of June 30 (\$ in Thousands)

Fiscal Year Ending	Actuarially Determined Contribution ⁽¹⁾	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll ⁽²⁾	Actual Contributions as a Percentage of Covered Payroll
2023	\$1,034,918	\$1,275,007	\$(240,089)	\$1,648,318	77.35%
2022	1,048,861	1,116,869	(68,008)	1,432,960	77.94%
2021	1,056,211	1,134,232	(78,021)	1,441,337	78.69%
2020	1,048,513	948,592	99,921	1,476,156	64.26%
2019	1,055,402	1,035,462	19,940	1,485,854	69.69%
2018	633,879	689,143	(55,264)	1,509,955	45.64%
2017	623,813	757,121	(133,308)	1,602,396	47.25%
2016	512,670	513,084	(414)	1,631,025	31.46%
2015	520,948	521,691	(743)	1,544,234	33.78%
2014	\$520,765	\$296,836	\$223,929	\$1,577,496	18.82%

⁽¹⁾ Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

⁽²⁾ Based on derived compensation using the provided employer contribution information for fiscal year ended 2017, and later.

Schedule of Employers' Contributions Pension - KERS Hazardous As of June 30 (\$ in Thousands)

Fiscal Year Ending	Actuarially Determined Contribution ⁽¹⁾	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll ⁽²⁾	Actual Contributions as a Percentage of Covered Payroll
2023	\$72,778	\$72,807	\$(29)	\$223,922	32.51%
2022	59,052	59,055	(3)	188,648	31.30%
2021	62,181	62,200	(19)	172,725	36.01%
2020	59,096	59,115	(19)	171,840	34.40%
2019	55,230	55,259	(29)	160,600	34.41%
2018	31,321	43,661	(12,340)	152,936	28.55%
2017	37,630	52,974	(15,344)	178,511	29.68%
2016	23,690	23,759	(69)	158,828	14.96%
2015	28,374	28,536	(162)	128,680	22.18%
2014	\$13,570	\$11,670	\$1,900	\$129,076	9.04%

⁽¹⁾ Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

⁽²⁾ Based on derived compensation using the provided employer contribution information for fiscal year ended 2017, and later.

Schedule of Employer's Contributions Pension - SPRS
As of June 30 (\$ in Thousands)

Fiscal Year Ending	Actuarially Determined Contribution ⁽¹⁾	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll ⁽²⁾	Actual Contributions as a Percentage of Covered Payroll
2023	\$58,120	\$58,120	\$-	\$65,693	88.47%
2022	62,341	277,341	(215,000)	48,061	577.06%
2021	59,263	59,650	(387)	47,873	124.60%
2020	58,358	59,453	(1,095)	49,019	121.29%
2019	58,948	60,048	(1,100)	49,515	121.27%
2018	36,033	46,877	(10,844)	50,346	93.11%
2017	35,937	63,240	(27,303)	54,065	116.97%
2016	25,723	25,822	(99)	46,685	55.31%
2015	31,444	31,990	(546)	45,765	69.90%
2014	\$25,808	\$20,279	\$5,529	\$44,616	45.45%

⁽¹⁾ Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

⁽²⁾ Based on derived compensation using the provided employer contribution information for fiscal years ended 2017, and later.

Schedule of the Employers' Net OPEB Liability - CERS Nonhazardous
As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2023	\$3,260,308	\$3,398,375	\$(138,067)	104.23%	\$2,982,960	(4.63)%
2022	5,053,498	3,079,984	1,973,514	60.95%	2,843,218	69.41%
2021	5,161,251	3,246,801	1,914,450	62.91%	2,619,695	73.08%
2020	4,996,309	2,581,613	2,414,696	51.67%	2,620,585	92.14%
2019	4,251,466	2,569,511	1,681,955	60.44%	2,577,378	65.26%
2018	4,189,606	2,414,126	1,775,480	57.62%	2,570,156	69.08%
2017	\$4,222,878	\$2,212,536	\$2,010,342	52.39%	\$2,480,130	81.06%

⁽¹⁾ Based on derived compensation using the provided employer contribution information. This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of the Employers' Net OPEB Liability - CERS Hazardous
As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2023	\$1,771,015	\$1,634,192	\$136,823	92.27%	\$719,666	19.01%
2022	2,374,457	1,522,671	851,786	64.13%	668,667	127.39%
2021	2,436,383	1,627,824	808,559	66.81%	613,985	131.69%
2020	2,245,222	1,321,117	924,105	58.84%	596,001	155.05%
2019	2,080,574	1,340,714	739,860	64.44%	583,632	126.77%
2018	1,993,941	1,280,982	712,959	64.24%	588,526	121.14%
2017	\$2,015,673	\$1,189,001	\$826,672	58.99%	\$542,710	152.32%

⁽¹⁾ Based on derived compensation using the provided employer contribution information. This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of the Employers' Net OPEB Liability - KERS Nonhazardous
As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2023	\$2,317,344	\$1,532,752	\$784,592	66.14%	\$1,653,492	47.45%
2022	3,576,530	1,364,419	2,212,111	38.15%	1,437,132	153.93%
2021	3,698,804	1,419,477	2,279,327	38.38%	1,452,345	156.94%
2020	3,599,557	1,060,649	2,538,908	29.47%	1,482,431	171.27%
2019	3,217,985	995,089	2,222,896	30.92%	1,515,953	146.63%
2018	3,262,117	891,205	2,370,912	27.32%	1,573,898	150.64%
2017	\$3,353,332	\$817,370	\$2,535,962	24.37%	\$1,593,097	159.18%

⁽¹⁾ Based on derived compensation using the provided employer contribution information. This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of the Employers' Net OPEB Liability - KERS Hazardous
As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2023	\$417,361	\$625,356	\$(207,995)	149.84%	\$223,922	(92.89)%
2022	595,789	588,162	7,627	98.72%	188,648	4.04%
2021	622,152	633,677	(11,525)	101.85%	172,725	(6.67)%
2020	564,524	521,755	42,769	92.42%	182,209	23.47%
2019	507,204	534,053	(26,849)	105.29%	151,448	(17.73)%
2018	485,904	519,072	(33,168)	106.83%	190,317	(17.43)%
2017	\$494,869	\$488,838	\$6,031	98.78%	\$171,087	3.53%

⁽¹⁾ Based on derived compensation using the provided employer contribution information. For 2021, 2022, and 2023 derived compensation based on pension contribution information, as there were no required employer contributions for the insurance fund for FYE 2021, FYE 2022, and FYE 2023. This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of the Employer's Net OPEB Liability - SPRS
As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2023	\$263,450	\$248,109	\$15,341	94.18%	\$65,830	23.30%
2022	351,453	231,242	120,211	65.80%	48,600	247.35%
2021	364,899	247,318	117,581	67.78%	47,155	249.35%
2020	339,942	201,340	138,602	59.23%	48,231	287.37%
2019	312,553	201,206	111,347	64.38%	48,780	228.26%
2018	301,012	190,847	110,165	63.40%	50,064	220.05%
2017	\$313,234	\$178,838	\$134,396	57.09%	\$48,873	274.99%

⁽¹⁾ Based on derived compensation using the provided employer contribution information. This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

**Schedule of Changes in Employers' Net OPEB Liability - CERS Nonhazardous
As of June 30 (\$ in Thousands)**

	2023	2022	2021	2020	2019	2018	2017
Total OPEB Liability							
Service Cost	\$98,045	\$138,225	\$132,407	\$131,289	\$119,011	\$122,244	\$85,468
Interest on Total OPEB liability	283,330	263,390	262,128	236,126	240,352	242,048	240,854
Benefit Changes	5,153	74,108	3,359	-	-	4,306	-
Difference between Expected and Actual Experience	(2,134,260)	(68,111)	(340,831)	505,843	(404,301)	(240,568)	(6,641)
Assumption Changes	120,132	(323,247)	282,975	60,225	268,842	(4,876)	520,286
Benefit Payments ^{(1) (2)}	(165,590)	(192,118)	(175,096)	(188,640)	(162,044)	(156,426)	(140,120)
Net Change in Total OPEB Liability	(1,793,190)	(107,753)	164,942	744,843	61,860	(33,272)	699,847
Total OPEB Liability - Beginning	5,053,498	5,161,251	4,996,309	4,251,466	4,189,606	4,222,878	3,523,031
Total OPEB Liability - Ending (a)	\$3,260,308	\$5,053,498	\$5,161,251	\$4,996,309	\$4,251,466	\$4,189,606	\$4,222,878
Plan Fiduciary Net Position							
Contributions – Employer ⁽²⁾	\$151,052	\$187,204	\$186,509	\$179,521	\$168,905	\$145,809	\$133,326
Contributions – Member	17,751	15,925	13,613	12,964	11,801	10,825	9,158
Benefit Payments ^{(1) (2)}	(165,590)	(192,118)	(175,096)	(188,640)	(162,044)	(156,426)	(140,120)
OPEB Plan Net Investment Income	316,115	(176,895)	641,084	9,160	137,591	202,068	264,782
OPEB Plan Administrative Expense	(937)	(933)	(922)	(903)	(877)	(761)	(789)
Other ⁽⁴⁾	-	-	-	-	9	75	-
Net Change in Plan Fiduciary Net Position	318,391	(166,817)	665,188	12,102	155,385	201,590	266,357
Plan Fiduciary Net Position – Beginning	3,079,984	3,246,801	2,581,613	2,569,511	2,414,126	2,212,536	1,946,179
Plan Fiduciary Net Position – Ending (b)	3,398,375	3,079,984	3,246,801	2,581,613	2,569,511	2,414,126	2,212,536
Net OPEB Liability – Ending (a) – (b)	\$(138,067)	\$1,973,514	\$1,914,450	\$2,414,696	\$1,681,955	\$1,775,480	\$2,010,342
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	104.23%	60.95%	62.91%	51.67%	60.44%	57.62%	52.39%
Covered Payroll ⁽³⁾	\$2,982,960	\$2,843,218	\$2,619,695	\$2,620,585	\$2,577,378	\$2,570,156	\$2,480,130
Net OPEB Liability as a Percentage of Covered Payroll	(4.63)%	69.41%	73.08%	92.14%	65.26%	69.08%	81.06%

⁽¹⁾ Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

⁽²⁾ Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to \$45,007,734 for fiscal year 2023.

⁽³⁾ Based on derived compensation using the provided employer contribution information.

⁽⁴⁾ Northern Trust Settlement.

This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

**Schedule of Changes in Employers' Net OPEB Liability - CERS Hazardous
As of June 30 (\$ in Thousands)**

	2023	2022	2021	2020	2019	2018	2017
Total OPEB Liability							
Service Cost	\$36,330	\$52,265	\$48,413	\$47,443	\$32,623	\$33,948	\$20,493
Interest on Total OPEB liability	130,614	120,640	116,710	115,998	116,768	118,009	113,166
Benefit Changes	-	44,909	1,146	-	-	484	-
Difference between Expected and Actual Experience	(646,006)	(7,814)	(47,937)	38,156	(103,317)	(100,348)	(2,470)
Assumption Changes	(31,947)	(176,969)	159,106	46,925	116,618	(2,500)	391,061
Benefit Payments ^{(1) (2)}	(92,433)	(94,957)	(86,277)	(83,874)	(76,059)	(71,325)	(63,656)
Net Change in Total OPEB Liability	(603,442)	(61,926)	191,161	164,648	86,633	(21,732)	458,594
Total OPEB Liability - Beginning	2,374,457	2,436,383	2,245,222	2,080,574	1,993,941	2,015,673	1,557,079
Total OPEB Liability - Ending (a)	\$1,771,015	\$2,374,457	\$2,436,383	\$2,245,222	\$2,080,574	\$1,993,941	\$2,015,673
Plan Fiduciary Net Position							
Contributions – Employer ⁽²⁾	\$49,547	\$66,320	\$63,509	\$59,662	\$60,445	\$51,615	\$44,325
Contributions – Member	4,258	3,654	3,098	2,762	2,458	2,173	1,708
Benefit Payments ^{(1) (2)}	(92,433)	(94,957)	(86,277)	(83,874)	(76,059)	(71,325)	(63,656)
OPEB Plan Net Investment Income	150,671	(79,668)	326,905	2,315	73,317	109,854	143,892
OPEB Plan Administrative Expense	(522)	(502)	(528)	(462)	(434)	(376)	(381)
Other ⁽⁴⁾	-	-	-	-	5	40	-
Net Change in Plan Fiduciary Net Position	111,521	(105,153)	306,707	(19,597)	59,732	91,981	125,888
Plan Fiduciary Net Position – Beginning	1,522,671	1,627,824	1,321,117	1,340,714	1,280,982	1,189,001	1,063,113
Plan Fiduciary Net Position – Ending (b)	1,634,192	1,522,671	1,627,824	1,321,117	1,340,714	1,280,982	1,189,001
Net OPEB Liability – Ending (a) – (b)	\$136,823	\$851,786	\$808,559	\$924,105	\$739,860	\$712,959	\$826,672
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	92.27%	64.13%	66.81%	58.84%	64.44%	64.24%	58.99%
Covered Payroll ⁽³⁾	\$719,666	\$668,667	\$613,985	\$596,001	\$583,632	\$588,526	\$542,710
Net OPEB Liability as a Percentage of Covered Payroll	19.01%	127.39%	131.69%	155.05%	126.77%	121.14%	152.32%

⁽¹⁾ Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

⁽²⁾ Employer contributions include expected benefits due to the implicit subsidy for members under age 65, equal to (\$856,422) for fiscal year 2023.

⁽³⁾ Based on derived compensation using the provided employer contribution information.

⁽⁴⁾ Northern Trust Settlement.

This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

**Schedule of Changes in Employers' Net OPEB Liability - KERS Nonhazardous
As of June 30 (\$ in Thousands)**

	2023	2022	2021	2020	2019	2018	2017
Total OPEB Liability							
Service Cost	\$43,199	\$62,548	\$58,831	\$59,600	\$61,345	\$66,360	\$46,992
Interest	200,910	190,531	191,624	179,811	186,820	191,178	192,911
Benefit Changes	3,209	21,884	1,382	-	-	1,865	-
Difference between Expected and Actual Experience	(1,440,201)	(37,249)	(231,631)	288,235	(302,189)	(191,147)	(3,921)
Changes of Assumptions	61,925	(206,907)	220,184	13,767	158,004	(11,235)	414,835
Benefit Payments ^{(1) (2)}	(128,228)	(153,081)	(141,143)	(159,841)	(148,112)	(148,236)	(139,601)
Net Change in Total OPEB Liability	(1,259,186)	(122,274)	99,247	381,572	(44,132)	(91,215)	511,216
Total OPEB Liability - Beginning	3,576,530	3,698,804	3,599,557	3,217,985	3,262,117	3,353,332	2,842,116
Total OPEB Liability - Ending (a)	\$2,317,344	\$3,576,530	\$3,698,804	\$3,599,557	\$3,217,985	\$3,262,117	\$3,353,332
Plan Fiduciary Net Position							
Contributions – Employer ⁽²⁾⁽⁵⁾	\$156,543	\$181,294	\$223,661	\$208,300	\$201,155	\$152,985	\$162,636
Contributions – Member	8,358	6,547	6,318	6,128	5,963	5,786	5,156
Benefit Payments ^{(1) (2)}	(128,228)	(153,081)	(141,143)	(159,841)	(148,112)	(148,236)	(139,601)
OPEB Plan Net Investment Income	132,431	(88,998)	270,811	11,820	45,749	64,028	94,239
OPEB Plan Administrative Expense	(771)	(820)	(819)	(847)	(875)	(760)	(861)
Other ⁽⁴⁾	-	-	-	-	4	32	-
Net Change in Plan Fiduciary Net Position	168,333	(55,058)	358,828	65,560	103,884	73,835	121,569
Plan Fiduciary Net Position – Beginning	1,364,419	1,419,477	1,060,649	995,089	891,205	817,370	695,801
Plan Fiduciary Net Position – Ending (b)	1,532,752	1,364,419	1,419,477	1,060,649	995,089	891,205	817,370
Net OPEB Liability – Ending (a) – (b)	\$784,592	\$2,212,111	\$2,279,327	\$2,538,908	\$2,222,896	\$2,370,912	\$2,535,962
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	66.14%	38.15%	38.38%	29.47%	30.92%	27.32%	24.37%
Covered Payroll ⁽³⁾	\$1,653,492	\$1,437,132	\$1,452,345	\$1,482,431	\$1,515,953	\$1,573,898	\$1,593,097
Net OPEB Liability as a Percentage of Covered Payroll	47.45%	153.93%	156.94%	171.27%	146.63%	150.64%	159.18%

⁽¹⁾ Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

⁽²⁾ Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to \$27,435,836 for fiscal year 2023.

⁽³⁾ Based on derived compensation using the provided employer contribution information.

⁽⁴⁾ Northern Trust Settlement.

⁽⁵⁾ Includes \$2.4 million and \$28.4 million employer cessation contribution for fiscal year 2022, and 2021, respectively.

This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of Changes in Employers' Net OPEB Liability - KERS Hazardous
As of June 30 (\$ in Thousands)

	2023	2022	2021	2020	2019	2018	2017
Total OPEB Liability							
Service Cost	\$9,435	\$14,474	\$13,633	\$11,548	\$12,337	\$12,893	\$8,002
Interest on Total OPEB liability	32,737	30,599	29,254	28,101	27,990	28,500	27,591
Benefit Changes	-	10,289	48	-	-	167	-
Difference between Expected and Actual Experience	(198,459)	(12,515)	(6,402)	27,668	(30,947)	(31,240)	(1,029)
Assumption Changes	(1,820)	(46,406)	42,022	11,428	31,687	(581)	89,401
Benefit Payments ^{(1) (2)}	(20,321)	(22,804)	(20,927)	(21,425)	(19,767)	(18,704)	(16,618)
Net Change in Total OPEB Liability	(178,428)	(26,363)	57,628	57,320	21,300	(8,965)	107,347
Total OPEB Liability - Beginning	595,789	622,152	564,524	507,204	485,904	494,869	387,522
Total OPEB Liability - Ending (a)	\$417,361	\$595,789	\$622,152	\$564,524	\$507,204	\$485,904	\$494,869
Plan Fiduciary Net Position							
Contributions – Employer ⁽²⁾	\$2,282	\$4,116	\$3,556	\$7,441	\$5,556	\$5,165	\$4,579
Contributions – Member	1,584	1,227	1,167	1,105	934	909	811
Benefit Payments ^{(1) (2)}	(20,321)	(22,804)	(20,927)	(21,425)	(19,767)	(18,704)	(16,618)
OPEB Plan Net Investment Income	53,772	(27,929)	128,244	704	28,373	42,950	59,614
OPEB Plan Administrative Expense	(123)	(125)	(118)	(123)	(117)	(104)	(105)
Other ⁽⁴⁾	-	-	-	-	2	18	-
Net Change in Plan Fiduciary Net Position	37,194	(45,515)	111,922	(12,298)	14,981	30,234	48,281
Plan Fiduciary Net Position – Beginning	588,162	633,677	521,755	534,053	519,072	488,838	440,557
Plan Fiduciary Net Position – Ending (b)	625,356	588,162	633,677	521,755	534,053	519,072	488,838
Net OPEB Liability – Ending (a) – (b)	\$(207,995)	\$7,627	\$(11,525)	\$42,769	\$(26,849)	\$(33,168)	\$6,031
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	149.84%	98.72%	101.85%	92.42%	105.29%	106.83%	98.78%
Covered Payroll ⁽³⁾	\$223,922	\$188,648	\$172,725	\$182,209	\$151,448	\$190,317	\$171,087
Net OPEB Liability as a Percentage of Covered Employee Payroll	(92.89)%	4.04%	(6.67)%	23.47%	(17.73)%	(17.43)%	3.53%

⁽¹⁾ Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

⁽²⁾ Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to \$792,418 for fiscal year 2023.

⁽³⁾ Based on derived compensation using the provided employer contribution information. For 2021, 2022, and 2023, derived compensation based on pension contribution information, as there were no required employer contributions for the insurance fund for FYE 2021, FYE 2022, and FYE 2023.

⁽⁴⁾ Northern Trust Settlement.

This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of Changes in Employer's Net OPEB Liability - SPRS
As of June 30 (\$ in Thousands)

	2023	2022	2021	2020	2019	2018	2017
Total OPEB Liability							
Service Cost	\$4,092	\$5,605	\$5,218	\$5,389	\$4,816	\$6,087	\$4,147
Interest on Total OPEB liability	19,608	18,592	17,984	17,600	17,724	18,432	17,993
Benefit Changes	-	4,975	101	-	-	34	-
Difference between Expected and Actual Experience	(98,425)	(5,952)	(6,318)	13,810	(14,295)	(23,320)	(573)
Assumption Changes	404	(21,937)	21,784	4,578	16,483	(358)	57,312
Benefit Payments ^{(1) (2)}	(13,682)	(14,729)	(13,812)	(13,988)	(13,187)	(13,097)	(12,123)
Net Change in Total OPEB Liability	(88,003)	(13,446)	24,957	27,389	11,541	(12,222)	66,756
Total OPEB Liability - Beginning	351,453	364,899	339,942	312,553	301,012	313,234	246,478
Total OPEB Liability - Ending (a)	\$263,450	\$351,453	\$364,899	\$339,942	\$312,553	\$301,012	\$313,234
Plan Fiduciary Net Position							
Contributions – Employer ⁽²⁾	\$8,755	\$9,343	\$9,381	\$12,873	\$12,623	\$8,535	\$7,862
Contributions – Member	348	230	209	196	176	155	131
Benefit Payments ^{(1) (2)}	(13,682)	(14,729)	(13,812)	(13,988)	(13,187)	(13,097)	(12,123)
OPEB Plan Net Investment Income	21,520	(10,847)	50,289	1,124	10,815	16,470	21,627
OPEB Plan Administrative Expense	(74)	(73)	(89)	(71)	(69)	(62)	(66)
Other ⁽⁴⁾	-	-	-	-	1	8	-
Net Change in Plan Fiduciary Net Position	16,867	(16,076)	45,978	134	10,359	12,009	17,431
Plan Fiduciary Net Position – Beginning	231,242	247,318	201,340	201,206	190,847	178,838	161,407
Plan Fiduciary Net Position – Ending (b)	248,109	231,242	247,318	201,340	201,206	190,847	178,838
Net OPEB Liability – Ending (a) – (b)	\$15,341	\$120,211	\$117,581	\$138,602	\$111,347	\$110,165	\$134,396
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	94.18%	65.80%	67.78%	59.23%	64.38%	63.40%	57.09%
Covered Payroll ⁽³⁾	\$65,830	\$48,600	\$47,155	\$48,231	\$48,780	\$50,064	\$48,873
Net OPEB Liability as a Percentage of Covered Payroll	23.30%	247.35%	249.35%	287.37%	228.26%	220.05%	274.99%
⁽¹⁾ Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).							
⁽²⁾ Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to (\$533,552) for fiscal year 2023.							
⁽³⁾ Based on derived compensation using the provided employer contribution information.							
⁽⁴⁾ Northern Trust Settlement.							
This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.							

The actuarially determined contribution effective for fiscal year ending 2023 that is documented in the following schedule was calculated as of June 30, 2021. Separate contribution rates are determined for each fund based on the liabilities associated with the current active members, former inactive members, and members receiving benefits from each respective fund, as well as the separately maintained asset balances for each fund.

Based on the June 30, 2021, actuarial valuation report, the actuarial methods and assumptions used to calculate the required contributions follow.

Notes to Schedule of Employers' OPEB Contributions

Item	CERS	CERS	KERS	KERS	SPRS
	Nonhazardous	Hazardous	Nonhazardous	Hazardous	
Determined by the Actuarial Valuation as of:	June 30, 2021	June 30, 2021	June 30, 2021	June 30, 2021	June 30, 2021
Actuarial Cost Method:	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal
Asset Valuation Method:	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized.	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized.	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized.	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized.	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized.
Amortization Method:	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay
Amortization Period:	30-year closed period at June 30, 2019 Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases.	30-year closed period at June 30, 2019 Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases.	30-year closed period at June 30, 2019 Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases.	30-year closed period at June 30, 2019 Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases.	30-year closed period at June 30, 2019 Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases.
Payroll Growth Rate:	2.00%	2.00%	0.00%	0.00%	0.00%
Investment Return:	6.25%	6.25%	6.25%	6.25%	6.25%
Inflation:	2.30%	2.30%	2.30%	2.30%	2.30%
Salary Increase:	3.30% to 10.30%, varies by service.	3.55% to 19.05%, varies by service.	3.30% to 15.30%, varies by service.	3.55% to 20.05%, varies by service.	3.55% to 16.05%, varies by service.
Mortality:	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.

Notes to Schedule of Employers' OPEB Contributions

Item	CERS	CERS	KERS	KERS	SPRS
	Nonhazardous	Hazardous	Nonhazardous	Hazardous	
Healthcare Trend Rates:					
Pre-65	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.
Post-65	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.

Schedule of Employers' OPEB Contributions - CERS Nonhazardous
As of June 30 (\$ in Thousands)

Fiscal Year Ending ⁽¹⁾	Actuarially Determined Contribution ⁽²⁾	Total Employer Contribution ⁽³⁾	Contribution Deficiency (Excess)	Covered Payroll ⁽⁴⁾	Actual Contributions as a Percentage of Covered Payroll
2023	\$101,122	\$106,044	\$(4,922)	\$2,982,960	3.55%
2022	118,551	123,366	(4,815)	2,843,218	4.34%
2021	142,249	129,903	12,346	2,619,695	4.96%
2020	124,740	129,267	(4,527)	2,620,585	4.93%
2019	160,055	139,655	20,400	2,577,378	5.42%
2018	120,797	124,619	(3,822)	2,570,156	4.85%
2017	122,270	120,712	1,558	2,480,130	4.87%
2016	110,987	111,836	(849)	2,352,762	4.75%
2015	119,511	119,444	67	2,296,716	5.20%
2014	\$130,652	\$123,278	\$7,374	\$2,272,270	5.43%

⁽¹⁾ Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

⁽²⁾ Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

⁽³⁾ Employer contributions do not include the expected implicit subsidy included in the Schedule of Changes in Employer's Net OPEB Liability - CERS Nonhazardous.

⁽⁴⁾ Based on derived compensation using the provided employer contribution information.

Schedule of Employers' OPEB Contributions - CERS Hazardous
As of June 30 (\$ in Thousands)

Fiscal Year Ending ⁽¹⁾	Actuarially Determined Contribution ⁽²⁾	Total Employer Contribution ⁽³⁾	Contribution Deficiency (Excess)	Covered Payroll ⁽⁴⁾	Actual Contributions as a Percentage of Covered Payroll
2023	\$48,793	\$50,404	\$(1,611)	\$719,666	7.00%
2022	58,375	59,905	(1,530)	668,667	8.96%
2021	60,539	59,799	740	613,985	9.74%
2020	56,739	57,897	(1,158)	596,001	9.71%
2019	71,028	62,272	8,756	583,632	10.67%
2018	55,027	56,002	(975)	588,526	9.52%
2017	53,131	51,537	1,594	542,710	9.50%
2016	64,253	67,619	(3,366)	492,851	13.72%
2015	69,103	71,778	(2,675)	483,641	14.84%
2014	\$74,360	\$74,792	-\$432	\$479,164	15.61%

⁽¹⁾ Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

⁽²⁾ Actuarially determined contribution for fiscal year ended 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

⁽³⁾ Employer contributions do not include the expected implicit subsidy included in the Schedule of Changes in Employer's Net OPEB Liability - CERS Hazardous.

⁽⁴⁾ Based on derived compensation using the provided employer contribution information.

Schedule of Employers' OPEB Contributions - KERS Nonhazardous As of June 30 (\$ in Thousands)

Fiscal Year Ending ⁽¹⁾	Actuarially Determined Contribution ⁽²⁾	Total Employer Contribution ⁽³⁾	Contribution Deficiency (Excess)	Covered Payroll ⁽⁴⁾	Actual Contributions as a Percentage of Covered Payroll
2023	\$123,952	\$129,108	\$(5,156)	\$1,653,492	7.81%
2022	135,809	140,694	(4,885)	1,437,132	9.79%
2021	161,936	186,676	(24,740)	1,452,345	12.85%
2020	183,821	175,007	8,814	1,482,431	11.81%
2019	187,978	178,964	9,014	1,515,953	11.81%
2018	132,365	136,419	(4,054)	1,573,898	8.67%
2017	133,024	152,356	(19,332)	1,593,097	9.56%
2016	121,899	135,816	(13,917)	1,529,249	8.88%
2015	130,455	135,940	(5,485)	1,544,234	8.80%
2014	\$208,881	\$166,610	\$42,271	\$1,577,496	10.56%

⁽¹⁾ Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

⁽²⁾ Actuarially determined contribution for fiscal year ended 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

⁽³⁾ Employer contributions do not include the expected implicit subsidy included in the Schedule of Changes in Employer's Net OPEB Liability - KERS Nonhazardous.

⁽⁴⁾ Based on derived compensation using the provided employer contribution information.

Schedule of Employers' OPEB Contributions - KERS Hazardous As of June 30 (\$ in Thousands)

Fiscal Year Ending ⁽¹⁾	Actuarially Determined Contribution ⁽²⁾	Total Employer Contribution ⁽³⁾	Contribution Deficiency (Excess)	Covered Payroll ⁽⁴⁾	Actual Contributions as a Percentage of Covered Payroll
2023	\$-	\$1,489	\$(1,489)	\$223,922	0.66%
2022	-	1,281	(1,281)	188,648	0.68%
2021	-	1,300	(1,300)	172,725	0.75%
2020	4,482	5,776	(1,294)	182,209	3.17%
2019	3,726	4,970	(1,244)	151,448	3.28%
2018	2,550	5,288	(2,738)	190,317	2.78%
2017	4,688	5,620	(932)	171,087	3.28%
2016	9,186	16,766	(7,580)	147,563	11.36%
2015	13,152	14,882	(1,730)	128,680	11.57%
2014	\$15,627	\$23,874	\$(8,247)	\$129,076	18.50%

⁽¹⁾ Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

⁽²⁾ Actuarially determined contribution for fiscal year ended 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

⁽³⁾ Employer contributions do not include the expected implicit subsidy included in the Schedule of Changes in Employer's Net OPEB Liability - KERS Hazardous.

⁽⁴⁾ Based on derived compensation using the provided employer contribution information. For 2021, 2022, and 2023, derived compensation based on pension contribution information as there were no required employer contributions for the insurance fund for FYE 2021, FYE 2022 and FYE 2023.

Schedule of Employer's OPEB Contributions - SPRS
As of June 30 (\$ in Thousands)

Fiscal Year Ending ⁽¹⁾	Actuarially Determined Contribution ⁽²⁾	Total Employer Contribution ⁽³⁾	Contribution Deficiency (Excess)	Covered Payroll ⁽⁴⁾	Actual Contributions as a Percentage of Covered Payroll
2023	\$9,289	\$9,289	\$-	\$65,830	14.11%
2022	8,782	8,782	-	48,600	18.07%
2021	9,285	9,285	-	47,155	19.69%
2020	13,133	13,133	-	48,231	27.23%
2019	13,283	13,288	(5)	48,780	27.24%
2018	9,062	9,397	(335)	50,064	18.77%
2017	9,222	9,222	-	48,873	18.87%
2016	8,553	10,237	(1,684)	45,551	22.47%
2015	9,890	10,382	(492)	45,765	22.69%
2014	\$20,879	\$14,493	\$6,386	\$44,616	32.48%

⁽¹⁾ Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

⁽²⁾ Actuarially determined contribution for fiscal year ended 2023 is based on the contribution rate calculated with the June 30, 2021, actuarial valuation.

⁽³⁾ Employer contributions do not include the expected implicit subsidy included in the Schedule of Changes in Employer's Net OPEB Liability - SPRS.

⁽⁴⁾ Based on derived compensation using the provided employer contribution information

Money-Weighted Rates of Return

In accordance with GASB, KPPA provides this additional disclosure regarding the money-weighted rate of return for the Pension Funds and Insurance Fund. The money-weighted rate of return is a method of calculating period-by-period returns on Pension Funds' and Insurance Fund's investments that adjusts for the changing amounts actually invested. For purposes of this statement, money-weighted rate of return is calculated as the internal rate of return on Pension Funds' and Insurance Fund's investments, net of Pension Funds' and Insurance Fund's investment expense, adjusted for the changing amounts actually invested.

See below for the money-weighted rates of return for multiple periods including fiscal year June 30, 2023, as calculated by the custodian bank, BNY Mellon:

Money - Weighted Rates of Return As of June 30					
	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
Pension					
2023	10.25%	10.35%	7.07%	9.46%	7.53%
2022	(5.83)%	(6.02)%	(5.29)%	(5.94)%	(5.80)%
2021	25.72%	25.58%	22.53%	25.21%	21.70%
2020	0.84%	0.71%	2.35%	0.96%	2.21%
2019	5.72%	5.76%	5.77%	5.68%	5.67%
2018	8.82%	8.82%	7.63%	8.69%	7.68%
2017	13.80%	13.72%	12.08%	13.45%	12.50%
2016	(0.62)%	(0.46)%	(0.97)%	(0.33)%	(1.76)%
2015	1.90%	1.95%	2.30%	1.84%	1.80%
2014	15.56%	15.50%	15.50%	15.65%	15.66%
Insurance					
	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
2023	10.32%	10.06%	9.89%	9.26%	9.44%
2022	(5.49)%	(4.95)%	(6.22)%	(4.43)%	(4.43)%
2021	24.81%	24.99%	25.16%	24.99%	25.36%
2020	0.36%	0.27%	0.98%	0.21%	0.64%
2019	5.73%	5.78%	5.04%	5.56%	5.73%
2018	9.22%	9.35%	7.95%	8.93%	9.39%
2017	13.67%	13.69%	13.77%	13.75%	13.69%
<i>Note: This table is intended to show information for ten years; additional year's information will be displayed as it becomes available.</i>					

Additional Supporting Schedules

Schedule of Administrative Expenses

Schedule of Direct Investment Expenses

Schedule of Professional Consultant Fees

Report on Internal Control

Schedule of Administrative Expenses
As of June 30 (\$ in Thousands)

	2023	2022
Personnel		
Salaries and Per Diem	\$16,432	\$15,803
Pension, Insurance Related Benefits	16,534	16,165
Unemployment Compensation	9	-
Employee Training	11	10
Total Personnel	32,986	31,978
Contractual		
Actuarial Services	491	474
Audit Services	110	142
Human Resource Consulting	-	6
Legal Counsel	1,007	1,126
Medical Review Services	1,413	1,593
Miscellaneous	131	124
Total Contractual	3,152	3,465
Communication		
Printing	68	77
Telephone	113	123
Postage	352	377
Travel	84	32
Total Communication	617	609
Internal Audit		
Travel/Conferences	\$2	2
Dues/Subscriptions	1	1
Miscellaneous	24	-
Total Internal Audit	27	3
Investments-Pension Funds		
Travel/Conferences	22	7
Dues/Subscriptions	13	13
Total Investments	35	15
Rentals		
Office Space	1,000	1,013
Equipment	90	92
Total Rentals	1,090	1,103
Information Technology		
Software	2,725	2,972
Total Information Technology	2,725	2,972
Miscellaneous		
Utilities	153	142
Supplies	71	83
Insurance	6	5
Dues & Subscriptions	61	52
Maintenance	1	-
Other	56	34
COVID Expenses	5	13
Total Miscellaneous	353	336
Depreciation/Amortization/Accruals	890	(739)
Total Pension Fund Administrative Expense	41,875	39,742
Healthcare Fees	2,427	2,454
Total Insurance Fund Administrative Expense	2,427	2,454
Total Contractual Services	\$44,302	\$42,196

Pension Fund Schedule of Direct Investment Expenses
As of June 30, 2023 (\$ in Thousands)

	CERS		KERS		SPRS
	Nonhazardous	Hazardous	Nonhazardous	Hazardous	
Security Lending Fees					
Borrower (Income) Rebates	\$7,904	\$2,760	\$2,525	\$755	\$426
Lending Agent Fees	164	57	59	17	9
Total Security Lending	8,068	2,817	2,584	772	435
Contractual Services					
Investment Management	51,121	17,180	14,788	4,806	2,155
Security Custody	743	256	298	77	51
Investment Consultant	306	105	120	32	21
Performance Fees	10,465	3,295	1,866	910	336
Total Contractual Services	\$62,635	\$20,836	\$17,072	\$5,825	\$2,563

Insurance Fund Schedule of Direct Investment Expenses
As of June 30, 2023 (\$ in Thousands)

	CERS		KERS		SPRS
	Nonhazardous	Hazardous	Nonhazardous	Hazardous	
Security Lending Fees					
Borrower (Income) Rebates	\$2,414	\$1,162	\$969	\$399	\$169
Lending Agent Fees	54	26	23	9	4
Total Security Lending	2,468	1,188	992	408	173
Contractual Services					
Investment Management	18,972	9,925	7,229	3,850	1,521
Security Custody	390	192	172	74	29
Investment Consultant	116	57	50	22	9
Performance Fees	3,499	1,782	2,870	819	299
Total Contractual Services	\$22,977	\$11,956	\$10,321	\$4,765	\$1,858

Schedule of Professional Consultant Fees
As of June 30 (\$ in Thousands)

	2023	2022
Actuarial Services	\$491	\$474
Medical Review Services	1,413	1,593
Audit Services	110	142
Legal Counsel	1,007	1,126
Human Resource Consulting	-	6
Miscellaneous	131	124
Total	\$3,152	\$3,465



MIKE HARMON
AUDITOR OF PUBLIC ACCOUNTS

Report On Internal Control Over Financial Reporting And
On Compliance And Other Matters Based On An Audit Of Financial
Statements Performed In Accordance With *Government Auditing Standards*

Independent Auditor's Report

To the Members
Kentucky Public Pensions Authority

We have audited, in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of the Kentucky Public Pensions Authority (KPPA), as of and for the year ended June 30, 2023, and the related notes to the financial statements, which collectively comprise KPPA's basic financial statements, and have issued our report thereon dated November 27, 2023.

Report on Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered KPPA's internal control over financial reporting (internal control) as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of KPPA's internal control. Accordingly, we do not express an opinion on the effectiveness of KPPA's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees in the normal course of performing their assigned functions, to prevent, or detect and correct misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over financial reporting was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over financial reporting that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

209 ST. CLAIR STREET
FRANKFORT, KY 40601-1817

TELEPHONE 502.564.5841
FACSIMILE 502.564.2912
AUDITOR.KY.GOV

AN EQUAL OPPORTUNITY EMPLOYER M/F/D



Report On Internal Control Over Financial Reporting
And On Compliance And Other Matters Based On An Audit Of Financial Statements
Performed In Accordance With *Government Auditing Standards*
(Continued)

Report on Compliance and Other Matters

As part of obtaining reasonable assurance about whether KPPA's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit and, accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Respectfully Submitted,

Farrah Petter, CPA
Assistant Auditor of Public Accounts
Frankfort, Ky

November 27, 2023

INVESTMENTS

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Investment Overview

This section of the report was compiled by KPPA investment staff using information provided by Wilshire Associates and the Bank of New York Mellon. Except otherwise noted, investment returns are based on investment asset fair value and calculated using time-weighted return calculation methodologies.

Investment returns play an important role at KPPA in terms of funding status of the plans and continued funding of operations. The Investment Committees of each Board of Trustees is committed to maximizing the long-term total rate of return on investments, given the appropriate level of risk, for the sole benefit of the members in the plans. The overall investment performance goal is to achieve an annualized rate of return which, when combined with employee and employer contributions, will meet or exceed the benefits and administrative funding requirements (see Investment Objectives later in this section).

Investments are managed by professional investment management firms and the KPPA Investment Staff based upon statutory investment authority, the investment policies adopted by the KRS Board of Trustees and the CERS Board of Trustees. The investment staff coordinates and monitors the investments of the trust assets and assists the Investment Committees in the formulation and implementation of investment policies and long-term investment strategy.

Asset Allocation and Diversification

The Trustees recognize that asset allocation is the primary driver of long-term investment performance and therefore review asset allocation on a regular basis. Asset allocation is a process designed to construct an optimal long-term asset mix that achieves a specific set of investment objectives. The Investment Policy Statement establishes the plans' asset allocation policy as designed to meet those objectives.

The asset allocation policies are adopted to provide for diversification of assets in an effort to maximize the long-term returns on investments consistent with prudent levels of market and economic risks. Of all the components of investment strategy formulation, the determination of asset allocation targets is the most important decision.

Risk is further diversified through active and passive management using multiple investment management firms and KPPA Investment Staff with a variety of investment styles. The total investment performance is not dependent upon the outcome of just one particular investment style or manager.

KPPA develops specific contractual investment guidelines for each external manager and each internally managed account that control the risk of high concentrations in a particular sector, industry, or security.

Diversification of the assets among various asset classes, investment management styles, and individual securities mitigates risk and enhances the potential of the investment portfolios to achieve their respective long-term objectives.

The following tables show each Plans' asset allocation targets as specified in their respective Investment Policy Statement and the actual asset allocation of the Plans as of June 30, 2023.

Board Policies vs. Actual Asset Allocation
As of June 30, 2023

Pension	Public Equity	Private Equity	Core Fixed Income	Specialty Credit	Cash	Real Estate	Real Return	Total Plan
CERS Nonhazardous Policy Target Asset Allocation	50.00%	10.00%	10.00%	10.00%	0.00%	7.00%	13.00%	100.00%
CERS Nonhazardous Actual Asset Allocation	50.46%	7.93%	10.22%	19.98%	1.97%	6.28%	3.16%	100.00%
CERS Hazardous Policy Target Asset Allocation	50.00%	10.00%	10.00%	10.00%	0.00%	7.00%	13.00%	100.00%
CERS Hazardous Actual Asset Allocation	50.41%	7.64%	10.25%	19.92%	2.95%	5.78%	3.05%	100.00%
KERS Nonhazardous Policy Target Asset Allocation	32.50%	7.00%	20.50%	15.00%	5.00%	10.00%	10.00%	100.00%
KERS Nonhazardous Actual Asset Allocation	33.66%	4.54%	20.72%	17.42%	16.45%	5.08%	2.13%	100.00%
KERS Hazardous Policy Target Asset Allocation	43.50%	10.00%	10.00%	15.00%	1.50%	10.00%	10.00%	100.00%
KERS Hazardous Actual Asset Allocation	43.88%	7.03%	12.15%	20.23%	8.31%	5.63%	2.77%	100.00%
SPRS Policy Target Asset Allocation	32.50%	7.00%	20.50%	15.00%	5.00%	10.00%	10.00%	100.00%
SPRS Actual Asset Allocation	32.83%	2.83%	20.76%	17.32%	20.75%	3.65%	1.86%	100.00%

NOTE: The actual asset allocations are calculated by taking the fair value of each asset class as a percentage of total portfolio for the plans combined.

Board Policies vs. Actual Asset Allocation
As of June 30, 2023

Insurance	Public Equity	Private Equity	Core Fixed Income	Specialty Credit	Cash	Real Estate	Real Return	Total Plan
CERS Nonhazardous Policy Target Asset Allocation	50.00%	10.00%	10.00%	10.00%	0.00%	7.00%	13.00%	100.00%
CERS Nonhazardous Actual Asset Allocation	50.55%	8.19%	10.24%	19.86%	2.58%	6.01%	2.57%	100.00%
CERS Hazardous Policy Target Asset Allocation	50.00%	10.00%	10.00%	10.00%	0.00%	7.00%	13.00%	100.00%
CERS Hazardous Actual Asset Allocation	50.99%	9.39%	9.52%	20.02%	0.59%	6.72%	2.77%	100.00%
KERS Nonhazardous Policy Target Asset Allocation	43.50%	10.00%	10.00%	15.00%	1.50%	10.00%	10.00%	100.00%
KERS Nonhazardous Actual Asset Allocation	44.51%	6.50%	12.11%	20.32%	10.13%	4.20%	2.23%	100.00%
KERS Hazardous Policy Target Asset Allocation	43.50%	10.00%	10.00%	15.00%	1.50%	10.00%	10.00%	100.00%
KERS Hazardous Actual Asset Allocation	44.22%	8.75%	12.11%	21.26%	3.40%	7.37%	2.89%	100.00%
SPRS Policy Target Asset Allocation	43.50%	10.00%	10.00%	15.00%	1.50%	10.00%	10.00%	100.00%
SPRS Actual Asset Allocation	44.71%	9.73%	11.63%	21.22%	2.93%	7.05%	2.73%	100.00%

NOTE: The actual asset allocations are calculated by taking the fair value of each asset class as a percentage of total portfolio for the plans combined.

Investment Strategies

Diversification

The Pension and Insurance portfolios are diversified on several levels, primarily through the use of the aforementioned asset class allocations. Asset allocations are evaluated on a periodic basis and represent an efficient allocation to maximize returns and minimize risks at a level appropriate for each system. The individual asset classes are diversified through the use of multiple portfolios that are managed by both the Office of Investments Staff and external Investment Managers. Finally, portfolios within each of the asset classes are diversified through both investment styles and the selection of individual securities. Each portfolio advisor is afforded discretion to diversify its portfolio(s) within the parameters established by the Boards.

Rebalancing

Proper implementation of the investment policy requires that a periodic adjustment, or rebalancing, of assets be made to ensure conformance with the IPS target levels. Such rebalancing is necessary to reflect sizable cash flows and performance imbalances among asset classes and investment advisors. The rebalancing policies call for a rebalancing to within its allocation ranges if an asset class exceeds or falls outside its allowable range as defined in the IPS.

Performance Review

At least once each quarter, the Investment Committees, on behalf of the Boards, review the performance of the portfolio to determine compliance with the IPS. The Investment Committees also review a report created and presented by the KPPA Compliance Officer. The Compliance Officer performs tests daily, monthly, and quarterly to assure compliance with the restrictions imposed by the IPS.

Investment Consulting

The Boards employ qualified independent industry leading external consultants to assist in asset allocation studies, asset allocation recommendations, manager searches and other investment related consulting functions. Consultants also provide performance reports covering both the internally managed and externally managed assets.

Investment Objectives

The Trustees recognize that as long-term investors, the primary aim is that the portfolios meet their performance objectives in the long-term while understanding that this may not necessarily occur in the short term. The overall investment performance goal is to achieve an annualized rate of return which, when combined with employee and employer contributions, will meet or exceed the benefits and administrative funding requirements. The following descriptions represent general standards of measurement that will be used as guidelines for the various classes of investments and managers of the Plans.

Public Asset Class Allocations

Short-term: For periods less than five years or a full market cycle, the Asset Class Allocation should exceed the returns of the appropriate Index.

Intermediate & Long-term: For periods greater than five years or a full market cycle, the Asset Class Allocation should exceed the appropriate Index, compare favorably on a risk-adjusted basis, and generate returns that rank above the median return of a relevant peer group. Volatility, as measured by the standard deviation of monthly returns, should be comparable to the Index.

Individual Public Security Portfolios

Short-term: For periods less than five years or a full market cycle, individual portfolios should exceed the returns of their market goal or benchmark.

Intermediate & Long-term: For periods greater than five years or a full market cycle, individual portfolios should exceed the return of their market goal or benchmark, compare favorably on a risk-adjusted basis, and generate returns that rank above the median return of a relevant peer group. Volatility, as measured by the standard deviation of monthly returns, should be comparable to the benchmark.

Alternative Assets

Private Equity

The Private Equity portfolio should seek to achieve both short-term and intermediate/long term Net Internal Rate of Returns that provide yields in excess of core equity investments.

Short-term: Alternative investments should earn a Net Internal Rate of Return (IRR) that place the investment above the median Net IRR of other similar funds, of the same vintage year.

Intermediate & Long-term: The private equity portfolio should earn a return that meets or exceeds the Systems Private Equity Index. Individual private equity investments should earn a Net IRR above the median Net IRR of other similar funds, of the same vintage year.

Real Estate

Relative Return: The Real Estate portfolio is expected to generate returns, net of all fees and expenses, in excess of the National Council of Real Estate Investment Fiduciaries Open End Diversified Core Equity Index lagged 1 calendar quarter.

Absolute Return: The long-term real return objective for the Real Estate portfolio is five percent over the Barclays Capital U.S. 7-10 Year Treasury Bond Index, net of investment management fees.

Real Return

Short-term: For periods less than five years or a full market cycle, the allocation should achieve an annual rate of return that exceeds the appropriate benchmark (the weighted average return of the underlying investment benchmarks) annually over a complete market cycle, net of all investment management fees.

Strategic objective: For periods greater than five years or a full market cycle, the allocation should not only outperform the short-term benchmark, but also achieve a rate of return that exceeds CPI + 300 basis points.

Investment Results

For the purposes of this report, total return information has been reported net of investment manager fees and investment expenses with audited data since July 2011. At the manager or individual account level, returns have been reported net of fees since July 2011 and gross of fees are used for prior historical data. All rates of return are calculated using time-weighted rates of return.

Fiscal Year 2023 Results

Please see the tables below for the net returns reported for the fiscal year ended June 30, 2023.

Net Returns As of June 30, 2023 (\$ in Thousands)

Pension Funds	Fair Value	% of Total	1 Year		3 Years		5 Years		GANIR	10 Years		Inception	
			Plan	Index	Plan	Index	Plan	Index		Plan	Index	Plan	Index
CERS	\$8,693,826	52.03%	10.24%	9.54%	9.26%	8.83%	6.82%	6.55%	6.52%	7.27%	6.92%	8.85%	8.86%
CERS Hazardous	3,006,298	17.99%	10.33%	9.54%	9.18%	8.83%	6.76%	6.55%	6.68%	7.24%	6.92%	8.85%	8.86%
KERS	3,522,035	21.08%	6.96%	7.02%	7.52%	7.11%	6.11%	5.70%	5.61%	6.65%	6.44%	8.69%	8.74%
KERS Hazardous	898,809	5.38%	9.46%	8.70%	8.83%	9.01%	6.58%	6.66%	6.40%	7.14%	6.97%	8.82%	8.88%
SPRS	587,507	3.52%	7.58%	7.02%	7.68%	7.11%	6.17%	5.70%	6.09%	6.61%	6.41%	8.68%	8.73%
Total	\$16,708,475	100.00%	9.54%	8.88%	8.88%	8.46%	6.68%	6.41%		7.16%	6.90%	8.82%	8.86%

Net Returns As of June 30, 2023 (\$ in Thousands)

Insurance Funds	Fair Value	% of Total	1 Year		3 Years		5 Years		10 Years		Inception	
			Plan	Index	Plan	Index	Plan	Index	Plan	Index	Plan	Index
CERS	\$3,274,939	45.52%	10.33%	9.54%	9.20%	8.62%	6.68%	6.28%	7.24%	6.90%	7.37%	7.56%
CERS Hazardous	1,606,040	22.32%	10.11%	9.54%	9.35%	8.62%	6.76%	6.28%	7.30%	6.90%	7.39%	7.56%
KERS	1,452,258	20.18%	9.87%	8.70%	8.88%	8.75%	6.46%	6.49%	6.85%	6.97%	7.26%	7.58%
KERS Hazardous	615,979	8.56%	9.29%	8.70%	9.25%	8.87%	6.65%	6.43%	7.17%	6.96%	7.35%	7.58%
SPRS	245,834	3.42%	9.46%	8.70%	9.43%	8.87%	6.88%	6.43%	7.35%	6.98%	7.40%	7.58%
Total	\$7,195,050	100.00%	10.15%	9.27%	9.22%	8.81%	6.70%	6.39%	7.21%	7.03%	7.36%	7.60%

Benchmarks

The benchmarks are weighted averages that are composites of the various asset class indices that exist within each of the investment portfolios. The Modified Dietz Method, as its basis for calculations, is used to determine the performance of an investment portfolio based on a time weighted cash flow. The various asset class benchmarks are shown below:

Benchmarks and Allocation Guidelines As of June 30, 2023

Asset Allocation by Plan				
Index	Asset Class	ALL CERS	Nonhazardous/ SPRS Pension	KERS Hazardous Pension/KERS Nonhazardous, KERS Hazardous, and SPRS Insurance
Equity				
MSCI ACWI	Public Equity	50.00%	32.50%	43.50%
Russell 3000 Quarter Lagged + 300 bps	Private Equity	10.00%	7.00%	10.00%
Fixed Income				
Bloomberg US Aggregate	Core Fixed Income	10.00%	20.50%	10.00%
50% Bloomberg US High Yield/50% Morningstar LSTA Leveraged Loan	Specialty Credit	10.00%	15.00%	15.00%
FTSE 3-Month US Treasury Bill	Cash	0.00%	5.00%	1.50%
Inflation Protected				
NCREIF ODCE	Real Estate	7.00%	10.00%	10.00%
US CPI + 3%	Real Return	13.00%	10.00%	10.00%

Note: These benchmarks are intended to be objective, measurable, investable/replicable, and representative of the investment mandates. The benchmarks are developed from publicly available information and accepted by the investment advisor and KPPA as the neutral position consistent with the investment mandate and status. KPPA Investment Staff and our Consultant recommend the indices and benchmarks, which are reviewed and approved by the Investment Committee and ratified by the KRS and CERS Boards. It is anticipated that as KRS and CERS funds continue to diversify through other markets and asset classes, both the Pension Funds' and Insurance Funds' total benchmarks will evolve to reflect these exposures.

Long-Term Results

The chart below displays the growth of \$1,000 over the course of 10 years given the performance of the portfolios compared to the benchmark and the actuarial assumed rate of return. As of June 30, 2023, the actuarial rate of return for KERS Nonhazardous and SPRS pension was 5.25% and 6.25% for all other funds.

Since June 30, 2014, returns ranged from a minimum of (5.73)% in 2022 to a maximum of 25.00% in 2021. For fiscal year 2023, the annualized total net returns of each Plan exceeded their respective actuarially assumed rates of return. Translating these returns into dollars, a beginning balance of \$1,000 in fiscal year 2014 would have a balance of \$1,996 in fiscal year 2023. The annualized benchmark would have a balance of \$1,961.

Pension Trust Growth As of June 30 (in Whole \$)											
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Pension Return		15.55%	2.01%	(0.52)%	13.47%	8.57%	5.83%	1.15%	25.00%	(5.73)%	9.54%
Performance BM		14.91%	3.13%	(0.19)%	13.28%	7.91%	6.00%	0.50%	24.07%	(5.76)%	8.88%
Actuarial Assumed ROR CERS Nonhazardous, CERS Hazardous and KERS Hazardous		7.75%	7.75%	7.50%	7.50%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%
Actuarial Assumed ROR KERS Nonhazardous and SPRS		7.75%	7.75%	7.50%	6.75%	5.25%	5.25%	5.25%	5.25%	5.25%	5.25%
Pension	\$1,000	\$1,156	\$1,179	\$1,173	\$1,331	\$1,445	\$1,529	\$1,546	\$1,933	\$1,822	\$1,996
Performance Benchmark	1,000	1,149	1,185	1,183	1,340	1,446	1,533	1,540	1,911	1,801	1,961
Actuarial Assumed ROR CERS Nonhazardous, CERS Hazardous and KERS Hazardous	1,000	1,078	1,161	1,248	1,342	1,426	1,515	1,609	1,710	1,817	1,930
Actuarial Assumed ROR KERS Nonhazardous and SPRS	\$1,000	\$1,078	\$1,161	\$1,248	\$1,332	\$1,402	\$1,476	\$1,553	\$1,635	\$1,721	\$1,811

The chart below shows theoretical annual returns for the Insurance portfolio since June 30, 2014, where returns range from a minimum of (5.34)% in 2022 to a maximum of 24.95% in 2021. As of June 30, 2023, the Insurance portfolio earned 10.15% versus the annualized benchmark return of 9.27%. The chart below indicates that with a beginning balance of \$1,000 in fiscal year 2014, the Insurance portfolio would have a balance of \$2,006 compared to the actuarially assumed rate of return balance of \$1,930 and the annualized benchmark return would have a balance of \$2,001 at the end of the 10-year period.

Insurance Trust As of June 30 (in Whole \$)											
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Return		14.89%	1.86%	(0.09)%	13.72%	9.05%	5.67%	0.48%	24.95%	(5.34)%	10.15%
Performance BM		15.03%	3.79%	0.03%	13.55%	8.48%	5.89%	0.13%	23.84%	(5.21)%	9.27%
Actuarial Assumed ROR		7.75%	7.75%	7.50%	7.50%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%
Insurance	\$1,000	\$1,149	\$1,170	\$1,169	\$1,330	\$1,450	\$1,532	\$1,540	\$1,924	\$1,821	\$2,006
Performance Benchmark	1,000	1,150	1,194	1,194	1,356	1,471	1,558	1,560	1,932	1,831	2,001
Actuarial Assumed ROR	\$1,000	\$1,078	\$1,161	\$1,248	\$1,342	\$1,426	\$1,515	\$1,609	\$1,710	\$1,817	\$1,930

Public Equity

For the fiscal year, the KPPA Pension Public Equity portfolio outperformed the benchmark by 121 basis points (bps), 17.74% versus the benchmark return of 16.53% (KPPA Insurance Public Equity: 17.60%). Relative outperformance was primarily driven by stock selection, most notably, broad outperformance across the international portion of the portfolio.

During the 12-months ending June 30, 2023, the KPPA Pension U.S. equity portion of the portfolio underperformed the R3000, 18.54% versus 18.95%; while the aggregate KPPA Insurance U.S. equity mandates returned 18.44%. Stock selection was solid across most strategies, especially within the mid, small, and microcap strategies. The only significant source of relative weakness came from the internal factor-based portfolio (11.31% vs 19.59%); however, this was less about stock selection and more about allocation tilts. The strategy's tilts, smaller in terms of market cap and towards value, weighed on relative performance (growth outpaced value by over 15%). Since inception, the Pension U.S. equity mandates have returned 11.30%, underperforming the benchmark by 9bps, while the Insurance U.S. equity mandates earned 9.92% annualized, outpacing the portfolio's benchmark by 2bps.

For the fiscal year, the KPPA Pension Non-U.S. equity mandates combined to outperform the MSCI ACWI Ex-US by 396bps, returning 16.43% versus 12.47%; while the aggregate KPPA Insurance international mandates returned 16.28%. Relative outperformance can best be attributed to broad based outperformance of the individual strategies. Most notably within the developed large cap and emerging market mandates (especially the dedicated value piece). Since inception, the Pension Non-U.S. equity mandates have returned 3.46%, underperforming the benchmark by 4bps, while the Insurance Non-U.S. equity mandates earned 3.44% annualized, outpacing the portfolio's benchmark by 60bps.

Return on Public Equity As of June 30, 2023

	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
Public equity						
Pension	4/1/1984	17.74%	10.87%	7.55%	8.57%	10.21%
Performance Benchmark		16.53%	10.83%	7.52%	8.46%	10.05%
Insurance	7/1/1992	17.60%	10.88%	7.53%	8.62%	8.57%
Performance Benchmark		16.53%	10.81%	7.49%	8.47%	8.37%

Note: Current Pension and Insurance benchmarks are Global Equity: MSCI ACWI; US Equity: Russell 3000; Non-US Equity: MSCI ACWI Ex-US

Pension Top 10 Public Equity Holdings As of June 30, 2023 (\$ in Thousands)

Company	Shares	Fair Value
APPLE INC	1,188,746	\$230,581
ISHARES CORE S&P MIDCAP ETF	840,865	219,869
MICROSOFT CORP	597,830	203,585
LAZARD EMERG MKT EQY-INST	6,625,310	109,318
AMAZON.COM INC	717,712	93,561
NVIDIA CORP	198,845	84,115
ALPHABET INC	477,670	57,177
TESLA INC	216,610	56,702
META PLATFORMS INC	177,862	51,043
ALPHABET INC	410,886	49,705
Total	11,452,336	\$1,155,656

Insurance Top 10 Public Equity Holdings As of June 30, 2023 (\$ in Thousands)

Company	Shares	Fair Value
APPLE INC	530,743	\$102,948
ISHARES CORE S&P MIDCAP ETF	381,139	99,660
MICROSOFT CORP	266,915	90,895
LAZARD EMERG MKT EQY-INST	3,059,536	50,483
AMAZON.COM INC	320,439	41,773
NVIDIA CORP	88,779	37,555
ALPHABET INC	213,267	25,528
TESLA INC	96,711	25,316
META PLATFORMS INC	79,411	22,789
ALPHABET INC	183,450	22,192
Total	5,220,390	\$519,139

A complete list of holdings is located at <https://kyret.ky.gov/Investments/Investments-Library/Pages/Investments-Holdings.aspx>.

Core Fixed Income

For the fiscal year ended June 30, 2023, the Pension Core Fixed Income portfolio outperformed the benchmark by 2.21%, with a return of 1.27% compared to the Bloomberg U.S. Aggregate which returned (0.94)%. The Insurance Core Fixed Income portfolio posted a 1.14% rate of return, which outperformed the Bloomberg U.S. Aggregate Bond Index by 2.08%. Relative outperformance was driven by the shorter duration profile and tactical allocation to front end investment grade credit as rates rose and credit spreads tightened. Since inception, the Pension Core Fixed Income portfolio has outperformed the benchmark by 0.87%; while the Insurance Core Fixed Income portfolio has outperformed by 0.59% annually.

Return on Core Fixed Income As of June 30, 2023

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
Pension	7/1/2013	1.27%	(0.35)%	2.23%	2.39%	2.39%
Performance Benchmark	7/1/2013	(0.94)%	(3.96)%	77.00%	1.52%	1.52%
Insurance	7/1/2013	1.14%	(0.48)%	2.06%	2.11%	2.11%
Performance Benchmark	7/1/2013	(0.94)%	(3.96)%	77.00%	1.52%	1.52%

Note: Pension and Insurance benchmark is Bloomberg US Aggregate.

Pension 2022 Top 10 Core Fixed Income Holdings As of June 30, 2023 (\$ in Thousands)

Issuer	Shares	Fair Value
U S TREASURY BILL	37,100,000	\$36,151
U S TREASURY NOTE	15,221,000	14,883
U S TREASURY NOTE	14,935,000	14,604
CHARTER COMM OPERATING 10/19	10,597,562	10,585
U S TREASURY NOTE	9,905,000	9,779
CITIGROUP INC	10,053,000	9,596
SANTANDER DRIVE AUTO RECEI 6 B	9,365,000	9,160
US TREAS-CPI INFLAT	9,510,942	9,115
U S TREASURY NOTE	9,296,000	8,960
U S TREASURY NOTE	9,207,000	8,875
Total	135,190,504	\$131,708

Insurance Top 10 Core Fixed Income Holdings As of June 30, 2023 (\$ in Thousands)

Issuer	Shares	Fair Value
U S TREASURY BILL	11,535,000	\$11,240
U S TREASURY NOTE	5,933,000	5,801
CHARTER COMM OPERATING 10/19	3,607,468	3,603
US TREAS-CPI INFLAT	3,506,255	3,360
CITIGROUP INC	3,391,000	3,237
SANTANDER DRIVE AUTO RECEI 6 B	3,300,000	3,228
U S TREASURY NOTE	3,139,000	3,026
US TREAS-CPI INFLAT	3,006,550	2,932
U S TREASURY NOTE	2,995,000	2,929
MICROCHIP TECHNOLOGY INC	2,907,000	2,895
Total	43,320,273	\$42,251

Note: A complete list of holdings is located at <https://kyret.ky.gov/Investments/Investments-Library/Pages/Investments-Holdings.aspx>.

Specialty Credit

For the fiscal year ended June 30, 2023, the Pension Specialty Credit portfolio returned 7.16%, underperforming the benchmark by 2.78% which returned 9.94% for the year. The Insurance Specialty Credit portfolio posted a 7.37% rate of return, underperforming the benchmark by 2.57%. Since inception, the Pension and Insurance Specialty Credit portfolios have outperformed their respective benchmarks by 1.97% and 1.84%, respectively.

Return on Specialty Credit As of June 30, 2023

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
Pension	7/1/2017	7.16%	7.72%	5.66%	N/A	5.70%
Performance Benchmark	7/1/2017	9.94%	4.76%	3.78%	N/A	3.73%
Insurance	7/1/2017	7.37%	7.78%	5.61%	N/A	5.57%
Performance Benchmark	7/1/2017	9.94%	4.76%	3.78%	N/A	3.73%

Note: Pension and Insurance benchmark is 50% Bloomberg US High Yield/50% Morningstar LSTA Leveraged Loan.

Pension Top 10 Specialty Credit Holdings As of June 30, 2023 (\$ in Thousands)

Issuer	Fair Value
TRANSDIGM INC 144A	\$3,688
INDONESIA TREASURY BOND	3,428
AMERICAN AIRLINES INC/AAD 144A	3,263
U S TREASURY NOTE	3,116
HUDBAY MINERALS INC 144A	2,975
U S TREASURY NOTE	2,973
MEDLINE BORROWER LP 144A	2,940
MEXICAN BONOS	2,771
UBER TECHNOLOGIES INC 144A	2,692
NFP CORP 144A	2,675
Total	\$30,519

Insurance Top 10 Specialty Credit Holdings As of June 30, 2023 (\$ in Thousands)

Issuer	Fair Value
TRANSDIGM INC 144A	\$1,637
AMERICAN AIRLINES INC/AAD 144A	1,316
MEDLINE BORROWER LP 144A	1,269
HUDBAY MINERALS INC 144A	1,224
U S TREASURY NOTE	1,177
INDONESIA TREASURY BOND	1,158
NFP CORP 144A	1,152
UBER TECHNOLOGIES INC 144A	1,111
TABEO LLC	1,105
UNITED AIRLINES INC 144A	1,067
Total	\$12,216

Note: A complete list of holdings is located at <https://kyret.ky.gov/Investments/Investments-Library/Pages/Investments-Holdings.aspx>.

Private Equity

For the fiscal year ended June 30, 2023, the Pension Private Equity portfolio posted a return of (1.55%), while the Insurance Private Equity portfolio returned 1.99%. The Investment Committee acknowledges the difficulty in assessing short term performance for Private Equity. Performance is typically based on quarterly estimates of each underlying business's value, and managers are often slow to mark valuations up or down. This can distort relative performance against a public market benchmark during periods when that index moves dramatically, such as fiscal year 2023. A better indication of program performance would be the mid- to longer-term time periods because more underlying company holdings have likely transacted at a specific (rather than estimated) valuation.

For the five years ended June 30, 2023, the Pension and Insurance Private Equity portfolios returned 13.91% and 13.25%, respectively. Over the past 10 years, the Pension portfolio trailed its benchmark by 1.57% but still produced a 13.39% return. The Insurance portfolio return of 14.42% was below its benchmark of 14.96%. Since inception in 2002, the Pension and Insurance portfolio's have reported a 11.82% return and a 10.96% return, respectively.

Return on Private Equity As of June 30, 2023

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
Pension	7/1/2002	(1.55)%	19.70%	13.91%	13.39%	11.82%
Performance Benchmark		(5.58)%	21.56%	13.51%	14.96%	11.83%
Insurance	7/1/2002	1.99%	21.29%	13.25%	14.42%	10.96%
Performance Benchmark		(5.58)%	21.56%	13.51%	14.96%	11.39%

Note: Pension and Insurance Benchmark 5 years and beyond is the Russell 3000 Lagged + 300bps. For shorter term periods, the benchmark matches actual performance experienced.

Real Estate

For the fiscal year ended June 30, 2023, the Pension Real Estate portfolio saw returns of (2.69)%, exceeding its benchmark return of (3.91)%. The Insurance Real Estate portfolio also surpassed the benchmark, returning (3.06)% compared to (3.91)%. For the five years ending June 30, 2023, both the Pension and Insurance portfolios outperformed the benchmarks return by 3.82% and 3.73%, respectively.

Return on Real Estate As of June 30, 2023

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
Pension	7/1/1984	(2.69)%	11.12%	10.38%	9.81%	6.64%
Performance Benchmark		(3.91)%	7.46%	6.56%	8.47%	6.47%
Insurance	5/1/2009	(3.06)%	10.84%	10.29%	9.76%	9.60%
Performance Benchmark		(3.91)%	7.46%	6.56%	8.47%	6.18%

Note: Pension and Insurance benchmark is NCREIF ODCE

Real Return

For the fiscal year ended June 30, 2023, the Pension Real Return portfolio returned 12.77%, outperforming its benchmark of 7.05%. The Insurance Real Return portfolio posted a return of 11.12%, also outperforming its benchmark return of 7.05% for the period. These returns were driven by strong returns from the portfolio's midstream energy assets. Since inception, the Pension and Insurance Real Return portfolios have outperformed their respective benchmarks by 0.70% and 0.42% respectively.

Return on Real Return As of June 30, 2023

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
Pension	7/1/2011	12.77%	12.72%	6.42%	4.71%	4.83%
Performance Benchmark		7.05%	12.76%	6.45%	4.06%	4.13%
Insurance	7/1/2011	11.12%	11.64%	6.28%	4.54%	4.60%
Performance Benchmark		7.05%	11.94%	6.45%	4.11%	4.18%

Note: Pension and Insurance benchmark is Real Return Custom BM

Cash

For the fiscal year ended June 30, 2023, the Pension Cash portfolio returned 3.38%, underperforming its benchmark, the FTSE 3-Month US Treasury Bill by 0.37%. The Insurance Cash portfolio also underperformed the index, posting a return of 3.36% during the same 12-month period.

As the accompanying table indicates, longer-term Cash portfolios have performed well compared to their benchmark. For the ten years ending June 30, 2023, the Pension portfolio has outperformed its benchmark by 0.23% on an annualized basis. Since its inception, the Pension portfolio has exceeded its benchmark by 0.39%. The Insurance portfolio has also outperformed its benchmark return over the ten-year and since inception periods by 0.05% and 0.10%, respectively.

Return on Cash As of June 30, 2023

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
Pension	1/1/1988	3.38%	1.24%	1.59%	1.21%	3.31%
Performance Benchmark		3.75%	1.33%	1.57%	0.98%	2.92%
Insurance	7/1/1992	3.36%	1.22%	1.48%	1.03%	2.45%
Performance Benchmark		3.75%	1.33%	1.57%	0.98%	2.35%

Note: Pension and Insurance benchmark is FTSE Treasury Bill-3 Month

Additional Schedules

The following schedules contain information on the assets under management for each firm KPPA employs and assets managed by KPPA Investment Staff, external investment-related expenses, commissions paid, and portfolio summaries for each of the five Pension and Insurance plans for the fiscal year ended June 30, 2023.

Investment Managers & Assets Under Management Active Mandate- Alphabetical by Manager As of June 30, 2023 (\$ in Thousands)	
Advisor	Assets Under Management
Internally Managed by KPPA	\$6,450,344
Adams Street	398,733
American Century Investments	630,265
Arctos Sports	15,932
Arrowmark	791,520
Axiom	134,745
Barings Real Estate	73,237
Blue Torch	202,971
BlackRock ACWI Ex-US	1,244,103
Benefit Street Partners	190,165
CapitalSpring	109,111
Cerberus	264,646
Columbia Threadneedle Investments	651,672
Franklin Templeton	516,336
Harrison Street	379,873
IFM	100,191
JP Morgan Emerging Markets	208,991
Lazard Asset Management	733,778
Loomis, Sayles & Company	565,896
Lord Abbett & Co	1,949,208
LSV Asset Management	742,141
Manulife Investment Management	411,250
Marathon Asset Management	678,947
Mesa West	80,232
Middle Ground	237,081
New State	5,713
Next Century	209,484
NISA Investment Advisors	409,182
Northern Trust Global Investments	448,010
Prologis	446,942
Pzena Emerging Markets	250,520
River Road Asset Management	422,233
Shenkman Capital Management	368,954
Stockbridge	167,132
Strategic Value Partners	134,147
Tortoise	262,496
Waterfall Asset Management	417,598
Westfield Capital	501,881
White Oak Global Advisors	197,334
Assets Under Management	\$22,002,994

Investment Managers & Assets Under Management
Managers With Terminated or Runoff Status - Alphabetical by Manager
As of June 30, 2023 (\$ in Thousands)

Advisor	Assets Under Management
AMERRA	\$88,701
Ares	28,047
Bay Hills	275,503
Black Diamond	105,788
Blackstone	34,598
BTG Pactual	37,653
Crestview	82,202
CVC	33,082
DAG Ventures	25,200
Fundamental	87,507
Leonard Green	127,529
Harvest Partners	66,848
H.I.G	32,732
Horsley Bridge	102,505
Kayne Anderson	52,281
Keyhaven	35,609
Levine Leichtman	123,208
Lubert-Adler	41,709
Patron	67,981
Prisma	138,330
Rubenstein	12,898
Triton	19,408
Vista Equity	101,914
Walton Street	29,707
Other	149,591
Assets Under Management	1,900,531
Total	\$23,903,525

Note: Totals reflect external manager assets under management, therefore totals will differ from Total Fair Values.

Note: The managers have been separated by actively managed and terminated/runoff. Managers who are actively managed are either fully funded or are in the investment phase of the strategy. Managers who are in a terminated or runoff status are in the process of liquidation or are in the final investment phase awaiting payout. Managers who are in runoff or have been liquidated with a de minimis balance are reported as "Other".

Investment Managers & Assets Under Management by Fund and Asset Class
Pension Funds
As of June 30, 2023 (\$ in Thousands)

Advisor/Asset Class	CERS	CERS	KERS	KERS	SPRS	KPPA
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		Total
Core Fixed Income	\$1,060,135	\$396,945	\$1,309,194	\$183,950	\$243,898	\$3,194,122
Lord Abbett & Co.	595,920	206,712	489,491	73,257	81,828	1,447,208
Loomis, Sayles & Company Core	172,930	59,986	142,045	21,258	23,746	419,965
NISA Investment Advisors	119,377	41,409	98,057	14,675	16,392	289,910
Internally Managed by KPPA	171,908	88,838	579,601	74,760	121,932	1,037,039
Private Equity	\$642,586	\$215,566	\$140,853	\$59,178	\$14,991	\$1,073,174
Ares	12,576	4,292	-	1,138	359	18,365
Bay Hills	105,534	33,832	61,042	10,671	4,948	216,027
Black Diamond	42,958	14,662	-	3,887	1,225	62,732
Blackstone	13,217	6,382	45	1,142	3	20,789
Crestview	34,851	11,528	10,233	3,342	1,319	61,273
CVC	14,822	5,059	-	1,341	423	21,645
DAG Ventures	9,817	3,060	8,198	1,039	540	22,654
Leonard Green	44,536	17,609	501	3,831	33	66,510
Harvest Partners	25,138	7,701	-	2,111	45	34,995
H.I.G.	12,962	5,111	978	1,170	256	20,477
Horsley Bridge	39,945	12,435	33,444	4,229	2,201	92,254
Kayne Anderson	18,717	5,829	-	1,595	-	26,141
Keyhaven	14,264	4,729	3,904	1,362	531	24,790
Levine Leichtman	46,289	14,735	-	4,000	304	65,328
Middle Ground	101,195	32,636	13,647	9,005	1,570	158,053
New State	2,184	740	767	220	88	3,999
Strategic Value Partners	58,823	18,932	7,420	5,206	854	91,235
Triton	8,703	2,970	-	787	248	12,708
Vista	36,055	13,324	674	3,102	44	53,199
Public Equity	\$4,387,288	\$1,515,428	\$1,185,535	\$394,373	\$192,859	\$7,675,483
American Century Investments	245,257	85,081	67,689	22,884	11,982	432,893
Axiom	51,666	17,923	14,259	4,821	2,524	91,193
BlackRock ACWI Ex-US	502,146	175,794	115,064	40,723	15,946	849,673
Franklin Templeton	200,399	69,519	55,309	18,699	9,790	353,716
Lazard Asset Management	284,436	98,672	78,502	26,540	13,896	502,046
LSV Asset Management	287,533	99,746	79,357	26,829	14,047	507,512
Next Century	85,215	29,196	19,790	6,962	3,292	144,455
Northern Trust	182,037	62,369	42,276	14,871	7,032	308,585
River Road Asset Management	167,570	57,413	38,916	13,690	6,473	284,062
Westfield Capital	199,424	68,326	46,314	16,292	7,704	338,060
JP Morgan Emerging Markets	81,921	28,419	22,610	7,644	4,002	144,596
Pzena Emerging Markets	97,499	33,823	26,909	9,097	4,763	172,091
Internally Managed by KPPA	2,002,185	689,147	578,540	185,321	91,408	3,546,601
Real Estate	\$543,796	\$173,041	\$179,035	\$50,381	\$21,400	\$967,653
Barings Real Estate	28,842	9,120	9,577	2,620	1,107	51,266
Fundamental Partners	34,462	10,897	11,442	3,130	1,323	61,254
Harrison Street	145,075	45,377	51,993	12,884	6,147	261,476
Lubert-Adler	18,945	5,931	1,910	1,649	626	29,061
Patron	10,293	3,255	3,418	935	395	18,296
Mesa West	45,110	14,228	8,435	4,044	1,300	73,117
Prologis	180,184	56,976	59,826	16,366	6,918	320,270
Rubenstein	6,264	1,952	-	535	192	8,943

Stockbridge	59,533	18,984	26,196	5,215	2,527	112,455
Walton Street	13,406	4,489	4,358	1,462	500	24,215
Internally Managed by KPPA	1,682	1,832	1,880	1,541	365	7,300
Real Return	\$265,891	\$88,872	\$74,244	\$24,136	\$10,772	\$463,915
AMERRA	41,141	12,990	-	3,688	1,866	59,685
Arctos	5,353	2,294	2,485	64	637	10,833
BTG Pactual	17,959	5,755	-	1,550	717	25,981
IFM	39,745	13,687	11,701	3,604	1,397	70,134
Prisma	55,623	17,619	17,874	4,664	1,935	97,715
Tortoise	105,999	36,503	42,156	10,559	4,217	199,434
Internally Managed by KPPA	71	24	28	7	3	133
Specialty Credit	\$1,736,704	\$598,727	\$613,464	\$181,854	\$101,769	\$3,232,518
Adams Street	154,908	52,233	50,636	15,058	6,279	279,114
Arrowmark	299,730	99,086	87,645	27,173	10,826	524,460
Blue Torch	78,813	26,611	25,734	7,732	3,190	142,080
Benefit Street Partners	75,343	24,954	18,961	6,811	1,760	127,829
CapitalSpring	45,017	14,910	11,329	4,069	1,052	76,377
Cerberus	109,189	36,164	27,479	9,870	2,551	185,253
Columbia Threadneedle Investments	185,302	72,714	138,034	30,216	28,950	455,216
Manulife Investment Management	174,059	67,951	36,585	17,923	7,506	304,024
Marathon Asset Management	243,559	80,026	128,494	21,709	11,601	485,389
Shenkman Capital Management	134,546	45,350	24,819	20,533	9,549	234,797
Waterfall Asset Management	157,150	52,534	43,844	13,611	16,657	283,796
White Oak Global Advisors	79,088	26,194	19,904	7,149	1,848	134,183
Other	\$57,426	\$17,719	\$19,710	\$4,937	\$1,818	\$101,610
Total Assets Under Management	\$8,693,826	\$3,006,298	\$3,522,035	\$898,809	\$587,507	\$16,708,475

Investment Managers & Assets Under Management by Fund and Asset Class

Insurance Funds

As of June 30, 2023 (\$ in Thousands)

Advisor/Asset Class	CERS	CERS	KERS	KERS	SPRS	KPPA
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		Total
Core Fixed Income	\$420,096	\$162,357	\$323,022	\$95,556	\$35,795	\$1,036,826
Lord Abbett & Co.	219,437	99,962	115,088	48,803	18,710	502,000
Loomis, Sayles & Company Core	63,790	29,059	33,456	14,187	5,439	145,931
NISA Investment Advisors	52,137	23,750	27,344	11,596	4,445	119,272
Internally Managed by KPPA	84,732	9,586	147,134	20,970	7,201	269,623
Private Equity	\$248,225	\$140,024	\$89,824	\$49,794	\$22,354	\$550,221
Ares	5,517	2,984	-	728	453	9,682
Bay Hills	30,767	16,599	4,228	5,079	2,803	59,476
Black Diamond	24,533	13,270	-	3,238	2,015	43,056
Blackstone	7,563	4,526	7	1,161	552	13,809
Crestview	11,402	6,160	709	1,675	983	20,929
CVC	6,517	3,525	-	860	535	11,437
DAG Ventures	1,031	553	568	273	121	2,546
Leonard Green	29,259	17,577	5,681	5,967	2,535	61,019
Harvest Partners	13,525	8,090	5,402	3,458	1,378	31,853
H.I.G.	6,785	3,883	68	991	528	12,255
Horsley Bridge	4,130	2,211	2,316	1,103	491	10,251
Kayne Anderson	10,822	6,535	4,757	2,902	1,124	26,140
Keyhaven	5,965	3,224	270	852	508	10,819
Levine Leichtman	25,228	14,943	9,055	6,134	2,520	57,880
Middle Ground	22,551	11,726	37,230	5,391	2,130	79,028
New State	772	397	329	155	61	1,714
Strategic Value Partners	15,694	8,315	13,291	4,356	1,256	42,912
Triton	3,817	2,065	-	504	314	6,700
Vista	22,347	13,441	5,913	4,967	2,047	48,715
Public Equity	\$1,655,332	\$818,974	\$646,377	\$272,367	\$109,920	\$3,502,970
American Century Investments	90,100	44,149	40,578	15,886	6,659	197,372
Axiom	19,882	9,742	8,954	3,505	1,469	43,552
BlackRock	205,868	102,342	48,766	27,934	9,520	394,430
Franklin Templeton	74,236	36,376	33,433	13,089	5,486	162,620
Lazard Asset Management	105,785	51,835	47,643	18,651	7,818	231,732
LSV Asset Management	107,108	52,483	48,238	18,884	7,916	234,629
Next Century	31,045	15,788	11,318	4,896	1,982	65,029
Northern Trust	66,562	33,850	24,267	10,497	4,249	139,425
River Road Asset Management	65,963	33,546	24,048	10,403	4,211	138,171
Westfield Capital	78,209	39,773	28,512	12,334	4,993	163,821
JP Morgan Emerging Markets	29,396	14,404	13,239	5,183	2,173	64,395
Pzena Emerging Markets	35,803	17,543	16,125	6,312	2,646	78,429
Internally Managed by KPPA	745,375	367,143	301,256	124,793	50,798	1,589,365
Real Estate	\$196,063	\$107,577	\$60,735	\$45,225	\$17,265	\$426,865
Barings Real Estate	10,089	5,537	3,120	2,333	892	21,971
Fundamental Partners	12,055	6,616	3,728	2,788	1,066	26,253
Harrison Street	54,328	29,716	17,161	12,431	4,761	118,397
Lubert-Adler	5,826	3,177	1,794	1,343	508	12,648
Mesa West	23,106	12,755	6,404	5,394	2,026	49,685
Patron	3,267	1,793	1,010	756	289	7,115
Prologis	58,168	31,921	17,987	13,453	5,143	126,672
Rubenstein	1,825	992	560	420	158	3,955
Stockbridge	24,923	13,730	8,111	5,721	2,192	54,677

Walton Street	2,476	1,340	860	586	230	5,492
Real Return	\$81,721	\$43,148	\$31,164	\$17,269	\$6,502	\$179,804
AMERRA	13,437	7,418	3,857	3,128	1,176	29,016
Arctos	2,613	892	1,466	64	64	5,099
BTG Pactual	5,284	2,903	1,801	1,221	463	11,672
IFM	13,917	7,171	5,119	2,880	970	30,057
Prisma	18,179	10,185	6,404	4,252	1,595	40,615
Tortoise	28,165	14,514	12,461	5,698	2,224	63,062
Internally Managed by KPPA	126	65	56	26	10	283
Specialty Credit	\$650,513	\$321,591	\$295,123	\$130,980	\$52,176	\$1,450,383
Adams Street	54,239	28,654	21,037	11,317	4,372	119,619
Arrowmark	121,025	65,933	43,270	26,899	9,933	267,060
Blue Torch	27,573	14,493	10,886	5,722	2,217	60,891
Benefit Street Partners	27,857	15,193	10,590	6,394	2,302	62,336
CapitalSpring	14,628	7,978	5,561	3,358	1,209	32,734
Cerberus	35,480	19,350	13,487	8,144	2,932	79,393
Columbia Threadneedle Investments	88,956	33,320	51,530	16,306	6,344	196,456
Manulife Investment Management	54,709	23,758	22,649	976	5,134	107,226
Marathon Asset Management	85,275	46,613	34,167	20,444	7,059	193,558
Shenkman Capital Management	52,978	19,629	46,499	11,164	3,887	134,157
Waterfall Asset Management	59,572	31,278	24,719	13,778	4,455	133,802
White Oak Global Advisors	28,221	15,392	10,728	6,478	2,332	63,151
Other	\$22,989	\$12,369	\$6,013	\$4,788	\$1,822	\$47,981
Total Assets Under Management	\$3,274,939	\$1,606,040	\$1,452,258	\$615,979	\$245,834	\$7,195,050

External Investment Expenses - Pension Asset Class/Type Breakdown

For the fiscal year ending June 30, 2023 (\$ in Thousands)

	Public Equity	Private Equity	Fixed Income	Specialty Credit	Cash	Real Return	Real Estate	Total
Fee for Long Balance	\$7	\$-	\$-	\$-	\$-	\$-	\$-	\$7
Securities Lending Fee Rebate	10,181	-	1,475	2,060	-	654	-	\$14,370
Investment Advisory Fees	13,222	6,858	2,759	18,968	-	3,643	7,666	\$53,116
Performance/Incentive Fees	-	(206)	-	18,303	-	1,788	(3,013)	\$16,872
Securities Lending Fees	144	-	42	56	-	64	-	\$306
Taxes and Insurance	-	609	-	-	-	-	-	\$609
Administration	180	-	-	-	1,904	-	-	\$2,084
Miscellaneous	28	3,429	-	28,288	-	1,007	1,424	\$34,176
Commission on Future Contracts	3	-	52	3	-	-	-	\$58
Consultant Fees	-	-	-	-	584	-	-	\$584
Custodial Fees	-	-	-	-	1,425	-	-	\$1,425
	\$23,765	\$10,690	\$4,328	\$67,678	\$3,913	\$7,156	\$6,077	\$123,607

External Investment Expenses - Insurance Asset Class/Type Breakdown

For the fiscal year ending June 30, 2023 (\$ in Thousands)

	Public Equity	Private Equity	Fixed Income	Specialty Credit	Cash	Real Return	Real Estate	Total
Fee for Long Balance	\$4	\$-	\$-	\$-	\$-	\$-	\$-	\$4
Securities Lending Fee Rebate	3,449	-	627	831	-	206	-	\$5,113
Investment Advisory Fees	6,115	4,438	1,028	8,251	-	1,646	3,468	\$24,946
Performance/Incentive Fees	-	960	-	8,673	-	809	(1,173)	\$9,269
Securities Lending Fees	59	-	14	23	-	20	-	\$116
Taxes and Insurance	-	306	-	-	-	-	-	\$306
Administration	81	-	-	-	827	-	-	\$908
Miscellaneous	12	1,608	-	12,578	-	504	611	\$15,313
Commission on Future Contracts	1	-	18	1	-	-	-	\$20
Consultant Fees	-	-	-	-	254	-	-	\$254
Custodial Fees	-	-	-	-	857	-	-	\$857
	\$9,721	\$7,312	\$1,687	\$30,357	\$1,938	\$3,185	\$2,906	\$57,106

The Governmental Accounting Standards Board recognizes that it may not be possible or cost-beneficial to separate certain investment expenses from either the related investment income or the general administrative expenses of the plan. KPPA has displayed all investment related fees and expenses identifiable and captured by our custodial bank, BNY Mellon and KPPA staff.

External Expenses

For the fiscal year ending June 30, 2023 (\$ in Thousands)

Expense	Fees Paid	Share of Total
Portfolio Management		
Pension Funds	\$106,922	59.17%
Insurance Fund	50,766	28.09%
Securities Lending		
Pension Funds	14,676	8.12%
Insurance Fund	5,229	2.90%
Custody		
Pension Funds	1,425	0.79%
Insurance Fund	857	0.47%
Consultant		
Pension Funds	584	0.32%
Insurance Fund	254	0.14%
Total Pension Funds		
	123,607	68.40%
Total Insurance Fund		
	57,106	31.60%
Total Expenses		
	\$180,713	100.00%

Schedule of Commissions Paid (in whole \$)

For the fiscal year ending June 30, 2023

Assets	Total Shares	Commissions Paid	Price per Share
U.S. Equities	44,926,514	\$829,621	0.0185
Non U.S. Equities	261,291,961	\$1,256,670	0.0048
Total	306,218,475	\$2,086,291	0.01

Fair Values (FV) - Pension Funds

As of June 30, 2023 (\$ in Thousands)

	CERS Nonhazardous		CERS Hazardous		KERS Nonhazardous		KERS Hazardous	
	Fair Value	% of Total FV	Fair Value	% of Total FV	Fair Value	% of Total FV	Fair Value	% of Total FV
Assets								
Equity								
Public Equity	\$4,387,287	50.46%	\$1,515,428	50.41%	\$1,185,535	33.66%	\$394,373	43.88%
Private Equity	689,035	7.93%	229,769	7.64%	159,851	4.54%	63,181	7.03%
Fixed Income								
Core Fixed Income	888,421	10.22%	308,173	10.25%	729,672	20.72%	109,211	12.15%
Specialty Credit	1,736,726	19.98%	598,736	19.92%	613,468	17.42%	181,856	20.23%
Cash	171,714	1.97%	88,772	2.95%	579,522	16.45%	74,740	8.31%
Inflation Protected								
Real Return	274,708	3.16%	91,713	3.05%	74,952	2.13%	24,885	2.77%
Real Estate	545,935	6.28%	173,707	5.78%	179,035	5.08%	50,563	5.63%
TOTAL PORTFOLIO	\$8,693,826		\$3,006,298		\$3,522,035		\$898,809	

Fair Values (FV) - Insurance Funds

As of June 30, 2023 (\$ in Thousands)

	CERS Nonhazardous		CERS Hazardous		KERS Nonhazardous		KERS Hazardous	
	Fair Value	% of Total FV	Fair Value	% of Total FV	Fair Value	% of Total FV	Fair Value	% of Total FV
Assets								
Equity								
Public Equity	\$1,655,332	50.55%	\$818,974	50.99%	\$646,377	44.51%	\$272,367	44.22%
Private Equity	268,197	8.19%	150,751	9.39%	94,391	6.50%	53,886	8.75%
Fixed Income								
Core Fixed Income	335,463	10.24%	152,820	9.52%	175,932	12.11%	74,605	12.11%
Specialty Credit	650,533	19.86%	321,600	20.02%	295,131	20.32%	130,980	21.26%
Cash	84,633	2.58%	9,538	0.59%	147,091	10.13%	20,951	3.40%
Inflation Protected								
Real Return	84,098	2.57%	44,445	2.77%	32,410	2.23%	17,822	2.89%
Real Estate	196,683	6.01%	107,912	6.72%	60,926	4.20%	45,368	7.37%
TOTAL PORTFOLIO	\$3,274,939		\$1,606,040		\$1,452,258		\$615,979	

Fair Values (FV) - Pension Funds

As of June 30, 2023 (\$ in Thousands)

	SPRS		Total	
	Fair Value	% of Total FV	Fair Value	% of Total FV
Assets				
Equity				
Public Equity	\$192,859	32.83%	\$7,675,482	45.94%
Private Equity	16,598	2.83%	1,158,434	6.93%
Fixed Income				
Core Fixed Income	121,978	20.76%	2,157,455	12.91%
Specialty Credit	101,770	17.32%	3,232,556	19.35%
Cash	121,919	20.75%	1,036,667	6.20%
Inflation Protected				
Real Return	10,917	1.86%	477,175	2.86%
Real Estate	21,466	3.65%	970,706	5.81%
TOTAL PORTFOLIO	\$587,507		\$16,708,475	

Fair Values (FV) - Insurance Funds

As of June 30, 2023 (\$ in Thousands)

	SPRS		Total	
	Fair Value	% of Total FV	Fair Value	% of Total FV
Assets				
Equity				
Public Equity	\$109,920	44.71%	\$3,502,970	48.68%
Private Equity	23,923	9.73%	591,148	8.22%
Fixed Income				
Core Fixed Income	28,602	11.63%	767,422	10.67%
Specialty Credit	52,177	21.22%	1,450,421	20.16%
Cash	7,194	2.93%	269,407	3.74%
Inflation Protected				
Real Return	6,699	2.73%	185,474	2.58%
Real Estate	17,319	7.05%	428,208	5.95%
TOTAL PORTFOLIO	\$245,834		\$7,195,050	

ACTUARIAL

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Certification of Actuarial Results

Re: Certification for the Actuarial Results as of June 30, 2023.

Dear Boards of Trustees:

Actuarial valuations are prepared annually as of June 30, for the County Employees Retirement System (CERS), the Kentucky Employees Retirement System (KERS), and the State Police Retirement System (SPRS). These reports describe the current actuarial condition of the Systems and document the calculated employer contribution requirements as well as the changes in the financial condition since the prior actuarial valuation.

Under Kentucky Statute, the Board of Trustees of the Kentucky Retirement System (KRS) must recommend the employer contribution requirement for KERS and SPRS for the fiscal years beginning July 1, 2024 and ending June 30, 2026. The Board of Trustees of the County Employees Retirement System must certify the employer contribution rates for CERS for the fiscal year beginning July 1, 2024 and ending June 30, 2025. The contribution requirements determined by June 30, 2023 actuarial valuations are intended to become effective twelve months after the valuation date and, as such, are intended to be used by the Board for recommending these required contributions effective July 1, 2024.

These contributions are calculated based on the membership data and plan assets as of June 30, 2023. These calculations are also based on the benefit provisions in effect as of June 30, 2023.

FINANCING OBJECTIVES AND FUNDING POLICY

The Kentucky Public Pensions Authority (KPPA) administers pension and health insurance funds to provide for monthly retirement income and retiree health insurance benefits. The total employer contribution requirement is comprised of a contribution to each respective fund.

The employer contribution is determined in accordance with Section 61.565 of Kentucky Statute. As specified by the Statute, the employer contribution is comprised of a normal cost contribution and an actuarial accrued liability contribution. The actuarial accrued liability contribution is calculated by amortizing the unfunded accrued liability as of June 30, 2019 over a closed 30-year amortization period (26 years remaining as of June 30, 2023). Gains and losses incurring in years after June 30, 2019 are amortized as separate, closed 20-year amortization bases.

If the contributions made are equal to the Actuarially Determined Contribution (ADC), and if all actuarial assumptions are met, there will not be an unfunded accrued liability at the end of the 26-year period remaining from the original closed 30-year amortization base. Accordingly, the ADC under the funding policy can be considered a "Reasonable Actuarially Determined Contribution" as required by the Actuarial Standards of Practice.

House Bill 8 passed during the 2021 legislative session and changed how employer contributions are allocated and collected from the participating employers in the KERS non-hazardous fund. Each employer will pay a normal cost contribution on the payroll of their covered employees and contribute to the fund an allocated share of the cost required to amortize the unfunded liability.

HB 1 and HB 604 were enacted in the 2022 legislative session and provided an additional \$135 million and \$105 million in appropriations to finance the unfunded actuarial accrued liability in the KERS non-hazardous retirement fund in FY 2023 and FY 2024. The previous year's valuation reflected the appropriations for FY 2023 in the calculated contribution requirement, and the appropriations for FY 2024 have been reflected in the contribution requirement in this year's valuation.



PROGRESS TOWARD REALIZATION OF FINANCING OBJECTIVES

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a plan's funded status. In the absence of benefit improvements, assumption changes, or actuarial losses, it should increase over time, until it reaches at least 100%. As of June 30, 2023, the funded ratios for the pension and health insurance funds are as follows:

Funding Level As of June 30										
System	2023		2022		2021		2020		2019	
	Pension	Insurance	Pension	Insurance	Pension	Insurance	Pension	Insurance	Pension	Insurance
CERS Nonhazardous	56.1%	131.5%	52.0%	132.1%	51.8%	85.4%	49.4%	78.5%	49.1%	70.7%
CERS Hazardous	51.4%	100.7%	47.6%	101.0%	46.7%	84.3%	45.1%	78.2%	45.3%	75.8%
KERS Nonhazardous	21.8%	81.7%	18.5%	79.1%	16.8%	50.2%	14.2%	42.7%	13.4%	36.3%
KERS Hazardous	65.4%	170.4%	63.2%	172.2%	60.4%	135.5%	55.3%	126.0%	54.8%	123.1%
SPRS	54.0%	100.5%	52.5%	100.6%	30.7%	82.0%	28.1%	75.0%	27.0%	71.3%

ASSUMPTIONS AND METHODS

The Boards of Trustees, in consultation with the actuary, set the actuarial assumptions and methods used in the actuarial valuation. An experience study was conducted after the June 30, 2022 actuarial valuation and the Board adopted updated assumptions for use in this actuarial valuation.

The updated assumptions include:

Demographic Assumptions:

- Post-retirement mortality rates were updated based on KPPA experience.
- Mortality improvement assumption was updated to the ultimate rates of the MP-2020 mortality improvement scale.
- Rates of termination prior to retirement were increased.
- Rates of disability incidence for the KERS non-hazardous fund and CERS funds were decreased.
- The percentage of members assumed to cover spouses in the retiree health insurance plan at retirement was increased for the SPRS fund.



Economic Assumptions:

- The rate of inflation was increased from 2.30% to 2.50%.
- The salary productivity assumption was reduced by 0.20%, resulting in no change in the salary increase assumption for long-service employees of 3.30% in the non-hazardous funds and 3.55% in the hazardous funds.
- The individual rates of salary increases were increased during the select period for the CERS funds.
- The investment return assumption for the CERS pension funds and all insurances funds was increased from 6.25% to 6.50%.
- The Tier 3 cash balance interest crediting rate assumption was increased to 5.90% for the KERS non-hazardous and SPRS pension funds and to 6.75% for the KERS hazardous and CERS pension funds.

In our opinion, all the assumptions and methods adopted by the Boards Trustees satisfy the requirements in the Actuarial Standards of Practice that are applicable for actuarial valuations of public retirement systems.

It is our opinion that the actuarial assumptions used to perform these valuations are internally consistent and reasonably reflect the anticipated future experience of the Systems. The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can, and almost certainly will, differ as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution requirements, and funding periods. The actuarial calculations are intended to provide information for rational decision making.

ADDITIONAL DISCLOSURES

The benefit structure is outlined in this section of the annual report. GRS prepared the following schedules in the actuarial section: *Summary of Actuarial Valuation Results, Recommended Employer Contribution Rates, Summary of Actuarial Unfunded Liabilities, the Solvency Test, the Summary of Active Member Valuation Data, the Summary of Retired Member Valuation Data, Summary of the Assumptions and Methods, and the Summary of the Benefit Provisions.*

In addition, GRS prepared the following schedules in the financial section in accordance with GASB Statement No. 67: *Net Pension Liability Schedule, Discount Rate Sensitivity Analysis, Schedule of Changes in the Employers' Net Pension Liability, Schedule of Employers' Net Pension Liability, and the Schedule of Employers' Contributions.*

DATA

Member data for retired, active and inactive members was supplied as of June 30, 2023, by KPPA staff. The staff also supplied asset information as of June 30, 2023. We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent with the prior year's data. GRS is not responsible for the accuracy or completeness of the information provided to us by KPPA.



CERTIFICATION

We certify that the information presented herein is accurate and fairly portrays the actuarial position of the Retirement Systems as of June 30, 2023. All of our work conforms with generally accepted actuarial principles and practices, and in conformity with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of Kentucky Code of Laws and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All three of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

Gabriel, Roeder, Smith & Co.

A handwritten signature in dark ink, appearing to read "Daniel J. White".

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

A handwritten signature in dark ink, appearing to read "Janie Shaw".

Janie Shaw, ASA, MAAA
Consultant

A handwritten signature in dark ink, appearing to read "Krysti Kiesel".

Krysti Kiesel, ASA, MAAA
Senior Analyst and Actuary

Summary of Actuarial Assumptions

The results of the actuarial valuation are based upon the assumptions and funding policies adopted by the Boards and statutory funding requirements. Assumptions and funding policies are reviewed against actual plan experience at least once every five years through the completion of the Actuarial Experience Study. In general, the assumptions and methods used in the June 30, 2023 valuation are based on the most recent actuarial experience study performed as of June 30, 2022, submitted, and adopted by the Boards in May and June 2023.

1. Actuarial Cost Method: The actuarial valuation was prepared using the entry age normal cost (EANC) method as required by state statute. Under this method, the present value of future benefits is determined for each member and allocated equitably as a level percentage of payroll from the member's entry age into the plan to the assumed age of exit from the plan. The portion of the present value of future benefits allocated to the current valuation year is called the normal cost. The portion of the present value of future benefits allocated to prior years of service is called the actuarial accrued liability. The unfunded actuarial accrued liability represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. Relative to the pension fund and the insurance fund, an employer contribution has been established to pay for both the normal cost and the amount needed to amortize the unfunded actuarial accrued liability (UAAL).

2. UAAL Amortization Method: Effective for the June 30, 2019 valuation, the actuarial accrued liability contribution is calculated by amortizing the unfunded accrued liability as of June 30, 2019 over a closed 30-year amortization period. Gains and losses incurring in future years are amortized as separated closed 20-year amortization bases. This amortization cost is calculated using a 0.00% payroll growth assumption for the KERS and SPRS Funds and a 2.00% payroll growth assumption for the CERS Funds. Effective for fiscal years ending June 30, 2022 and later, the amortization cost for the KERS Nonhazardous funds is allocated amongst employers as a dollar amount based on the employers' actuarial accrued liability as of June 30, 2019. The amortization cost for the remaining funds is divided by covered payroll and included in the contribution rate, payable by employers as a percentage of pay.

3. Asset Valuation Method: The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the investment return assumption. The amount recognized each year is 20% of the difference between market value and expected market value.

4. Retiree Insurance Funding Policy: Effective for the June 30, 2019 valuation, the actuarial accrued liability contribution is calculated by amortizing the unfunded accrued liability as of June 30, 2019, over a closed 30-year amortization period. Gains and losses incurring in future years are amortized as separated closed 20-year amortization bases. This amortization cost is calculated using a 0.00% payroll growth assumption for the KERS and SPRS Funds and a 2.00% payroll growth assumption for the CERS Funds. Effective for fiscal years ending June 30, 2022 and later, the amortization cost for the KERS Nonhazardous funds is allocated amongst employers as a dollar amount based on the employers' actuarial accrued liability as of June 30, 2019. The amortization cost for the remaining funds is divided by covered payroll and included in the contribution rate, payable by employers as a percentage of pay.

5. Investment Return Assumption: The future investment earnings of plan assets are assumed to accumulate at a rate of 6.50% per annum for the CERS Nonhazardous Retirement System, the CERS Hazardous Retirement System, and all Insurance Systems. This rate consists of a 2.50% price inflation component and a 4.00% real rate of return component. The assumed rate of return for the KERS Hazardous pension fund is 6.25% and consists of a 2.50% inflationary component and a 3.75% real rate of return component. The assumed rate of return for the KERS Nonhazardous pension fund and the SPRS pension fund is 5.25% and consist of a 2.50% inflationary component and a 2.75% real rate of return component. This assumption was adopted in 2023.

6. Salary Increase Assumptions: Active member salaries are assumed to increase at the rates provided in Table 1. The rates include a price inflation and productivity component, and an additional increase due to promotion based upon plan experience. The price inflation component is 2.50% for all plans and the productivity component is 0.80% for the nonhazardous systems and 1.05% for the hazardous systems. This assumption was adopted in 2023.

Table 1. Salary Increase Assumptions

Service	CERS	CERS	KERS	KERS	SPRS
	Nonhazardous	Hazardous	Nonhazardous	Hazardous	
0	10.30%	19.05%	15.30%	20.05%	16.05%
1	7.30%	9.05%	6.80%	7.55%	8.55%
2	6.30%	7.05%	6.05%	6.55%	7.55%
3	5.30%	6.05%	5.80%	6.55%	5.55%
4	5.05%	5.80%	5.30%	5.55%	5.55%
5	4.80%	5.55%	4.80%	5.05%	5.55%
6	4.55%	5.55%	4.55%	4.55%	5.55%
7	4.30%	5.05%	4.30%	4.05%	4.55%
8	4.05%	5.05%	4.05%	4.05%	4.55%
9	4.05%	4.55%	3.80%	3.55%	3.55%
10	3.80%	4.55%	3.80%	3.55%	3.55%
11	3.80%	4.05%	3.30%	3.55%	3.55%
12	3.55%	4.05%	3.30%	3.55%	3.55%
13	3.55%	4.05%	3.30%	3.55%	3.55%
14	3.55%	3.80%	3.30%	3.55%	3.55%
15+	3.30%	3.80%	3.30%	3.55%	3.55%
16+	3.30%	3.55%	3.30%	3.55%	3.55%

7. Health Care Cost Trend Rate:

The costs for retiree medical premiums are assumed to increase according to the assumptions provided in Table 2.

Table 2: Health Care Cost Trend Rate (See footnotes 1-2)

Year	Non-Medicare Plans ⁽¹⁾	Medicare Plans ⁽¹⁾	Dollar Contribution ⁽²⁾
2025	6.80%	8.50%	1.50%
2026	6.55%	8.00%	1.50%
2027	6.30%	8.00%	1.50%
2028	6.05%	8.00%	1.50%
2029	5.80%	7.50%	1.50%
2030	5.55%	7.00%	1.50%
2031	5.30%	6.50%	1.50%
2032	5.05%	6.00%	1.50%
2033	4.90%	5.50%	1.50%
2034	4.75%	5.00%	1.50%
2035	4.60%	4.50%	1.50%
2036	4.45%	4.05%	1.50%
2037	4.30%	4.05%	1.50%
2038+	4.05%	4.05%	1.50%

⁽¹⁾ All increases are assumed to occur on January 1. The 2024 premiums were known at the time of the June 30, 2023, valuation and were incorporated into the liability measurement.

⁽²⁾ Applies to members participating on or after July 1, 2003. All increases are assumed to occur on July 1.

8. Payroll Growth Assumption: For purposes of determining the amortization cost to finance the unfunded actuarial accrued liability, the active member payroll (or amortization payments for the KERS Nonhazardous fund) is assumed to increase at a rate of 0.00% per year for KERS (Nonhazardous and Hazardous) and SPRS and the active member payroll in CERS (Nonhazardous and Hazardous) is assumed to increase at the rate of 2.00% per annum. This assumption was adopted in 2017.

9. Retiree Cost of Living Adjustments (COLA): SB2 only allows the Cost of Living Adjustments (COLAs) to be awarded on a biennial basis if the State Legislature so authorizes and either (i) the system is over 100% funded or (ii) the Legislature appropriates sufficient funds to pay the increased liability for the COLA.

10. Retirement Rate Assumptions: The probability, or the likelihood, that a member will retire at a specified age or level of service is provided in Table 3. These assumptions were adopted in 2023.

Table 3a: Retirement Rate Assumptions CERS (See footnotes 1 - 3)

Nonhazardous					Hazardous			
Age					Service	CERS Members Participating before 9/1/2008 ⁽²⁾	CERS Members Participating between 9/1/2008 and 1/1/2014 ⁽³⁾	CERS Members Participating after 1/1/2014 ⁽³⁾
	CERS Normal Retirement Male	CERS Normal Retirement Female	CERS Early Retirement ⁽¹⁾ Male	CERS Early Retirement ⁽¹⁾ Female				
Under 45	35.00%	27.00%			5	17.00%		
45	35.00%	27.00%			6	17.00%		
46	35.00%	27.00%			7	17.00%		
47	35.00%	27.00%			8	17.00%		
48	35.00%	27.00%			9	17.00%		
49	35.00%	27.00%			10	17.00%		
50	30.00%	27.00%			11	17.00%		
51	30.00%	27.00%			12	17.00%		
52	30.00%	27.00%			13	17.00%		
53	30.00%	27.00%			14	17.00%		
54	30.00%	27.00%			15	17.00%		
55	30.00%	27.00%	4.00%	5.00%	16	17.00%		
56	30.00%	27.00%	4.00%	5.00%	17	17.00%		
57	30.00%	27.00%	4.00%	5.00%	18	17.00%		
58	30.00%	27.00%	4.00%	5.00%	19	17.00%		
59	30.00%	27.00%	4.00%	5.00%	20	30.00%		
60	30.00%	27.00%	4.00%	8.00%	21	22.50%		
61	30.00%	27.00%	4.00%	9.00%	22	18.00%		
62	30.00%	40.00%	15.00%	20.00%	23	21.00%		
63	30.00%	35.00%	15.00%	18.00%	24	24.00%		
64	30.00%	30.00%	15.00%	16.00%	25	27.00%	21.60%	16.00%
65	30.00%	30.00%			26	30.00%	24.00%	16.00%
66	30.00%	27.00%			27	33.00%	26.40%	16.00%
67	30.00%	27.00%			28	36.00%	28.80%	16.00%
68	30.00%	27.00%			29	39.00%	31.20%	16.00%
69	30.00%	27.00%			30+	39.00%	31.20%	100.00%
70	30.00%	27.00%						
71	30.00%	27.00%						
72	30.00%	27.00%						
73	30.00%	27.00%						
74	30.00%	27.00%						
75	100.00%	100.00%						

(1) The annual rate of retirement is 11% for male members and 12% for female members with 25-26 years of service.

(2) The annual rate of retirement is 100% at age 62.

(3) The annual rate of retirement is 100% at age 60.

Nonhazardous System: There is a 1% increase in the first two years a member becomes eligible under the age of 65. 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 62 to reflect the different retiree health insurance benefit.

Table 3b: Retirement Rate Assumptions KERS (See footnotes 1 - 3)

Age	Non-Hazardous					Hazardous			
	KERS Normal Retirement		KERS Early Retirement ⁽¹⁾		Service	KERS Members participating before 9/1/2008 ⁽²⁾		KERS Members participating between 9/1/2008 and 1/1/2014 ⁽³⁾	KERS Members participating after 1/1/2014 ⁽³⁾
	Male	Female	Male	Female		Age 55-61	Age 62+		
Under 45	20.00%	33.00%			5	10.00%	35.00%		
45	21.00%	33.00%			6	10.00%	35.00%		
46	22.00%	33.00%			7	10.00%	35.00%		
47	23.00%	33.00%			8	10.00%	35.00%		
48	24.00%	33.00%			9	10.00%	35.00%		
49	25.00%	33.00%			10	10.00%	35.00%		
50	26.00%	33.00%			11	10.00%	35.00%		
51	27.00%	33.00%			12	10.00%	35.00%		
52	28.00%	33.00%			13	10.00%	35.00%		
53	29.00%	33.00%			14	10.00%	35.00%		
54	30.00%	33.00%			15	10.00%	35.00%		
55	30.00%	33.00%	5.00%	5.00%	16	10.00%	35.00%		
56	30.00%	33.00%	5.00%	5.00%	17	10.00%	35.00%		
57	30.00%	33.00%	5.00%	5.00%	18	10.00%	35.00%		
58	30.00%	33.00%	5.00%	5.00%	19	10.00%	35.00%		
59	30.00%	33.00%	5.00%	5.00%	20	50.00%	50.00%		
60	30.00%	33.00%	5.00%	8.00%	21	32.00%	32.00%		
61	30.00%	33.00%	8.00%	9.00%	22	32.00%	32.00%		
62	35.00%	35.00%	15.00%	20.00%	23	32.00%	32.00%		
63	30.00%	33.00%	15.00%	18.00%	24	32.00%	32.00%		
64	30.00%	33.00%	15.00%	16.00%	25	32.00%	32.00%	25.60%	16.00%
65	30.00%	33.00%			26	32.00%	32.00%	25.60%	16.00%
66	30.00%	33.00%			27	32.00%	32.00%	25.60%	16.00%
67	30.00%	33.00%			28	32.00%	32.00%	25.60%	16.00%
68	30.00%	33.00%			29	32.00%	32.00%	25.60%	16.00%
69	30.00%	33.00%			30+	32.00%	32.00%	25.60%	100.00%
70	30.00%	33.00%							
71	30.00%	33.00%							
72	30.00%	33.00%							
73	30.00%	33.00%							
74	30.00%	33.00%							
75	100.00%	100.00%							

(1) The annual rate of retirement is 12% for male members and 14% for female members with 25-26 years of service.

(2) The annual rate of retirement is 100% at age 65.

(3) The annual rate of retirement is 100% at age 60.

Nonhazardous System: There is a 1% increase in the first two years a member becomes eligible under the age of 65. 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.

Table 3c: Retirement Rate Assumptions SPRS (See footnotes 1 - 2)

Service	Hazardous		
	SPRS Members Participating before 9/1/2008 ⁽¹⁾	SPRS Members participating between 9/1/2008 and 1/1/2014 ⁽²⁾	SPRS Members participating after 1/1/2014 ⁽²⁾
20	22.00%		
21	22.00%		
22	22.00%		
23	28.00%		
24	28.00%		
25	28.00%	17.60%	16.00%
26	28.00%	17.60%	16.00%
27	28.00%	17.60%	16.00%
28	44.00%	22.40%	16.00%
29	44.00%	22.40%	16.00%
30	44.00%	22.40%	100.00%
31	58.00%	22.40%	
32	58.00%	22.40%	
33	58.00%	35.20%	
34	58.00%	35.20%	
35	58.00%	35.20%	
36	58.00%	46.40%	
37	58.00%	46.40%	
38	58.00%	46.40%	
39	58.00%	46.40%	
40+	58.00%	46.40%	

(1) The annual rate of service retirement is 100% at age 55.

(2) 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 age 55 to reflect the different retiree health insurance benefit.

11. Mortality Assumptions: Pre-retirement mortality: PUB-2010 General Mortality table, for the Nonhazardous Systems, and the PUB-2010 Public Safety Mortality table for the Hazardous Systems, 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 MP-2020 mortality improvement scale using a base year of 2023.

Table 4a provides the life expectancy for a non-disabled retiree in future years based on the assumption with full generational projection:

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 MP-2020 mortality improvement scale using a base year of 2010.

These mortality assumptions were adopted in 2023. Table 4b provides sample annual rates of mortality in the base year of each table (2023 for the retired member mortality rates and 2010 for the active member and disabled member mortality rates).

Table 4a: 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

Table 4b: Sample Annual Rate of Mortality

Age	Active Member Mortality		Active Member Mortality		Retired Member Mortality		Disabled Member Mortality	
	Nonhazardous		Hazardous					
	Males	Females	Males	Females	Males	Females	Males	Females
20	0.04%	0.01%	0.04%	0.02%	0.03%	0.01%	0.62%	0.35%
22	0.03%	0.01%	0.04%	0.02%	0.03%	0.01%	0.53%	0.29%
32	0.04%	0.02%	0.04%	0.03%	0.04%	0.02%	0.59%	0.46%
42	0.08%	0.04%	0.07%	0.06%	0.07%	0.04%	1.14%	1.13%
52	0.18%	0.10%	0.14%	0.10%	0.32%	0.21%	2.73%	2.38%
62	0.37%	0.22%	0.32%	0.19%	0.94%	0.55%	4.02%	3.08%
72	0.84%	0.60%	0.98%	0.60%	2.38%	1.48%	6.52%	4.86%

12. Withdrawal Rates: The probability, or likelihood, of active members terminating employment prior to retirement is provided in Table 5. The rates below include the pre-retirement mortality rates described in item #11. These assumptions were adopted in 2023.

Table 5: Selected Rates of Termination Prior to Retirement

CERS Nonhazardous		CERS Hazardous	KERS Nonhazardous		KERS Hazardous	SPRS	
Years of Service			Years of Service			Years of Service	
1	20.00%	20.00%	1	22.00%	32.50%	1	15.00%
2	17.92%	10.48%	2	18.10%	25.58%	2	5.30%
3	14.35%	8.33%	3	14.73%	19.66%	3	4.14%
4	12.26%	7.06%	4	12.77%	16.19%	4	3.47%
5	10.78%	6.18%	5	11.37%	13.73%	5	2.98%
6	9.63%	5.47%	6	10.29%	11.82%	6	2.61%
7	8.69%	4.91%	7	9.41%	10.26%	7	2.30%
8	7.90%	4.43%	8	8.66%	8.93%	8	2.05%
9	7.21%	4.01%	9	8.01%	7.79%	9	1.83%
10	6.60%	3.66%	10	7.44%	6.79%	10	1.63%
11	6.06%	3.32%	11	6.93%	5.89%	11	1.45%
12	5.57%	3.02%	12	6.47%	5.07%	12	1.29%
13	5.12%	2.76%	13	6.04%	4.33%	13	1.14%
14	4.70%	2.51%	14	5.65%	3.64%	14	1.01%
15	4.32%	2.28%	15	5.29%	3.00%	15	0.88%
16	3.97%	2.07%	16	4.95%	2.42%	16	0.77%
17	3.63%	1.86%	17	4.64%	1.86%	17	0.66%
18	3.32%	1.68%	18	4.36%	1.34%	18	0.56%
19	3.04%	1.50%	19	4.07%	0.86%	19	0.46%
20	2.75%	1.33%	20	3.82%	0.39%	20	0.37%
21	2.48%	0.00%	21	3.56%	0.00%	21	0.00%
22	2.23%	0.00%	22	3.32%	0.00%	22	0.00%
23	2.00%	0.00%	23	3.10%	0.00%	23	0.00%
24	1.77%	0.00%	24	2.88%	0.00%	24	0.00%
25	1.55%	0.00%	25	2.67%	0.00%	25	0.00%
26+	0.00%	0.00%	26+	0.00%	0.00%	26+	0.00%

13. Rates of Disablement: CERS/KERS/SPRS provides disability benefits for those individuals meeting specific qualifications established by state law. This assumption provides the probability, or likelihood, that a member will become disabled during the course of employment for various age levels. These assumptions were adopted in 2023.

Table 6: Sample Rates of Disablement

Nearest Age	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
	Probability	Probability	Probability	Probability	Probability
20	0.04%	0.06%	0.03%	0.05%	0.05%
30	0.06%	0.11%	0.05%	0.08%	0.09%
40	0.13%	0.24%	0.11%	0.18%	0.20%
50	0.37%	0.67%	0.31%	0.50%	0.56%
60	0.97%	1.75%	0.80%	1.32%	1.46%

14. Assumption Changes Since Prior Valuation: Demographic and Economic assumptions were updated based on the 2022 experience study. A 1% increase in the rate of retirement for each of the first two years a nonhazardous member becomes retirement eligible under the age of 65 is assumed to reflect the shift in retirement pattern due to House Bill 506. Additionally, in conjunction with the review of the healthcare per capita claims cost, the assumed increase in the future healthcare costs, or trend assumption, is reviewed on an annual basis. The trend assumption for the non-Medicare Plans was increased during the select period as a result of this review.

Summary of Actuarial Valuation Results					
Recommended Contribution Rate (FY 2025) ⁽¹⁾	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
Pension Fund Contribution	19.71%	36.49%	6.99%	23.74%	65.79%
Insurance Fund Contribution	0.00%	2.12%	1.45%	0.00%	2.31%
Actuarially Determined Employer Contributions Rate ⁽²⁾ , payable as a percentage of payroll	19.71%	38.61%	8.44%	23.74%	68.10%
Amortization Cost to be Allocated, if applicable	N/A	N/A	\$856,561,041	N/A	N/A
Funded Status as of Valuation Date As of June 30, 2023 (in Whole \$)					
Pension Fund					
Actuarial Liability	\$15,296,428,191	\$5,849,996,034	\$16,304,277,475	\$1,363,036,563	\$1,091,794,728
Actuarial Value of Assets	8,585,072,563	3,008,146,724	3,552,471,492	891,460,165	589,848,255
Unfunded Liability on Actuarial Value of Assets	6,711,355,628	2,841,849,310	12,751,805,983	471,576,398	501,946,473
Funding Ratio on Actuarial Value of Assets	56.12%	51.42%	21.79%	65.40%	54.03%
Market Value of Assets	8,672,597,255	3,035,192,206	3,539,942,510	893,533,383	591,514,353
Unfunded Liability on Market Value of Assets	\$6,623,830,936	\$2,814,803,828	\$12,764,334,965	\$469,503,180	\$500,280,375
Funding Ratio on Market Value of Assets	56.70%	51.88%	21.71%	65.55%	54.18%
Insurance Fund					
Actuarial Liability	\$2,560,387,062	\$1,604,146,747	\$1,877,108,617	\$363,512,398	\$244,058,286
Actuarial Value of Assets	3,366,332,261	1,615,348,695	1,532,894,678	619,518,838	245,171,996
Unfunded Liability on Actuarial Value of Assets	(805,945,199)	(11,201,948)	344,213,939	(256,006,440)	(1,113,710)
Funding Ratio on Actuarial Value of Assets	131.48%	100.70%	81.66%	170.43%	100.46%
Market Value of Assets	3,398,374,988	1,634,191,785	1,532,752,170	625,356,052	248,109,091
Unfunded Liability on Market Value of Assets	\$(837,987,926)	\$(30,045,038)	\$344,356,447	\$(261,843,654)	\$(4,050,805)
Funding Ratio on Market Value of Assets	132.73%	101.87%	81.65%	172.03%	101.66%
Member Data (See Footnotes)					
Number of Active Members	78,810	9,205	31,383	3,886	868
Total Annual Payroll (Active Members) ⁽³⁾	\$2,898,812,630	\$677,987,564	\$1,615,867,787	\$211,601,653	\$65,912,885
Average Annual Pay (Active Members)	\$36,782	\$73,654	\$51,489	\$54,452	\$75,937
Number of Retired Members & Beneficiaries	70,932	11,603	48,409	4,887	1,697
Average Annual Retirement Allowance	\$12,056	\$27,366	\$20,333	\$15,320	\$37,298
Number of Vested Inactive Members	50,491	1,835	31,085	2,326	324
Number of Inactive Members Due a Refund	60,595	2,452	24,895	6,251	390
⁽¹⁾ Rates do reflect the CERS phase-in provisions, which limit the increases to the employer contribution rates to 12% over the prior fiscal year through June 30, 2028. However, the actuarially determined employer contribution rates are below this threshold for FYE2025, and therefore, the rates shown above are equal to the actuarially determined rates.					
⁽²⁾ For the KERS Nonhazardous fund, contribution rate includes the normal cost portion of the contribution requirement only. Amortization cost will be allocated to employers as a dollar amount.					
⁽³⁾ Annual payroll included in the Summary of Actuarial Valuation Results is based upon the annualized monthly payroll for active members as of the valuation date. The annual payroll recorded in the financial section is based upon the sum of the monthly payroll for active members recorded for each month of fiscal year ending June 30, 2023.					

CERS Funds

The Insurance Fund contribution rates and the employer contribution rates for CERS Nonhazardous and CERS Hazardous shown in the tables below are the full funding rates presented by the actuary in the 2014 through 2023 annual valuations.

House Bill 362 was enacted during the 2018 legislative session that limits the annual increase in the CERS employer contribution over the prior fiscal year to 12% per year for the period of July 1, 2018 to June 30, 2028, or until the full actuarial required contribution is met.

Recommended Employer Contribution Rates

As of June 30

CERS (Nonhazardous Employers)

Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
2014	2015-2016	4.23%	8.19%	12.42%	4.88%	17.30%
2015	2016-2017	3.80%	10.15%	13.95%	4.93%	18.88%
2016	2017-2018	3.70%	10.78%	14.48%	4.70%	19.18%
2017	2018-2019	5.85%	15.99%	21.84%	6.21%	28.05%
2018	2019-2020	5.80%	16.72%	22.52%	4.76%	27.28%
2019	2020-2021	6.63%	17.18%	23.81%	5.43%	29.24%
2020	2021-2022	6.46%	17.42%	23.88%	4.17%	28.05%
2021	2022-2023	6.30%	17.10%	23.40%	3.39%	26.79%
2022	2023-2024	6.06%	17.28%	23.34%	0.00%	23.34%
2023	2024-2025	5.29%	14.42%	19.71%	0.00%	19.71%

CERS (Hazardous Employers)

Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
2014	2015-2016	6.21%	14.05%	20.26%	13.42%	33.68%
2015	2016-2017	4.52%	17.19%	21.71%	9.79%	31.50%
2016	2017-2018	4.40%	17.80%	22.20%	9.35%	31.55%
2017	2018-2019	6.78%	28.91%	35.69%	12.17%	47.86%
2018	2019-2020	6.35%	30.63%	36.98%	9.52%	46.50%
2019	2020-2021	11.36%	30.66%	42.02%	9.86%	51.88%
2020	2021-2022	11.00%	32.23%	43.23%	8.73%	51.96%
2021	2022-2023	10.71%	32.10%	42.81%	6.78%	49.59%
2022	2023-2024	10.34%	30.77%	41.11%	2.58%	43.69%
2023	2024-2025	9.77%	26.72%	36.49%	2.12%	38.61%

The insurance fund contribution rates and the employer contribution rates for CERS Nonhazardous and CERS Hazardous shown in the above tables are the full funding rates presented by the actuary in the 2014 through 2023 annual valuations. However, in the case of CERS Nonhazardous and CERS Hazardous, in 2006 the actuary recommended a five-year phase-in of the rate which requires the payment of the insurance benefit normal cost with a five-year phase-in of the unfunded accrued liability (UAL) associated with the insurance funds. In 2008 this recommendation was changed to a ten-year phase-in from the initial starting date. This phase-in was complete and the full actuarial rates were paid in FYE 2018. HB 362 (passed during the 2018 legislative session) limited the employer contribution rate increases to 12% per year over the prior fiscal year for the period of July 1, 2018 to June 30, 2028. SB 249 (passed during the 2020 legislative session) froze the contribution rates for one year so that the rates for FYE 2021 were equal to FYE 2020. As of FYE 2023, the CERS contributions rates were fully phased-in and the actual employer contribution rates equaled the actuarially determined rates shown above.

KERS Funds

The contribution rates for KERS Nonhazardous and KERS Hazardous shown in the tables below are the full funding rates presented by the actuary for 2014 through 2023 annual valuations. However, actual employer contributions were less than the recommended rates for years 2009 through 2014. SB 2 (2013 Legislative Regular Session) required full funding starting in fiscal year 2015. HB 265 from the 2018 legislative session reduced the employer contribution rate for KERS quasi-governmental agencies to the fiscal year 2018 rate for fiscal year 2019, which was 49.47%. The 2019 Special Legislative Session HB 1 sets the employer contribution rate at 49.47%, retroactive to July 1, 2019, for fiscal year 2020 for KERS quasi-governmental agencies. House Bill 8 passed during the 2021 legislative session and changed how employer contributions are allocated and collected from the participating employers in the KERS Nonhazardous Fund. Each employer will pay a normal cost contribution on the payroll of their covered employees and contribute to the fund an allocated share of the cost required to amortize the unfunded liability.

Recommended Employer Contribution Rates

As of June 30

KERS (Nonhazardous Employers)

Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
2014	2015-2016	4.10%	29.47%	33.57%	7.74%	41.31%
2015	2016-2017	3.60%	35.33%	38.93%	8.35%	47.28%
2016	2017-2018	4.93%	37.05%	41.98%	8.41%	50.39%
2017	2018-2019	8.17%	62.86%	71.03%	12.40%	83.43%
2018	2019-2020	7.98%	66.56%	74.54%	10.65%	85.19%
2019	2020-2021	7.99%	65.29%	73.28%	11.15%	84.43%
Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Insurance Fund: Normal Cost	Normal Cost Contribution	Amortization Cost to be Allocated	
2020	2021-2022	7.90%	2.20%	10.10%	\$1,039,849,248	
2021	2022-2023	7.82%	2.15%	9.97%	\$994,421,476	
2022	2023-2024	7.74%	1.86%	9.60%	\$905,892,818	
2023	2024-2025	6.99%	1.45%	8.44%	\$856,561,041	

KERS (Hazardous Employers)

Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
2014	2015-2016	5.69%	11.40%	17.09%	7.12%	24.21%
2015	2016-2017	6.93%	14.15%	21.08%	2.74%	23.82%
2016	2017-2018	6.44%	14.04%	20.48%	1.34%	21.82%
2017	2018-2019	9.67%	24.72%	34.39%	2.46%	36.85%
2018	2019-2020	9.24%	25.18%	34.42%	0.00%	34.42%
2019	2020-2021	9.21%	26.79%	36.00%	0.00%	36.00%
2020	2021-2022	8.84%	24.59%	33.43%	0.00%	33.43%
2021	2022-2023	8.78%	23.04%	31.82%	0.00%	31.82%
2022	2023-2024	8.60%	21.52%	30.12%	0.00%	30.12%
2023	2024-2025	7.71%	16.03%	23.74%	0.00%	23.74%

The contribution rates for KERS Nonhazardous and KERS Hazardous shown in the above tables are the full funding rates presented by the actuary in the 2014 through 2023 annual valuations. HB 265 (passed during the 2018 legislative session), HB 1 (passed during the 2019 special legislative session), and HB 352 (passed during the 2020 legislative session) reduced the FYE 2019-2021 employer contribution rate to 49.47% for Regional Mental Health/Mental Retardation Boards, Local and District Health Departments, State Universities, Community Colleges and any other agencies eligible to voluntarily cease participating in the KERS Nonhazardous fund. HB 8 (passed during the 2021 legislative session) changed how employer contributions are allocated and collected amongst employers in the KERS Nonhazardous fund effective for FYE2022. The normal cost is collected as a percentage of covered payroll and the amortization cost is allocated to employers as a dollar amount based on their accrued liability as of June 30, 2019. Amortization cost shown above reflects the amortization required as of the valuation date and does not reflect any adjustment for the cessation of any employers after the valuation date.

SPRS Funds

The contribution rates for SPRS shown in the below tables are the full funding rates presented by the actuary in the 2014 through 2023 annual valuations. However, the actual employer contribution rates have been less than those shown below. As a result of HB1 passed in 2008 the statute called for an employer contribution rate at an increasing percentage of the full funding rates. SB2 (2013 Regular Legislative Session) eliminated this phase-in beginning with the June 30, 2013, actuarial valuation.

Recommended Employer Contribution Rates

As of June 30

SPRS Employers

Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
2014	2015-2016	8.39%	50.05%	58.44%	19.17%	77.61%
2015	2016-2017	8.77%	57.70%	66.47%	18.87%	85.34%
2016	2017-2018	11.16%	60.41%	71.57%	18.10%	89.67%
2017	2018-2019	16.21%	102.84%	119.05%	27.23%	146.28%
2018	2019-2020	15.81%	104.73%	120.54%	19.50%	140.04%
2019	2020-2021	19.39%	104.40%	123.79%	19.69%	143.48%
2020	2021-2022	19.04%	108.95%	127.99%	18.07%	146.06%
2021	2022-2023	18.60%	66.72%	85.32%	14.11%	99.43%
2022	2023-2024	19.49%	65.90%	85.39%	3.68%	89.07%
2023	2024-2025	19.41%	46.38%	65.79%	2.31%	68.10%

The contribution rates for SPRS shown in the above tables are the full funding rates presented by the actuary in the 2014 through 2023 annual valuations.

Summary of Actuarial Unfunded Liabilities
As of June 30 (\$ in Thousands)
CERS (Nonhazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	\$9,772,523	\$6,117,134	\$6,507,300	\$3,655,389	\$3,265,222	62.60%	66.59%
2015	10,740,325	6,474,849	6,416,854	4,265,477	4,323,472	60.29%	59.75%
2016	11,076,457	6,535,372	6,106,187	4,541,084	4,970,270	59.00%	55.13%
2017	12,803,509	6,764,873	6,687,237	6,038,636	6,116,272	52.84%	52.23%
2018	13,191,505	6,950,225	7,018,963	6,241,280	6,172,542	52.69%	53.21%
2019	14,356,114	7,049,527	7,159,921	7,306,587	7,196,192	49.10%	49.87%
2020	14,610,867	7,220,607	7,027,327	7,390,260	7,583,540	49.42%	48.10%
2021	14,894,907	7,715,884	8,565,652	7,179,023	6,329,254	51.80%	57.51%
2022	15,674,220	8,148,912	7,963,586	7,525,308	7,710,634	51.99%	50.81%
2023	\$15,296,428	\$8,585,072	\$8,672,597	\$6,711,356	\$6,623,831	56.12%	56.70%

CERS (Nonhazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	\$2,616,915	\$1,831,199	\$1,899,557	\$785,715	\$717,357	69.98%	72.59%
2015	2,907,827	1,997,456	1,948,454	910,371	959,373	68.69%	67.01%
2016	2,988,121	2,079,811	1,943,757	908,310	1,044,364	69.60%	65.05%
2017	3,355,151	2,227,401	2,212,536	1,127,750	1,142,616	66.39%	65.94%
2018	3,092,623	2,371,430	2,414,126	721,193	678,497	76.68%	78.06%
2019	3,567,947	2,523,249	2,569,511	1,044,698	998,435	70.72%	72.02%
2020	3,392,086	2,661,351	2,581,613	730,735	810,473	78.46%	76.11%
2021	3,450,485	2,947,312	3,246,801	503,172	203,683	85.42%	94.10%
2022	2,391,990	3,160,084	3,079,984	(768,094)	(687,994)	132.11%	128.76%
2023	\$2,560,387	\$3,366,332	\$3,398,375	\$(805,945)	\$(837,988)	131.48%	132.73%

CERS (Hazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	\$3,288,826	\$1,967,640	\$2,082,998	\$1,321,186	\$1,205,827	59.83%	63.34%
2015	3,613,308	2,096,783	2,073,397	1,516,525	1,539,911	58.03%	57.38%
2016	3,704,456	2,139,119	2,003,669	1,565,337	1,700,787	57.74%	54.09%
2017	4,649,047	2,238,320	2,217,996	2,410,726	2,431,051	48.15%	47.71%
2018	4,792,548	2,321,721	2,348,337	2,470,827	2,444,211	48.44%	49.00%
2019	5,245,365	2,375,106	2,413,708	2,870,258	2,831,657	45.28%	46.02%
2020	5,431,298	2,447,885	2,379,704	2,983,413	3,051,595	45.07%	43.81%
2021	5,629,458	2,628,621	2,914,408	3,000,837	2,715,050	46.69%	51.77%
2022	5,861,691	2,788,714	2,718,234	3,072,977	3,143,457	47.58%	46.37%
2023	\$5,849,996	\$3,008,147	\$3,035,192	\$2,841,849	\$2,814,804	51.42%	51.88%

CERS (Hazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	\$1,493,864	\$997,733	\$1,034,308	\$496,131	\$459,557	66.79%	69.24%
2015	1,504,015	1,087,707	1,061,561	416,308	442,454	72.32%	70.58%
2016	1,558,818	1,135,784	1,062,602	423,034	496,216	72.86%	68.17%
2017	1,788,433	1,196,780	1,189,001	591,653	599,431	66.92%	66.48%
2018	1,684,028	1,256,306	1,280,982	427,722	403,046	74.60%	76.07%
2019	1,732,879	1,313,659	1,340,714	419,221	392,165	75.81%	77.37%
2020	1,740,971	1,362,028	1,321,117	378,943	419,854	78.23%	75.88%
2021	1,751,203	1,475,635	1,627,824	275,568	123,379	84.26%	92.95%
2022	1,538,131	1,553,761	1,522,671	(15,630)	15,460	101.02%	98.99%
2023	\$1,604,147	\$1,615,349	\$1,634,192	\$(11,202)	\$(30,045)	100.70%	101.87%

Summary of Actuarial Unfunded Liabilities
As of June 30 (\$ in Thousands)
KERS (Nonhazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	\$11,550,110	\$2,423,957	\$2,560,420	\$9,126,154	\$8,989,691	20.99%	22.17%
2015	12,359,673	2,350,990	2,307,858	10,008,683	10,051,815	19.02%	18.67%
2016	13,224,698	2,112,287	1,953,422	11,112,412	11,271,276	15.97%	14.77%
2017	15,591,641	2,123,623	2,056,870	13,468,018	13,534,771	13.62%	13.19%
2018	15,675,232	2,019,278	2,004,446	13,655,954	13,670,786	12.88%	12.79%
2019	16,466,427	2,206,280	2,233,672	14,260,147	14,232,755	13.40%	13.57%
2020	16,348,962	2,323,298	2,308,080	14,025,663	14,040,882	14.21%	14.12%
2021	16,321,373	2,735,876	3,018,660	13,585,497	13,302,713	16.76%	18.50%
2022	16,576,631	3,065,263	3,013,845	13,511,368	13,562,786	18.49%	18.18%
2023	\$16,304,277	\$3,552,471	\$3,539,942	\$12,751,806	\$12,764,335	21.79%	21.71%

KERS (Nonhazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	\$2,226,760	\$621,237	\$664,776	\$1,605,523	\$1,561,984	27.90%	29.85%
2015	2,413,705	695,018	687,684	1,718,687	1,726,021	28.79%	28.49%
2016	2,456,678	743,270	695,189	1,713,408	1,761,489	30.26%	28.30%
2017	2,683,496	823,918	817,370	1,859,578	1,866,126	30.70%	30.46%
2018	2,435,506	887,121	891,205	1,548,385	1,544,301	36.42%	36.59%
2019	2,733,065	991,427	995,089	1,741,639	1,737,977	36.28%	36.41%
2020	2,564,788	1,095,959	1,060,649	1,468,829	1,504,139	42.73%	41.35%
2021	2,574,112	1,291,472	1,419,477	1,282,640	1,154,634	50.17%	55.14%
2022	1,782,386	1,409,553	1,364,419	372,833	417,967	79.08%	76.55%
2023	\$1,877,109	\$1,532,895	\$1,532,752	\$344,214	\$344,357	81.66%	81.65%

KERS (Hazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	\$816,850	\$527,897	\$559,504	\$288,953	\$257,346	64.63%	68.50%
2015	895,433	556,688	550,120	338,746	345,313	62.17%	61.44%
2016	936,706	559,487	524,679	377,219	412,027	59.73%	56.01%
2017	1,121,420	607,159	601,529	514,261	519,891	54.14%	53.64%
2018	1,151,923	639,262	645,485	512,661	506,438	55.50%	56.04%
2019	1,226,195	671,647	680,932	554,548	545,262	54.77%	55.53%
2020	1,283,770	709,587	690,350	574,183	593,420	55.27%	53.78%
2021	1,295,243	782,496	866,141	512,747	429,102	60.41%	66.87%
2022	1,316,825	832,436	810,978	484,389	505,847	63.22%	61.59%
2023	\$1,363,037	\$891,460	\$893,534	\$471,577	\$469,503	65.40%	65.55%

KERS (Hazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	\$396,987	\$419,396	\$435,504	(22,409)	(38,517)	105.64%	109.70%
2015	374,904	451,514	441,626	(76,610)	(66,722)	120.43%	117.80%
2016	377,745	473,160	440,596	(95,415)	(62,851)	125.26%	116.64%
2017	419,440	493,458	488,838	(74,019)	(69,399)	117.65%	116.55%
2018	393,481	511,441	519,072	(117,961)	(125,592)	129.98%	131.92%
2019	426,705	525,315	534,053	(98,610)	(107,348)	123.11%	125.16%
2020	427,977	539,251	521,755	(111,275)	(93,778)	126.00%	121.91%
2021	424,456	575,025	633,677	(150,569)	(209,221)	135.47%	149.29%
2022	347,044	597,701	588,162	(250,657)	(241,118)	172.23%	169.48%
2023	\$363,512	\$619,519	\$625,356	\$(256,007)	\$(261,844)	170.43%	172.03%

Summary of Actuarial Unfunded Liabilities As of June 30 (\$ in Thousands)

SPRS (Pension)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	\$681,118	\$242,742	\$260,763	\$438,377	\$420,355	35.64%	38.28%
2015	734,156	248,388	246,968	485,769	487,188	33.83%	33.64%
2016	775,160	234,568	217,594	540,593	557,566	30.26%	28.07%
2017	967,145	261,320	255,737	705,824	711,408	27.02%	26.44%
2018	989,528	268,259	267,572	721,269	721,956	27.11%	27.04%
2019	1,045,318	282,162	286,165	763,156	759,153	26.99%	27.38%
2020	1,053,157	296,126	293,949	757,031	759,208	28.12%	27.91%
2021	1,053,260	323,250	356,346	730,009	696,914	30.69%	33.83%
2022	1,067,447	559,973	551,699	507,474	515,748	52.46%	51.68%
2023	\$1,091,795	\$589,848	\$591,514	\$501,947	\$500,281	54.03%	54.18%

SPRS (Insurance)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
2014	\$234,271	\$155,595	\$165,168	\$78,676	\$69,103	66.42%	70.50%
2015	254,839	167,775	165,018	87,064	89,821	65.84%	64.75%
2016	257,197	172,704	161,366	84,494	95,831	67.15%	62.74%
2017	276,641	180,464	178,838	96,178	97,803	65.23%	64.65%
2018	262,088	187,535	190,847	74,553	71,242	71.55%	72.82%
2019	276,809	197,395	201,206	79,415	75,604	71.31%	72.69%
2020	276,143	207,018	201,340	69,126	74,803	74.97%	72.91%
2021	272,406	223,251	247,318	49,154	25,088	81.96%	90.79%
2022	232,798	234,239	231,242	(1,441)	1,556	100.62%	99.33%
2023	\$244,058	\$245,172	\$248,109	\$(1,114)	\$(4,051)	100.46%	101.66%

Solvency Test**As of June 30 (\$ in Thousands)****CERS (Nonhazardous Pension Fund)**

Actuarial Liabilities							
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	\$1,204,383	\$5,873,279	\$2,694,860	\$6,117,134	100.00%	83.60%	0.00%
2015	1,216,585	6,489,863	3,033,878	6,474,849	100.00%	81.00%	0.00%
2016	1,231,027	6,785,530	3,059,900	6,535,372	100.00%	78.20%	0.00%
2017	1,277,432	7,731,682	3,794,396	6,764,873	100.00%	71.00%	0.00%
2018	1,269,287	8,196,719	3,725,500	6,950,225	100.00%	69.30%	0.00%
2019	1,280,679	8,905,545	4,169,890	7,049,527	100.00%	64.80%	0.00%
2020	1,312,554	9,088,237	4,210,077	7,220,607	100.00%	65.00%	0.00%
2021	1,324,826	9,397,968	4,172,112	7,715,883	100.00%	68.00%	0.00%
2022	1,335,758	10,021,345	4,317,117	8,148,912	100.00%	68.00%	0.00%
2023	\$1,341,594	\$9,791,605	\$4,163,230	\$8,585,073	100.00%	74.00%	0.00%

CERS (Nonhazardous Insurance Fund)

Actuarial Liabilities							
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	\$-	\$1,318,183	\$1,298,732	\$1,831,199	100.00%	100.00%	39.50%
2015	-	1,372,597	1,535,231	1,997,456	100.00%	100.00%	40.70%
2016	-	1,484,937	1,503,184	2,079,811	100.00%	100.00%	39.60%
2017	-	1,603,438	1,751,713	2,227,401	100.00%	100.00%	35.60%
2018	-	1,525,322	1,567,301	2,371,430	100.00%	100.00%	54.00%
2019	-	1,830,692	1,737,255	2,523,249	100.00%	100.00%	39.90%
2020	-	1,746,160	1,645,926	2,661,351	100.00%	100.00%	55.60%
2021	-	1,835,734	1,614,751	2,947,312	100.00%	100.00%	68.80%
2022	-	1,055,375	1,336,615	3,160,084	100.00%	100.00%	100.00%
2023	\$-	\$1,256,529	\$1,303,858	\$3,366,332	100.00%	100.00%	100.00%

CERS (Hazardous Pension Fund)

Actuarial Liabilities								
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets			
					(1)	(2)	(3)	
2014	\$415,070	\$2,077,517	\$796,239	\$1,967,640	100.00%	74.70%	0.00%	
2015	422,359	2,297,703	893,246	2,096,783	100.00%	72.90%	0.00%	
2016	428,713	2,388,712	887,031	2,139,119	100.00%	71.60%	0.00%	
2017	458,808	2,910,601	1,279,638	2,238,320	100.00%	61.10%	0.00%	
2018	442,637	3,151,057	1,198,853	2,321,721	100.00%	59.60%	0.00%	
2019	458,559	3,399,954	1,386,852	2,375,106	100.00%	56.40%	0.00%	
2020	454,801	3,606,091	1,370,407	2,447,885	100.00%	55.30%	0.00%	
2021	457,391	3,777,313	1,394,754	2,628,621	100.00%	57.50%	0.00%	
2022	468,325	3,915,964	1,477,402	2,788,714	100.00%	59.30%	0.00%	
2023	\$476,005	\$3,905,983	\$1,468,008	\$3,008,147	100.00%	64.80%	0.00%	

CERS (Hazardous Insurance Fund)

Actuarial Liabilities								
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets			
					(1)	(2)	(3)	
2014	\$-	\$700,312	\$793,553	\$997,733	100.00%	100.00%	37.50%	
2015	-	790,714	713,301	1,087,707	100.00%	100.00%	41.60%	
2016	-	879,360	679,458	1,135,784	100.00%	100.00%	37.70%	
2017	-	994,764	793,669	1,196,780	100.00%	100.00%	25.50%	
2018	-	1,001,717	682,311	1,256,306	100.00%	100.00%	37.30%	
2019	-	1,072,861	660,018	1,313,659	100.00%	100.00%	36.50%	
2020	-	1,154,389	586,582	1,362,028	100.00%	100.00%	35.40%	
2021	-	1,217,527	533,676	1,475,635	100.00%	100.00%	48.40%	
2022	-	1,045,022	493,109	1,553,761	100.00%	100.00%	100.00%	
2023	\$-	\$1,163,315	\$440,832	\$1,615,349	100.00%	100.00%	100.00%	

Solvency Test**As of June 30 (\$ in Thousands)****KERS (Nonhazardous Pension Fund)**

Actuarial Liabilities							
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	\$928,558	\$8,870,693	\$1,750,860	\$2,423,957	100.00%	16.90%	0.00%
2015	925,934	9,437,468	1,996,271	2,350,990	100.00%	15.10%	0.00%
2016	920,120	10,010,168	2,294,410	2,112,286	100.00%	11.90%	0.00%
2017	934,559	11,608,346	3,048,736	2,123,623	100.00%	10.20%	0.00%
2018	892,033	11,929,018	2,854,180	2,019,278	100.00%	9.40%	0.00%
2019	881,020	12,513,230	3,072,176	2,206,280	100.00%	10.60%	0.00%
2020	869,196	12,467,523	3,012,243	2,323,298	100.00%	11.70%	0.00%
2021	877,142	12,425,951	3,018,279	2,735,876	100.00%	15.00%	0.00%
2022	859,591	12,700,595	3,016,445	3,065,263	100.00%	17.40%	0.00%
2023	\$889,146	\$12,013,685	\$3,401,447	\$3,552,471	100.00%	22.20%	0.00%

KERS (Nonhazardous Insurance Fund)

Actuarial Liabilities							
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	\$-	\$1,425,605	\$801,155	\$621,237	100.00%	43.60%	0.00%
2015	-	1,428,350	985,355	695,018	100.00%	48.70%	0.00%
2016	-	1,483,636	973,042	743,270	100.00%	50.10%	0.00%
2017	-	1,575,294	1,108,202	823,918	100.00%	52.30%	0.00%
2018	-	1,475,954	959,552	887,121	100.00%	60.10%	0.00%
2019	-	1,686,605	1,046,461	991,427	100.00%	58.80%	0.00%
2020	-	1,589,742	975,045	1,095,959	100.00%	68.90%	0.00%
2021	-	1,609,775	964,337	1,291,472	100.00%	80.20%	0.00%
2022	-	967,051	815,335	1,409,553	100.00%	100.00%	54.30%
2023	\$-	\$1,040,344	\$836,765	\$1,532,895	100.00%	100.00%	58.90%

KERS (Hazardous Pension Fund)

Actuarial Liabilities							
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	\$83,664	\$581,231	\$151,955	\$527,897	100.00%	76.40%	0.00%
2015	83,606	633,189	178,638	556,688	100.00%	74.70%	0.00%
2016	86,705	648,482	201,519	559,487	100.00%	72.90%	0.00%
2017	93,350	746,350	281,720	607,159	100.00%	68.80%	0.00%
2018	89,106	810,311	252,506	639,262	100.00%	67.90%	0.00%
2019	86,663	879,818	259,713	671,647	100.00%	66.50%	0.00%
2020	95,528	898,128	290,114	709,587	100.00%	68.40%	0.00%
2021	97,559	916,431	281,254	782,496	100.00%	74.70%	0.00%
2022	94,538	946,328	275,959	832,436	100.00%	78.00%	0.00%
2023	\$103,310	\$929,321	\$330,406	\$891,460	100.00%	84.80%	0.00%

KERS (Hazardous Insurance Fund)

Actuarial Liabilities							
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	\$-	\$206,477	\$190,509	\$419,396	100.00%	100.00%	100.00%
2015	-	221,115	153,789	451,514	100.00%	100.00%	100.00%
2016	-	228,361	149,384	473,160	100.00%	100.00%	100.00%
2017	-	243,816	175,623	493,458	100.00%	100.00%	100.00%
2018	-	248,775	144,706	511,441	100.00%	100.00%	100.00%
2019	-	282,070	144,635	525,315	100.00%	100.00%	100.00%
2020	-	281,924	146,053	539,251	100.00%	100.00%	100.00%
2021	-	288,015	136,441	575,025	100.00%	100.00%	100.00%
2022	-	232,585	114,459	597,701	100.00%	100.00%	100.00%
2023	\$-	\$250,189	\$113,323	\$619,519	100.00%	100.00%	100.00%

Solvency Test
As of June 30 (\$ in Thousands)
SPRS (Pension Fund)

Actuarial Liabilities							
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	\$41,831	\$563,011	\$76,276	\$242,742	100.00%	35.70%	0.00%
2015	41,567	605,855	86,734	248,388	100.00%	34.10%	0.00%
2016	41,871	636,499	96,791	234,568	100.00%	30.30%	0.00%
2017	44,798	773,982	148,365	261,320	100.00%	28.00%	0.00%
2018	43,835	800,788	144,905	268,259	100.00%	28.00%	0.00%
2019	41,948	848,396	154,974	282,162	100.00%	28.30%	0.00%
2020	40,831	863,579	148,747	296,126	100.00%	29.60%	0.00%
2021	42,035	860,801	150,423	323,250	100.00%	32.70%	0.00%
2022	42,027	870,200	155,220	559,973	100.00%	59.50%	0.00%
2023	\$47,394	\$825,683	\$218,717	\$589,848	100.00%	65.70%	0.00%

SPRS (Insurance Fund)

Actuarial Liabilities							
Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
					(1)	(2)	(3)
2014	\$-	\$143,402	\$90,869	\$155,595	100.00%	100.00%	13.40%
2015	-	170,447	84,392	167,775	100.00%	98.40%	0.00%
2016	-	177,094	80,103	172,704	100.00%	97.50%	0.00%
2017	-	186,390	90,251	180,464	100.00%	96.80%	0.00%
2018	-	183,151	78,937	187,535	100.00%	100.00%	5.60%
2019	-	199,959	76,850	197,395	100.00%	98.70%	0.00%
2020	-	207,638	68,506	207,018	100.00%	99.70%	0.00%
2021	-	206,707	65,699	223,251	100.00%	100.00%	25.20%
2022	-	172,664	60,134	234,239	100.00%	100.00%	100.00%
2023	\$-	\$176,587	\$67,471	\$245,172	100.00%	100.00%	100.00%

Active Member Valuation

Summary of Active Member Valuation Data

As of June 30 (\$ in Thousands)

CERS Nonhazardous Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll ⁽¹⁾	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
2014	1,101	81,115	\$2,272,270	\$28	2.50%	48.1	9.6
2015	1,092	80,852	2,296,716	28	1.40%	48.0	9.5
2016	1,095	80,664	2,352,762	29	2.70%	47.9	9.4
2017	1,096	82,198	2,452,407	30	2.29%	47.9	9.4
2018	1,092	81,818	2,466,801	30	1.06%	47.7	9.2
2019	1,094	81,506	2,521,860	31	2.62%	47.7	9.1
2020	1,087	81,250	2,565,391	32	2.05%	47.8	9.1
2021	1,084	77,367	2,528,735	33	3.52%	48.0	9.4
2022	1,084	77,849	2,691,171	35	5.76%	47.6	9.1
2023	1,086	78,810	\$2,898,813	\$37	6.40%	47.3	8.8

CERS Hazardous Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll ⁽¹⁾	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
2014	254	9,194	479,164	52	3.00%	39.2	10.6
2015	246	9,172	483,641	53	1.20%	39.1	10.6
2016	246	9,084	492,851	54	2.90%	39.1	10.6
2017	250	9,495	541,633	57	5.14%	39.2	10.5
2018	247	9,263	533,618	58	0.99%	38.5	10.2
2019	243	9,474	559,353	59	2.49%	38.6	10.1
2020	243	9,419	568,558	60	2.24%	38.4	10.0
2021	241	9,173	578,355	63	4.45%	38.4	10.0
2022	240	9,184	620,934	68	7.23%	38.3	10.0
2023	239	9,205	677,988	74	8.94%	38.1	9.8

⁽¹⁾ Annual payroll included in the Schedule of Active Member Valuation Data is based upon the annualized monthly payroll for active members as of the valuation date. The annual payroll recorded in the financial section is based upon the sum of the monthly payroll for active members recorded for each month of fiscal year ending June 30, 2023.

Member data in actuarial section will differ from reported data in other ACFR sections. For this section, the data is reported by account instead of by person (ex: a member could have vested service in KERS, but is currently active in CERS and is reported in two membership categories).

KERS Nonhazardous Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll ⁽¹⁾	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
2014	353	40,365	\$1,577,496	\$39	0.40%	44.8	10.5
2015	348	39,056	1,544,234	40	1.20%	45.0	10.6
2016	349	37,779	1,529,249	40	2.40%	45.1	10.7
2017	342	37,234	1,531,535	41	1.62%	45.4	10.9
2018	338	35,139	1,471,477	42	1.81%	45.2	10.8
2019	331	33,696	1,437,647	43	1.88%	45.4	11.0
2020	313	31,703	1,387,761	44	2.60%	45.7	11.2
2021	321	30,186	1,349,330	45	2.12%	46.0	11.6
2022	319	29,551	1,355,267	46	2.60%	46.0	11.4
2023	320	31,383	\$1,615,868	\$51	12.27%	45.7	10.9

KERS Hazardous Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll ⁽¹⁾	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
2014	18	4,024	\$129,076	\$32	0.30%	40.6	7.4
2015	17	3,886	128,680	33	3.20%	40.7	7.5
2016	17	3,959	147,563	37	12.60%	40.4	7.5
2017	18	4,047	162,418	40	7.67%	40.3	7.6
2018	18	3,929	158,213	40	0.34%	39.8	7.3
2019	18	3,705	150,446	41	0.84%	39.8	7.3
2020	19	4,094	170,826	42	2.76%	39.8	7.3
2021	19	3,827	162,836	43	1.97%	40.1	7.7
2022	19	3,617	165,637	46	7.63%	40.0	7.6
2023	19	3,886	\$211,602	\$54	18.91%	39.7	7.2

SPRS Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll ⁽¹⁾	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
2014	1	855	\$44,616	\$52	4.00%	37.8	10.9
2015	1	937	45,765	49	(6.40)%	36.8	9.8
2016	1	908	45,551	50	2.71%	37.0	10.0
2017	1	903	48,598	54	7.28%	37.5	10.6
2018	1	886	48,808	55	2.36%	37.3	10.5
2019	1	883	47,752	54	(1.83)%	36.7	10.0
2020	1	798	46,145	58	6.93%	37.5	10.7
2021	1	775	45,338	59	1.17%	37.7	11.1
2022	1	844	47,885	57	(3.02)%	36.5	10.1
2023	1	868	\$65,913	\$76	33.84%	36.9	10.5

⁽¹⁾ Annual payroll included in the Schedule of Active Member Valuation Data is based upon the annualized monthly payroll for active members as of the valuation date. The annual payroll recorded in the financial section is based upon the sum of the monthly payroll for active members recorded for each month of fiscal year ending June 30, 2023.

Member data in actuarial section will differ from reported data in other Annual Report sections. For this section, the data is reported by account instead of by person (ex: a member could have vested service in KERS, but is currently active in CERS and is reported in two membership categories).

Summary of Retired Member Valuation Data As of June 30 (\$ in Thousands)

CERS (Nonhazardous)

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances ⁽¹⁾	% Increase In Allowances	Average Annual Allowance
2014	3,480	1,221	49,935	\$33,975	\$8,996	\$582,958	4.48%	\$12
2015	4,020	1,304	52,651	44,962	10,369	617,551	5.93%	12
2016	4,409	721	56,339	49,487	5,822	661,217	7.07%	12
2017	4,141	1,467	59,013	47,074	40,823	667,468	0.95%	11
2018	4,650	1,725	61,938	57,343	14,436	710,374	6.43%	11
2019	4,472	1,871	64,539	53,392	16,649	747,117	5.17%	12
2020	3,550	2,675	65,414	40,409	24,066	763,459	2.19%	12
2021	4,350	2,558	67,206	51,859	23,756	791,562	3.68%	12
2022	4,693	3,010	68,889	58,456	29,341	820,678	3.68%	12
2023	4,753	2,710	70,932	\$62,416	\$27,922	\$855,173	4.20%	\$12

CERS (Hazardous)

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances ⁽¹⁾	% Increase In Allowances	Average Annual Allowance
2014	469	116	7,646	\$9,940	\$1,567	\$191,008	4.58%	\$25
2015	526	138	8,034	13,430	2,284	202,153	5.84%	25
2016	604	75	8,563	14,642	1,494	215,302	6.50%	25
2017	576	141	8,998	15,102	3,724	226,680	5.28%	25
2018	779	190	9,587	22,292	3,297	245,675	8.38%	26
2019	608	172	10,023	16,096	2,957	258,813	5.35%	26
2020	621	192	10,452	19,621	3,643	274,791	6.17%	26
2021	651	245	10,858	18,939	4,855	288,876	5.13%	27
2022	674	301	11,231	19,629	6,539	301,966	4.53%	27
2023	672	300	11,603	\$21,528	\$5,964	\$317,529	5.15%	\$27

⁽¹⁾ The Annualized Retirement Allowance is the annualized value of the monthly retirement allowance for retired members and beneficiaries as of the valuation date. Consequently, the values will not match the fiscal year total benefit payments recorded in the financial section. Headcounts and hazardous benefits for members receiving benefits in both the nonhazardous and hazardous fund have been included in the hazardous funds' summaries above. Additional \$25,156,000 in KERS Nonhazardous annual benefits and \$29,929,000 in CERS Nonhazardous benefits not included in June 30, 2023 summary above.

Member data in actuarial section will differ from reported data in other Annual Report sections. For this section, the data is reported by account instead of by person (ex: a member could have vested service in KERS, but is currently active in CERS and is reported in two membership categories).

KERS (Nonhazardous)

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances ⁽¹⁾	% Increase In Allowances	Average Annual Allowance
2014	2,067	1,038	41,223	\$31,433	\$15,143	\$866,047	(0.70)%	\$21
2015	2,140	1,094	42,269	32,433	14,902	833,578	2.02%	21
2016	2,441	706	44,004	61,294	9,942	934,930	5.81%	21
2017	2,181	1,269	44,916	35,150	48,778	921,302	(1.46)%	21
2018	2,853	1,243	46,526	50,360	18,711	952,951	3.44%	20
2019	2,226	1,342	47,410	36,115	20,359	968,706	1.65%	20
2020	1,806	1,883	47,333	29,576	30,319	967,963	(0.08)%	20
2021	2,026	1,659	47,700	32,264	27,794	972,434	0.46%	20
2022	2,471	1,976	48,195	42,661	33,726	981,369	0.92%	20
2023	2,115	1,901	48,409	\$35,508	\$32,596	\$984,280	0.30%	\$20

KERS (Hazardous)

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances ⁽¹⁾	% Increase In Allowances	Average Annual Allowance
2014	256	66	3,620	\$3,762	\$612	\$54,272	6.16%	\$15
2015	203	65	3,758	3,144	985	56,431	3.98%	15
2016	237	29	3,966	3,028	458	59,001	4.55%	15
2017	206	79	4,093	2,771	2,609	59,162	0.27%	14
2018	321	44	4,370	5,394	507	64,050	8.26%	15
2019	227	60	4,537	4,242	769	67,523	5.42%	15
2020	214	123	4,628	3,102	1,543	69,081	2.31%	15
2021	263	165	4,726	3,681	1,959	70,803	2.49%	15
2022	300	176	4,850	4,978	2,093	73,689	4.08%	15
2023	210	173	4,887	\$3,101	\$1,924	\$74,867	1.60%	\$15

SPRS State Police Retirement System

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances ⁽¹⁾	% Increase In Allowances	Average Annual Allowance
2014	95	28	1,413	\$3,360	\$833	\$53,432	4.96%	\$38
2015	62	15	1,460	1,947	449	54,930	2.80%	38
2016	65	10	1,515	2,004	285	56,650	3.13%	37
2017	30	9	1,536	1,046	443	57,253	1.06%	37
2018	81	17	1,600	2,837	464	59,626	4.14%	37
2019	74	27	1,647	2,735	957	61,404	2.98%	37
2020	61	39	1,669	2,411	1,382	62,432	1.68%	37
2021	55	51	1,673	1,967	1,699	62,700	0.43%	37
2022	76	47	1,702	2,948	1,868	63,780	1.72%	37
2023	43	48	1,697	\$1,308	\$1,793	\$63,294	(0.76)%	\$37

⁽¹⁾ The Annualized Retirement Allowance is the annualized value of the monthly retirement allowance for retired members and beneficiaries as of the valuation date. Consequently, the values will not match the fiscal year total benefit payments recorded in the financial section. Headcounts and hazardous benefits for members receiving benefits in both the nonhazardous and hazardous fund have been included in the hazardous funds' summaries above. Additional \$25,156,000 in KERS Nonhazardous annual benefits and \$29,929,000 in CERS Nonhazardous benefits not included in June 30, 2023 summary above.

Member data in actuarial section will differ from reported data in other Annual Report sections. For this section, the data is reported by account instead of by person (ex: a member could have vested service in KERS, but is currently active in CERS and is reported in two membership categories).

Summary of Benefit Provisions CERS, KERS, and SPRS Plans

Plan Funding

State statute requires active members to contribute 5% of creditable compensation for nonhazardous members and 8% of creditable compensation for hazardous members. For members participating on or after September 1, 2008, an additional 1% of creditable compensation is required. This amount is credited to the Insurance Fund and is non-refundable to the member. Employers contribute at the rate determined by the Boards to be necessary for the actuarial soundness of the systems, as required by KRS 78.635 and KRS 61.565. KERS rates are subject to state budget approval.

Membership Eligibility

For all regular full-time non-school board employees to be eligible for membership, they must average 100 or more hours of work per month over a fiscal or calendar year. For all regular full-time school board employees to be eligible for membership, they must average 80 hours of work per month over the actual days worked during the school year.

Retirement Eligibility for Nonhazardous Employees

Age	Years of Service	Allowance Reduction
Tier 1 Members Whose Participation Began Before 9/1/2008		
65	1 month	None
Any	27	None
55	5	6.5% per year for first five years, and 4.5% for next five years before age 65 or 27 years of service.
Any	25	6.5% per year for first five years, and 4.5% for next five years before age 65 or 27 years of service.
Tier 2 Members Whose Participation Began On or After 9/1/2008 but before 1/1/2014		
65	5	None
57	Rule of 87	None
60	10	6.5% per year for first five years, and 4.5% for next five years before age 65 or Rule of 87 (age plus years of service)
Tier 3 Members Whose Participation Began On or After 1/1/2014		
65	5	None
57	Rule of 87	None

Retirement Eligibility for Hazardous

Age	Years of Service	Allowance Reduction
Tier 1 Members Whose Participation Began Before 9/1/2008		
55	1 month	None
Any	20	None
50	15	6.5% per year for first five years, and 4.5% for next five years before age 55 or 20 years of service.
Tier 2 Members Whose Participation Began On or After 9/1/2008 but before 1/1/2014		
60	5	None
Any	25	None
50	15	6.5% per year for first five years, and 4.5% for next five years before age 60 or 25 years of service.
Tier 3 Members Whose Participation Began On or After 1/1/2014		
60	5	None
Any	25	None

Benefit Formula for Nonhazardous**Tier 1: Members whose participation began before 9/1/2008**

Final Compensation	Benefit Factor		Years of Service
Average of the five highest years of compensation	CERS 2.20% if:	Member begins participating prior to 8/1/2004.	Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program).
	CERS 2.00% if:	Member begins participating on or after 8/1/2004 but before 9/1/2008.	
	KERS 1.97% if:	Member does not have 13 months of service credit for 1/1/1998-1/1/1999.	
	KERS 2.00% if:	Member has 13 months of service credit from 1/1/1998-1/1/1999.	
	KERS 2.20% if:	Member has 20 or more years of service, including 13 months from 1/1/1998-1/1/1999 and retires by 1/1/2009.	

If a member retires with less than four years of service credit, the member's benefit is equal to the actuarially equivalent of two times their member contribution balance with interest.

Benefit Formula Nonhazardous**Tier 2: Members whose participation began on or after 9/1/2008 but before 1/1/2014**

Final Compensation	Benefit Factor		Years of Service
Average of the last five years of compensation	CERS & KERS increasing percent based on service at retirement up to 30 years* plus 2.00% for each year of service over 30 years		Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program).
	*Service	Multiplier	
	10 years or less	1.10%	
	10-20 years	1.30%	
	20-26 years	1.50%	
	26-30 years	1.75%	

Benefit Formula for Hazardous for Tier 1: Members whose participation began before 9/1/2008

Final Compensation	Benefit Factor		Years of Service
Average of the three highest years of compensation	CERS 2.50% if:	Member begins participating before 9/1/2008.	Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program).
	KERS 2.49% if:		
	SPRS 2.50% if:		
If a member retires with less than four years of service, the member's benefit is equal to the actuarially equivalent of two times their member contribution balance with interest.			

Benefit Formula for Hazardous for Tier 2: Members whose participation began on or after 9/1/2008 but before 1/1/2014

Final Compensation	Benefit Factor		Years of Service
Average of the three highest complete years of compensation	CERS, KERS, & SPRS increasing percent based on service at retirement*		Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program).
	*Service	Multiplier	
	10 years or less	1.30%	
	10-20 years	1.50%	
	20-25 years	2.25%	
	25+ years	2.50%	
Member begins participating on or after 9/1/2008 but before 1/1/2014.			

Benefit Formula for Hazardous for Tier 3: Members whose participation began on or after 1/1/2014

Each year that the member is active, a 7.50% employer pay credit and the employee's 8.00% contribution will be credited to each member's hypothetical cash balance account. The hypothetical account will earn interest at a minimum rate of 4%, annually. If the geometric average net investment return for the previous five years exceeds 4%, then the hypothetical account will be credited with an additional amount of interest in that year equal to 75% of the amount of the return which exceeds 4%. All interest credits will be applied to the hypothetical account balance on June 30 based on the account balance as of June 30 of the previous year. At retirement, the member's hypothetical account balance may be converted into an annuity based on an actuarial factor.

Benefit Formula**Tier 3: Members whose participation began on or after 1/1/2014****Accumulated Account Balance / Actuarial Factor = Monthly Life Annuity**

Accumulated Account Balance					
	Member	Employer	Base Annual	Upside Sharing	Actuarial
	Contributions	Contributions	Interest	Interest (FY 2023)	Factor
CERS Nonhazardous	5.00%	4.00%	4.00%	5.89%	See www.kyret.ky.gov for most recent Actuarial Factors
CERS Hazardous	8.00%	7.50%	4.00%	6.01%	
KERS Nonhazardous	5.00%	4.00%	4.00%	5.21%	
KERS Hazardous	8.00%	7.50%	4.00%	5.80%	
SPRS	8.00%	7.50%	4.00%	5.57%	

Note: Accumulated Account Balance is comprised of member contributions, employer contributions, annual interest and annual upside sharing interest. For additional information on the calculation of the annual interest for Tier 3 see Upside Sharing Interest in Note B.

Note: Please see Plan Provisions for additional details.

Summary of Benefit Provisions CERS, KERS SPRS Plans

Post-Retirement Death Benefits

If the member is receiving a monthly benefit based on at least four (4) years of creditable service, the retirement system will pay a \$5,000 death benefit payment to the beneficiary named by the member specifically for this benefit. If a member has more than one account with the systems administered by KPPA, only one death benefit shall be paid. A death benefit is subject to taxation.

Disability Benefits

Members participating before 8/1/2004 may qualify for disability retirement provided the member has at least 60 months of service credit* and is not eligible for an unreduced benefit. Additional service credit may be added for computation of benefits under the benefit formula.

Members participating on or after 8/1/2004 but before 1/1/2014 may qualify for disability retirement provided the member has at least 60 months of service credit*. Benefits are computed as 20% for Nonhazardous and 25% for Hazardous of member's monthly final rate of pay or the amount calculated under the Benefit Formula based upon actual service, whichever is higher.

Members participating on or after 1/1/2014 may qualify for disability retirement provided the member has at least 60 months of service credit. The account which includes member contributions, employer pay credits and interest credits can be withdrawn from the System as a lump sum or an annuity equal to the greater Benefits are computed as 20% for Nonhazardous and 25% for Hazardous of the member's monthly final rate of pay or the annuity computed as if eligible for unreduced retirement benefit, whichever is greater.

Members disabled in the line of duty, or due to a duty-related injury, may be eligible for special benefits.

*Service requirements may be waived if line of duty or duty related.

Pre-Retirement Death Benefits

The beneficiary, which shall be the spouse unless another person was named beneficiary after the marriage date, of a deceased active member is eligible for a monthly benefit if the member died while in the line of duty; or due to a duty-related injury, with a minimum of one (1) month of service credit. If the member's death did not occur in the line of duty or as a result of a duty-related injury, the beneficiary is eligible for a monthly benefit under the following conditions: 1. The member was eligible to retire at the time of death. 2. The member was under the age of 65 (for nonhazardous members) or under the age of 55 (for hazardous members) with a minimum of 60 months of service credit and was employed by a participating agency at the time of death. 3. The member was no longer employed by a participating agency at the time of death but had accumulated a minimum of 144 months of service credit. If the deceased member does not meet one of the eligibility requirements the beneficiary will receive a lump-sum payment from the member's accumulated account balance..

Cost of Living Adjustment (COLA)

Senate Bill 2 passed during the 2013 legislative session, eliminated all future COLAs unless the State Legislature so authorizes on a biennial basis and either (i) the system is over 100% funded or (ii) the Legislature appropriates sufficient funds to pay the increased liability for the COLA.

Health Insurance Benefits

For members participating prior to July 1, 2003, CERS, KERS, and SPRS pay a percentage of the monthly premium for single coverage based upon the service credit accrued at retirement. Members participating on or after July 1, 2003, and before September 1, 2008, are required to earn a minimum of 10 years (120 months) of service credit to qualify for health insurance benefits upon retirement. Members participating on or after September 1, 2008, are required to earn a minimum of 15 years (180 months) of service credit to qualify for health insurance benefits upon retirement. The monthly health insurance contribution will be \$10 for each year of nonhazardous and \$15 for each year of hazardous earned service increased by 1.5% annually.

Refunds

Upon termination of employment, a refund of the member's accumulated account balance is available to the member.

Interest on Accounts

For employees participating prior to September 1, 2008, the interest paid is set by the Boards of Trustees and will not be less than 2.0%. For employees participating on or after September 1, 2008, but before January 1, 2014, interest will be credited at a rate of 2.5%. For employees participating on or after January 1, 2014, interest will be credited at a minimum rate of 4.0% (see Note B for additional details on the annual interest calculation).

Benefit Changes since the Prior Valuation

House Bill 506 passed during the 2023 legislative session reinstated the Partial Lump Sum Options (PLSO) form of payment for members retiring on or after January 1, 2024. The bill introduced an expansion of the lump-sum payment options, allowing for payouts equal to 48 or 60 times the member's Basic, or Survivorship 100% monthly retirement allowance. The lifetime monthly retirement allowance is adjusted actuarially to account for the selected lump sum payment option.

House Bill 506 additionally modified the minimum separation period required for a retiree to reemploy with a participating employer of the Systems administered by the KPPA while still receiving their retirement allowance. This adjustment standardized the separation period to one month for all scenarios within each plan for retirement dates effective January 1, 2024 and after.

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Plan Statistics

Definitions

Active members are those members who are currently employed by a participating agency and contributing to KPPA as a condition of employment.

Inactive members are those members who are no longer employed with a participating agency but have not yet retired or taken a refund of contributions.

Retired members include both members and beneficiaries who are receiving a monthly benefit from KPPA.

A single member may have multiple accounts, which contribute to one pension. Each person is only counted once in the Membership by System report. A member who has both a membership account and a retired account is included in the retired count. Members who have multiple membership accounts are included under the system where they most recently contributed. Members who have more than one retirement account are included in the system with the greatest service credit. If the retired accounts have equal service credit, they are counted first in SPRS, CERS Hazardous, KERS Hazardous, CERS Nonhazardous, then KERS Nonhazardous. These tables do not include individuals receiving payments under dependent child accounts, Qualified Domestic Relations Orders, or multiple beneficiary accounts.

CERS Nonhazardous Membership As of June 30

Fiscal Year	Active	Inactive	Retired	Total
2014	82,494	70,231	46,112	198,837
2015	82,969	72,965	48,515	204,449
2016	83,346	75,904	51,673	210,923
2017	84,401	78,940	54,018	217,359
2018	84,435	81,608	56,629	222,672
2019	84,632	85,300	58,933	228,865
2020	83,458	90,673	60,877	235,008
2021	80,378	95,682	63,566	239,626
2022	80,263	101,508	65,266	247,037
2023	81,217	106,903	66,935	255,055

CERS Hazardous Membership As of June 30

Fiscal Year	Active	Inactive	Retired	Total
2014	9,189	2,038	6,066	17,293
2015	9,188	2,142	6,389	17,719
2016	9,139	2,309	6,834	18,282
2017	9,321	2,442	7,186	18,949
2018	9,285	2,581	7,647	19,513
2019	9,402	2,702	8,000	20,104
2020	9,350	2,924	8,431	20,705
2021	9,138	3,243	8,814	21,195
2022	9,149	3,481	9,121	21,751
2023	9,181	3,687	9,448	22,316

KERS Nonhazardous Membership As of June 30

Fiscal Year	Active	Inactive	Retired	Total
2014	40,500	41,213	38,022	119,735
2015	39,289	42,479	38,827	120,595
2016	38,121	43,926	40,099	122,146
2017	36,725	44,848	40,813	122,386
2018	34,845	45,768	42,175	122,788
2019	33,432	46,721	42,874	123,027
2020	31,190	48,583	43,592	123,365
2021	29,709	49,679	44,469	123,857
2022	29,069	50,529	44,952	124,550
2023	30,854	51,001	44,975	126,830

KERS Hazardous Membership As of June 30

Fiscal Year	Active	Inactive	Retired	Total
2014	4,094	3,318	2,467	9,879
2015	3,932	3,761	2,575	10,268
2016	3,987	4,067	2,739	10,793
2017	4,061	4,363	2,823	11,247
2018	3,963	4,716	3,010	11,689
2019	3,779	5,094	3,146	12,019
2020	4,112	5,838	3,242	13,192
2021	3,809	6,513	3,339	13,661
2022	3,607	6,889	3,440	13,936
2023	3,875	7,222	3,459	14,556

SPRS Membership As of June 30

Fiscal Year	Active	Inactive	Retired	Total
2014	861	239	1,279	2,379
2015	940	257	1,324	2,521
2016	924	262	1,379	2,565
2017	910	278	1,393	2,581
2018	891	290	1,445	2,626
2019	899	313	1,484	2,696
2020	798	349	1,523	2,670
2021	775	389	1,540	2,704
2022	844	402	1,562	2,808
2023	868	432	1,552	2,852

Kentucky Public Pensions Authority Membership Totals As of June 30

Fiscal Year	Active	Inactive	Retired	Total
2014	137,138	117,039	93,946	348,123
2015	136,318	121,604	97,630	355,552
2016	135,517	126,468	102,724	364,709
2017	135,418	130,871	106,233	372,522
2018	133,419	134,963	110,906	379,288
2019	132,144	140,130	114,437	386,711
2020	128,908	148,367	117,665	394,940
2021	123,809	155,506	121,728	401,043
2022	122,932	162,809	124,341	410,082
2023	125,995	169,245	126,369	421,609

Principal Participating Employers in CERS As of June 30, 2023

Participating Employer	Rank	Covered Employees	% of Total System
JEFFERSON COUNTY BOARD OF EDUCATION	1	5,029	5.54%
LOUISVILLE JEFFERSON COUNTY METRO GOVERNMENT	2	4,495	4.96%
FAYETTE COUNTY BOARD OF EDUCATION	3	2,009	2.22%
LEXINGTON FAYETTE URBAN COUNTY GOVERNMENT	4	1,635	1.80%
JUDICIAL DEPARTMENT ADMINISTRATIVE OFFICE OF THE COURTS	5	1,442	1.59%
BOONE COUNTY BOARD OF EDUCATION	6	1,143	1.26%
HARDIN COUNTY BOARD OF EDUCATION	7	1,053	1.16%
BULLITT COUNTY BOARD OF EDUCATION	8	1,040	1.15%
SCOTT COUNTY BOARD OF EDUCATION	9	874	0.96%
WARREN COUNTY BOARD OF EDUCATION	10	872	0.96%
ALL OTHERS		71,093	78.40%
Total		90,685	100.00%

Schedule of Participating Employers in CERS As of June 30, 2023

Agency Classification	Number of Agencies	Covered Employees
Airport Boards	5	538
Ambulance Services	18	413
Area Development Districts	14	686
Boards of Education	171	45,868
Cities	222	10,381
Community Action Agencies	21	2,820
Conservation Districts	49	63
County Attorneys	75	543
County Clerks	16	580
Development Authorities	6	8
Fire Departments	29	1,140
Fiscal Courts	118	10,946
Hospitals & Clinics (incl. Dental)	1	298
Housing Authorities	39	410
Jailers	2	69
Libraries	86	1,298
Other Retirement Systems	2	3
P1 State Agencies	4	1,443
Parks and Recreation	6	63
Planning Commissions	16	204
Police Departments	2	13
Riverport Authorities	5	71
Sanitation Districts	8	320
Sheriff Departments	12	700
Special Districts & Boards	47	1,401
Tourist Commissions	25	199
Urban Government Agencies	2	6,130
Utility Boards	119	4,077
Total	1,120	90,685
Total Employees By Tier Levels		
Tier 1		25,830
Tier 2		12,575
Tier 3		52,280

Principal Participating Employers in KERS As of June 30, 2023

Participating Employer	Rank	Covered Employees	% of Total System
DEPARTMENT FOR COMMUNITY BASED SERVICES	1	4,341	12.29%
DEPARTMENT OF HIGHWAYS	2	3,560	10.08%
DEPARTMENT OF CORRECTIONS	3	3,351	9.49%
JUDICIAL DEPARTMENT ADMINISTRATIVE OFFICE OF THE COURTS	4	1,443	4.09%
DEPARTMENT OF JUVENILE JUSTICE	5	1,036	2.93%
UNIFIED PROSECUTORIAL SYSTEM	6	899	2.55%
KENTUCKY STATE POLICE	7	867	2.46%
DEPARTMENT OF REVENUE	8	686	1.94%
DEPARTMENT OF PARKS	9	622	1.76%
ENVIRONMENTAL PROTECTION	10	618	1.75%
ALL OTHERS		17,887	50.66%
Total		35,310	100.00%

Schedule of Participating Employers in KERS As of June 30, 2023

Agency Classification	Number of Agencies	Covered Employees
County Attorneys	58	268
Health Departments	60	2,158
Master Commissioner	31	54
Non-P1 State Agencies	33	597
Other Retirement Systems	1	20
P1 State Agencies	133	28,272
Regional Mental Health Units	10	2,433
Universities	7	1,508
Total	333	35,310

Total Employees By Tier Levels

Tier 1	13,252
Tier 2	5,354
Tier 3	16,704

Schedule of Participating Employers in SPRS As of June 30, 2023

Agency Classification	Number of Agencies	Covered Employees
Kentucky State Police - Uniformed Police Officers	1	868

Total Employees By Tier Levels

Tier 1	325
Tier 2	180
Tier 3	363

Average Monthly Benefit by Length of Service in CERS As of June 30, 2023 (in Whole \$)

Service Credit Range	CERS Nonhazardous		CERS Hazardous	
	Number of Accounts	Average Monthly Benefit	Number of Accounts	Average Monthly Benefit
Under 5 years	11,156	\$169	1,303	\$437
5 or more but less than 10	11,855	349	1,173	724
10 or more but less than 15	12,158	549	1,164	1,291
15 or more but less than 20	10,312	836	1,299	1,898
20 or more but less than 25	13,128	1,038	4,804	2,708
25 or more but less than 30	14,618	1,958	1,629	3,714
30 or more but less than 35	3,233	2,719	429	4,443
35 or more	881	3,819	85	5,529
Total	77,341	\$979	11,886	\$2,257

Average Monthly Benefit by Length of Service in KERS As of June 30, 2023 (in Whole \$)

Service Credit Range	KERS Nonhazardous		KERS Hazardous	
	Number of Accounts	Average Monthly Benefit	Number of Accounts	Average Monthly Benefit
Under 5 years	6,933	\$178	970	\$206
5 or more but less than 10	6,240	442	892	576
10 or more but less than 15	5,901	739	830	1,042
15 or more but less than 20	5,052	1,089	754	1,571
20 or more but less than 25	5,523	1,438	1,319	2,057
25 or more but less than 30	13,704	2,301	215	2,929
30 or more but less than 35	6,681	3,239	62	3,746
35 or more	2,490	4,600	6	4,231
Total	52,524	\$1,645	5,048	\$1,261

Average Monthly Benefit by Length of Service in SPRS As of June 30, 2023 (in Whole \$)

Service Credit Range	Number of Accounts	Average Monthly Benefit
Under 5 years	151	\$562
5 or more but less than 10	58	951
10 or more but less than 15	73	1,452
15 or more but less than 20	126	2,142
20 or more but less than 25	561	2,752
25 or more but less than 30	499	3,803
30 or more but less than 35	221	4,782
35 or more	60	6,169
Total	1,749	\$3,079

Note: These tables reflect the Average Monthly Pension Benefit. A single member may have multiple accounts, which contribute to one pension. These tables do not reflect dependent child accounts, Qualified Domestic Relations Order (QDRO) accounts or multiple beneficiary accounts.

Fiduciary Net Position - CERS

As of June 30 (\$ in Thousands)

Fiscal Year	Nonhazardous			Hazardous		
	Pension	Insurance	Total	Pension	Insurance	Total
2014	\$6,528,147	\$1,878,711	\$8,406,858	\$2,087,002	\$1,030,303	\$3,117,305
2015	6,440,800	1,920,946	8,361,746	2,078,202	1,056,480	3,134,682
2016	6,141,396	1,908,550	8,049,946	2,010,177	1,056,097	3,066,274
2017	6,739,142	2,160,553	8,899,695	2,227,679	1,179,313	3,406,992
2018	7,086,322	2,346,767	9,433,089	2,361,047	1,268,272	3,629,319
2019	7,242,975	2,486,458	9,729,433	2,429,613	1,324,809	3,754,422
2020	7,110,889	2,498,051	9,608,940	2,395,688	1,305,132	3,700,820
2021	8,670,667	3,141,786	11,812,453	2,934,421	1,607,811	4,542,232
2022	8,062,346	2,981,224	11,043,570	2,736,928	1,503,977	4,240,905
2023	\$8,781,440	\$3,289,533	\$12,070,973	\$3,055,797	\$1,613,586	\$4,669,383

Fiduciary Net Position - KERS

As of June 30 (\$ in Thousands)

Fiscal Year	Nonhazardous			Hazardous		
	Pension	Insurance	Total	Pension	Insurance	Total
2014	\$2,578,290	\$646,905	\$3,225,195	\$561,484	\$433,525	\$995,009
2015	2,327,782	665,639	2,993,421	552,468	439,113	991,581
2016	1,980,292	668,318	2,648,610	527,880	437,397	965,277
2017	2,092,781	781,406	2,874,187	605,921	484,442	1,090,363
2018	2,048,890	846,762	2,895,652	651,173	513,384	1,164,557
2019	2,286,625	942,136	3,228,761	687,877	527,108	1,214,985
2020	2,362,231	1,006,498	3,368,729	697,366	514,740	1,212,106
2021	3,085,014	1,353,123	4,438,137	874,928	624,889	1,499,817
2022	3,076,743	1,301,522	4,378,265	819,237	579,902	1,399,139
2023	\$3,607,206	\$1,465,489	\$5,072,695	\$902,567	\$616,322	\$1,518,889

Fiduciary Net Position - SPRS

As of June 30 (\$ in Thousands)

Fiscal Year	Pension	Insurance	Total
2014	\$260,974	\$164,958	\$425,932
2015	247,229	164,714	411,943
2016	218,013	160,949	378,962
2017	256,383	178,191	434,574
2018	268,425	189,994	458,419
2019	287,242	200,128	487,370
2020	295,044	200,245	495,289
2021	357,660	246,004	603,664
2022	552,926	230,015	782,941
2023	\$592,826	\$246,797	\$839,623

Fiduciary Net Position - KPPA

As of June 30 (\$ in Thousands)

Fiscal Year	Pension	Insurance	Total
2014	\$12,015,897	\$4,154,402	\$16,170,299
2015	11,646,481	4,246,892	15,893,373
2016	10,877,757	4,231,311	15,109,068
2017	11,921,906	4,783,905	16,705,811
2018	12,415,856	5,165,179	17,581,035
2019	12,934,332	5,480,639	18,414,971
2020	12,861,218	5,524,666	18,385,884
2021	15,922,690	6,973,613	22,896,303
2022	15,248,180	6,596,640	21,844,820
2023	\$16,939,836	\$7,231,727	\$24,171,563

Note: For additional historical data for all charts presented, please visit our website for previous annual reports at <https://kyret.ky.gov/Publications/Pages/Annual-Reports.aspx>

Changes in Fiduciary Net Position - CERS Nonhazardous Pension Fund

As of June 30 (\$ in Thousands)

Additions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Members' Contributions	\$122,459	\$133,637	\$133,987	\$150,714	\$160,370	\$159,064	\$168,994	\$165,698	\$186,648	\$147,769
Employers' Contributions	324,231	297,714	282,767	331,493	355,473	393,302	475,311	472,196	606,772	645,940
Health Insurance Contributions (HB1)	6,109	6,674	7,687	9,158	10,826	11,801	5	(1)	(60)	(30)
Net Investment Income (Loss)	895,531	110,569	(40,799)	825,901	578,377	394,558	56,682	1,784,231	(500,996)	815,417
Bank of America Settlement	-	10,280	-	-	-	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	361	44	-	-	-	-
Employer Pay Credit										51,694
Pension Spiking	-	850	1,339	2,061	2,544	151	105	32	35	46
Total Additions	1,348,330	559,724	384,981	1,319,327	1,107,951	958,920	701,097	2,422,156	292,399	1,660,836
Deductions										
Benefit Payments	582,850	615,335	651,247	687,460	726,568	766,221	795,960	826,749	858,260	894,351
Refunds	14,286	13,524	13,754	14,430	14,608	14,387	14,918	13,862	19,789	23,263
Administrative Expenses	18,615	18,212	19,078	19,614	19,592	21,659	22,304	21,767	22,670	24,128
Capital Project Expenses	-	-	307	77	-	-	-	-	-	-
Total Deductions	615,751	647,071	684,385	721,581	760,768	802,267	833,182	862,378	900,719	941,742
Net Increase (Decrease) in Fiduciary Net Position	\$732,579	(\$87,347)	(\$299,404)	\$597,746	\$347,183	\$156,653	(\$132,085)	\$1,559,778	(\$608,321)	\$719,094

CERS Nonhazardous Insurance Fund

As of June 30 (\$ in Thousands)

Additions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Employers' Contributions	\$121,161	\$115,836	\$108,269	\$117,310	\$120,798	\$135,570	\$124,740	\$124,697	\$118,550	\$101,121
Net Investment Income (Loss)	232,330	36,731	(1,422)	259,586	197,520	133,697	8,656	619,593	(170,699)	306,003
Retired Re-employed (HB1)	2,117	3,608	3,567	3,402	3,821	4,085	4,528	5,206	4,816	4,922
Member Drug Reimbursement	6	-	-	1	11	6	4	3	1	-
Premiums Received from Retirees	1,450	582	629	707	637	616	596	555	534	294
Humana Gain Share	-	-	-	-	-	3,574	-	20,676	8,912	5,951
Northern Trust Settlement	-	-	-	-	75	9	-	-	-	-
Health Insurance Contributions (HB1)	-	-	-	-	-	-	12,959	13,614	15,985	17,782
Total Additions	357,064	156,757	111,043	381,006	322,862	277,557	151,483	784,344	(21,901)	436,073
Deductions										
Health Insurance Premiums	96,804	113,734	122,713	124,573	131,631	133,005	135,094	136,263	134,428	123,587
Administrative Expenses	508	782	726	789	761	877	903	884	933	937
Self-Funded Healthcare Costs	-	-	-	3,635	4,248	3,979	3,887	3,462	3,288	3,240
Excise Tax Insurance	-	6	-	6	6	6	6	-	12	-
Total Deductions	97,312	114,522	123,439	129,003	136,646	137,867	139,890	140,609	138,661	127,764
Net Increase (Decrease) in Fiduciary Net Position	\$259,751	\$42,235	(\$12,396)	\$252,003	\$186,216	\$139,690	\$11,593	\$643,735	(\$160,562)	\$308,309

Changes in Fiduciary Net Position - CERS Hazardous Pension Fund

As of June 30 (\$ in Thousands)

Additions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Members' Contributions	\$42,631	\$46,609	\$51,554	\$60,102	\$61,089	\$58,661	\$63,236	\$62,367	\$69,565	\$56,988
Employers' Contributions	115,240	107,515	104,952	114,315	124,953	137,664	168,201	172,089	221,968	286,353
Employer Pay Credit										21,683
Health Insurance Contributions (HB1)	1,091	1,084	1,418	1,708	2,173	2,458	1	2	(104)	(20)
Net Investment Income (Loss)	288,490	37,104	(9,021)	270,473	192,174	132,970	15,992	600,730	(175,431)	281,965
Bank of America Settlement	-	2,865	-	-	-	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	111	14	-	-	-	-
Pension Spiking	-	557	762	1,632	2,707	387	242	116	60	186
Total Additions	447,452	195,734	149,665	448,230	383,207	332,154	247,672	835,304	116,058	647,155
Deductions										
Benefit Payments	189,635	200,134	213,448	226,985	244,119	259,008	275,802	290,000	305,790	319,594
Refunds	2,664	3,111	2,879	2,315	4,214	2,854	3,814	4,662	5,766	6,568
Administrative Expenses	1,721	1,289	1,337	1,421	1,504	1,726	1,981	1,910	1,995	2,124
Capital Project Expenses	-	-	26	7	-	-	-	-	-	-
Total Deductions	194,020	204,534	217,690	230,728	249,837	263,588	281,597	296,572	313,551	328,286
Net Increase (Decrease) in Fiduciary Net Position	\$253,431	\$(8,800)	\$(68,025)	\$217,502	\$133,370	\$68,566	\$(33,925)	\$538,732	\$(197,493)	\$318,869

CERS Hazardous Insurance Fund

As of June 30 (\$ in Thousands)

Additions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Employers' Contributions	\$74,265	\$71,008	\$66,757	\$50,743	\$55,027	\$61,106	\$56,739	\$58,451	\$58,374	\$48,792
Net Investment Income (Loss)	125,278	20,283	1,102	142,929	109,004	72,580	2,237	322,817	(78,453)	148,739
Retired Re-employed (HB1)	526	770	862	794	975	1,166	1,158	1,348	1,530	1,611
Member Drug Reimbursement	-	-	-	-	-	-	-	-	-	-
Premiums Received from Retirees	32	10	(106)	(301)	(265)	(53)	(32)	(149)	(271)	(546)
Humana Gain Share	-	-	-	-	-	506	-	2,990	1,259	914
Northern Trust Settlement	-	-	-	-	40	5	-	-	-	-
Health Insurance Contributions (HB1)	-	-	-	-	-	-	2,760	3,096	3,758	4,278
Total Additions	200,101	92,071	68,615	194,165	164,781	135,310	62,862	388,553	(13,803)	203,788
Deductions										
Health Insurance Premiums	60,843	65,553	68,518	70,407	74,844	78,190	81,849	85,151	89,319	93,485
Administrative Expenses	275	339	480	381	376	434	462	466	502	522
Self-Funded Healthcare Costs	-	-	-	160	603	149	228	257	210	172
Total Deductions	61,117	65,894	68,998	70,948	75,823	78,773	82,539	85,874	90,031	94,179
Net Increase (Decrease) in Fiduciary Net Position	\$138,983	\$26,177	\$(383)	\$123,216	\$88,958	\$56,537	\$(19,677)	\$302,679	\$(103,834)	\$109,609

Changes in Fiduciary Net Position - KERS Nonhazardous Pension Fund

As of June 30 (\$ in Thousands)

Additions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Members' Contributions	\$92,941	\$100,424	\$101,677	\$100,544	\$104,972	\$93,759	\$96,594	\$90,202	\$89,607	\$84,579
Employers' Contributions	296,836	520,948	512,670	644,803	619,988	948,866	948,578	1,134,180	141,027	114,427
Employer Pay Credit										22,018
General Fund Appropriations	-	-	-	58,193	67,574	75,858	-	-	912,705	240,000
Health Insurance Contributions (HB1)	4,546	4,181	4,817	5,156	5,786	5,963	1	(8)	(13)	(12)
Actuarially Accrued Liability Contributions										898,545
Employer Cessation	-	-	-	53,215	17	10,643	20	-	63,113	-
Net Investment Income (Loss)	337,923	44,570	(20,662)	220,985	147,577	114,918	53,696	528,439	(165,904)	220,258
Bank of America Settlement	-	8,442	-	-	-	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	301	37	-	-	-	-
Pension Spiking	-	743	414	909	1,564	95	(6)	52	24	16
Total Additions	732,246	679,308	598,916	1,083,805	947,779	1,250,139	1,098,883	1,752,865	1,040,559	1,579,831
Deductions										
Benefit Payments	889,937	905,790	923,288	948,489	967,374	988,349	999,813	1,009,501	1,023,375	1,023,704
Refunds	13,627	13,552	12,130	11,819	13,603	12,342	11,523	8,953	12,116	11,847
Administrative Expenses	11,145	10,474	10,807	10,974	10,692	11,712	11,941	11,627	13,339	13,817
Capital Project Expenses	-	-	181	34	-	-	-	-	-	-
Total Deductions	914,709	929,816	946,406	971,316	991,669	1,012,403	1,023,277	1,030,081	1,048,830	1,049,368
Net Increase (Decrease) in Fiduciary Net Position	\$(182,463)	\$(250,508)	\$(347,490)	\$112,489	\$(43,890)	\$237,736	\$75,606	\$722,784	\$(8,271)	\$530,463

KERS Nonhazardous Insurance Fund

As of June 30 (\$ in Thousands)

Additions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Employers' Contributions	\$164,176	\$132,208	\$131,935	\$133,024	\$132,364	\$173,576	\$170,479	\$153,571	\$31,611	\$35,549
Actuarially Accrued Liability Contributions	-	-	-	-	-	-	-	-	101,637	87,674
Net Investment Income (Loss)	96,738	8,690	(3,904)	90,915	61,331	43,202	10,624	258,595	(85,555)	128,052
Retired Re-employed (HB1)	2,433	3,732	3,880	3,765	4,055	3,996	4,502	4,705	5,041	5,885
Member Drug Reimbursement	8	-	-	1	5	3	2	-	-	4
Premiums Received from Retirees	918	272	240	248	216	184	183	182	182	(27)
Humana Gain Share Payment	-	-	-	-	-	3,079	-	17,167	7,321	4,851
Employer Cessations	-	-	-	15,567	-	1,391	25	28,400	2,405	-
Northern Trust Settlement	-	-	-	-	32	4	-	-	-	-
Health Insurance Contribution (HB1)	-	-	-	-	-	-	6,127	6,326	6,560	8,370
Total Additions	264,273	144,902	132,151	243,520	198,003	225,435	191,942	468,946	69,202	270,358
Deductions										
Health Insurance Premiums	112,671	123,127	126,550	127,648	130,069	127,221	125,006	119,897	118,451	103,952
Administrative Expenses	736	893	818	861	760	875	847	815	821	771
Self-Funded Healthcare Costs	-	2,145	2,095	1,920	1,819	1,962	1,724	1,609	1,525	1,668
Excise Tax Insurance	-	3	6	3	3	3	3	-	6	-
Total Deductions	113,407	126,168	129,469	130,432	132,651	130,061	127,580	122,321	120,803	106,391
Net Increase (Decrease) in Fiduciary Net Position	\$150,866	\$18,734	\$2,679	\$113,088	\$65,352	\$95,374	\$64,362	\$346,625	\$(51,601)	\$163,967

Changes in Fiduciary Net Position - KERS Hazardous Pension Fund

As of June 30 (\$ in Thousands)

Additions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Members' Contributions	\$11,995	\$12,670	\$15,055	\$17,523	\$17,891	\$17,118	\$19,769	\$19,961	\$20,588	\$17,459
Employers' Contributions	11,670	28,374	23,690	37,630	32,790	55,229	59,096	62,182	59,052	64,020
Employer Pay Credit										8,758
General Fund Appropriations	-	-	-	15,000	10,000	-	-	-	-	-
Health Insurance Contributions (HB1)	551	537	684	811	909	934	4	3	(5)	(7)
Net Investment Income (Loss)	80,724	8,701	(1,652)	70,993	51,848	36,704	6,805	174,922	(51,841)	77,261
Bank of America Settlement	-	767	-	-	-	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	33	4	-	-	-	-
Pension Spiking	-	162	70	344	871	29	19	18	3	29
Total Additions	104,941	51,211	37,847	142,301	114,342	110,018	85,693	257,086	27,797	167,520
Deductions										
Benefit Payments	54,320	56,774	59,306	61,231	65,616	69,527	71,861	73,889	77,047	78,636
Refunds	2,830	2,609	2,211	2,106	2,501	2,684	3,168	4,380	4,976	4,041
Administrative Expenses	897	844	903	919	975	1,103	1,176	1,255	1,465	1,513
Capital Project Expenses	-	-	15	4	-	-	-	-	-	-
Total Deductions	58,048	60,227	62,435	64,260	69,092	73,314	76,205	79,524	83,488	84,190
Net Increase (Decrease) in Fiduciary Net Position	\$46,892	\$(9,016)	\$(24,588)	\$78,041	\$45,250	\$36,704	\$9,488	\$177,562	\$(55,691)	\$83,330

KERS Hazardous Insurance Fund

As of June 30 (\$ in Thousands)

Additions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Employers' Contributions	\$23,336	\$14,173	\$15,929	\$4,688	\$4,302	\$3,725	\$4,482	\$23	\$1	\$37
Net Investment Income (Loss)	52,214	7,793	(882)	59,188	42,567	28,049	638	126,475	(27,406)	52,991
Retired Re-employed (HB1)	538	709	837	932	986	1,245	1,294	1,276	1,280	1,452
Member Drug Reimbursement	-	-	-	-	-	-	1	-	1	-
Premiums Received from Retirees	37	14	(13)	(51)	(50)	(19)	(5)	(11)	(54)	(69)
Humana Gain Share	-	-	-	-	-	213	-	1,253	548	368
Northern Trust Settlement	-	-	-	-	18	2	-	-	-	-
Health Insurance Contributions (HB1)	-	-	-	-	-	-	1,100	1,164	1,232	1,592
Total Additions	76,126	22,689	15,871	64,757	47,823	33,215	7,510	130,180	(24,398)	56,371
Deductions										
Health Insurance Premiums	15,405	17,000	17,490	17,562	18,697	19,280	19,630	19,800	20,355	19,748
Administrative Expenses	78	101	97	105	104	117	123	118	125	123
Self-Funded Healthcare Costs	-	-	-	45	79	94	125	112	109	80
Excise Tax Insurance	-	-	-	-	-	-	-	-	-	-
Total Deductions	15,482	17,101	17,587	17,712	18,880	19,491	19,878	20,030	20,589	19,951
Net Increase (Decrease) in Fiduciary Net Position	\$60,642	\$5,588	\$(1,716)	\$47,045	\$28,943	\$13,724	\$(12,368)	\$110,150	\$(44,987)	\$36,420

Changes in Fiduciary Net Position - SPRS Pension Fund

As of June 30 (\$ in Thousands)

Additions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Members' Contributions	\$5,005	\$5,150	\$5,149	\$5,349	\$5,522	\$5,062	\$4,767	\$4,752	\$4,773	\$5,250
Employers' Contributions	20,279	31,444	25,723	38,028	36,486	58,947	58,358	59,262	62,341	56,536
Employer Pay Credit										1,585
General Fund Appropriations	-	-	-	25,000	10,000	1,086	1,086	384	215,000	-
Health Insurance Contributions (HB1)	70	94	113	131	155	176	-	-	(26)	(8)
Net Investment Income (Loss)	40,374	3,427	(3,841)	26,795	18,487	14,863	6,359	61,966	(22,148)	40,801
Bank of America Settlement	-	646	-	-	-	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	21	3	-	-	-	-
Pension Spiking	-	546	99	210	392	15	9	4	-	-
Total Additions	65,729	41,307	27,243	95,513	71,063	80,152	70,579	126,368	259,940	104,164
Deductions										
Benefit Payments	53,026	54,766	56,268	56,935	58,805	60,948	62,423	63,249	64,121	63,805
Refunds	214	85	11	26	22	162	88	273	280	166
Administrative Expenses	215	201	176	181	194	225	266	230	273	293
Capital Project Expenses	-	-	4	1	-	-	-	-	-	-
Total Deductions	53,454	55,052	56,459	57,143	59,021	61,335	62,777	63,752	64,674	64,264
Net Increase (Decrease) in Fiduciary Net Position	\$12,276	\$(13,745)	\$(29,216)	\$38,370	\$12,042	\$18,817	\$7,802	\$62,616	\$195,266	\$39,900

SPRS Insurance Fund

As of June 30 (\$ in Thousands)

Additions	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Employers' Contributions	\$14,498	\$10,379	\$10,228	\$9,222	\$9,397	\$13,282	\$13,133	\$9,284	\$8,782	\$9,289
Net Investment Income (Loss)	20,508	2,921	(48)	21,570	16,420	10,766	1,108	50,051	(10,787)	21,426
Retired Re-employed (HB1)	(5)	3	9	-	-	6	-	-	-	-
Member Drug Reimbursement	-	-	-	-	-	-	-	-	-	-
Premiums Received from Retirees	11	1	(29)	(55)	(41)	(13)	(12)	(14)	(27)	(131)
Humana Gain Share	-	-	-	-	-	144	-	811	342	224
Northern Trust Settlement	-	-	-	-	8	1	-	-	-	-
Health Insurance contributions (HB1)	-	-	-	-	-	-	196	209	256	356
Total Additions	35,012	13,304	10,160	30,737	25,784	24,186	14,425	60,341	(1,434)	31,164
Deductions										
Health Insurance Premiums	12,688	13,483	13,836	13,405	13,881	13,942	14,215	14,487	14,461	14,290
Administrative Expenses	58	65	89	66	62	69	71	71	73	74
Self-Funded Healthcare Costs	-	-	-	24	38	40	22	25	21	18
Excise Tax Insurance	-	-	-	-	-	-	-	-	-	-
Total Deductions	12,745	13,548	13,925	13,495	13,981	14,051	14,308	14,583	14,555	14,382
Net Increase (Decrease) in Fiduciary Net Position	\$22,267	\$(244)	\$(3,765)	\$17,242	\$11,803	\$10,135	\$117	\$45,758	\$(15,989)	\$16,782

The following tables include individuals receiving a monthly benefit as of June 30 in the indicated fiscal year. A single member may have multiple accounts which contribute to one pension. This table represents all individuals receiving a benefit including dependent children, Qualified Domestic Relations Order (QDRO) accounts and multiple beneficiary accounts. If a member has died or a disability decision is pending, the monthly benefit amount is reflected as zero until the account status changes.

Schedule of Benefit Expenses CERS Nonhazardous

As of June 30 (in Whole \$)

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2014				
Average Benefit	\$596	\$1,042	\$856	\$613
Number of Accounts	11,885	34,911	4,729	1,110
Total Monthly Benefits	\$7,081,048	\$36,375,607	\$4,047,035	\$680,784
% of Total Monthly Benefits	14.70%	75.49%	8.40%	1.41%
Fiscal Year 2015				
Average Benefit	\$612	\$1,044	\$862	\$616
Number of Accounts	12,749	36,746	4,854	1,161
Total Monthly Benefits	\$7,801,662	\$38,375,001	\$4,186,130	\$715,032
% of Total Monthly Benefits	15.27%	75.13%	8.20%	1.40%
Fiscal Year 2016				
Average Benefit	\$623	\$1,045	\$874	\$626
Number of Accounts	14,014	39,066	5,118	1,268
Total Monthly Benefits	\$8,724,563	\$40,823,334	\$4,472,723	\$793,726
% of Total Monthly Benefits	15.92%	74.48%	8.16%	1.45%
Fiscal Year 2017				
Average Benefit	\$634	\$1,050	\$883	\$616
Number of Accounts	14,792	40,873	5,280	1,318
Total Monthly Benefits	\$9,374,583	\$42,912,604	\$4,661,375	\$811,542
% of Total Monthly Benefits	16.23%	74.29%	8.07%	1.41%
Fiscal Year 2018				
Average Benefit	\$647	\$1,062	\$892	\$645
Number of Accounts	15,713	42,918	5,425	1,359
Total Monthly Benefits	\$10,169,605	\$45,560,863	\$4,838,284	\$875,980
% of Total Monthly Benefits	16.55%	74.15%	7.87%	1.43%
Fiscal Year 2019				
Average Benefit	\$668	\$1,067	\$901	\$657
Number of Accounts	16,710	44,594	5,479	1,363
Total Monthly Benefits	\$11,167,300	\$47,580,052	\$4,934,518	\$895,303
% of Total Monthly Benefits	17.29%	73.68%	7.64%	1.39%
Fiscal Year 2020				
Average Benefit	\$673	\$1,070	\$904	\$667
Number of Accounts	17,378	45,973	5,405	1,370
Total Monthly Benefits	\$11,693,581	\$49,186,433	\$4,888,554	\$913,574
% of Total Monthly Benefits	17.54%	73.76%	7.33%	1.37%
Fiscal Year 2021				
Average Benefit	\$684	\$1,074	\$909	\$688
Number of Accounts	18,581	47,970	5,518	1,432
Total Monthly Benefits	\$12,717,667	\$51,532,707	\$5,016,308	\$984,964
% of Total Monthly Benefits	18.10%	73.35%	7.14%	1.40%
Fiscal Year 2022				
Average Benefit	\$701	\$1,082	\$914	\$723
Number of Accounts	19,172	49,431	5,444	1,470
Total Monthly Benefits	\$13,435,298	\$53,468,946	\$4,977,131	\$1,062,739
% of Total Monthly Benefits	18.42%	73.30%	6.82%	1.46%
Fiscal Year 2023				
Average Benefit	\$717	\$1,095	\$920	\$753
Number of Accounts	19,864	50,658	5,303	1,516
Total Monthly Benefits	\$14,247,555	\$55,453,257	\$4,876,441	\$1,141,532
% of Total Monthly Benefits	18.82%	73.23%	6.44%	1.51%

Schedule of Benefit Expenses - CERS Hazardous

As of June 30 (in Whole \$)

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2014				
Average Benefit	\$1,467	\$2,437	\$1,125	\$1,008
Number of Accounts	1,974	4,873	695	119
Total Monthly Benefits	\$2,895,353	\$11,876,578	\$781,685	\$119,935
% of Total Monthly Benefits	18.47%	75.77%	4.99%	0.77%
Fiscal Year 2015				
Average Benefit	\$1,480	\$2,448	\$1,145	\$954
Number of Accounts	2,097	5,139	688	127
Total Monthly Benefits	\$3,103,613	\$12,581,191	\$787,549	\$121,103
% of Total Monthly Benefits	18.70%	75.82%	4.75%	0.73%
Fiscal Year 2016				
Average Benefit	\$1,494	\$2,453	\$1,137	\$975
Number of Accounts	2,269	5,485	742	143
Total Monthly Benefits	\$3,388,890	\$13,452,235	\$843,463	\$139,353
% of Total Monthly Benefits	19.01%	75.47%	4.73%	0.78%
Fiscal Year 2017				
Average Benefit	\$1,509	\$2,473	\$1,138	\$997
Number of Accounts	2,394	5,764	794	149
Total Monthly Benefits	\$3,612,099	\$14,255,349	\$903,238	\$148,515
% of Total Monthly Benefits	19.09%	75.35%	4.77%	0.78%
Fiscal Year 2018				
Average Benefit	\$1,542	\$2,505	\$1,141	\$1,110
Number of Accounts	2,540	6,189	811	158
Total Monthly Benefits	\$3,917,668	\$15,503,185	\$925,221	\$175,316
% of Total Monthly Benefits	19.09%	75.55%	4.51%	0.85%
Fiscal Year 2019				
Average Benefit	\$1,546	\$2,522	\$1,163	\$1,166
Number of Accounts	2,655	6,488	822	168
Total Monthly Benefits	\$4,104,061	\$16,365,945	\$956,017	\$195,932
% of Total Monthly Benefits	18.98%	75.69%	4.42%	0.91%
Fiscal Year 2020				
Average Benefit	\$1,590	\$2,554	\$1,174	\$1,205
Number of Accounts	2,771	6,864	814	169
Total Monthly Benefits	\$4,406,958	\$17,527,561	\$955,266	\$203,646
% of Total Monthly Benefits	19.08%	75.90%	4.14%	0.88%
Fiscal Year 2021				
Average Benefit	\$1,615	\$2,569	\$1,169	\$1,253
Number of Accounts	2,908	7,211	846	173
Total Monthly Benefits	\$4,698,033	\$18,522,964	\$988,745	\$216,818
% of Total Monthly Benefits	19.23%	75.83%	4.05%	0.89%
Fiscal Year 2022				
Average Benefit	\$1,649	\$2,586	\$1,173	\$1,329
Number of Accounts	2,979	7,494	858	182
Total Monthly Benefits	\$4,910,951	\$19,377,298	\$1,006,030	\$241,826
% of Total Monthly Benefits	19.23%	75.88%	3.94%	0.95%
Fiscal Year 2023				
Average Benefit	\$1,690	\$2,616	\$1,196	\$1,437
Number of Accounts	3,061	7,784	853	188
Total Monthly Benefits	\$5,171,930	\$20,360,195	\$1,020,135	\$270,089
% of Total Monthly Benefits	19.28%	75.91%	3.80%	1.01%

Schedule of Benefit Expenses - KERS Nonhazardous

As of June 30 (in Whole \$)

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2014				
Average Benefit	\$992	\$1,911	\$987	\$886
Number of Accounts	6,678	33,106	2,706	954
Total Monthly Benefits	\$6,624,472	\$63,255,779	\$2,671,749	\$845,468
% of Total Monthly Benefits	9.03%	86.18%	3.64%	1.15%
Fiscal Year 2015				
Average Benefit	\$992	\$1,901	\$996	\$909
Number of Accounts	6,896	33,940	2,696	983
Total Monthly Benefits	\$6,843,193	\$64,503,048	\$2,684,720	\$893,407
% of Total Monthly Benefits	9.13%	86.09%	3.58%	1.19%
Fiscal Year 2016				
Average Benefit	\$989	\$1,886	\$1,005	\$902
Number of Accounts	7,390	35,192	2,770	1,014
Total Monthly Benefits	\$7,312,293	\$66,383,638	\$2,784,928	\$914,804
% of Total Monthly Benefits	9.45%	85.77%	3.60%	1.18%
Fiscal Year 2017				
Average Benefit	\$992	\$1,883	\$1,013	\$924
Number of Accounts	7,628	35,890	2,772	1,028
Total Monthly Benefits	\$7,565,780	\$67,591,003	\$2,807,938	\$950,318
% of Total Monthly Benefits	9.59%	85.65%	3.56%	1.20%
Fiscal Year 2018				
Average Benefit	\$998	\$1,879	\$1,019	\$940
Number of Accounts	8,070	37,141	2,767	1,007
Total Monthly Benefits	\$8,049,794	\$69,780,011	\$2,818,593	\$946,466
% of Total Monthly Benefits	9.87%	85.52%	3.45%	1.16%
Fiscal Year 2019				
Average Benefit	\$993	\$1,876	\$1,029	\$933
Number of Accounts	8,387	37,751	2,751	997
Total Monthly Benefits	\$8,328,706	\$70,826,696	\$2,831,527	\$930,110
% of Total Monthly Benefits	10.04%	85.42%	3.41%	1.12%
Fiscal Year 2020				
Average Benefit	\$984	\$1,872	\$1,031	\$937
Number of Accounts	8,622	38,233	2,676	987
Total Monthly Benefits	\$8,483,484	\$71,585,386	\$2,759,983	\$924,459
% of Total Monthly Benefits	10.13%	85.47%	3.30%	1.10%
Fiscal Year 2021				
Average Benefit	\$984	\$1,864	\$1,036	\$949
Number of Accounts	9,046	39,020	2,698	1,019
Total Monthly Benefits	\$8,897,420	\$72,724,923	\$2,796,355	\$966,951
% of Total Monthly Benefits	10.42%	85.17%	3.27%	1.13%
Fiscal Year 2022				
Average Benefit	\$987	\$1,860	\$1,031	\$966
Number of Accounts	9,279	39,508	2,609	1,033
Total Monthly Benefits	\$9,155,941	\$73,489,369	\$2,690,544	\$997,608
% of Total Monthly Benefits	10.61%	85.12%	3.12%	1.16%
Fiscal Year 2023				
Average Benefit	\$982	\$1,861	\$1,034	\$956
Number of Accounts	9,464	39,505	2,531	1,024
Total Monthly Benefits	\$9,291,103	\$73,531,803	\$2,615,997	\$979,166
% of Total Monthly Benefits	10.75%	85.09%	3.03%	1.13%

Schedule of Benefit Expenses - KERS Hazardous

As of June 30 (in Whole \$)

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2014				
Average Benefit	\$971	\$1,560	\$649	\$749
Number of Accounts	1,851	1,497	191	89
Total Monthly Benefits	\$1,797,900	\$2,335,190	\$123,867	\$66,679
% of Total Monthly Benefits	41.58%	54.01%	2.86%	1.54%
Fiscal Year 2015				
Average Benefit	\$986	\$1,556	\$661	\$714
Number of Accounts	1,912	1,566	193	90
Total Monthly Benefits	\$1,884,477	\$2,436,923	\$127,477	\$64,250
% of Total Monthly Benefits	41.76%	54.00%	2.82%	1.42%
Fiscal Year 2016				
Average Benefit	\$984	\$1,542	\$663	\$730
Number of Accounts	2,046	1,658	194	94
Total Monthly Benefits	\$2,011,530	\$2,557,114	\$128,663	\$68,605
% of Total Monthly Benefits	42.21%	53.65%	2.70%	1.44%
Fiscal Year 2017				
Average Benefit	\$993	\$1,541	\$662	\$721
Number of Accounts	2,101	1,719	205	96
Total Monthly Benefits	\$2,086,732	\$2,648,685	\$135,625	\$69,255
% of Total Monthly Benefits	42.24%	53.61%	2.75%	1.40%
Fiscal Year 2018				
Average Benefit	\$1,002	\$1,551	\$684	\$737
Number of Accounts	2,215	1,877	205	100
Total Monthly Benefits	\$2,218,520	\$2,911,409	\$140,174	\$73,704
% of Total Monthly Benefits	41.52%	54.48%	2.62%	1.38%
Fiscal Year 2019				
Average Benefit	\$1,020	\$1,561	\$708	\$744
Number of Accounts	2,269	1,987	208	99
Total Monthly Benefits	\$2,315,435	\$3,101,783	\$147,342	\$73,702
% of Total Monthly Benefits	41.07%	55.01%	2.61%	1.31%
Fiscal Year 2020				
Average Benefit	\$1,017	\$1,561	\$701	\$739
Number of Accounts	2,334	2,061	207	94
Total Monthly Benefits	\$2,374,412	\$3,216,376	\$145,112	\$69,433
% of Total Monthly Benefits	40.90%	55.40%	2.50%	1.20%
Fiscal Year 2021				
Average Benefit	\$1,021	\$1,551	\$701	\$751
Number of Accounts	2,414	2,164	215	97
Total Monthly Benefits	\$2,464,831	\$3,355,473	\$150,742	\$72,837
% of Total Monthly Benefits	40.78%	55.52%	2.49%	1.21%
Fiscal Year 2022				
Average Benefit	\$1,032	\$1,560	\$711	\$786
Number of Accounts	2,434	2,267	216	96
Total Monthly Benefits	\$2,512,089	\$3,536,881	\$153,476	\$75,437
% of Total Monthly Benefits	40.01%	56.34%	2.44%	1.20%
Fiscal Year 2023				
Average Benefit	\$1,040	\$1,565	\$703	\$843
Number of Accounts	2,441	2,296	213	98
Total Monthly Benefits	\$2,538,237	\$3,592,494	\$149,801	\$82,626
% of Total Monthly Benefits	39.89%	56.46%	2.35%	1.30%

Schedule of Benefit Expenses - SPRS

As of June 30 (in Whole \$)

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2014				
Average Benefit	\$3,621	\$3,197	\$1,346	\$2,196
Number of Accounts	146	1,172	75	23
Total Monthly Benefits	\$528,611	\$3,747,012	\$100,974	\$49,197
% of Total Monthly Benefits	11.94%	84.66%	2.28%	1.11%
Fiscal Year 2015				
Average Benefit	\$3,578	\$3,189	\$1,347	\$2,153
Number of Accounts	150	1,213	75	23
Total Monthly Benefits	\$536,649	\$3,867,971	\$101,018	\$49,524
% of Total Monthly Benefits	11.78%	84.91%	2.22%	1.09%
Fiscal Year 2016				
Average Benefit	\$3,579	\$3,135	\$1,269	\$2,008
Number of Accounts	155	1,277	82	25
Total Monthly Benefits	\$554,743	\$4,002,993	\$104,056	\$50,196
% of Total Monthly Benefits	11.77%	84.95%	2.21%	1.07%
Fiscal Year 2017				
Average Benefit	\$3,611	\$3,135	\$1,278	\$2,008
Number of Accounts	149	1,303	82	25
Total Monthly Benefits	\$538,032	\$4,084,771	\$104,788	\$50,196
% of Total Monthly Benefits	11.26%	85.50%	2.19%	1.05%
Fiscal Year 2018				
Average Benefit	\$3,642	\$3,128	\$1,289	\$2,082
Number of Accounts	153	1,361	83	26
Total Monthly Benefits	\$557,249	\$4,257,579	\$107,019	\$54,127
% of Total Monthly Benefits	11.20%	85.56%	2.15%	1.09%
Fiscal Year 2019				
Average Benefit	\$3,607	\$3,138	\$1,298	\$2,082
Number of Accounts	156	1,401	83	26
Total Monthly Benefits	\$562,630	\$4,395,857	\$107,737	\$54,127
% of Total Monthly Benefits	10.99%	85.85%	2.10%	1.06%
Fiscal Year 2020				
Average Benefit	\$3,628	\$3,154	\$1,339	\$2,137
Number of Accounts	152	1,440	80	26
Total Monthly Benefits	\$551,470	\$4,541,490	\$107,148	\$55,558
% of Total Monthly Benefits	10.49%	86.41%	2.04%	1.06%
Fiscal Year 2021				
Average Benefit	\$3,542	\$3,160	\$1,287	\$2,137
Number of Accounts	156	1,468	84	26
Total Monthly Benefits	\$552,551	\$4,638,826	\$108,101	\$55,558
% of Total Monthly Benefits	10.32%	86.63%	2.02%	1.04%
Fiscal Year 2022				
Average Benefit	\$3,565	\$3,163	\$1,275	\$2,077
Number of Accounts	159	1,481	83	25
Total Monthly Benefits	\$566,764	\$4,683,959	\$105,787	\$51,931
% of Total Monthly Benefits	10.48%	86.60%	1.96%	0.96%
Fiscal Year 2023				
Average Benefit	\$3,550	\$3,146	\$1,294	\$2,077
Number of Accounts	155	1,486	83	25
Total Monthly Benefits	\$550,304	\$4,674,802	\$107,386	\$51,931
% of Total Monthly Benefits	10.22%	86.82%	1.99%	0.97%

Active Refunds Report For the Period ended June 30, 2023 (in Whole \$)							
System	Tier	Active Termination Refunds		Active Death Refunds		Totals	
		Number of Refunds	Amount of Refunds	Number of Refunds	Amount of Refunds	Number of Refunds	Amount of Refunds
CERS Nonhazardous	1	276	\$3,642,939	169	\$338,656	445	\$3,981,595
	2	457	6,452,888	51	156,026	508	6,608,914
	3	1,849	12,368,533	92	282,340	1,941	12,650,873
	Total	2,582	22,464,360	312	777,022	2,894	23,241,382
CERS Hazardous	1	21	620,357	1	616	22	620,973
	2	40	2,277,137	-	-	40	2,277,137
	3	174	3,316,045	-	-	174	3,316,045
	Total	235	6,213,539	1	616	236	6,214,155
KERS Nonhazardous	1	168	2,334,981	98	184,293	266	2,519,274
	2	203	3,488,346	16	79,384	219	3,567,730
	3	626	5,285,615	22	59,301	648	5,344,916
	Total	997	11,108,942	136	322,978	1,133	11,431,920
KERS Hazardous	1	8	184,704	5	12,303	13	197,007
	2	38	933,351	2	7,316	40	940,667
	3	205	2,771,039	3	24,561	208	2,795,600
	Total	251	3,889,094	10	44,180	261	3,933,274
SPRS	1	2	46,983	-	-	2	46,983
	2	2	103,622	-	-	2	103,622
	3	3	618	-	-	3	618
	Total	7	151,223	-	-	7	151,223
TOTALS		4,072	\$43,827,158	459	\$1,144,796	4,531	\$44,971,954

Analysis of Initial Retirees As of June 30 (in Whole \$)

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
Fiscal Year 2014					
Number of Accounts	3,529	430	2,037	245	77
Average Service Credit (months)	182	194	202	165	260
Average Final Compensation	\$33,816	\$57,718	\$46,480	\$46,595	\$70,009
Average Monthly Benefit	\$879	\$2,021	\$1,278	\$1,296	\$3,322
Average System Payment for Health Insurance	\$486	\$1,279	\$534	\$937	\$1,378
Fiscal Year 2015					
Number of Accounts	4,084	496	2,078	191	55
Average Service Credit (months)	188	204	204	164	251
Average Final Compensation	\$34,561	\$59,589	\$47,187	\$47,148	\$67,862
Average Monthly Benefit	\$913	\$2,178	\$1,308	\$1,280	\$3,009
Average System Payment for Health Insurance	\$489	\$1,254	\$549	\$906	\$1,376
Fiscal Year 2016					
Number of Accounts	4,151	522	2,043	205	57
Average Service Credit (months)	190	212	207	160	234
Average Final Compensation	\$34,632	\$58,977	\$47,429	\$44,494	\$65,535
Average Monthly Benefit	\$932	\$2,303	\$1,351	\$1,225	\$2,953
Average System Payment for Health Insurance	\$501	\$1,277	\$558	\$870	\$1,425
Fiscal Year 2017					
Number of Accounts	4,151	544	2,094	191	30
Average Service Credit (months)	191	203	208	146	241
Average Final Compensation	\$34,779	\$58,384	\$46,753	\$47,604	\$68,401
Average Monthly Benefit	\$940	\$2,236	\$1,339	\$1,150	\$2,935
Average System Payment for Health Insurance	\$510	\$1,247	\$558	\$872	\$1,192
Fiscal Year 2018					
Number of Accounts	4,570	696	2,682	328	68
Average Service Credit (months)	195	211	223	167	241
Average Final Compensation	\$37,683	\$65,407	\$48,552	\$51,219	\$71,132
Average Monthly Benefit	\$1,027	\$2,528	\$1,481	\$1,392	\$3,035
Average System Payment for Health Insurance	\$531	\$1,300	\$578	\$1,033	\$1,365
Fiscal Year 2019					
Number of Accounts	4,283	541	1,993	234	63
Average Service Credit (months)	193	198	204	174	254
Average Final Compensation	\$37,412	\$64,646	\$47,824	\$51,901	\$73,795
Average Monthly Benefit	\$997	\$2,366	\$1,355	\$1,532	\$3,341
Average System Payment for Health Insurance	\$513	\$1,231	\$569	\$1,015	\$1,391
Fiscal Year 2020					
Number of Accounts	3,584	580	1,755	195	54
Average Service Credit (months)	189	221	211	150	245
Average Final Compensation	\$36,968	\$67,994	\$47,069	\$51,021	\$78,468
Average Monthly Benefit	\$935	\$2,715	\$1,352	\$1,242	\$3,313
Average System Payment for Health Insurance	\$539	\$1,361	\$579	\$1,013	\$1,404
Fiscal Year 2021					
Number of Accounts	3,967	531	1,644	201	32
Average Service Credit (months)	194	209	201	143	217
Average Final Compensation	\$38,245	\$68,216	\$46,600	\$49,664	\$72,942
Average Monthly Benefit	\$987	\$2,589	\$1,276	\$1,248	\$2,872
Average System Payment for Health Insurance	\$543	\$1,326	\$560	\$1,019	\$1,347

Analysis of Initial Retirees As of June 30 (in Whole \$) Continued

	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
Fiscal Year 2022					
Number of Accounts	3,975	496	1,910	221	46
Average Service Credit (months)	198	205	213	165	245
Average Final Compensation	\$39,244	\$70,218	\$48,028	\$52,575	\$76,377
Average Monthly Benefit	\$1,048	\$2,691	\$1,389	\$1,515	\$3,287
Average System Payment for Health Insurance	\$576	\$1,336	\$599	\$1,020	\$1,345
Fiscal Year 2023					
Number of Accounts	4,003	498	1,479	136	13
Average Service Credit (months)	194	216	190	146	186
Average Final Compensation	\$41,262	\$77,761	\$50,304	\$52,473	\$73,081
Average Monthly Benefit	\$1,101	\$3,029	\$1,332	\$1,315	\$2,737
Average System Payment for Health Insurance	\$625	\$1,503	\$640	\$1,151	\$1,208

Note: This table represents all individuals who had an initial retirement date within the fiscal year.

Payment Options Selected by Retired Members As of June 30, 2023 (in Whole \$)

	Basic	Other	Period Certain	Pop Up	Social Security Adjustment	Survivorship	Annuity
CERS Nonhazardous							
Number of Accounts	33,185	26	11,314	12,064	2,289	18,398	65
Monthly Benefits	\$27,776,553	\$46,638	\$10,388,401	\$15,144,926	\$3,131,754	\$19,222,394	\$8,119
CERS Hazardous							
Number of Accounts	1,976	36	1,112	4,658	600	3,504	-
Monthly Benefits	\$3,911,427	\$60,706	\$2,321,508	\$11,979,911	\$1,020,349	\$7,528,447	\$-
KERS Nonhazardous							
Number of Accounts	19,393	23	6,715	10,163	3,243	12,971	16
Monthly Benefits	\$28,657,458	\$45,511	\$10,289,411	\$20,547,866	\$5,618,055	\$21,255,419	\$4,349
KERS Hazardous							
Number of Accounts	1,414	6	553	1,402	318	1,350	5
Monthly Benefits	\$1,573,156	\$5,498	\$695,779	\$2,105,151	\$352,552	\$1,629,635	\$1,387
SPRS							
Number of Accounts	189	1	132	754	182	491	-
Monthly Benefits	\$545,008	\$3,084	\$383,635	\$2,588,617	\$364,615	\$1,499,465	\$-
KPPA Total							
Number of Accounts	56,157	92	19,826	29,041	6,632	36,714	86
Monthly Benefits	\$62,463,602	\$161,437	\$24,078,734	\$52,366,471	\$10,487,325	\$51,135,360	\$13,855

The information in this table represents accounts administered by KPPA. A single member may have multiple accounts, which contribute to one pension.

Employer Contribution Rates

In CERS, KERS, and SPRS, both the employee and the employer contribute a percentage of creditable compensation to KPPA.

The employee contribution rate is set by state statute. Nonhazardous employees contribute 5% while Hazardous duty members contribute 8%. Employees hired on or after September 1, 2008, contribute an additional 1% to health insurance.

CERS employer contribution rates are set by the CERS Board under Kentucky Revised Statutes 78.635 based on an annual actuarial valuation, unless altered by legislation enacted by the Kentucky General Assembly. The CERS employer contribution rates for fiscal year 2008 through 2009 were reduced from the actuarially recommended rate as a result of the passage of House Bill (HB) 1 during the 2008 Extraordinary Session of the Kentucky General Assembly. Also, during its 2009 Regular Session, the Kentucky General Assembly enacted HB 117, which mandated an extension of the phase-in of insurance contribution rates that had been previously approved by the KPPA Board in 2006 from five years to 10 years to further mitigate the impact of the application of GASB Statements 43 and 45 on CERS employer contribution rates for health insurance. During the 2018 Regular Session of the Kentucky General Assembly, HB 362 capped CERS employer contribution rate increases to no more than 12% per year over the prior fiscal year for the period of July 1, 2018 to June 30, 2028, or until the actuarial recommended contribution was met. Fiscal year 2022 was the last year for the 12% cap for CERS. The actual pension and insurance employer contribution rates that were paid are shown below.

Under Kentucky Revised Statutes 61.565, KERS and SPRS employer contribution rates are set by the KRS Board based on an annual actuarial valuation. However, KERS and SPRS employer rates are subject to approval by the Kentucky General Assembly through the adoption of the biennial Executive Branch Budget. For fiscal years 2003 through 2014, the Kentucky General Assembly suspended Kentucky Revised Statutes 61.565 in the budget in order to provide an employer contribution rate that is less than the amount recommended by the Board's consulting actuary. For fiscal years 2018 thru 2021, the legislature amended the KERS Nonhazardous rate for quasi-government agencies to 49.47%. The table in the Actuarial Section shows the KERS and SPRS employer contribution rates that were actuarial recommended rates in the annual valuation without any adjustments. House Bill 8 passed during the 2021 legislative session changed how employer contributions are allocated and collected from the participating employers in the KERS Nonhazardous Fund. Each employer will pay a normal cost contribution on the payroll of their covered employees and contribute to the fund an allocated share of the cost required to amortize the unfunded liability.

Employer Contribution Rates (%) As of June 30										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
CERS Nonhazardous										
Actual Rate	18.89%	17.67%	17.06%	18.68%	19.18%	21.48%	24.06%	24.06%	26.95%	26.79%
CERS Hazardous										
Actual Rate	35.70%	34.31%	32.95%	31.06%	31.55%	35.34%	39.58%	39.58%	44.33%	49.59%
KERS Nonhazardous*										
Actual Rate	26.79%	38.77%	38.77%	48.59%	49.47%	83.43%	83.43%	84.43%	10.10%	9.97%
KERS Hazardous										
Actual Rate	32.21%	26.34%	26.34%	23.82%	23.70%	36.85%	36.85%	36.00%	33.43%	31.82%
SPRS										
Actual Rate	71.15%	75.76%	75.76%	89.21%	91.24%	146.28%	146.28%	143.48%	146.06%	99.43%
*2021 House Bill 8 changed the manner in which KERS Nonhazardous pays employer contributions. Beginning in FY22, each employer pays the normal cost, which is the rate stated above, along with an actuarial accrued liability payment that is calculated and provided by the actuary.										

Insurance Contracts

KPPA provides medical insurance and other managed care coverage for eligible retired members.

Participation in the insurance program is optional and requires the completion of the proper forms at the time of retirement in order to obtain the insurance coverage. KPPA provides access to health insurance coverage through the Kentucky Employees' Health Plan (KEHP) for recipients until they reach age 65 and/or become Medicare eligible. After a retired member becomes eligible for Medicare, coverage is available through a Medicare eligible plan offered by KPPA. A retired member's spouse and/or dependents may also be covered on health insurance through KPPA.

Insurance Benefits Paid to Retirees & Beneficiaries					
Participating in a KPPA Health Insurance Plan As of June 30, 2023 (in Whole \$)					
	CERS Nonhazardous	CERS Hazardous	KERS Nonhazardous	KERS Hazardous	SPRS
Number	40,942	10,024	31,612	3,109	1,795
Average Service Credit (Months)	267	277	312	264	320
Average Monthly System Payment for Health Insurance	\$349	\$1,051	\$370	\$732	\$956
Average Monthly Member Payment for Health Insurance	\$55	\$42	\$55	\$45	\$25
Total Monthly Payment for Health Insurance	\$15,657,298	\$8,954,858	\$12,613,727	\$1,985,695	\$1,357,854

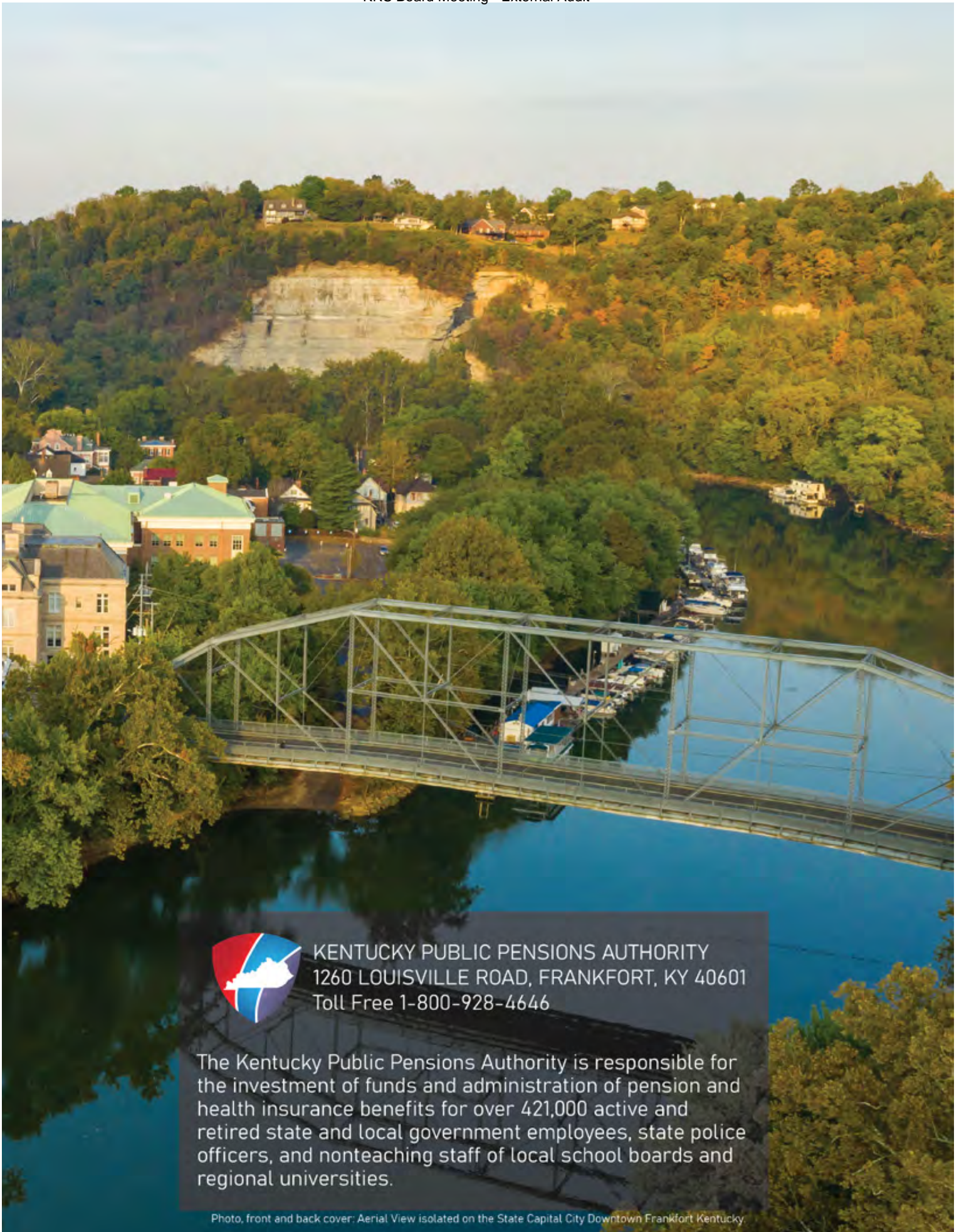
Insurance Contracts by Type As of June 30

CERS Nonhazardous										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
KEHP Parent Plus	278	242	235	222	231	214	210	218	225	234
KEHP Couple/Family	546	473	465	462	510	530	519	508	543	524
KEHP Single	7,843	8,098	8,164	8,313	8,802	8,912	8,751	8,685	8,692	8,721
Medicare without Prescription	2,583	2,531	2,499	2,462	2,389	2,278	2,183	2,081	1,958	1,921
Medicare with Prescription	20,200	21,520	23,007	24,247	25,476	26,848	27,786	28,472	29,001	29,542
CERS Hazardous										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
KEHP Parent Plus	432	456	378	395	422	430	425	473	468	491
KEHP Couple/Family	2,184	2,255	2,321	2,387	2,571	2,648	2,816	2,894	2,961	3,047
KEHP Single	1,447	1,500	1,595	1,645	1,712	1,746	1,731	1,768	1,810	1,893
Medicare without Prescription	89	107	114	125	119	121	116	120	134	138
Medicare with Prescription	2,510	2,697	2,969	3,205	3,388	3,658	3,911	4,103	4,284	4,455
KERS Nonhazardous										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
KEHP Parent Plus	506	452	441	411	460	441	433	428	434	433
KEHP Couple/Family	797	714	656	663	696	700	666	633	612	553
KEHP Single	9,491	9,251	8,876	8,627	8,638	8,304	7,942	7,415	7,141	6,693
Medicare without Prescription	1,370	1,303	1,286	1,229	1,179	1,141	1,089	1,026	989	957
Medicare with Prescription	17,738	18,577	19,447	20,215	21,117	21,713	22,271	22,648	22,903	22,976
KERS Hazardous										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
KEHP Parent Plus	110	110	97	88	96	103	112	104	116	118
KEHP Couple/Family	448	448	439	432	478	493	491	491	477	470
KEHP Single	647	656	663	667	686	699	677	667	686	653
Medicare without Prescription	56	62	66	72	73	83	82	82	84	72
Medicare with Prescription	1,104	1,177	1,302	1,401	1,495	1,584	1,662	1,693	1,746	1,796
SPRS										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
KEHP Parent Plus	78	81	77	79	74	77	85	89	90	92
KEHP Couple/Family	444	441	447	420	426	454	459	448	454	434
KEHP Single	263	265	246	251	253	224	226	221	217	230
Medicare without Prescription	20	16	18	17	21	16	16	13	14	17
Medicare with Prescription	712	777	850	897	941	975	998	1,003	1,016	1,022
KPPA Total										
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
KEHP Parent Plus	1,404	1,341	1,228	1,195	1,283	1,265	1,265	1,312	1,333	1,368
KEHP Couple/Family	4,419	4,331	4,328	4,364	4,681	4,825	4,951	4,974	5,047	5,028
KEHP Single	19,691	19,770	19,544	19,503	20,091	19,885	19,327	18,756	18,546	18,190
Medicare without Prescription	4,118	4,019	3,983	3,905	3,781	3,639	3,486	3,322	3,179	3,105
Medicare with Prescription	42,264	44,748	47,575	49,965	52,417	54,778	56,628	57,919	58,950	59,791

Acronym Glossary for Kentucky Retirement Systems

As of December 6, 2023

Phrase	Acronym
Actuarially Determined Contribution	ADC
Annual Required Contribution	ARC
Annual Comprehensive Financial Report	ACFR
Board of Trustees	Board
Collateralized Mortgage Obligations	CMO
Commonwealth of Kentucky	Commonwealth
Consumer Price Index	CPI
Department of Employee Insurance	DEI
Emerging Market Debt	EMD
Executive Order	EO
Exchange Traded Funds	ETFs
Fiscal Year	FY
Generally Accepted Accounting Principles	GAAP
Governmental Accounting Standards Board	GASB
Gabriel, Roeder, Smith & Co.	GRS
House Bill	HB
Investment Management Agreement	IMA
Investment Policy Statement	IPS
Internal Revenue Service	IRS
Information Technology	IT
Kentucky Administrative Regulations	KAR
Kentucky Employees' Health Plan	KEHP
Kentucky Public Pensions Authority	KPPA
Kohlberg, Kravis, Roberts	KKR
Kentucky Retirement Systems	KRS
Net Asset Value	NAV
Net OPEB Liability	NOL
Net Pension Liability	NPL
Not Rated	NR
Other post-employment benefits	OPEB
Pacific Alternative Asset Management Company	PAAMCO
Perimeter Park West Incorporated	PPW
Qualified Domestic Relations Order	QDRO
Required Supplementary Information	RSI
Senate Bill	SB
Senate Resolution	SR
Strategic Technology Advancements for the Retirement of Tomorrow	START
Short Term Investment Funds	STIFs
Total Pension Liability	TPL
Teachers' Retirement System	TRS
Unfunded Actuarial Accrued Liability	UAAL
Unfunded Accrued Liability	UAL
Unrelated Business Income	UBI



KENTUCKY PUBLIC PENSIONS AUTHORITY
1260 LOUISVILLE ROAD, FRANKFORT, KY 40601
Toll Free 1-800-928-4646

The Kentucky Public Pensions Authority is responsible for the investment of funds and administration of pension and health insurance benefits for over 421,000 active and retired state and local government employees, state police officers, and nonteaching staff of local school boards and regional universities.

Photo, front and back cover: Aerial View isolated on the State Capital City Downtown Frankfort Kentucky

Kentucky Employees Retirement System

GASB No. 67 Accounting Valuation Report
As of June 30, 2023

DRAFT





November 9, 2023

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

Re: GASB 67 Reporting – Actuarial Information – Kentucky Employees Retirement System

Dear Members of the Board:

This report provided herein contains certain information for the **Kentucky Employees Retirement System (KERS)** in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67, “Financial Reporting for Pension Plans” for the fiscal year ending June 30, 2023. A separate report will be provided at a later date with additional accounting information determined in accordance with GASB Statement No. 68, “Accounting and Financial Reporting for Pensions”.

The liability calculations presented in this report were performed for the purpose of satisfying the requirements of GASB No. 67 and are not applicable for other purposes, such as determining the plan’s funding requirements. The plan’s liability for other purposes may produce significantly different results. This report may be provided to parties other than the Board of Trustees of the Kentucky Retirement Systems only in its entirety and only with the permission of the Board.

The total pension liability, net pension liability, and sensitivity information shown in this report are based on an actuarial valuation date of June 30, 2022. The total pension liability was rolled-forward from the valuation date to the plan’s fiscal year ending June 30, 2023 using generally accepted actuarial principles. GASB 67 requires the disclosure of a 10-year history of certain information in the Required Supplementary Information within the annual financial report. Information disclosed for years prior to June 30, 2017 were prepared by the prior actuary.

Actuarial Assumptions

The Board of Trustees adopted new actuarial assumptions on June 5, 2023. These assumptions are documented in the report titled “2022 Actuarial Experience Study for the Period Ending June 30, 2022”. The Total Pension Liability as of June 30, 2023 is determined using these updated assumptions.

Plan Provisions

House Bill 506 passed during the 2023 legislative session and reinstated the Partial Lump-Sum Optional Form of payment for members who retire on and after January 1, 2024, with the lump-sum payment options expanded to include to 48 or 60 times the member’s monthly retirement allowance.

Board of Trustees
November 9, 2023
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Since this optional form of payment results in a reduced, actuarial equivalent, monthly retirement allowance for members who elect a partial lump-sum option, this provision does not have a fiscal impact to the total pension liability.

House Bill 506 also adjusted the minimum required separation period before a retiree may become reemployed and continue to receive their retirement allowance to one month for all circumstances for each plan. This is a minimal change for members in the hazardous plan, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe this provision of House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members and therefore have reflected no fiscal impact to the total pension liability of the hazardous plan.

Similarly, this is a relatively small change for future retirees in the non-hazardous plan. But as the minimum separation period was previously three months in almost every circumstance, we have assumed that there would be a 1.0% increase in the rate of retirement for each of the first two years a non-hazardous member becomes retirement eligible under the age of 65, in order to reflect a shift in the retirement pattern. The total pension liability as of June 30, 2023 for the non-hazardous plan is determined using these updated benefit provisions.

There have been no other plan provision changes that would materially impact the total pension liability since June 30, 2022. It is our opinion that these procedures for determining the information contained in these reports are reasonable, appropriate, and comply with applicable requirements under GASB No. 67.

Single Discount Rate

Single discount rates of 5.25% for the non-hazardous plan and 6.25% for the hazardous plan were used to measure the total pension liability for the fiscal year ending June 30, 2023. This single discount rate was based on the expected rate of return on pension plan investments for each plan. Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the pension plan's fiduciary net position and future contributions were projected to be sufficient to finance all the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of the projected benefit payments to determine the total pension liability for each plan.

The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Future contributions are projected assuming that the entire actuarially determined employer contribution is received by each plan each future year, calculated in accordance with the current funding policy.

401(h) Subaccount

Based on guidance issued by GASB in connection with GASB Statement No. 74, the 1% of pay member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered an OPEB asset. As a result, the reported fiduciary net positions as of June 30, 2017 and later are net of the 401(h) asset balance.



Board of Trustees
November 9, 2023
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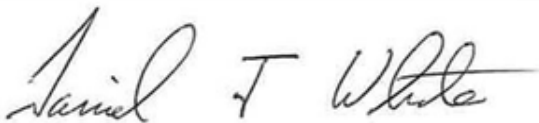
Additional Disclosures

This report is based upon information, furnished to us by the Kentucky Public Pensions Authority (KPPA), which includes benefit provisions, membership information, and financial data. We did not audit this data and information, but we did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KPPA. Please see the "Actuarial Valuation Report as of June 30, 2022" and the "2022 Actuarial Experience Study for the Period Ending June 30, 2022" for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for the fiscal year ending June 30, 2023.

To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

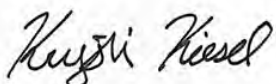
Gabriel Roeder Smith & Co.



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



Janie Shaw, ASA, EA, MAAA
Consultant and Actuary



Krysti Kiesel, ASA, MAAA
Consultant and Actuary



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SECTION 1

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EXHIBIT 1a

Schedule of the Employers' Net Pension Liability – KERS Non-Hazardous Plan
(\$ in thousands)

Fiscal Year Ending June 30,	Total Pension Liability	Plan Fiduciary Net Position	Employers' Net Pension Liability (Asset)	Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	Covered Employee Payroll ¹	Net Pension Liability as a Percentage of Covered Employee Payroll
(1)	(2)	(3)	(4) = (2) - (3)	(5) = (3) / (2)	(6)	(7) = (4) / (6)
2023	\$ 15,858,669	\$ 3,539,943	\$ 12,318,726	22.32%	\$ 1,648,318	747.35%
2022	16,281,188	3,013,845	13,267,343	18.51%	1,432,960	925.87%
2021	16,335,657	3,018,660	13,316,997	18.48%	1,441,337	923.93%
2020	16,472,733	2,308,080	14,164,653	14.01%	1,476,156	959.56%
2019	16,356,674	2,233,672	14,123,002	13.66%	1,485,854	950.50%
2018	15,608,221	2,004,446	13,603,775	12.84%	1,509,955	900.94%
2017	15,445,206	2,056,870	13,388,336	13.32%	1,602,396	835.52%
2016	13,379,781	1,980,292	11,399,489	14.80%	1,631,025	698.92%
2015	12,359,673	2,327,783	10,031,890	18.83%	1,544,234	649.64%
2014	11,550,110	2,578,291	8,971,819	22.32%	1,577,496	568.74%

Note:

¹ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

EXHIBIT 1b

Schedule of the Employers' Net Pension Liability – KERS Hazardous Plan
(\$ in thousands)

Fiscal Year Ending June 30,	Total Pension Liability	Plan Fiduciary Net Position	Employers' Net Pension Liability (Asset)	Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	Covered Employee Payroll ¹	Net Pension Liability as a Percentage of Covered Employee Payroll
(1)	(2)	(3)	(4) = (2) - (3)	(5) = (3) / (2)	(6)	(7) = (4) / (6)
2023	\$ 1,316,521	\$ 893,533	\$ 422,988	67.87%	\$ 223,922	188.90%
2022	1,318,494	810,978	507,516	61.51%	188,648	269.03%
2021	1,311,767	866,140	445,627	66.03%	172,725	258.00%
2020	1,251,027	690,350	560,677	55.18%	171,840	326.28%
2019	1,227,226	680,932	546,294	55.49%	160,600	340.16%
2018	1,150,610	645,485	505,125	56.10%	152,936	330.29%
2017	1,098,630	601,529	497,101	54.75%	178,511	278.47%
2016	919,517	527,879	391,638	57.41%	158,828	246.58%
2015	895,433	552,468	342,965	61.70%	128,680	266.53%
2014	816,850	561,484	255,366	68.74%	129,076	197.84%

Note:

¹ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

EXHIBIT 2a

Schedule of the Employers' Net Pension Liability – KERS Non-Hazardous Plan

(\$ in thousands)

Change in the Net Pension Liability	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total pension liability										
Service Cost	\$ 163,563	\$ 165,616	\$ 171,472	\$ 179,702	\$ 184,988	\$ 195,681	\$ 143,858	\$ 139,631	\$ 143,847	\$ 133,361
Interest	827,579	830,440	838,084	832,178	793,163	785,123	870,725	891,897	859,509	853,653
Benefit Changes	2,024	0	2,091	0	0	9,624	0	0	0	0
Difference between actual and expected experience	310,954	(15,034)	(130,268)	115,515	70,529	153,565	(134,379)	0	30,958	0
Assumption Changes	(691,088)	0	0	0	700,464	0	2,145,530	923,999	694,592	0
Benefit Payments	(1,035,551)	(1,035,491)	(1,018,455)	(1,011,336)	(1,000,691)	(980,978)	(960,309)	(935,419)	(919,343)	(903,564)
Net Change in Total Pension Liability	\$ (422,519)	\$ (54,469)	\$ (137,076)	\$ 116,059	\$ 748,453	\$ 163,015	\$ 2,065,425	\$ 1,020,108	\$ 809,563	\$ 83,450
Total Pension Liability - Beginning	\$ 16,281,188	\$ 16,335,657	\$ 16,472,733	\$ 16,356,674	\$ 15,608,221	\$ 15,445,206	\$ 13,379,781	\$ 12,359,673	\$ 11,550,110	\$ 11,466,660
Total Pension Liability - Ending (a)	\$ 15,858,669	\$ 16,281,188	\$ 16,335,657	\$ 16,472,733	\$ 16,356,674	\$ 15,608,221	\$ 15,445,206	\$ 13,379,781	\$ 12,359,673	\$ 11,550,110
Plan Fiduciary Net Position¹										
Contributions - Employer	\$ 1,275,007	\$ 1,116,869 ⁶	\$ 1,134,232 ⁶	\$ 948,592	\$ 1,035,462	\$ 689,143	\$ 757,121	\$ 513,084	\$ 521,691	\$ 296,836
Contributions - Member ²	84,579	89,607	90,202	96,594	93,759	104,972	100,543	106,495	104,606	97,487
Refunds of contributions to members	(11,847)	(12,116)	(8,953)	(11,523)	(12,342)	(13,603)	(11,819)	(12,130)	(13,552)	(13,627)
Retirement benefits	(1,023,704)	(1,023,375)	(1,009,502)	(999,813)	(988,349)	(967,375)	(948,490)	(923,288)	(905,791)	(889,937)
Net Investment Income ²	215,880	(162,461)	516,223	52,499	112,371	144,881	220,985	(20,663)	44,570	337,923
Administrative Expense	(13,817)	(13,339)	(11,622)	(11,941)	(11,712)	(10,692)	(10,957)	(10,989)	(10,474)	(11,145)
Other	0	0	0	0	37 ⁵	301 ⁵	(30,805) ⁴	0	8,442	0
Net Change in Plan Fiduciary Net Position	\$ 526,098	\$ (4,815)	\$ 710,580	\$ 74,408	\$ 229,226	\$ (52,373)	\$ 76,578	\$ (347,491)	\$ (250,508)	\$ (182,463)
Plan Fiduciary Net Position - Beginning	\$ 3,013,845	\$ 3,018,660	\$ 2,308,080	\$ 2,233,672	\$ 2,004,446	\$ 2,056,870	\$ 1,980,292	\$ 2,327,783	\$ 2,578,291	\$ 2,760,754
Prior Year Adjustment	0	0	0	0	0	(51)	0	0	0	0
Plan Fiduciary Net Position - Ending (b)	\$ 3,539,943	\$ 3,013,845	\$ 3,018,660	\$ 2,308,080	\$ 2,233,672	\$ 2,004,446	\$ 2,056,870	\$ 1,980,292	\$ 2,327,783	\$ 2,578,291
Net Pension Liability - Ending (a) - (b)	\$ 12,318,726	\$ 13,267,343	\$ 13,316,997	\$ 14,164,653	\$ 14,123,002	\$ 13,603,775	\$ 13,388,336	\$ 11,399,489	\$ 10,031,890	\$ 8,971,819
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	22.32%	18.51%	18.48%	14.01%	13.66%	12.84%	13.32%	14.80%	18.83%	22.32%
Covered Employee Payroll³	\$ 1,648,318	\$ 1,432,960	\$ 1,441,337	\$ 1,476,156	\$ 1,485,854	\$ 1,509,955	\$ 1,602,396	\$ 1,631,025	\$ 1,544,234	\$ 1,577,496
Net Pension Liability as a Percentage of Covered Employee Payroll	747.35%	925.87%	923.93%	959.56%	950.50%	900.94%	835.52%	698.92%	649.64%	568.74%

Notes:

¹ Does not include 401(h) assets for fiscal years 2017 and later. 401(h) assets totaled \$67,263,000 as of June 30, 2023

² Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later

For fiscal year 2023, 401(h) contributions equaled -\$12,000; and associated investment return equaled \$4,378,000

³ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later

⁴ Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later

⁵ Northern Trust Settlement

⁶ Includes \$63.1 million and \$175.6 million employer cessation contributions in fiscal years 2022 and 2021, respectively



EXHIBIT 2b

Schedule of the Employers' Net Pension Liability – KERS Hazardous Plan (\$ in thousands)

Change in the Net Pension Liability	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total pension liability										
Service Cost	\$ 26,852	\$ 26,885	\$ 28,450	\$ 25,568	\$ 27,117	\$ 28,641	\$ 21,081	\$ 20,751	\$ 18,729	\$ 16,880
Interest	79,822	79,422	75,743	74,357	69,657	66,536	66,589	64,851	61,005	59,594
Benefit Changes	0	0	26	0	0	705	0	0	0	0
Difference between actual and expected experience	(1,773)	(17,557)	34,789	(1,095)	1,395	24,215	26,902	0	6,067	0
Assumption Changes	(24,197)	0	0	0	50,658	0	127,878	0	52,165	0
Benefit Payments	(82,677)	(82,023)	(78,268)	(75,029)	(72,211)	(68,117)	(63,338)	(61,518)	(59,383)	(57,151)
Net Change in Total Pension Liability	\$ (1,973)	\$ 6,727	\$ 60,740	\$ 23,801	\$ 76,616	\$ 51,980	\$ 179,112	\$ 24,084	\$ 78,583	\$ 19,323
Total Pension Liability - Beginning	\$ 1,318,494	\$ 1,311,767	\$ 1,251,027	\$ 1,227,226	\$ 1,150,610	\$ 1,098,630	\$ 919,517	\$ 895,433	\$ 816,850	\$ 797,527
Total Pension Liability - Ending (a)	\$ 1,316,521	\$ 1,318,494	\$ 1,311,767	\$ 1,251,027	\$ 1,227,226	\$ 1,150,610	\$ 1,098,630	\$ 919,517	\$ 895,433	\$ 816,850
Plan Fiduciary Net Position¹										
Contributions - Employer	\$ 72,807	\$ 59,055	\$ 62,200	\$ 59,115	\$ 55,259	\$ 43,661	\$ 52,974	\$ 23,759	\$ 28,536	\$ 11,670
Contributions - Member ²	17,459	20,588	19,961	19,769	17,118	17,891	17,524	15,739	13,207	12,546
Refunds of contributions to members	(4,041)	(4,976)	(4,380)	(3,168)	(2,684)	(2,501)	(2,106)	(2,211)	(2,610)	(2,830)
Retirement benefits	(78,636)	(77,047)	(73,888)	(71,861)	(69,527)	(65,616)	(61,231)	(59,306)	(56,773)	(54,320)
Net Investment Income ²	76,479	(51,317)	173,152	6,739	36,380	51,467	70,994	(1,653)	8,701	80,724
Administrative Expense	(1,513)	(1,465)	(1,255)	(1,176)	(1,103)	(975)	(919)	(916)	(844)	(897)
Other	0	0	0	0	4 ⁵	33 ⁵	(3,586) ⁴	0	767	0
Net Change in Plan Fiduciary Net Position	\$ 82,555	\$ (55,162)	\$ 175,790	\$ 9,418	\$ 35,447	\$ 43,960	\$ 73,650	\$ (24,588)	\$ (9,016)	\$ 46,893
Plan Fiduciary Net Position - Beginning	\$ 810,978	\$ 866,140	\$ 690,350	\$ 680,932	\$ 645,485	\$ 601,529	\$ 527,879	\$ 552,468	\$ 561,484	\$ 514,591
Prior Year Adjustment	0	0	0	0	0	(4)	0	0	0	0
Plan Fiduciary Net Position - Ending (b)	\$ 893,533	\$ 810,978	\$ 866,140	\$ 690,350	\$ 680,932	\$ 645,485	\$ 601,529	\$ 527,879	\$ 552,468	\$ 561,484
Net Pension Liability - Ending (a) - (b)	\$ 422,988	\$ 507,516	\$ 445,627	\$ 560,677	\$ 546,294	\$ 505,125	\$ 497,101	\$ 391,638	\$ 342,965	\$ 255,366
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	67.87%	61.51%	66.03%	55.18%	55.49%	56.10%	54.75%	57.41%	61.70%	68.74%
Covered Employee Payroll³	\$ 223,922	\$ 188,648	\$ 172,725	\$ 171,840	\$ 160,600	\$ 152,936	\$ 178,511	\$ 158,828	\$ 128,680	\$ 129,076
Net Pension Liability as a Percentage of Covered Employee Payroll	188.90%	269.03%	258.00%	326.28%	340.16%	330.29%	278.47%	246.58%	266.53%	197.84%

Notes:

¹ Does not include 401(h) assets for fiscal years 2017 and later. 401(h) assets totaled \$9,034,000 as of June 30, 2023

² Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later

For fiscal year 2023, 401(h) contributions equaled -\$7,000; and associated investment return equaled \$781,000

³ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later

⁴ Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later

⁵ Northern Trust Settlement



EXHIBIT 3a

Schedule of Employers' Contributions – KERS Non-Hazardous Plan
(\$ in thousands)

Fiscal Year Ending	Actuarially Determined Contribution ¹	Total Employer Contributions	Contribution Deficiency (Excess)	Covered Employee Payroll ²	Actual Contributions as a Percentage of Covered Payroll
2023	\$ 1,034,918	\$ 1,275,007	\$ (240,089)	\$ 1,648,318	77.35%
2022	1,048,861	1,116,869	(68,008)	1,432,960	77.94%
2021	1,056,211	1,134,232	(78,021)	1,441,337	78.69%
2020	1,048,513	948,592	99,921	1,476,156	64.26%
2019	1,055,402	1,035,462	19,940	1,485,854	69.69%
2018	633,879	689,143	(55,264)	1,509,955	45.64%
2017	623,813	757,121	(133,308)	1,602,396	47.25%
2016	512,670	513,084	(414)	1,631,025	31.46%
2015	520,948	521,691	(743)	1,544,234	33.78%
2014	520,765	296,836	223,929	1,577,496	18.82%

Notes:

¹ Actuarially determined contribution for fiscal year ending 2023 is based on the contribution requirement calculated with the June 30, 2021 actuarial valuation.

² Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.



EXHIBIT 3b

Schedule of Employers' Contributions – KERS Hazardous Plan
(\$ in thousands)

Fiscal Year Ending	Actuarially Determined Contribution ¹	Total Employer Contributions	Contribution Deficiency (Excess)	Covered Employee Payroll ²	Actual Contributions as a Percentage of Covered Payroll
2023	\$ 72,778	\$ 72,807	\$ (29)	\$ 223,922	32.51%
2022	59,052	59,055	(3)	188,648	31.30%
2021	62,181	62,200	(19)	172,725	36.01%
2020	59,096	59,115	(19)	171,840	34.40%
2019	55,230	55,259	(29)	160,600	34.41%
2018	31,321	43,661	(12,340)	152,936	28.55%
2017	37,630	52,974	(15,344)	178,511	29.68%
2016	23,690	23,759	(69)	158,828	14.96%
2015	28,374	28,536	(162)	128,680	22.18%
2014	13,570	11,670	1,900	129,076	9.04%

Notes:

¹ Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021 actuarial valuation.

² Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.



Notes to Schedule of Employers' Contributions for FYE 2023

The actuarially determined contributions effective for fiscal year ending 2023 that are documented in the schedules on the previous pages were calculated as of June 30, 2021. Based on the June 30, 2021 actuarial valuation report, the actuarial methods and assumptions used to calculate these contribution rates are below:

Item	KERS Non-Hazardous Plan	KERS Hazardous Plan
Determined by the Actuarial Valuation as of:	June 30, 2021	June 30, 2021
Actuarial Cost Method:	Entry Age Normal	Entry Age Normal
Asset Valuation Method:	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay	Level Percent of Pay
Amortization Period:	30-year closed period at June 30, 2019 <i>Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases</i>	30-year closed period at June 30, 2019 <i>Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases</i>
Payroll Growth Rate	0.00%	0.00%
Investment Return:	5.25%	6.25%
Inflation:	2.30%	2.30%
Salary Increases:	3.30% to 15.30%, varies by service	3.55% to 20.05%, varies by service
Mortality:	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019



EXHIBIT 4

Sensitivity of the Net Pension Liability to Changes in the Discount Rate
(\$ in thousands)

Table 1. Sensitivity of the Net Pension Liability to Changes in the Discount Rate for KERS (Non-Hazardous)

1.00% Decrease (4.25%)	Current Discount Rate (5.25%)	1.00% Increase (6.25%)
\$ 14,159,095	\$ 12,318,726	\$ 10,793,619

Table 2. Sensitivity of the Net Pension Liability to Changes in the Discount Rate for KERS (Hazardous)

1.00% Decrease (5.25%)	Current Discount Rate (6.25%)	1.00% Increase (7.25%)
\$ 580,511	\$ 422,988	\$ 295,371

State Police Retirement System

GASB No. 67 Accounting Valuation Report

As of June 30, 2023

DRAFT





September 20, 2023

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

Re: GASB 67 Reporting – Actuarial Information – State Police Retirement System

Dear Members of the Board:

This report provided herein contains certain information for the **State Police Retirement System (SPRS)** in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67, “Financial Reporting for Pension Plans” for the fiscal year ending June 30, 2023. A separate report will be provided at a later date with additional accounting information determined in accordance with GASB Statement No. 68, “Accounting and Financial Reporting for Pensions”.

The liability calculations presented in this report were performed for the purpose of satisfying the requirements of GASB No. 67 and are not applicable for other purposes, such as determining the plan’s funding requirements. The plan’s liability for other purposes may produce significantly different results. This report may be provided to parties other than the Board of Trustees of the Kentucky Retirement Systems only in its entirety and only with the permission of the Board.

The total pension liability, net pension liability, and sensitivity information shown in this report are based on an actuarial valuation date of June 30, 2022. The total pension liability was rolled-forward from the valuation date to the plan’s fiscal year ending June 30, 2023 using generally accepted actuarial principles. GASB 67 requires the disclosure of a 10-year history of certain information in the Required Supplementary Information within the annual financial report. Information disclosed for years prior to June 30, 2017 were prepared by the prior actuary.

Actuarial Assumptions

The Board of Trustees adopted new actuarial assumptions on June 5, 2023. These assumptions are documented in the report titled “2022 Actuarial Experience Study for the Period Ending June 30, 2022”. The Total Pension Liability as of June 30, 2023 is determined using these updated assumptions.

Plan Provisions

House Bill 506 passed during the 2023 legislative session and reinstated the Partial Lump-Sum Optional Form of payment for members who retire on and after January 1, 2024, with the lump-sum payment options expanded to include to 48 or 60 times the member’s monthly retirement allowance.

Board of Trustees
September 20, 2023
Page 2

Since this optional form of payment results in a reduced, actuarial equivalent, monthly retirement allowance for members who elect a partial lump-sum option, this provision does not have a fiscal impact to the total pension liability.

House Bill 506 also adjusted the minimum required separation period before a retiree may become reemployed and continue to receive their retirement allowance to one month for all circumstances for each plan. This is a minimal change for members in SPRS, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe this provision of House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members and therefore have reflected no fiscal impact to the total pension liability.

There have been no other plan provision changes that would materially impact the total pension liability since June 30, 2022. It is our opinion that these procedures for determining the information contained in these reports are reasonable, appropriate, and comply with applicable requirements under GASB No. 67.

Single Discount Rate

A single discount rate of 5.25% was used to measure the total pension liability for the fiscal year ending June 30, 2023. This single discount rate was based on the expected rate of return on pension plan investments. Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the pension plan's fiduciary net position and future contributions were projected to be sufficient to finance all the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of the projected benefit payments to determine the total pension liability.

The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Future contributions are projected assuming that the entire actuarially determined employer contribution is received each future year, calculated in accordance with the current funding policy.

401(h) Subaccount

Based on guidance issued by GASB in connection with GASB Statement No. 74, the 1% of pay member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered an OPEB asset. As a result, the reported fiduciary net positions as of June 30, 2017 and later are net of the 401(h) asset balance.

Additional Disclosures

This report is based upon information, furnished to us by the Kentucky Public Pensions Authority (KPPA), which includes benefit provisions, membership information, and financial data. We did not audit this data and information, but we did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KPPA. Please see the "Actuarial Valuation Report as of June 30, 2022" and the "2022 Actuarial Experience Study for the Period Ending June 30, 2022" for additional discussion of the nature of the actuarial calculations and more

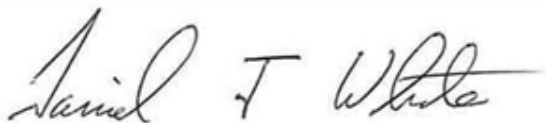


Board of Trustees
September 20, 2023
Page 3

information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for the fiscal year ending June 30, 2023. To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All three of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

Gabriel Roeder Smith & Co.



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



Janie Shaw, ASA, EA, MAAA
Consultant and Actuary



Krysti Kiesel, ASA, MAAA
Senior Analyst and Actuary



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SECTION 1

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EXHIBIT 1

Schedule of the Employers' Net Pension Liability – SPRS Plan
(\$ in thousands)

Fiscal Year Ending June 30,	Total Pension Liability	Plan Fiduciary Net Position	Employers' Net Pension Liability (Asset)	Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	Covered Employee Payroll ¹	Net Pension Liability as a Percentage of Covered Employee Payroll
(1)	(2)	(3)	(4) = (2) - (3)	(5) = (3) / (2)	(6)	(7) = (4) / (6)
2023	\$ 1,039,813	\$ 591,514	\$ 448,299	56.89%	\$ 65,693	682.42%
2022	1,057,752	551,699	506,053	52.16%	48,061	1,052.94%
2021	1,055,824	356,346	699,478	33.75%	47,873	1,461.11%
2020	1,049,237	293,949	755,288	28.02%	49,019	1,540.81%
2019	1,035,000	286,165	748,835	27.65%	49,515	1,512.34%
2018	969,622	267,572	702,050	27.60%	50,346	1,394.45%
2017	943,271	255,737	687,534	27.11%	54,065	1,271.68%
2016	795,421	218,012	577,409	27.41%	46,685	1,236.82%
2015	734,156	247,228	486,928	33.68%	45,765	1,063.97%
2014	681,118	260,974	420,144	38.32%	44,616	941.69%

Note:

¹ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.

EXHIBIT 2

Schedule of the Employers' Net Pension Liability – SPRS Plan

(\$ in thousands)

Change in the Net Pension Liability	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total pension liability										
Service Cost	\$ 13,229	\$ 12,158	\$ 12,530	\$ 13,192	\$ 11,726	\$ 11,890	\$ 8,297	\$ 8,402	\$ 7,695	\$ 7,142
Interest	53,853	53,740	53,417	52,697	49,301	47,978	51,769	52,951	50,661	50,391
Benefit Changes	0	3,130	35	0	0	184	0	0	0	0
Difference between actual and expected experience	10,204	(2,700)	4,127	10,859	20,952	25,126	8,143	0	9,331	0
Assumption Changes	(31,255)	0	0	0	44,510	0	136,602	56,191	40,201	0
Benefit Payments	(63,970)	(64,400)	(63,522)	(62,511)	(61,111)	(58,827)	(56,960)	(56,279)	(54,850)	(53,239)
Net Change in Total Pension Liability	\$ (17,939)	\$ 1,928	\$ 6,587	\$ 14,237	\$ 65,378	\$ 26,351	\$ 147,850	\$ 61,265	\$ 53,038	\$ 4,294
Total Pension Liability - Beginning	\$ 1,057,752	\$ 1,055,824	\$ 1,049,237	\$ 1,035,000	\$ 969,622	\$ 943,271	\$ 795,421	\$ 734,156	\$ 681,118	\$ 676,824
Total Pension Liability - Ending (a)	\$ 1,039,813	\$ 1,057,752	\$ 1,055,824	\$ 1,049,237	\$ 1,035,000	\$ 969,622	\$ 943,271	\$ 795,421	\$ 734,156	\$ 681,118
Plan Fiduciary Net Position¹										
Contributions - Employer	\$ 58,120	\$ 277,341	\$ 59,650	\$ 59,453	\$ 60,048	\$ 46,877	\$ 63,239	\$ 25,822	\$ 31,990	\$ 20,279
Contributions - Member ²	5,250	4,773	4,752	4,767	5,062	5,522	5,348	5,263	5,244	5,075
Refunds of contributions to members	(166)	(280)	(273)	(88)	(162)	(22)	(26)	(11)	(85)	(213)
Retirement benefits	(63,804)	(64,120)	(63,249)	(62,423)	(60,949)	(58,805)	(56,934)	(56,268)	(54,765)	(53,026)
Net Investment Income ²	40,708	(22,088)	61,729	6,341	14,816	18,437	26,795	(3,843)	3,426	40,374
Administrative Expense	(293)	(273)	(212)	(266)	(225)	(194)	(181)	(178)	(201)	(215)
Other	0	0	0	0	3 ⁵	21 ⁵	(517) ⁴	0	645	0
Net Change in Plan Fiduciary Net Position	\$ 39,815	\$ 195,353	\$ 62,397	\$ 7,784	\$ 18,593	\$ 11,836	\$ 37,724	\$ (29,215)	\$ (13,746)	\$ 12,274
Plan Fiduciary Net Position - Beginning	\$ 551,699	\$ 356,346	\$ 293,949	\$ 286,165	\$ 267,572	\$ 255,737	\$ 218,012	\$ 247,228	\$ 260,974	\$ 248,700
Prior Year Adjustment	0	0	0	0	0	(1)	0	0	0	0
Plan Fiduciary Net Position - Ending (b)	\$ 591,514	\$ 551,699	\$ 356,346	\$ 293,949	\$ 286,165	\$ 267,572	\$ 255,737	\$ 218,012	\$ 247,228	\$ 260,974
Net Pension Liability - Ending (a) - (b)	\$ 448,299	\$ 506,053	\$ 699,478	\$ 755,288	\$ 748,835	\$ 702,050	\$ 687,534	\$ 577,409	\$ 486,928	\$ 420,144
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	56.89%	52.16%	33.75%	28.02%	27.65%	27.60%	27.11%	27.41%	33.68%	38.32%
Covered Employee Payroll³	\$ 65,693	\$ 48,061	\$ 47,873	\$ 49,019	\$ 49,515	\$ 50,346	\$ 54,065	\$ 46,685	\$ 45,765	\$ 44,616
Net Pension Liability as a Percentage of Covered Employee Payroll	682.42%	1052.94%	1461.11%	1540.81%	1512.34%	1394.45%	1271.68%	1236.82%	1063.97%	941.69%

Notes:

¹ Does not include 401(h) assets for fiscal years 2017 and later. 401(h) assets totaled \$1,312,000 as of June 30, 2023

² Does not include 401(h) contributions or associated investment income for fiscal years 2017 and later

For fiscal year 2023, 401(h) contributions equaled -\$8,000; and associated investment return equaled \$93,000

³ Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later

⁴ Adjustment due to 401(h) plan asset balance being considered an OPEB asset under GASB 74 for fiscal years 2017 and later

⁵ Northern Trust Settlement



EXHIBIT 3

Schedule of Employers' Contributions – SPRS Plan
(\$ in thousands)

Fiscal Year Ending	Actuarially Determined Contribution¹	Total Employer Contributions	Contribution Deficiency (Excess)	Covered Employee Payroll²	Actual Contributions as a Percentage of Covered Payroll
2023	\$ 58,120	\$ 58,120	\$ -	\$ 65,693	88.47%
2022	62,341	277,341	(215,000)	48,061	577.06%
2021	59,263	59,650	(387)	47,873	124.60%
2020	58,358	59,453	(1,095)	49,019	121.29%
2019	58,948	60,048	(1,100)	49,515	121.27%
2018	36,033	46,877	(10,844)	50,346	93.11%
2017	35,937	63,240	(27,303)	54,065	116.97%
2016	25,723	25,822	(99)	46,685	55.31%
2015	31,444	31,990	(546)	45,765	69.90%
2014	25,808	20,279	5,529	44,616	45.45%

Notes:

¹ Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021 actuarial valuation, as amended by HB1 passed during the 2022 legislative session.

² Based on derived compensation using the provided employer contribution information for fiscal years 2017 and later.



Notes to Schedule of Employers' Contributions for FYE 2023

The actuarially determined contribution effective for fiscal year ending 2023 that is documented in the schedule on the previous page was calculated as of June 30, 2021. Based on the June 30, 2021 actuarial valuation report, the actuarial methods and assumptions used to calculate these contribution rates are below:

Item	SPRS Plan
Determined by the Actuarial Valuation as of:	June 30, 2021
Actuarial Cost Method:	Entry Age Normal
Asset Valuation Method:	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay
Amortization Period:	30-year closed period at June 30, 2019 <i>Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases</i>
Payroll Growth Rate	0.00%
Investment Return:	5.25%
Inflation:	2.30%
Salary Increases:	3.55% to 16.05%, varies by service
Mortality:	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019

EXHIBIT 4

Sensitivity of the Net Pension Liability to Changes in the Discount Rate
 (\$ in thousands)

1.00% Decrease (4.25%)	Current Discount Rate (5.25%)	1.00% Increase (6.25%)
\$ 577,298	\$ 448,299	\$ 342,465

Kentucky Employees Retirement System

GASB No. 74 Accounting Valuation Report
As of June 30, 2023

DRAFT





November 9, 2023

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

Re: GASB No. 74 Reporting – Actuarial Information – Kentucky Employees Retirement System

Dear Members of the Board:

This report provided herein contains certain information for the **Kentucky Employees Retirement System (KERS)** in connection with the Governmental Accounting Standards Board (GASB) Statement No. 74, “Financial Reporting for Postemployment Benefit Plans Other than Pension Plans” for the fiscal year ending June 30, 2023. A separate report will be provided at a later date with additional accounting information determined in accordance with GASB Statement No. 75, “Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions”.

The liability calculations presented in this report were performed for the purpose of satisfying the requirements of GASB No. 74 and are not applicable for other purposes, such as determining the plan’s funding requirements. The plan’s liability for other purposes may produce significantly different results. This report may be provided to parties other than the Board of Trustees of the Kentucky Retirement Systems only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The total OPEB liability, net OPEB liability, and sensitivity information shown in this report are based on an actuarial valuation date of June 30, 2022. The total OPEB liability was rolled-forward from the valuation date to the plan’s fiscal year ending June 30, 2023, using generally accepted actuarial principles. GASB No. 74 requires the disclosure of a 10-year history of certain information in the Required Supplementary Information within the annual financial report. The exhibits provided in this report include the applicable information for historical years that were calculated in accordance with this accounting standard. Information disclosed for years prior to June 30, 2017 were prepared by the prior actuary.

Actuarial Assumptions

The Board of Trustees adopted new actuarial assumptions on June 5, 2023. These assumptions are documented in the report titled “2022 Actuarial Experience Study for the Period Ending June 30, 2022”. Additionally, the discount rate used to calculate the total OPEB liability increased from 5.72% to 5.94% for the non-hazardous plan and from 5.59% to 5.94% for the hazardous plan (see further discussion on the calculation of the single discount rate later in this letter). The Total OPEB Liability as of June 30, 2023 is determined using these updated assumptions.

Board of Trustees
November 9, 2023
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Plan Provisions

House Bill 506 passed during the 2023 legislative session and adjusted the minimum required separation period before a retiree may become reemployed to be one month for all circumstances for each System maintained by KPPA. This is a minimal change for members in the hazardous plan, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members and therefore have reflected no fiscal impact to the total OPEB liability of the hazardous plan.

Similarly, this is a relatively small change for future retirees in the non-hazardous plan. But as the minimum separation period was previously three months in almost every circumstance, we have assumed that there would be a 1.0% increase in the rate of retirement for each of the first two years a non-hazardous member becomes retirement eligible under the age of 65, in order to reflect a shift in the retirement pattern. The total OPEB liability as of June 30, 2023 for the non-hazardous plan is determined using these updated benefit provisions.

There were no other plan provision changes that would materially impact the total OPEB liability since June 30, 2022. It is our opinion that these procedures for determining the information contained in these reports are reasonable and appropriate, and comply with applicable requirements under GASB No. 74.

Implicit Employer Subsidy for Non-Medicare Retirees

The fully-insured premiums paid for the Kentucky Employees' Health Plan are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit employer subsidy for the non-Medicare eligible retirees. GASB No. 74 requires that the liability associated with this implicit subsidy be included in the calculation of the Total OPEB Liability.

Single Discount Rate

Single discount rates of 5.94% for the non-hazardous plan and 5.94% for the hazardous plan were used to measure the total OPEB liability for the fiscal year ending June 30, 2023. They are based on the expected rate of return on OPEB plan investments of 6.50% and a municipal bond rate of 3.86%, as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2023.

Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the plan's fiduciary net position and future contributions were projected to be sufficient to finance the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on insurance plan investments was applied to all periods of the projected benefit payments paid from the retirement system. However, the cost associated with the implicit employer subsidy is not currently being included in the calculation of the plan's actuarial determined contributions, and it is our understanding that any cost associated with the implicit subsidy will not be paid out of the plan's trust. Therefore, the municipal bond rate was applied to future expected benefit payments associated with the implicit subsidy.



Board of Trustees
November 9, 2023
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The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Future contributions are projected assuming that the entire actuarially determined employer contribution is received by each plan each future year, calculated in accordance with the current funding policy.

401(h) Subaccount

Based on guidance issued by GASB in connection with GASB Statement No. 74, the 1% of pay member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered an OPEB asset. As a result, the reported fiduciary net position includes these 401(h) assets. Additionally, these member contributions and associated investment income and administrative expenses are included in the reconciliation of the fiduciary net position.

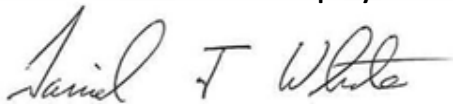
Additional Disclosures

This report is based upon information, furnished to us by the Kentucky Public Pensions Authority (KPPA), which includes benefit provisions, membership information, and financial data. We did not audit this data and information, but we did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KPPA. Please see the "Actuarial Valuation Report as of June 30, 2022" and the "2022 Actuarial Experience Study for the Period Ending June 30, 2022" for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for the fiscal year ending June 30, 2023.

To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,


Gabriel Roeder Smith & Company



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



Janie Shaw, ASA, EA, MAAA
Consultant and Actuary



Krysti Kiesel, ASA, MAAA
Consultant and Actuary



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SECTION 1

EXHIBIT 1a

Schedule of the Employers' Net OPEB Liability – KERS Non-Hazardous Plan
(\$ in thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Employee Payroll ¹	Net OPEB Liability as a Percentage of Covered Employee Payroll
(1)	(2)	(3)	(4) = (2) - (3)	(5) = (3) / (2)	(6)	(7) = (4) / (6)
2023	\$ 2,317,344	\$ 1,532,752	\$ 784,592	66.14%	\$ 1,653,492	47.45%
2022	3,576,530	1,364,419	2,212,111	38.15%	1,437,132	153.93%
2021	3,698,804	1,419,477	2,279,327	38.38%	1,452,345	156.94%
2020	3,599,557	1,060,649	2,538,908	29.47%	1,482,431	171.27%
2019	3,217,985	995,089	2,222,896	30.92%	1,515,953	146.63%
2018	3,262,117	891,205	2,370,912	27.32%	1,573,898	150.64%
2017	3,353,332	817,370	2,535,962	24.37%	1,593,097	159.18%

Note:

¹ Based on derived compensation using the provided employer contribution information.

EXHIBIT 1b

Schedule of the Employers' Net OPEB Liability – KERS Hazardous Plan
(\$ in thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Employee Payroll ¹	Net OPEB Liability as a Percentage of Covered Employee Payroll
(1)	(2)	(3)	(4) = (2) - (3)	(5) = (3) / (2)	(6)	(7) = (4) / (6)
2023	\$ 417,361	\$ 625,356	\$ (207,995)	149.84%	\$ 223,922	-92.89%
2022	595,789	588,162	7,627	98.72%	188,648	4.04%
2021	622,152	633,677	(11,525)	101.85%	172,725	-6.67%
2020	564,524	521,755	42,769	92.42%	182,209	23.47%
2019	507,204	534,053	(26,849)	105.29%	151,448	-17.73%
2018	485,904	519,072	(33,168)	106.83%	190,317	-17.43%
2017	494,869	488,838	6,031	98.78%	171,087	3.53%

Note:

¹ Based on derived compensation using the provided employer contribution information. For 2021, 2022, and 2023, derived compensation based on pension contribution information, as there were no required employer contributions for the insurance fund for FYE2021, FYE2022, and FYE2023.



EXHIBIT 2**Development of Single Discount Rate**

	<u>KERS Non-Hazardous</u>	<u>KERS Hazardous</u>
Single Discount Rate	5.94%	5.94%
Long-Term Expected Rate of Return	6.50%	6.50%
Long-Term Municipal Bond Rate ¹	3.86%	3.86%

Notes:

¹ Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2023.



EXHIBIT 3a

Schedule of the Employers' Net OPEB Liability – KERS Non-Hazardous Plan
(\$ in thousands)

Change in the Net OPEB Liability	2023	2022	2021	2020	2019	2018	2017
Total OPEB liability							
Service Cost	\$ 43,199	\$ 62,548	\$ 58,831	\$ 59,600	\$ 61,345	\$ 66,360	\$ 46,992
Interest on the total OPEB liability	200,910	190,531	191,624	179,811	186,820	191,178	192,911
Benefit Changes	3,209	21,884	1,382	0	0	1,865	0
Difference between actual and expected experience	(1,440,201)	(37,249)	(231,631)	288,235	(302,189)	(191,147)	(3,921)
Assumption Changes	61,925	(206,907)	220,184	13,767	158,004	(11,235)	414,835
Benefit Payments ^{1,2}	(128,228)	(153,081)	(141,143)	(159,841)	(148,112)	(148,236)	(139,601)
Net Change in Total OPEB Liability	(1,259,186)	(122,274)	99,247	381,572	(44,132)	(91,215)	511,216
Total OPEB Liability - Beginning	\$ 3,576,530	\$ 3,698,804	\$ 3,599,557	\$ 3,217,985	\$ 3,262,117	\$ 3,353,332	\$ 2,842,116
Total OPEB Liability - Ending (a)	\$ 2,317,344	\$ 3,576,530	\$ 3,698,804	\$ 3,599,557	\$ 3,217,985	\$ 3,262,117	\$ 3,353,332
Plan Fiduciary Net Position							
Contributions - Employer ²	\$ 156,543	\$ 181,294 ⁵	\$ 223,661 ⁵	\$ 208,300	\$ 201,155	\$ 152,985	\$ 162,636
Contributions - Member	8,358	6,547	6,318	6,128	5,963	5,786	5,156
Benefit Payments ^{1,2}	(128,228)	(153,081)	(141,143)	(159,841)	(148,112)	(148,236)	(139,601)
OPEB Plan Net Investment Income	132,431	(88,998)	270,811	11,820	45,749	64,028	94,239
OPEB Plan Administrative Expense	(771)	(820)	(819)	(847)	(875)	(760)	(861)
Other	0	0	0	0	4 ⁴	32 ⁴	0
Net Change in Plan Fiduciary Net Position	168,333	(55,058)	358,828	65,560	103,884	73,835	121,569
Plan Fiduciary Net Position - Beginning	\$ 1,364,419	\$ 1,419,477	\$ 1,060,649	\$ 995,089	\$ 891,205	\$ 817,370	\$ 695,801
Plan Fiduciary Net Position - Ending (b)	\$ 1,532,752	\$ 1,364,419	\$ 1,419,477	\$ 1,060,649	\$ 995,089	\$ 891,205	\$ 817,370
Net OPEB Liability - Ending (a) - (b)	784,592	2,212,111	2,279,327	2,538,908	2,222,896	2,370,912	2,535,962
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	66.14%	38.15%	38.38%	29.47%	30.92%	27.32%	24.37%
Covered Employee Payroll³	\$ 1,653,492	\$ 1,437,132	\$ 1,452,345	\$ 1,482,431	\$ 1,515,953	\$ 1,573,898	\$ 1,593,097
Net OPEB Liability as a Percentage of Covered Employee Payroll	47.45%	153.93%	156.94%	171.27%	146.63%	150.64%	159.18%

Notes:

¹ Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).² Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to \$27,435,836 for fiscal year 2023.³ Based on derived compensation using the provided employer contribution information.⁴ Northern Trust Settlement⁵ Includes \$2.4 million and \$28.4 million employer cessation contribution for fiscal years 2022 and 2021, respectively

EXHIBIT 3b

Schedule of the Employers' Net OPEB Liability – KERS Hazardous Plan
(\$ in thousands)

Change in the Net OPEB Liability	2023	2022	2021	2020	2019	2018	2017
Total OPEB liability							
Service Cost	\$ 9,435	\$ 14,474	\$ 13,633	\$ 11,548	\$ 12,337	\$ 12,893	\$ 8,002
Interest on the total OPEB liability	32,737	30,599	29,254	28,101	27,990	28,500	27,591
Benefit Changes	0	10,289	48	0	0	167	0
Difference between actual and expected experience	(198,459)	(12,515)	(6,402)	27,668	(30,947)	(31,240)	(1,029)
Assumption Changes	(1,820)	(46,406)	42,022	11,428	31,687	(581)	89,401
Benefit Payments ^{1,2}	(20,321)	(22,804)	(20,927)	(21,425)	(19,767)	(18,704)	(16,618)
Net Change in Total OPEB Liability	(178,428)	(26,363)	57,628	57,320	21,300	(8,965)	107,347
Total OPEB Liability - Beginning	\$ 595,789	\$ 622,152	\$ 564,524	\$ 507,204	\$ 485,904	\$ 494,869	\$ 387,522
Total OPEB Liability - Ending (a)	\$ 417,361	\$ 595,789	\$ 622,152	\$ 564,524	\$ 507,204	\$ 485,904	\$ 494,869
Plan Fiduciary Net Position							
Contributions - Employer ²	\$ 2,282	\$ 4,116	\$ 3,556	\$ 7,441	\$ 5,556	\$ 5,165	\$ 4,579
Contributions - Member	1,584	1,227	1,167	1,105	934	909	811
Benefit Payments ^{1,2}	(20,321)	(22,804)	(20,927)	(21,425)	(19,767)	(18,704)	(16,618)
OPEB Plan Net Investment Income	53,772	(27,929)	128,244	704	28,373	42,950	59,614
OPEB Plan Administrative Expense	(123)	(125)	(118)	(123)	(117)	(104)	(105)
Other	0	0	0	0	2 ⁴	18 ⁴	0
Net Change in Plan Fiduciary Net Position	37,194	(45,515)	111,922	(12,298)	14,981	30,234	48,281
Plan Fiduciary Net Position - Beginning	\$ 588,162	\$ 633,677	\$ 521,755	\$ 534,053	\$ 519,072	\$ 488,838	\$ 440,557
Plan Fiduciary Net Position - Ending (b)	\$ 625,356	\$ 588,162	\$ 633,677	\$ 521,755	\$ 534,053	\$ 519,072	\$ 488,838
Net OPEB Liability - Ending (a) - (b)	(207,995)	7,627	(11,525)	42,769	(26,849)	(33,168)	6,031
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	149.84%	98.72%	101.85%	92.42%	105.29%	106.83%	98.78%
Covered Employee Payroll³	\$ 223,922	\$ 188,648	\$ 172,725	\$ 182,209	\$ 151,448	\$ 190,317	\$ 171,087
Net OPEB Liability as a Percentage of Covered Employee Payroll	-92.89%	4.04%	-6.67%	23.47%	-17.73%	-17.43%	3.53%

Notes:

¹ Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

² Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to \$792,418 for fiscal year 2023.

³ Based on derived compensation using the provided employer contribution information. For 2021, 2022, and 2023, derived compensation based on pension contribution information, as there were no required employer contributions for the insurance fund for FYE2021, FYE2022, and FYE2023.

⁴ Northern Trust Settlement



EXHIBIT 4a

Schedule of Employers' Contributions – KERS Non-Hazardous Plan
(\$ in thousands)

Fiscal Year Ending ¹	Actuarially Determined Contribution ²	Total Employer Contributions ³	Contribution Deficiency (Excess)	Covered Employee Payroll ⁴	Actual Contributions as a Percentage of Covered Payroll
2023	\$ 123,952	\$ 129,108	\$ (5,156)	\$ 1,653,492	7.81%
2022	135,809	140,694	(4,885)	1,437,132	9.79%
2021	161,936	186,676	(24,740)	1,452,345	12.85%
2020	183,821	175,006	8,815	1,482,431	11.81%
2019	187,978	178,964	9,014	1,515,953	11.81%
2018	132,365	136,419	(4,054)	1,573,898	8.67%
2017	133,024	152,356	(19,332)	1,593,097	9.56%
2016	121,899	135,816	(13,917)	1,529,249	8.88%
2015	130,455	135,940	(5,485)	1,544,234	8.80%
2014	208,881	166,610	42,271	1,577,496	10.56%

Notes:

¹ Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

² Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021 actuarial valuation.

³ Employer contributions do not include the expected implicit subsidy included in exhibit 3.

⁴ Based on derived compensation using the provided employer contribution information.



EXHIBIT 4b**Schedule of Employers' Contributions – KERS Hazardous Plan**
(\$ in thousands)

Fiscal Year Ending ¹	Actuarially Determined Contribution ²	Total Employer Contributions ³	Contribution Deficiency (Excess)	Covered Employee Payroll ⁴	Actual Contributions as a Percentage of Covered Payroll
2023	\$ 0	\$ 1,489	\$ (1,489)	\$ 223,922	0.66%
2022	0	1,281	(1,281)	188,648	0.68%
2021	0	1,300	(1,300)	172,725	0.75%
2020	4,482	5,776	(1,294)	182,209	3.17%
2019	3,726	4,970	(1,244)	151,448	3.28%
2018	2,550	5,288	(2,738)	190,317	2.78%
2017	4,688	5,620	(932)	171,087	3.28%
2016	9,186	16,766	(7,580)	147,563	11.36%
2015	13,152	14,882	(1,730)	128,680	11.57%
2014	15,627	23,874	(8,247)	129,076	18.50%

Notes:

¹ Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

² Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021 actuarial valuation.

³ Employer contributions do not include the expected implicit subsidy included in exhibit 3.

⁴ Based on derived compensation using the provided employer contribution information. For 2021, 2022, and 2023, derived compensation based on pension contribution information, as there were no required employer contributions for the insurance fund for FYE2021, FYE2022, and FYE2023.



Notes to Schedule of Employers' Contributions for FYE 2023

The actuarially determined contributions effective for fiscal year ending 2023 that are documented in the schedule on the previous pages were calculated as of June 30, 2021. Based on the June 30, 2021 actuarial valuation report, the actuarial methods and assumptions used to calculate these contributions are below:

Item	KERS Non-Hazardous	KERS Hazardous
Determine by the Actuarial Valuation as of:	June 30, 2021	June 30, 2021
Actuarial Cost Method:	Entry Age Normal	Entry Age Normal
Asset Valuation Method:	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay	Level Percent of Pay
Amortization Period:	30-year closed period at June 30, 2019 <i>Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases</i>	30-year closed period at June 30, 2019 <i>Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases</i>
Payroll Growth Rate:	0.00%	0.00%
Investment Return:	6.25%	6.25%
Inflation:	2.30%	2.30%
Salary Increases:	3.30% to 15.30%, varies by service	3.55% to 20.05%, varies by service
Mortality:	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.
Healthcare Trend Rates: Pre-65	Initial trend starting at 6.30% at January 1, 2023, gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023, gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.
Post-65	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.



EXHIBIT 5a

Sensitivity of the Net OPEB Liability to Changes in the Discount Rate and Healthcare Trend Rate
KERS Non-Hazardous Plan
(\$ in thousands)

Table 1. Sensitivity of the Net OPEB Liability to Changes in the Discount Rate

1.00% Decrease, 4.94%	Current Discount Rate, 5.94%	1.00% Increase, 6.94%
\$ 1,055,209	\$ 784,592	\$ 557,024

Table 2. Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rate

1.00% Decrease	Current Healthcare Cost Trend Rate	1.00% Increase
\$ 575,159	\$ 784,592	\$ 1,038,116



EXHIBIT 5b

Sensitivity of the Net OPEB Liability to Changes in the Discount Rate and Healthcare Trend Rate
KERS Hazardous Plan
(\$ in thousands)

Table 1. Sensitivity of the Net OPEB Liability to Changes in the Discount Rate

1.00% Decrease, 4.94%	Current Discount Rate, 5.94%	1.00% Increase, 6.94%
\$ (155,851)	\$ (207,995)	\$ (251,094)

Table 2. Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rate

1.00% Decrease	Current Healthcare Cost Trend Rate	1.00% Increase
\$ (239,711)	\$ (207,995)	\$ (169,294)



APPENDIX 1

Appendix 1

Development of Baseline Claims Cost

For non-Medicare retirees, the initial per capita costs were developed using retiree claims experience for calendar years 2020 through 2022. The claims were projected on an incurred claim basis, adjusted for prescription drug rebates, and loaded for administrative expense. The per capita costs shown in the table below also include HRA contributions for retirees on the CDHP plans. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. The fully-insured premiums paid to the Kentucky Employees' Health Plan are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit employer subsidy for the non-Medicare eligible retirees.

For Medicare retirees, the initial per capita costs were estimated based on the plan premiums effective January 1, 2023, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees.

Age graded and sex distinct premiums are utilized by this valuation. These costs are appropriate for the unique age and sex distribution currently existing. Over the future years covered by this valuation, the age and sex distribution will most likely change. Therefore, our process "distributes" the average premium over all age/sex combinations and assigns a unique premium for each combination. The age/sex specific costs more accurately reflect the health care utilization and cost at that age.

FOR THOSE NOT ELIGIBLE FOR MEDICARE (as of January 1, 2023)		
AGE	MALE	FEMALE
40	\$373.36	\$606.68
50	605.22	745.56
60	1,028.58	1,012.80
64	1,250.79	1,180.40

FOR THOSE ELIGIBLE FOR MEDICARE (as of January 1, 2023)		
AGE	MALE	FEMALE
65	\$78.14	\$73.71
75	91.43	89.21
85	96.68	97.82

Blake Orth is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Blake Orth

Blake Orth, FSA, EA, MAAA



State Police Retirement System

GASB No. 74 Accounting Valuation Report

As of June 30, 2023

DRAFT





September 27, 2023

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

Re: GASB No. 74 Reporting – Actuarial Information – State Police Retirement System

Dear Members of the Board:

This report provided herein contains certain information for the **State Police Retirement System (SPRS)** in connection with the Governmental Accounting Standards Board (GASB) Statement No. 74, "Financial Reporting for Postemployment Benefit Plans Other than Pension Plans" for the fiscal year ending June 30, 2023. A separate report will be provided at a later date with additional accounting information determined in accordance with GASB Statement No. 75, "Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions".

The liability calculations presented in this report were performed for the purpose of satisfying the requirements of GASB No. 74 and are not applicable for other purposes, such as determining the plan's funding requirements. The plan's liability for other purposes may produce significantly different results. This report may be provided to parties other than the Board of Trustees of the Kentucky Retirement Systems only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The total OPEB liability, net OPEB liability, and sensitivity information shown in this report are based on an actuarial valuation date of June 30, 2022. The total OPEB liability was rolled-forward from the valuation date to the plan's fiscal year ending June 30, 2023, using generally accepted actuarial principles. GASB No. 74 requires the disclosure of a 10-year history of certain information in the Required Supplementary Information within the annual financial report. The exhibits provided in this report include the applicable information for historical years that were calculated in accordance with this accounting standard. Information disclosed for years prior to June 30, 2017 were prepared by the prior actuary.

Actuarial Assumptions

The Board of Trustees adopted new actuarial assumptions on June 5, 2023. These assumptions are documented in the report titled "2022 Actuarial Experience Study for the Period Ending June 30, 2022". Additionally, the discount rate used to calculate the total OPEB liability increased from 5.69% to 6.02% (see further discussion on the calculation of the single discount rate later in this letter). The Total OPEB Liability as of June 30, 2023 is determined using these updated assumptions.

Board of Trustees
September 27, 2023
Page 2

Plan Provisions

House Bill 506 passed during the 2023 legislative session and adjusted the minimum required separation period before a retiree may become reemployed to be one month for all circumstances for each System maintained by KPPA. This is a minimal change for members in SPRS, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members and therefore have reflected no fiscal impact to the total OPEB liability.

There were no other plan provision changes that would materially impact the total OPEB liability since June 30, 2022. It is our opinion that these procedures for determining the information contained in these reports are reasonable and appropriate, and comply with applicable requirements under GASB No. 74.

Implicit Employer Subsidy for Non-Medicare Retirees

The fully-insured premiums paid for the Kentucky Employees' Health Plan are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit employer subsidy for the non-Medicare eligible retirees. GASB No. 74 requires that the liability associated with this implicit subsidy be included in the calculation of the Total OPEB Liability.

Single Discount Rate

A single discount rate of 6.02% was used to measure the total OPEB liability for the fiscal year ending June 30, 2023. It is based on the expected rate of return on OPEB plan investments of 6.50% and a municipal bond rate of 3.86%, as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2023.

Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the plan's fiduciary net position and future contributions were projected to be sufficient to finance the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on insurance plan investments was applied to all periods of the projected benefit payments paid from the retirement system. However, the cost associated with the implicit employer subsidy is not currently being included in the calculation of the plan's actuarial determined contributions, and it is our understanding that any cost associated with the implicit subsidy will not be paid out of the plan's trust. Therefore, the municipal bond rate was applied to future expected benefit payments associated with the implicit subsidy.

The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Future contributions are projected assuming that the entire actuarially determined employer contribution is received by each plan each future year, calculated in accordance with the current funding policy.



Board of Trustees
September 27, 2023
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401(h) Subaccount

Based on guidance issued by GASB in connection with GASB Statement No. 74, the 1% of pay member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered an OPEB asset. As a result, the reported fiduciary net position includes these 401(h) assets. Additionally, these member contributions and associated investment income and administrative expenses are included in the reconciliation of the fiduciary net position.


Additional Disclosures

This report is based upon information, furnished to us by the Kentucky Public Pensions Authority (KPPA), which includes benefit provisions, membership information, and financial data. We did not audit this data and information, but we did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KPPA. Please see the "Actuarial Valuation Report as of June 30, 2022" and the "2022 Actuarial Experience Study for the Period Ending June 30, 2022" for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for the fiscal year ending June 30, 2023.

To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

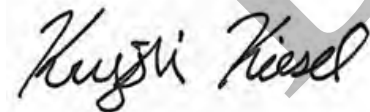
Gabriel Roeder Smith & Co.



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



Janie Shaw, ASA, EA, MAAA
Consultant and Actuary



Krysti Kiesel, ASA, MAAA
Senior Analyst and Actuary



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SECTION 1

DRAFT

EXHIBIT 1

Schedule of the Employers' Net OPEB Liability
(\$ in thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Employee Payroll ¹	Net OPEB Liability as a Percentage of Covered Employee Payroll
(1)	(2)	(3)	(4) = (2) - (3)	(5) = (3) / (2)	(6)	(7) = (4) / (6)
2023	\$ 263,450	\$ 248,109	\$ 15,341	94.18%	\$ 65,830	23.30%
2022	351,453	231,242	120,211	65.80%	48,600	247.35%
2021	364,899	247,318	117,581	67.78%	47,155	249.35%
2020	339,942	201,340	138,602	59.23%	48,231	287.37%
2019	312,553	201,206	111,347	64.38%	48,780	228.26%
2018	301,012	190,847	110,165	63.40%	50,064	220.05%
2017	313,234	178,838	134,396	57.09%	48,873	274.99%

Note:

¹ Based on derived compensation using the provided employer contribution information.

EXHIBIT 2**Development of Single Discount Rate**

	<u>SPRS</u>
Single Discount Rate	6.02%
Long-Term Expected Rate of Return	6.50%
Long-Term Municipal Bond Rate ¹	3.86%

Notes:

¹ Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in Fidelity Index's "20-Year Municipal GO AA Index" as of June 30, 2023.



EXHIBIT 3

Schedule of the Employers' Net OPEB Liability

(\$ in thousands)

Change in the Net OPEB Liability	2023	2022	2021	2020	2019	2018	2017
Total OPEB liability							
Service Cost	\$ 4,092	\$ 5,605	\$ 5,218	\$ 5,389	\$ 4,816	\$ 6,087	\$ 4,147
Interest on the total OPEB liability	19,608	18,592	17,984	17,600	17,724	18,432	17,993
Benefit Changes	0	4,975	101	0	0	34	0
Difference between actual and expected experience	(98,425)	(5,952)	(6,318)	13,810	(14,295)	(23,320)	(573)
Assumption Changes	404	(21,937)	21,784	4,578	16,483	(358)	57,312
Benefit Payments ^{1,2}	(13,682)	(14,729)	(13,812)	(13,988)	(13,187)	(13,097)	(12,123)
Net Change in Total OPEB Liability	(88,003)	(13,446)	24,957	27,389	11,541	(12,222)	66,756
Total OPEB Liability - Beginning	\$ 351,453	\$ 364,899	\$ 339,942	\$ 312,553	\$ 301,012	\$ 313,234	\$ 246,478
Total OPEB Liability - Ending (a)	\$ 263,450	\$ 351,453	\$ 364,899	\$ 339,942	\$ 312,553	\$ 301,012	\$ 313,234
Plan Fiduciary Net Position							
Contributions - Employer ²	\$ 8,755	\$ 9,343	\$ 9,381	\$ 12,873	\$ 12,623	\$ 8,535	\$ 7,862
Contributions - Member	348	230	209	196	176	155	131
Benefit Payments ^{1,2}	(13,682)	(14,729)	(13,812)	(13,988)	(13,187)	(13,097)	(12,123)
OPEB Plan Net Investment Income	21,520	(10,847)	50,289	1,124	10,815	16,470	21,627
OPEB Plan Administrative Expense	(74)	(73)	(89)	(71)	(69)	(62)	(66)
Other	0	0	0	0	1 ⁴	8 ⁴	0
Net Change in Plan Fiduciary Net Position	16,867	(16,076)	45,978	134	10,359	12,009	17,431
Plan Fiduciary Net Position - Beginning	\$ 231,242	\$ 247,318	\$ 201,340	\$ 201,206	\$ 190,847	\$ 178,838	\$ 161,407
Plan Fiduciary Net Position - Ending (b)	\$ 248,109	\$ 231,242	\$ 247,318	\$ 201,340	\$ 201,206	\$ 190,847	\$ 178,838
Net OPEB Liability - Ending (a) - (b)	15,341	120,211	117,581	138,602	111,347	110,165	134,396
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	94.18%	65.80%	67.78%	59.23%	64.38%	63.40%	57.09%
Covered Employee Payroll³	\$ 65,830	\$ 48,600	\$ 47,155	\$ 48,231	\$ 48,780	\$ 50,064	\$ 48,873
Net OPEB Liability as a Percentage of Covered Employee Payroll	23.30%	247.35%	249.35%	287.37%	228.26%	220.05%	274.99%

Notes:

¹ Benefit payments are offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).² Employer contributions and benefit payments include expected benefits due to the implicit subsidy for members under age 65, equal to -\$533,552 for fiscal year 2023.³ Based on derived compensation using the provided employer contribution information.⁴ Northern Trust Settlement

EXHIBIT 4**Schedule of Employers' Contributions**

(\$ in thousands)

Fiscal Year Ending ¹	Actuarially Determined Contribution ²	Total Employer Contributions ³	Contribution Deficiency (Excess)	Covered Employee Payroll ⁴	Actual Contributions as a Percentage of Covered Payroll
2023	\$ 9,289	\$ 9,289	\$ 0	\$ 65,830	14.11%
2022	8,782	8,782	0	48,600	18.07%
2021	9,285	9,285	0	47,155	19.69%
2020	13,133	13,133	0	48,231	27.23%
2019	13,283	13,288	(5)	48,780	27.24%
2018	9,062	9,397	(335)	50,064	18.77%
2017	9,222	9,222	0	48,873	18.87%
2016	8,553	10,237	(1,684)	45,551	22.47%
2015	9,890	10,382	(492)	45,765	22.69%
2014	20,879	14,493	6,386	44,616	32.48%

Notes:

¹ Data for years prior to 2018 is based on contribution data provided in the 2017 ACFR, based on calculations provided by the prior actuary.

² Actuarially determined contribution for fiscal year ending 2023 is based on the contribution rate calculated with the June 30, 2021 actuarial valuation.

³ Employer contributions do not include the expected implicit subsidy included in exhibit 3.

⁴ Based on derived compensation using the provided employer contribution information.



Notes to Schedule of Employers' Contributions for FYE 2023

The actuarially determined contribution effective for fiscal year ending 2023 that is documented in the schedule on the previous page was calculated as of June 30, 2021. Based on the June 30, 2021 actuarial valuation report, the actuarial methods and assumptions used to calculate the contribution are below:

Item	SPRS
Determine by the Actuarial Valuation as of:	June 30, 2021
Actuarial Cost Method:	Entry Age Normal
Asset Valuation Method:	20% of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay
Amortization Period:	30-year closed period at June 30, 2019 <i>Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases</i>
Payroll Growth Rate:	0.00%
Investment Return:	6.25%
Inflation:	2.30%
Salary Increases:	3.55% to 16.05%, varies by service
Mortality:	System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.
Healthcare Trend Rates: Pre-65	Initial trend starting at 6.30% at January 1, 2023, gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.
Post-65	Initial trend starting at 6.30% at January 1, 2023 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2022 premiums were known at the time of the valuation and were incorporated into the liability measurement.



EXHIBIT 5

Sensitivity of the Net OPEB Liability to Changes in the Discount Rate and Healthcare Trend Rate
(\$ in thousands)

Table 1. Sensitivity of the Net OPEB Liability to Changes in the Discount Rate

1.00% Decrease, 5.02%	Current Discount Rate, 6.02%	1.00% Increase, 7.02%
\$ 45,363	\$ 15,341	\$ (9,776)

Table 2. Sensitivity of the Net OPEB Liability to Changes in the Healthcare Cost Trend Rate

1.00% Decrease	Current Healthcare Cost Trend Rate	1.00% Increase
\$ (5,320)	\$ 15,341	\$ 40,029



APPENDIX 1

DRAFT

Appendix 1

Development of Baseline Claims Cost

For non-Medicare retirees, the initial per capita costs were developed using retiree claims experience for calendar years 2020 through 2022. The claims were projected on an incurred claim basis, adjusted for prescription drug rebates, and loaded for administrative expense. The per capita costs shown in the table below also include HRA contributions for retirees on the CDHP plans. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. The fully-insured premiums paid to the Kentucky Employees' Health Plan are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit employer subsidy for the non-Medicare eligible retirees.

For Medicare retirees, the initial per capita costs were estimated based on the plan premiums effective January 1, 2023, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees.

Age graded and sex distinct premiums are utilized by this valuation. These costs are appropriate for the unique age and sex distribution currently existing. Over the future years covered by this valuation, the age and sex distribution will most likely change. Therefore, our process "distributes" the average premium over all age/sex combinations and assigns a unique premium for each combination. The age/sex specific costs more accurately reflect the health care utilization and cost at that age.

FOR THOSE NOT ELIGIBLE FOR MEDICARE (as of January 1, 2023)		
AGE	MALE	FEMALE
40	\$373.36	\$606.68
50	605.22	745.56
60	1,028.58	1,012.80
64	1,250.79	1,180.40

FOR THOSE ELIGIBLE FOR MEDICARE (as of January 1, 2023)		
AGE	MALE	FEMALE
65	\$78.14	\$73.71
75	91.43	89.21
85	96.68	97.82

Blake Orth is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Blake Orth

Blake Orth, FSA, EA, MAAA



F-14 (Revised 6/2021)

Record of Control Weakness or Noncompliance

For APA Use Only:

Agency	Kentucky Public Pensions Authority
Audit Section	Investments
Test Workpaper Reference	102a
Finding Reference #	2023-KPPA-001
Known Questioned Costs	0
Likely Questioned Costs	0

Condition and Context (Nature of the Weakness or Noncompliance)

The Kentucky Public Pensions Authority (KPPA) investment accounting branch performs reconciliations of investment activity recorded between their custodian, Bank of New York Mellon (BNYM), and their accounting system, Great Plains (GP). While the reconciliations occurred, the reconciliation documentation only had the typed names of the preparer and reviewer and there were no indicators of when the reconciliation occurred. Beginning in July 2023, KPPA updated their internal control process to address this issue.

Cause

KPPA did not design the internal controls to ensure investment reconciliations appropriately documented the time of the reconciliation and to prevent the rollforward of the preparer and reviewer names.

Effect

Properly documented approvals are effective internal controls to prevent and to detect and correct potential misstatements with regards to investment reconciliations. Misstatements in the reconciliation process may occur when approvals are rolled forward on a document and the time of the reconciliation is not documented.

Criteria

Sound internal controls over the investment reconciliation process ensure the investment balances recorded in the accounting system contain complete and accurate information for financial reporting. A complete and accurate reconciliation of investment activity is necessary in order to ensure financial statement reporting requirements are met in accordance with Generally Accepted Accounting Principles (GAAP) and Governmental Accounting Standards Board (GASB) pronouncements.

Recommendation

As noted above, KPPA updated their investment reconciliation processes for FY 2024. We recommend KPPA review those processes to ensure sufficient evidence of proper approvals were documented in the investment reconciliation process.

F-14 (Revised 6/2021)

Record of Control Weakness or Noncompliance**NOTE TO RESPONDENT:**

Please provide management's response and planned corrective action with all the required elements using the format below.

Corrective Action Plans

2 CFR 200, Subpart F, § 511(c) (Uniform Guidance) requires the auditee to prepare a Corrective Action Plan (CAP).

Based on the Uniform Guidance:

- §200.26 defines corrective action as “action taken by the auditee that: (a) Corrects identified deficiencies; (b) Produces recommended improvements; or (c) Demonstrates that audit findings are either invalid or do not warrant auditee action.”
- The CAP should address both federal audit findings and all findings related to the financial statements which are required to be reported in accordance with *Government Auditing Standards* included in the current year auditor's report.
- The CAP must provide the name(s) of the contact person(s) responsible for corrective action, the corrective action planned, and the anticipated completion date.
- If the auditee does not agree with the audit findings or believes corrective action is not required, then the corrective action plan must include an explanation and specific reasons.

Other Requirements

KRS 43.090 requires your agency to notify the Legislative Research Commission and the Auditor of Public Accounts of the audit recommendations that have been implemented and of the audit recommendations that have not been implemented within 60 days of the completion of the final audit report. For any recommendations that have not been implemented, a reason for failure to implement audit recommendations must also be provided.

Management's Response and Planned Corrective Action
Finding Reference # 2023-KPPA-001

To be completed by the responding agency:

Response prepared by:	Connie Davis
<i>Note: The APA is requesting the official response of the agency's management. It is the responsibility of the preparer to ensure all internal approvals of the response have been obtained.</i>	
Person responsible for corrective action:	Connie Davis
Date response prepared:	November 14, 2023
Estimated corrective action completion date:	Completed

Management's Response and Planned Corrective Action:

We concur with the finding and have updated procedures to ensure the proper oversight is documented.

F-14 (Revised 6/2021)

Record of Control Weakness or Noncompliance

For APA Use Only:

Agency	Kentucky Public Pensions Authority
Audit Section	Expenditures
Test Workpaper Reference	D05.02a
Finding Reference #	2023-KPPA-002
Known Questioned Costs	\$0
Likely Questioned Costs	\$0

Condition and Context (Nature of the Weakness or Noncompliance)

The Kentucky Public Pensions Authority (KPPA) manages multiple pension and health plans, including the County Employees Retirement System (CERS) hazardous and nonhazardous and the Kentucky Employees Retirement System (KERS) hazardous and nonhazardous plans. KPPA pays a monthly healthcare premium subsidy to Humana and the Department of Employee Insurance (DEI) for retired members. KPPA cash management branch sets up and requests wire transfers from the custodian bank accounts to the trust fund cash clearing accounts to cover the monthly insurance premium obligations for Humana and DEI. The healthcare premium subsidy and wire amounts appear on KPPA reports. The wire transfer requests and reports were reviewed and the following discrepancies noted:

- During May 2023, the KERS nonhazardous insurance account transferred \$2,419,507 and the CERS nonhazardous insurance account transferred \$1,924,760, as requested; however, the accounts were inadvertently switched on the request. Thus, the funds were transferred to the incorrect accounts resulting in KERS nonhazardous insurance being overcharged and CERS nonhazardous insurance being undercharged by \$494,747.
- During April 2023, the calculation of the subsidy amount used in the calculation of the insurance amount to be transferred totaled \$398. This amount was switched between the KERS nonhazardous and KERS hazardous, resulting in KERS nonhazardous being overcharged and KERS hazardous being undercharged by \$398.
- During October 2022, the KERS nonhazardous insurance account transferred \$5,033,988 but should have transferred \$5,033,958, an overcharge of \$30. The KERS nonhazardous pension account was undercharged \$30 having transferred \$1,636,185 when it should have been \$1,636,215.

In addition to the errors identified above, the same employee creating the breakout of the different wire amounts was also responsible for approving the wires once they were set up in the custodial bank's system.

Cause

KPPA's internal controls over the wire transfers did not identify errors and did not prevent a segregation of duties issue between the preparation and review process.

Effect

Incorrect amounts were requested from the custodial bank for one pension plan and several of the insurance plan accounts. The net difference for pension funds indicate an understatement of \$30 and the net difference for insurance funds indicate an overstatement of \$30 on the financial statements in the benefit payments and healthcare premium subsidy expenditures, respectively. The difference by fund are as follows:

- KERS nonhazardous insurance-overcharged \$495,175.

F-14 (Revised 6/2021)

Record of Control Weakness or Noncompliance

- KERS hazardous insurance-undercharged \$398.
- CERS nonhazardous insurance-undercharged \$494,747.
- KERS nonhazardous pension-undercharged \$30.

Failure to segregate duties could lead to undetected errors in the healthcare premium subsidy wire amounts as well as incorrect financial reports.

Criteria

Effective internal controls over wire transfers ensure healthcare premium subsidy transactions contain accurate information for financial reporting and appropriate information for making management decisions.

The objective of segregation of duties is to ensure that assigned duties are separated such that no one employee is in a position both to commit and conceal errors in the normal course of performing their assigned duties. In general, the principal incompatible duties to be segregated are:

- Authorization of transactions,
- Custody of assets,
- Recording or reporting of transactions, and
- Performing reconciliations.

Adequate segregation of duties reduces the likelihood that errors, either intentional or unintentional, will remain undetected. This is carried out by providing for separate processing by different individuals at various stages of a transaction and for independent reviews of the work performed.

Recommendation

We recommend KPPA review the procedures over wire transfers to ensure effective review of wire transactions and adequate segregation of duties.

F-14 (Revised 6/2021)

Record of Control Weakness or Noncompliance

NOTE TO RESPONDENT:

Please provide management's response and planned corrective action with all the required elements using the format below.

Corrective Action Plans

2 CFR 200, Subpart F, § 511(c) (Uniform Guidance) requires the auditee to prepare a Corrective Action Plan (CAP).

Based on the Uniform Guidance:

- §200.26 defines corrective action as “action taken by the auditee that: (a) Corrects identified deficiencies; (b) Produces recommended improvements; or (c) Demonstrates that audit findings are either invalid or do not warrant auditee action.”
- The CAP should address both federal audit findings and all findings related to the financial statements which are required to be reported in accordance with *Government Auditing Standards* included in the current year auditor's report.
- The CAP must provide the name(s) of the contact person(s) responsible for corrective action, the corrective action planned, and the anticipated completion date.
- If the auditee does not agree with the audit findings or believes corrective action is not required, then the corrective action plan must include an explanation and specific reasons.

Other Requirements

KRS 43.090 requires your agency to notify the Legislative Research Commission and the Auditor of Public Accounts of the audit recommendations that have been implemented and of the audit recommendations that have not been implemented within 60 days of the completion of the final audit report. For any recommendations that have not been implemented, a reason for failure to implement audit recommendations must also be provided.

Management's Response and Planned Corrective Action
Finding Reference # 2023-KPPA-002

To be completed by the responding agency:

Response prepared by:	Connie Davis
<i>Note: The APA is requesting the official response of the agency's management. It is the responsibility of the preparer to ensure all internal approvals of the response have been obtained.</i>	
Person responsible for corrective action:	Connie Davis
Date response prepared:	November 14, 2023
Estimated corrective action completion date:	Completed

Management's Response and Planned Corrective Action:

We concur with the finding and have corrected the errors noted above. Procedures have been updated to include a review/approval of all wire transactions before instructions are sent for processing.



MIKE HARMON
AUDITOR OF PUBLIC ACCOUNTS

Keith Peercy, Chairperson
Board of Trustees
Kentucky Public Pension Authority
1260 Louisville Road
Frankfort, KY 40601

We have audited the financial statements of the Kentucky Public Pension Authority (KPPA) as of and for the year ended June 30, 2023 and have issued our report thereon dated November 27, 2023.

Statement on Auditing Standards AU-C 260, *The Auditor's Communication with Those Charged with Governance*, requires us to communicate certain matters to keep those charged with governance adequately informed about matters related to the financial statement audit that are, in our professional judgment, significant and relevant to the responsibilities of those charged with governance in overseeing the financial reporting process. This report summarizes certain matters required by professional standards to be communicated to you in your oversight responsibility over the KPPA financial reporting process.

This information is intended solely for the information and use of the KPPA management, Audit Committee, and the Board of Trustees and is not intended to be and should not be used by anyone other than these specified parties.

Respectfully Submitted,

Farrah Petter, CPA
Assistant Auditor of Public Accounts

November 27, 2023

c: *David Eager, Executive Director*
Rebecca Adkins, Deputy Executive Director

209 ST. CLAIR STREET
FRANKFORT, KY 40601-1817

TELEPHONE 502.564.5841
FACSIMILE 502.564.2912
AUDITOR.KY.GOV

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Board of Trustees
Kentucky Public Pension Authority
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Required Communications

Statement on Auditing Standards AU-C 260 requires the auditor to provide those charged with governance with additional information regarding the scope and results of the audit that may assist them in overseeing management's financial reporting and disclosure process. For purposes of this statement "those charged with governance" means the person(s) with responsibility for overseeing the strategic direction of the entity and the obligations related to the accountability of the entity, which includes overseeing the financial reporting process. We have identified the Kentucky Public Pension Authority Board of Trustees members as individuals charged with governance. As permitted by auditing standards, we are providing communications to a representative of this group of individuals, which we have determined to be the Board Chair, and are also providing copies of the letter to the KPPA's management.

Our Responsibility in Relation to the Financial Statement Audit

As communicated in our engagement letter dated April 11, 2023, our responsibility, as described by professional standards, is to form and express an opinion(s) about whether the financial statements that have been prepared by management with your oversight are presented fairly, in all material respects, in accordance with accounting principles generally accepted in the United States of America. Our audit of the financial statements does not relieve you or management of your respective responsibilities.

Our responsibility, as prescribed by professional standards, is to plan and perform our audit to obtain reasonable, rather than absolute, assurance about whether the financial statements are free of material misstatement. An audit of financial statements includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control over financial reporting. Accordingly, as part of our audit, we considered the internal control of KPPA solely for the purpose of determining our audit procedures and not to provide any assurance concerning such internal control.

We are also responsible for communicating significant matters related to the audit that are, in our professional judgment, relevant to your responsibilities in overseeing the financial reporting process. However, we are not required to design procedures for the purpose of identifying other matters to communicate to you.

We have provided our findings, if any, regarding significant control deficiencies over financial reporting, material weaknesses, material noncompliance, and other matters noted during our audit in a separate letter to you dated November 27, 2023. Additional findings were also communicated in a separate letter to management dated November 27, 2023, which did not rise to level necessary to be disclosed in the audit report but still warranted attention by KPPA.

Board of Trustees
Kentucky Public Pension Authority
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Our responsibility also includes communicating to you any information which we believe is a material misstatement of fact. Nothing came to our attention that caused us to believe that such information, or its manner of presentation, is materially inconsistent with the information, or manner of its presentation, appearing in the financial statements.

Planned Scope and Timing of the Audit

We conducted our audit consistent with the planned scope and timing we previously communicated to you.

Compliance with All Ethics Requirements Regarding Independence

The engagement team, others in our firm, as appropriate, our firm, and our network firms have complied with all relevant ethical requirements regarding independence.

Significant Risks Identified

We have identified the following significant risks:

- Management's override of controls is a mandatory risk in accordance with auditing standards.
- Improper revenue recognition is a presumed risk of material misstatement in auditing standards.
- Ineffective reconciliations among multiple computer programs is a risk.

Qualitative Aspects of the Entity's Significant Accounting Practices²

Significant Accounting Policies

Management has the responsibility to select and use appropriate accounting policies. A summary of the significant accounting policies adopted by KPPA is included in Note A to the financial statements. There have been no initial selection of accounting policies and no changes in significant accounting policies or their application during fiscal year 2023. No matters have come to our attention that would require us, under professional standards, to inform you about (1) the methods used to account for significant unusual transactions and (2) the effect of significant accounting policies in controversial or emerging areas for which there is a lack of authoritative guidance or consensus.

Significant Accounting Estimates

Accounting estimates are an integral part of the financial statements prepared by management and are based on management's current judgments. Those judgments are normally based on knowledge and experience about past and current events and assumptions about future events. Certain accounting estimates are particularly sensitive

Board of Trustees
Kentucky Public Pension Authority
Page 4

because of their significance to the financial statements and because of the possibility that future events affecting them may differ markedly from management's current judgments.

The most sensitive accounting estimates affecting the financial statements are:

- Management's estimates related to the fair value of its investments on the Net Asset Value (NAV) of units of the investee. Management's estimate of the NAV is based on the investment manager's NAV since it is a practical resource based on the underlying fair value of investments held by the investee less any liabilities.
- Management's disclosure of the net pension liability in Note M to the financial statements. Management's estimate of the net pension liability is based on KPPA's actuarial valuations and the methods and assumptions used in determining the amounts are disclosed in the notes.
- Management's disclosure of the net OPEB liability of KPPA in Note M of the financial statements. Management's estimate of the OPEB liability is based on KPPA's actuarial valuations and the methods and assumptions used in determining the amounts are disclosed in the notes.

We evaluated the key factors and assumptions used to develop the NAV, net pension liability, and OPEB liability and determined that it is reasonable in relation to the basic financial statements taken as a whole and in relation to the applicable opinion units.

Financial Statement Disclosures

Certain financial statement disclosures involve significant judgment and are particularly sensitive because of their significance to financial statement users. We believe the financial statement disclosures affecting KPPA's financial statements are sufficient, consistent, and generally acceptable.

Significant Unusual Transactions

For purposes of this communication, professional standards require us to communicate to you significant unusual transactions identified during our audit. No significant unusual transactions were identified as a result of our audit procedures.

Identified or Suspected Fraud

We did not identify or obtain any information that indicates fraud may have occurred or be suspected.

Significant Difficulties Encountered during the Audit

We are required to inform those charged with governance of any significant difficulties encountered during the audit, including significant delays in obtaining information, extensive unexpected effort required to obtain sufficient appropriate audit evidence, the unavailability of expected information, and other matters.

Board of Trustees
Kentucky Public Pension Authority
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We encountered no significant difficulties in dealing with management relating to the performance of the audit. The employees and management of KPPA provided the auditors with appropriate, timely documentation, and made time available to assist auditors in the performance of audit procedures. The auditors appreciate all of the time and assistance provided to them during the conduct of the audit.

Uncorrected and Corrected Misstatements

For purposes of this communication, professional standards also require us to accumulate all known and likely misstatements identified during the audit, other than those that we believe are trivial, and communicate them to the appropriate level of management. Further, professional standards require us to also communicate the effect of uncorrected misstatements related to prior periods on the relevant classes of transactions, account balances or disclosures, and the financial statements as a whole and each applicable opinion unit. Based on our audit, no misstatements were presented to management for consideration. Uncorrected misstatements or matters underlying those uncorrected misstatements could potentially cause future-period financial statements to be materially misstated, even though the uncorrected misstatements are immaterial to the financial statements currently under audit.

In addition, professional standards require us to communicate to you all material, corrected misstatements that were brought to the attention of management as a result of our audit procedures. There were no material misstatements identified during the audit.

Disagreements with Management

For purposes of this letter, professional standards define a disagreement with management as a matter, whether or not resolved to our satisfaction, concerning a financial accounting, reporting, or auditing matter, which could be significant to KPPA's financial statements or the auditor's report. No such disagreements arose during the course of the audit.

Circumstances that Affect the Form and Content of the Auditor's Report

For purposes of this letter, professional standards require that we communicate any circumstances that affect the form and content of our auditor's report. There were no circumstances identified that affect the form and content of the auditor's report.

Representations Requested from Management

We have requested certain written representations from management, which are included in the attached letter dated November 27, 2023.

Management's Consultations with Other Accountants

Board of Trustees
Kentucky Public Pension Authority
Page 6

In some cases, management may decide to consult with other accountants about auditing and accounting matters. Management informed us that, and to our knowledge, there were no consultations with other accountants regarding auditing and accounting matters.

Other Significant Matters, Findings, or Issues

In the normal course of our professional association with KPPA, we generally discuss a variety of matters, including the application of accounting principles and auditing standards, significant events or transactions that occurred during the year, operating and regulatory conditions affecting the entity, and operational plans and strategies that may affect the risks of material misstatement. None of the matters discussed resulted in a condition to our retention as KPPA's auditors.

Other Information Included in Annual Reports

Pursuant to professional standards, our responsibility as auditors for other information, whether financial or nonfinancial, included in KPPA's annual reports, does not extend beyond the information identified in the audit report, and we are not required to perform any procedures to corroborate such other information. However, in accordance with such standards, we have read the information and considered whether such information, or the manner of its presentation, was materially inconsistent with its presentation in the financial statements.

Our responsibility also includes communicating to you any information which we believe is a material misstatement of fact. Nothing came to our attention that caused us to believe that such information, or its manner of presentation, is materially inconsistent with the information, or manner of its presentation, appearing in the financial statements.

This report is intended solely for the information and use of the management, board of trustees, and others within KPPA and is not intended to be and should not be used by anyone other than these specified parties.



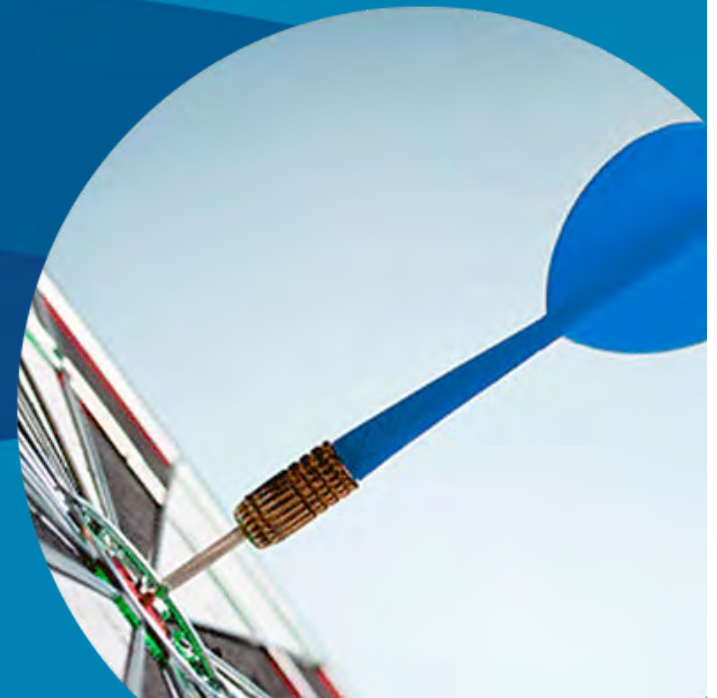
Kentucky Retirement Systems

2023 Actuarial Valuation Results

November 14, 2023

Janie Shaw, ASA, EA, MAAA

Danny White, FSA, EA, MAAA



Comments on Valuation Results

- Board adopted new assumptions in June 2023
 - **Investment Return Assumption:** Increased to 6.50% for insurance funds
 - **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
 - **Disability incidence:** Decrease the rate of disability incidence for the KERS non-hazardous fund
 - **Cash Balance Interest Credit:** Increased to 5.90% for KERS non-hazardous and SPRS funds and to 6.75% for KERS hazardous fund



Comments on Valuation Results

- Change in active membership and payroll
 - Active membership increased across all funds
 - KERS Hazardous: 28% increase in membership payroll
 - SPRS: 38% increase in membership payroll
 - Employer contribution for the KERS non-hazardous fund is no longer tied to payroll



Comments on Valuation Results

- Overview of legislation passed in 2023
 - **HB 506:** reinstated the Partial Lump Sum Option Form of payment, and adjusted the minimum required separation period for return to work
 - **HB 1 and HB 604:** provides \$240 million in additional appropriations to the non-hazardous retirement fund each year for two years (FY 2023 and FY 2024)



Comments on Valuation Results

- FYE 2023 Investment Experience
 - 7% to 9% return on market value (varies by fund)
 - Assumed rate of return: 5.25% for KERS non-hazardous and SPRS retirement funds
 - Assumed rate of return: 6.25% for KERS hazardous retirement fund
 - Assumed rate of return: 6.25% for insurance funds (6.50% after the 2023 after the valuation date)
 - Fund assets \$158M more than expected for KERS and SPRS (\$87M pension and \$71M insurance)
 - \$11M in asset gains recognized this year (\$10M pension and \$1M insurance)



Comments on Valuation Results

- Retirement Fund Liability Experience
 - \$545M loss for all KERS/SPRS retirement funds combined
 - Primarily attributed to salary increases being greater than expected for individual active members
- Insurance Fund Liability Experience
 - \$199M loss for all KERS/SPRS insurance funds combined
 - 2024 Pre-Medicare premiums higher than expected partially offset by Medicare premiums lower than expected



Comments on KERS Non-Haz Retirement Fund

- Imperative to maintain or increase contribution effort for the non-hazardous retirement fund
 - June 30, 2023 plan assets were \$3,540 million
 - Fund distributed \$1,049 million in benefit payments and administrative expenses in FYE 2023
 - Fund received \$1,360 million in employer and member contributions in FYE 2023



Actuarially Determined Employer Contributions

	KERS Non-Hazardous		KERS Hazardous		SPRS	
	2022 Val	2023 Val	2022 Val	2023 Val	2022 Val	2023 Val
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pension Fund	7.74%	6.99%	30.12%	23.74%	85.39%	65.79%
Insurance Fund	<u>1.86%</u>	<u>1.45%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>3.68%</u>	<u>2.31%</u>
Actuarially Determined Contribution, payable as a percentage of payroll	9.60%	8.44%	30.12%	23.74%	89.07%	68.10%
Difference		-1.16%		-6.38%		-20.97%
Amortization Cost – Pension	\$ 901M	\$ 855M				
Amortization Cost – Insurance	<u>5M</u>	<u>2M</u>				
Amortization Cost - Total	\$ 906M	\$ 857M	N/A	N/A	N/A	N/A
Difference		\$(49)				

Note: The 2023 valuation establishes the contribution requirement for FYE2025 and FYE2026.
The 2022 valuation was provided for informational purposes only.



Actuarially Determined Employer Contributions (\$millions)

	KERS Non-Hazardous		KERS Hazardous		SPRS	
	2022 Val	2023 Val	2022 Val	2023 Val	2022 Val	2023 Val
(1)	(2)	(3)	(4)	(5)	(4)	(5)
Pension Fund	\$1,006	\$968	\$50	\$50	\$41	\$43
Insurance Fund	<u>30</u>	<u>25</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>2</u>
Total Actuarially Determined Employer Contribution	\$1,036	\$993	\$50	\$50	\$43	\$45
Change in Actuarially Determined Employer Contribution		\$(43)		\$0		\$2

Note: The 2023 valuation establishes the contribution requirement for FYE2025 and FYE2026.
The 2022 valuation was provided for informational purposes only.



Change in Required Employer Contributions

KERS Non-Hazardous – Amortization Cost

	KERS Non-Hazardous (\$millions)			
	Pension	Insurance	Total	
Amortization Cost – FY 2024	\$ 906	\$ 88	\$ 994	← Based on June 30, 2021 Valuation
Impact of 2022 Valuation	<u>(5)</u>	<u>(83)</u>	<u>(88)</u>	
Amortization Cost – 2022 Val	\$ 901	\$ 5	\$ 906	← Informational purposes only
\$240M in Appropriations	(20)	0	(20)	
Investment Experience	(1)	0	(1)	
Demographic Experience	35	7	42	← Salary increases for active members higher than expected
Experience Study	<u>(60)</u>	<u>(10)</u>	<u>(70)</u>	
Total Change	\$(46)	\$(3)	\$(49)	
Amortization Cost – 2023 Val (FY 2025)	\$ 855	\$ 2	\$ 857	

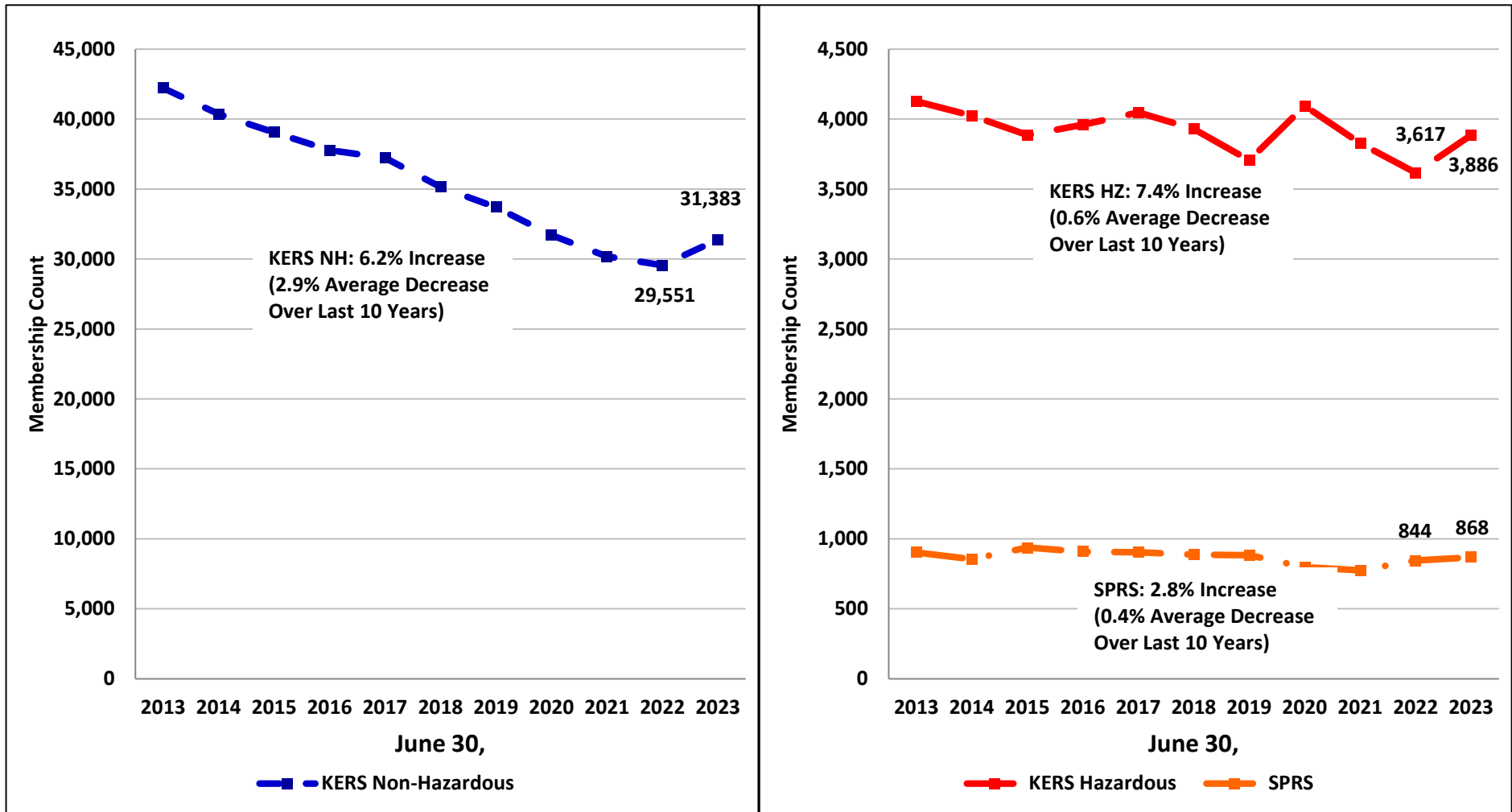


Unfunded Actuarial Accrued Liability – Actuarial Value of Asset Basis (\$ in Billions)

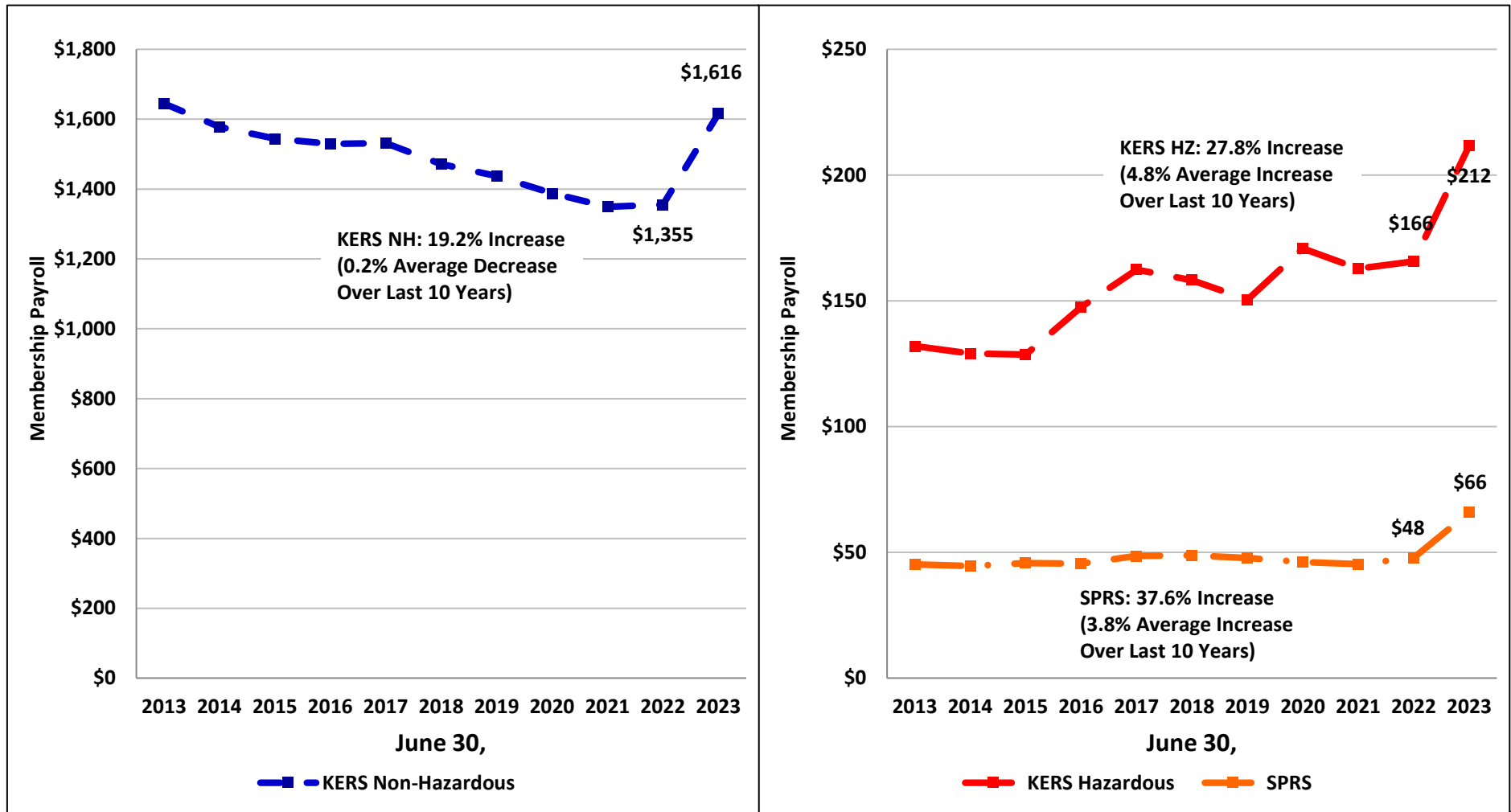
	KERS Non-Hazardous		KERS Hazardous		SPRS	
	2022 Val	2023 Val	2022 Val	2023 Val	2022 Val	2023 Val
(1)	(2)	(3)	(4)	(5)	(4)	(5)
Pension Fund	\$13.51	\$12.75	\$0.48	\$0.47	\$0.51	\$0.50
Insurance Fund	<u>0.37</u>	<u>0.34</u>	<u>(0.25)</u>	<u>(0.26)</u>	<u>(0.00)</u>	<u>(0.00)</u>
Total Unfunded Actuarial Accrued Liability	\$13.88	\$13.10	\$0.23	\$0.22	\$0.51	\$0.50
Change in Unfunded Actuarial Accrued Liability		\$(0.79)		\$(0.02)		\$(0.01)



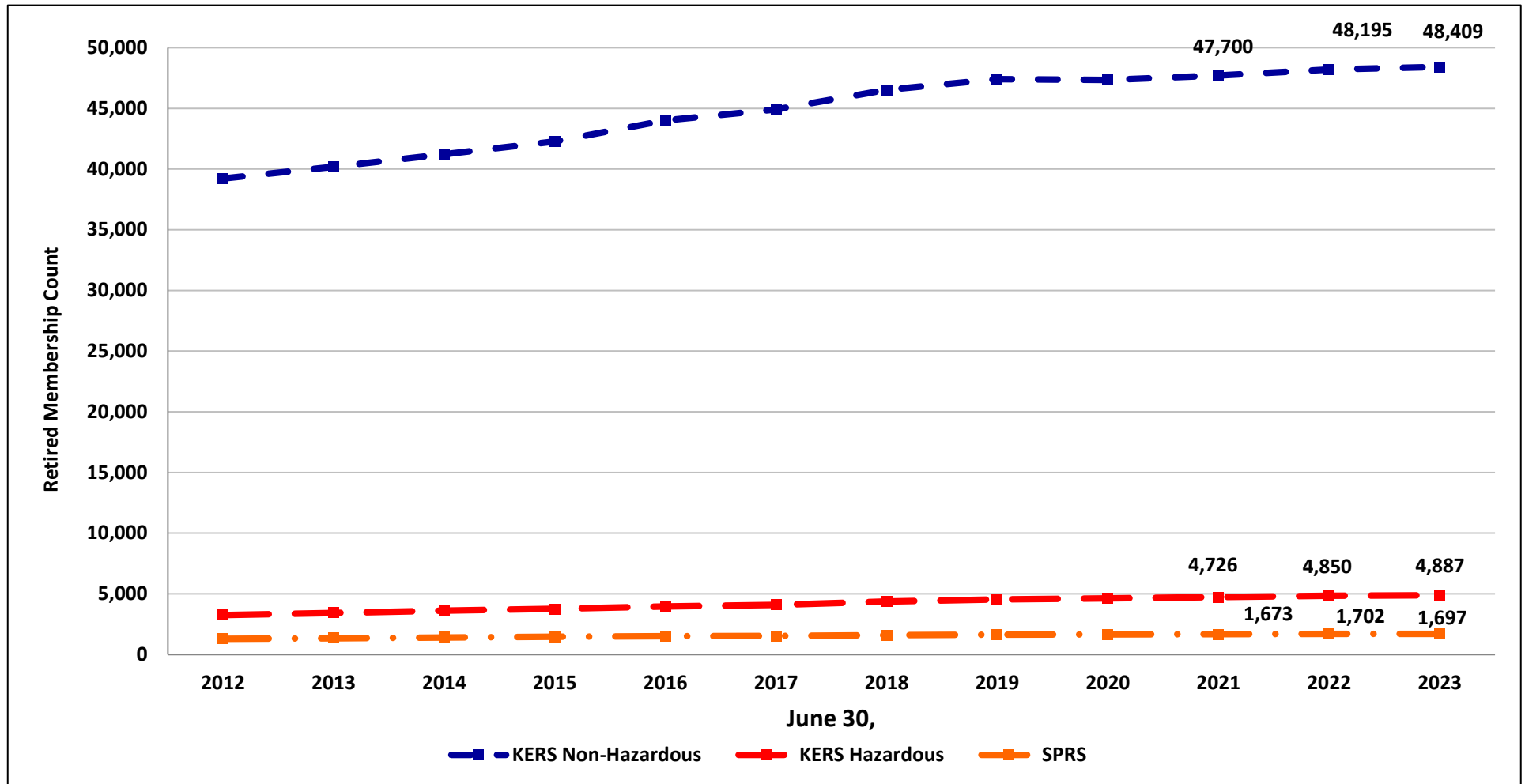
Active Membership Count



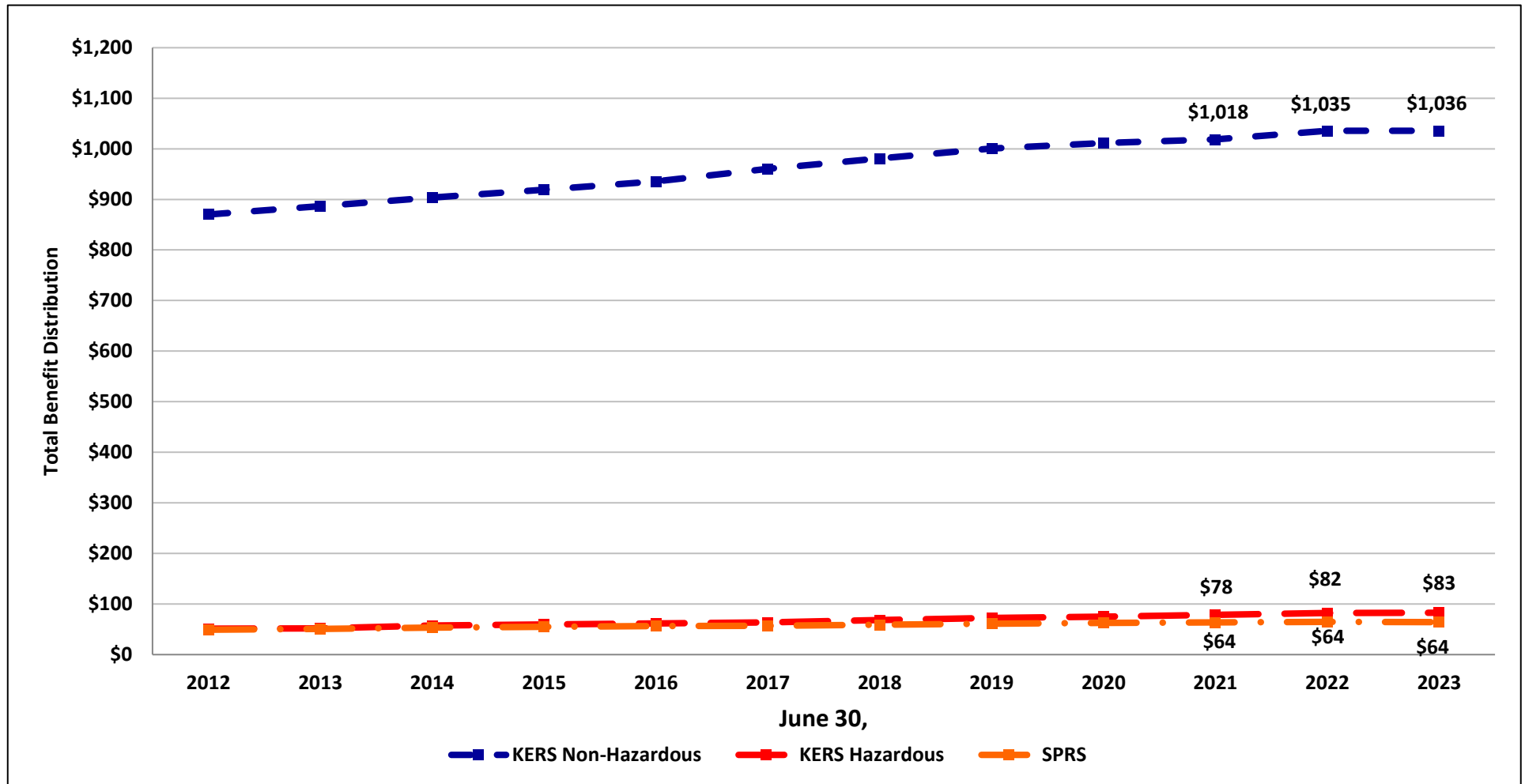
Membership Payroll (\$ in Millions)



Retired Membership Count



Pension Benefit Distributions (\$ in Millions)



Funding Results – KERS (\$ in millions)

Item	Non-Hazardous System				Hazardous System			
	Pension		Insurance		Pension		Insurance	
	2022	2023	2022	2023	2022	2023	2022	2023
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Total Normal Cost Rate	11.76%	11.13%	2.29%	1.94%	15.72%	15.00%	4.07%	2.77%
Member Rate	<u>(5.00)%</u>	<u>(5.00)%</u>	<u>(0.49)%</u>	<u>(0.54)%</u>	<u>(8.00)%</u>	<u>(8.00)%</u>	<u>(0.70)%</u>	<u>(0.75)%</u>
Employer Normal Cost Rate	6.76%	6.13%	1.80%	1.40%	7.72%	7.00%	3.37%	2.02%
Administrative Expenses	0.98%	0.86%	0.06%	0.05%	0.88%	0.71%	0.08%	0.06%
Amortization Cost	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>21.52%</u>	<u>16.03%</u>	<u>(13.39)%</u>	<u>(11.29)%</u>
Total Actuarially Determined Rate	7.74%	6.99%	1.86%	1.45%	30.12%	23.74%	0.00%	0.00%
Amortization Cost to be Allocated	\$ 901M	\$ 855M	5M	2M	N/A	N/A	N/A	N/A
Actuarial Accrued Liability (AAL)	\$16,577	\$16,304	\$1,782	\$1,877	\$1,317	\$1,363	\$347	\$364
Actuarial Value of Assets	<u>\$3,065</u>	<u>\$3,552</u>	<u>\$1,410</u>	<u>\$1,533</u>	<u>\$832</u>	<u>\$891</u>	<u>\$598</u>	<u>\$620</u>
Unfunded AAL	\$13,511	\$12,752	\$373	\$344	\$484	\$472	\$(251)	\$(256)
Funded Ratio	18.5%	21.8%	79.1%	81.7%	63.2%	65.4%	172.2%	170.4%



Funding Results – SPRS (\$ in millions)

Item	Pension		Insurance	
	2022	2023	2022	2023
(1)	(2)	(3)	(4)	(5)
Total Normal Cost Rate	26.92%	26.97%	7.03%	5.39%
Member Rate	<u>(8.00)%</u>	<u>(8.00)%</u>	<u>(0.52)%</u>	<u>(0.57)%</u>
Employer Normal Cost Rate	18.92%	18.97%	6.51%	4.82%
Administrative Expenses	0.57%	0.44%	0.15%	0.11%
Amortization Cost	<u>65.90%</u>	<u>46.38%</u>	<u>(2.98)%</u>	<u>(2.62)%</u>
Total Actuarially Determined Rate	85.39%	65.79%	3.68%	2.31%
Actuarial Accrued Liability (AAL)	\$1,067	\$1,092	\$233	\$244
Actuarial Value of Assets	<u>\$560</u>	<u>\$590</u>	<u>\$234</u>	<u>\$245</u>
Unfunded AAL	\$507	\$502	\$(1)	\$(1)
Funded Ratio	52.5%	54.0%	100.6%	100.5%



PROJECTION INFORMATION PENSION AND INSURANCE



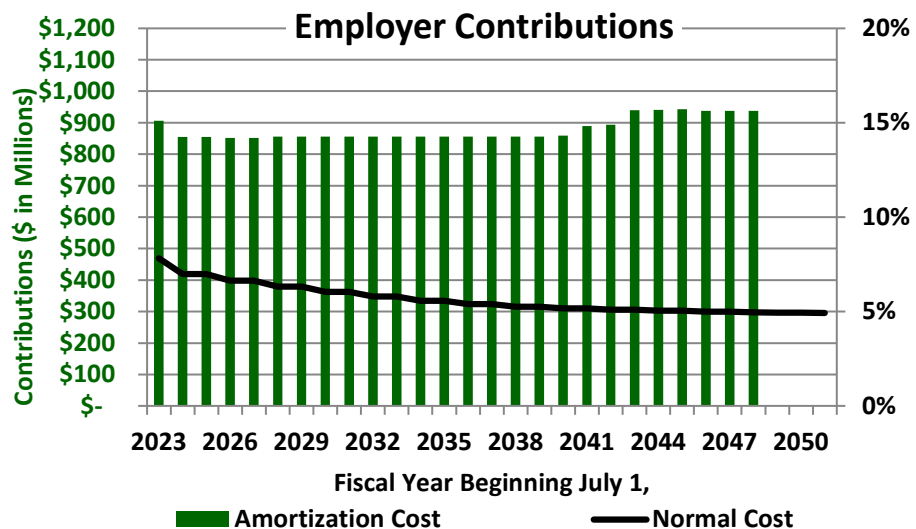
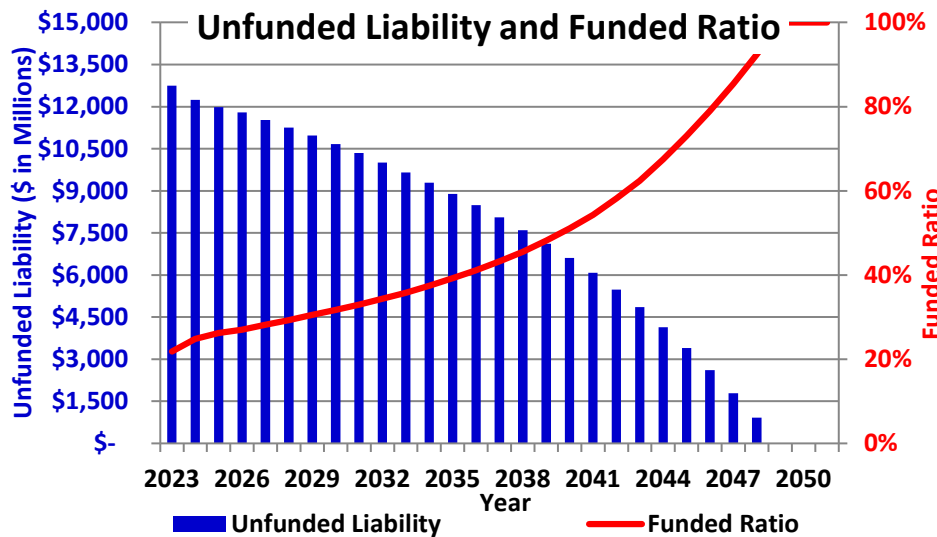
Projection Assumptions

- Assumes that all actuarial assumptions are realized, including the assumed annual asset return of 5.25%/6.25%/6.50%
- Full actuarially determined contribution paid each biennium
- Membership payroll assumed to remain level
 - Total active population assumed to decrease 2% each year

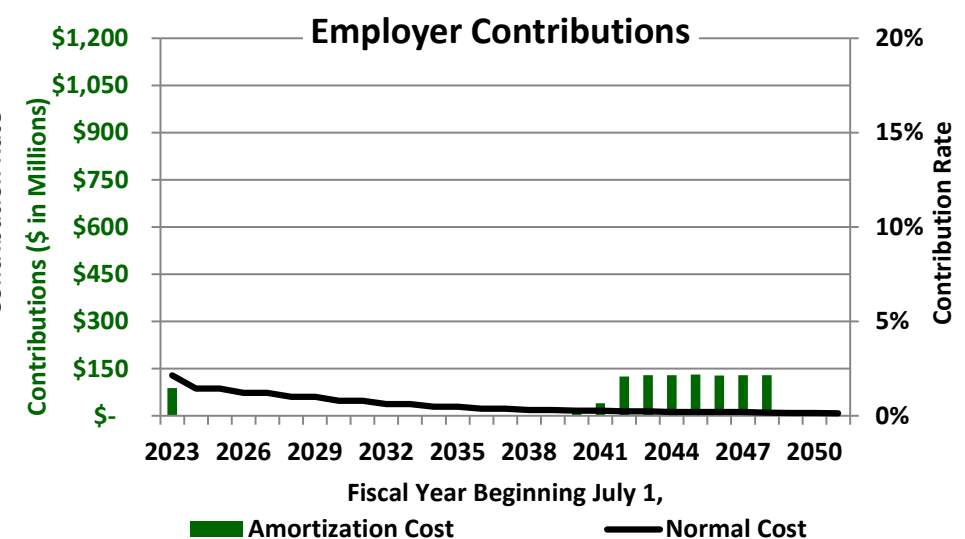
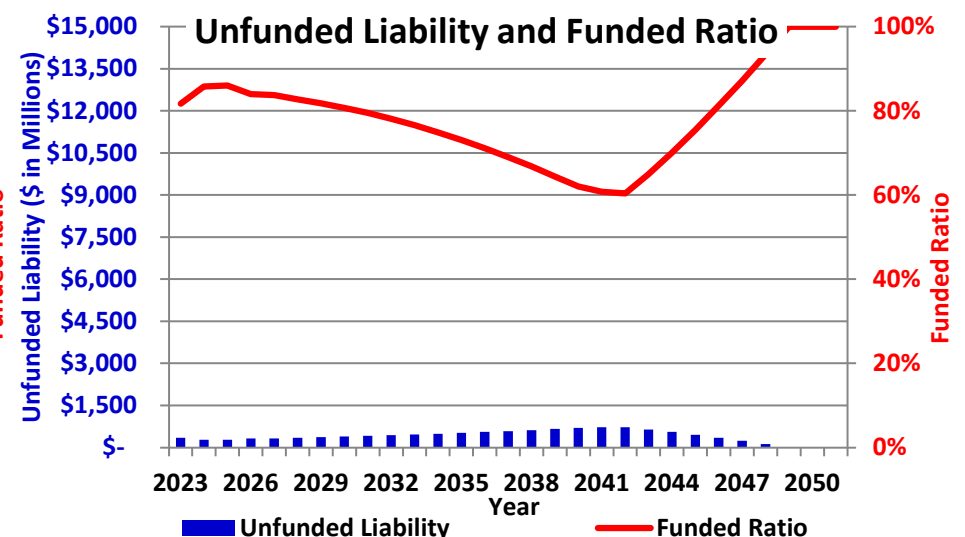


KERS Non-Hazardous Projection

Pension

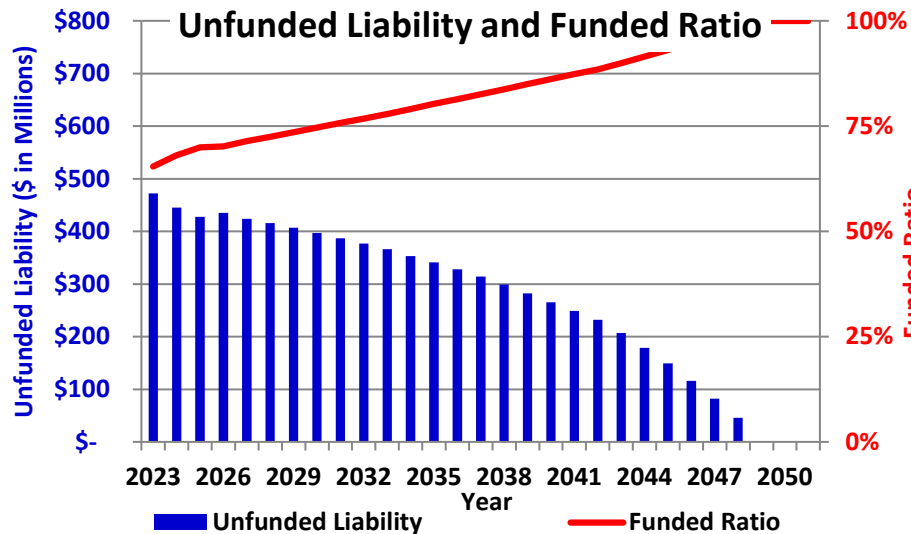


Insurance

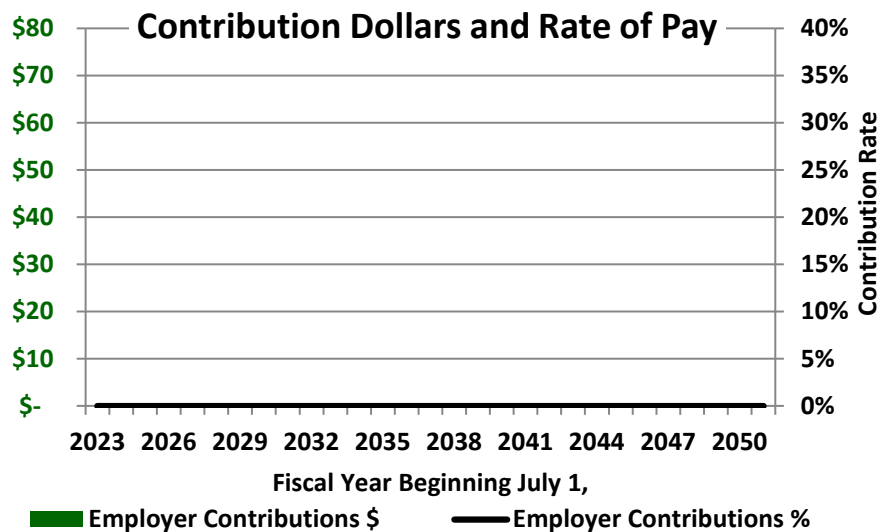
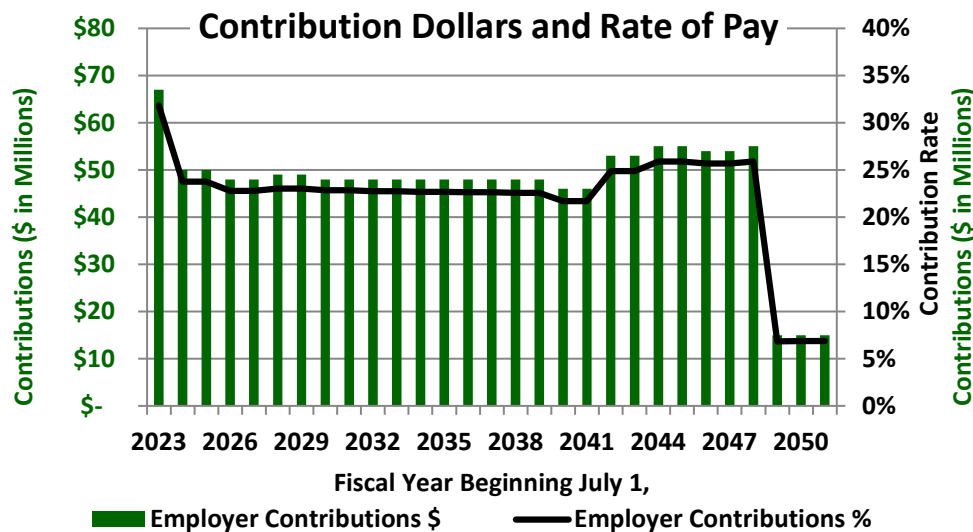
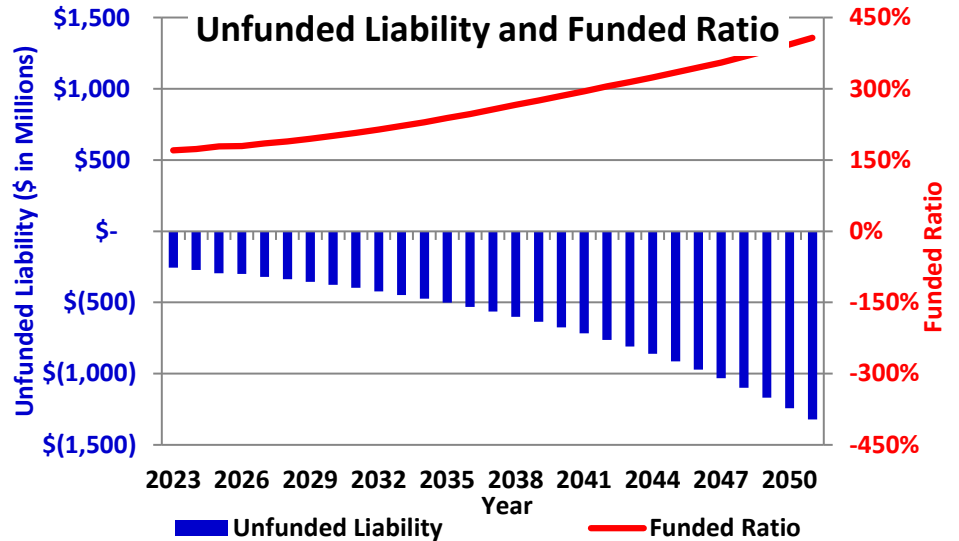


KERS Hazardous Projection

Pension

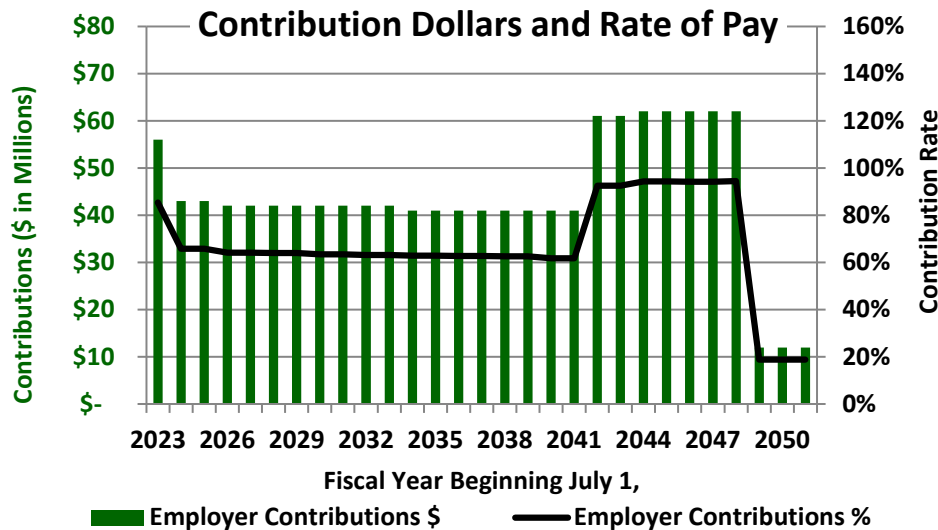
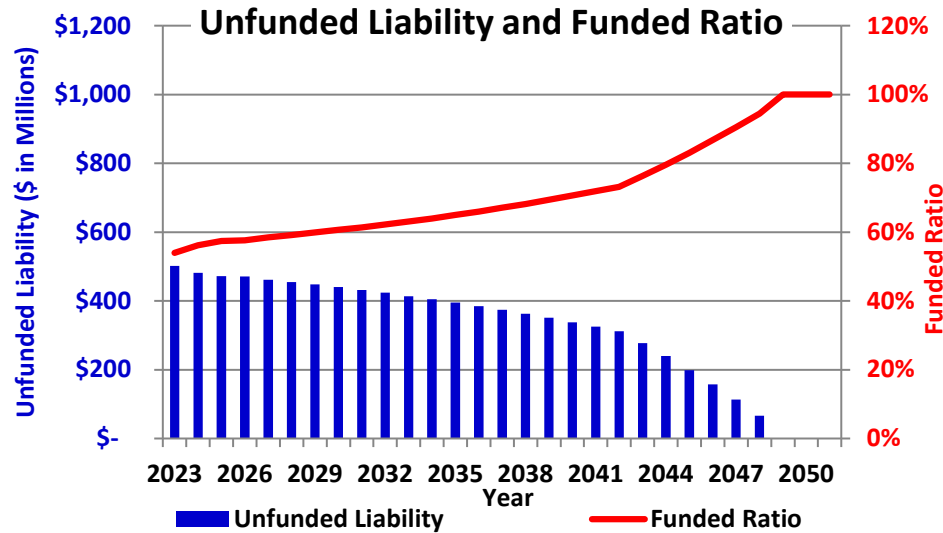


Insurance

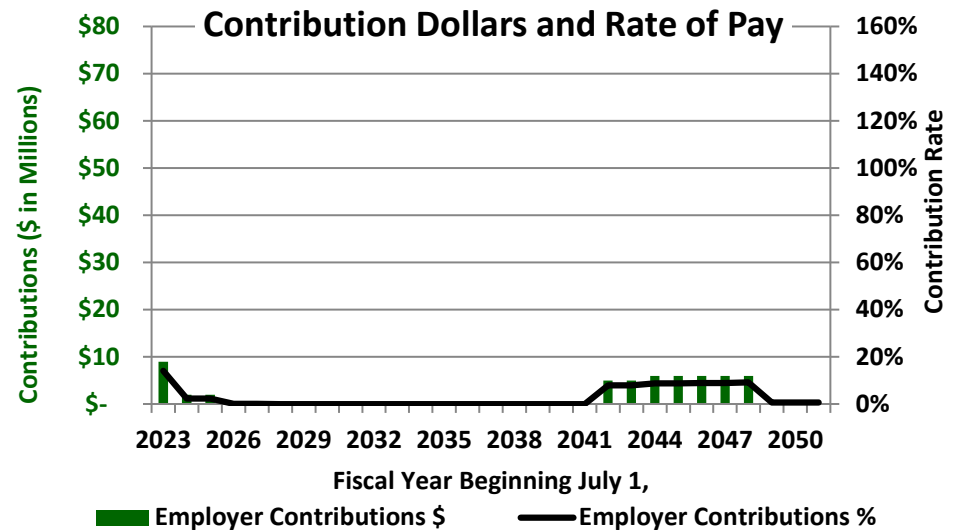
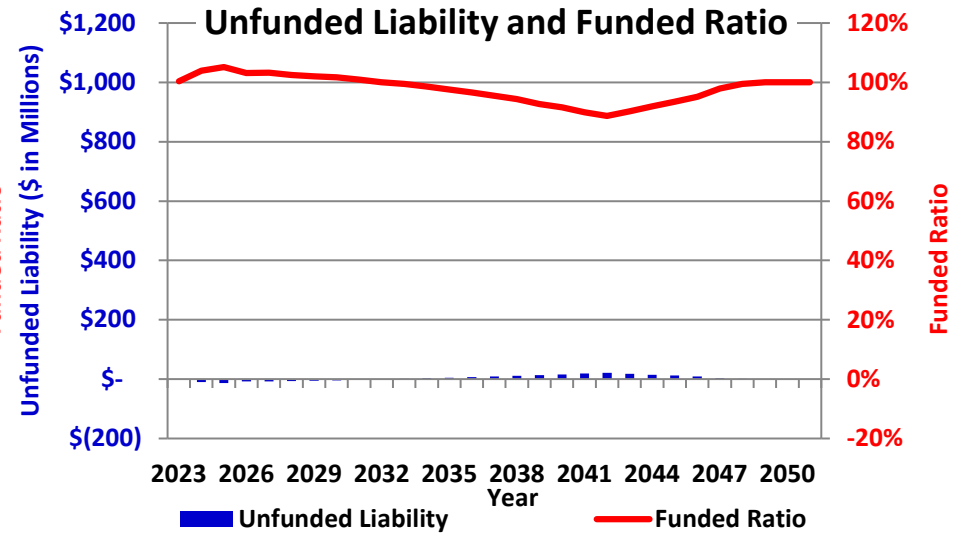


SPRS Projection

Pension



Insurance



Closing Comments on 2023 Valuation Results

- It is imperative the State and participating employers continue contributing the actuarially determined contributions in each future year to improve the System's financial security
- The increase in active members and payroll is a positive signal to the financial wellbeing of the System and the participating employers



Disclaimers

- This presentation is intended to be used in conjunction with the actuarial valuation as of June 30, 2023. This presentation should not be relied on for any purpose other than the purpose described in the valuation report.
- This presentation shall not be construed to provide tax advice, legal advice or investment advice.
- 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.



Kentucky Employees Retirement System (KERS)

Actuarial Valuation Report
as of June 30, 2023

DRAFT





November 13, 2023

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

Subject: Actuarial Valuation as of June 30, 2023

Dear Trustees of the Board:

This report describes the current actuarial condition of the Kentucky Employees Retirement System (KERS) and provides the actuarially determined employer contribution for fiscal years ending June 30, 2025 and June 30, 2026. In addition, the report analyzes changes in KERS's financial condition and provides various summaries of the data.

Separate reports are issued with regard to valuation results determined in accordance with Governmental Accounting Standards Board (GASB) Statements 67, 68, 74 and 75. Results of this report should not be used for any other purpose without consultation with the undersigned. Valuations are prepared annually as of June 30, the first day of the plan year for KERS. This report was prepared at the request of the Board of Trustees of the Kentucky Retirement Systems (Board) and is intended for use by the Kentucky Public Pensions Authority (KPPA) staff and those designated or approved by the Board.

FINANCING OBJECTIVES AND FUNDING POLICY

The contributions determined by these actuarial valuations are intended to become effective twelve months after the valuation date and, as such, are intended to be used by the Board for recommending required contribution rates effective July 1, 2024, as well as the subsequent fiscal year beginning July 1, 2025 and ending June 30, 2026.

The employer contribution is determined in accordance with Section 61.565 of Kentucky Statute. As specified by the Statute, the employer contribution is comprised of a normal cost contribution and an actuarial accrued liability contribution. The actuarial accrued liability contribution is calculated by amortizing the unfunded accrued liability as of June 30, 2019 over a closed 30-year amortization period (26 years remaining as of June 30, 2023). Gains and losses incurring in years after June 30, 2019 are amortized as separate closed 20-year amortization bases.

Board of Trustees
November 13, 2023
Page 2

If the contributions made are equal to the Actuarially Determined Contribution (ADC), and if all actuarial assumptions are met, there will not be an unfunded accrued liability at the end of the 26-year period remaining from the original closed 30-year amortization base. Accordingly, the ADC under the funding policy can be considered a “Reasonable Actuarially Determined Contribution” as required by the Actuarial Standards of Practice.

House Bill 8 passed during the 2021 legislative session and specified the method for allocating and collecting contributions from the participating employers in the non-hazardous fund. Each employer will pay a normal cost contribution on the payroll of their covered employees and contribute to the fund an allocated share of the cost required to amortize the unfunded liability.

HB 1 and HB 604 were enacted in the 2022 legislative session and provided an additional \$135 million and \$105 million in appropriations to finance the unfunded actuarial accrued liability in the KERS non-hazardous retirement fund in FY 2023 and FY 2024. The previous year’s valuation reflected the appropriations for FY 2023 in the calculated contribution requirement, and the appropriations for FY 2024 have been reflected in the contribution requirement in this year’s valuation.

ASSUMPTIONS AND METHODS

The Board of Trustees, in consultation with the actuary, sets the actuarial assumptions and methods used in the actuarial valuation. Except where noted in this report, the assumptions used in this actuarial valuation are based on an experience study conducted with experience through June 30, 2022, adopted by the Board of Trustees on June 5, 2023 for first use in this June 30, 2023 actuarial valuation.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can, and almost certainly will, differ as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contributions, and funding periods. The actuarial calculations are intended to provide information for rational decision making.

BENEFIT PROVISIONS

The benefit provisions reflected in these valuations are those which were in effect on June 30, 2023. House Bill 506 passed during the 2023 legislative session and reinstated the Partial Lump Sum Option Form of payment for members who retire on and after January 1, 2024, and adjusted the minimum required separation period before a retiree may become reemployed and continue to receive their retirement allowance to one month for all circumstances. There were no other material benefit provision changes since the prior valuation.



Board of Trustees
November 13, 2023
Page 3

DATA

Member data for retired, active and inactive members was supplied as of June 30, 2023, by KPPA staff. The staff also supplied asset information as of June 30, 2023. We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent with the prior year's data. GRS is not responsible for the accuracy or completeness of the information provided to us by KPPA.

CERTIFICATION

We certify that the information presented herein is accurate and fairly portrays the actuarial position of KERS as of June 30, 2023.

All of our work conforms with generally accepted actuarial principles and practices, and is in conformity with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of Kentucky Code of Laws and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All three of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

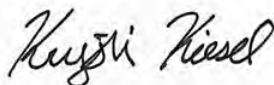
Gabriel, Roeder, Smith & Company



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



Janie Shaw, ASA, EA, MAAA
Consultant



Krysti Kiesel, ASA, MAAA
Senior Analyst and Actuary



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SECTION 1

EXECUTIVE SUMMARY

DRAFT

Summary of Principal Results

(Dollar amounts expressed in thousands)

	Non-Hazardous		Hazardous		Total	
	June 30, 2023	June 30, 2022	June 30, 2023	June 30, 2022	June 30, 2023	June 30, 2022
Contribution Rate, payable on covered payroll¹:						
Retirement	6.99%	7.74%	23.74%	30.12%		
Insurance	<u>1.45%</u>	<u>1.86%</u>	<u>0.00%</u>	<u>0.00%</u>		
Total	8.44%	9.60%	23.74%	30.12%	N/A	N/A
Amortization Cost to be allocated amongst employers	\$856,561	\$905,893	N/A	N/A	N/A	N/A
Assets:						
Retirement						
• Actuarial value (AVAR)	\$3,552,471	\$3,065,263	\$891,460	\$832,436	\$4,443,931	\$3,897,699
• Market value (MVAR)	\$3,539,943	\$3,013,845	\$893,533	\$810,978	\$4,433,476	\$3,824,823
• Ratio of actuarial to market value of assets	100.4%	101.7%	99.8%	102.6%	100.2%	101.9%
Insurance						
• Actuarial value (AVAI)	\$1,532,895	\$1,409,553	\$619,519	\$597,701	\$2,152,414	\$2,007,254
• Market value (MVAI)	\$1,532,752	\$1,364,419	\$625,356	\$588,162	\$2,158,108	\$1,952,581
• Ratio of actuarial to market value of assets	100.0%	103.3%	99.1%	101.6%	99.7%	102.8%
Funded Status:						
Retirement						
• Actuarial accrued liability	\$16,304,278	\$16,576,631	\$1,363,036	\$1,316,825	\$17,667,314	\$17,893,456
• Unfunded accrued liability on AVAR	\$12,751,807	\$13,511,368	\$471,576	\$484,389	\$13,223,383	\$13,995,757
• Funded ratio on AVAR	21.8%	18.5%	65.4%	63.2%	25.2%	21.8%
• Unfunded accrued liability on MVAR	\$12,764,335	\$13,562,786	\$469,503	\$505,847	\$13,233,838	\$14,068,633
• Funded ratio on MVAR	21.7%	18.2%	65.6%	61.6%	25.1%	21.4%
Insurance						
• Actuarial accrued liability	\$1,877,109	\$1,782,386	\$363,512	\$347,044	\$2,240,621	\$2,129,430
• Unfunded accrued liability on AVAI	\$344,214	\$372,833	(\$256,007)	(\$250,657)	\$88,207	\$122,176
• Funded ratio on AVAI	81.7%	79.1%	170.4%	172.2%	96.1%	94.3%
• Unfunded accrued liability on MVAI	\$344,357	\$417,967	(\$261,844)	(\$241,118)	\$82,513	\$176,849
• Funded ratio on MVAI	81.7%	76.6%	172.0%	169.5%	96.3%	91.7%
Membership:						
• Number of						
- Active Members	31,383	29,551	3,886	3,617	35,269	33,168
- Retirees and Beneficiaries	48,409	48,195	4,887	4,850	53,296	53,045
- Inactive Members	55,980	55,510	8,577	8,154	64,557	63,664
- Total	135,772	133,256	17,350	16,621	153,122	149,877
• Projected payroll of active members	\$1,615,868	\$1,355,267	\$211,602	\$165,637	\$1,827,470	\$1,520,904
• Average salary of active members	\$51,489	\$45,862	\$54,452	\$45,794	\$51,815	\$45,855

¹ Reflects contribution rate payable as a percentage of covered payroll. For the non-hazardous fund, this includes the normal cost portion of the contribution requirement only. For the hazardous fund, this includes both the normal cost and unfunded liability portion of the contribution requirement.

¹ Contribution rates calculated with the June 30, 2023 valuation are effective for fiscal years ending June 30, 2025 and June 30 2026.



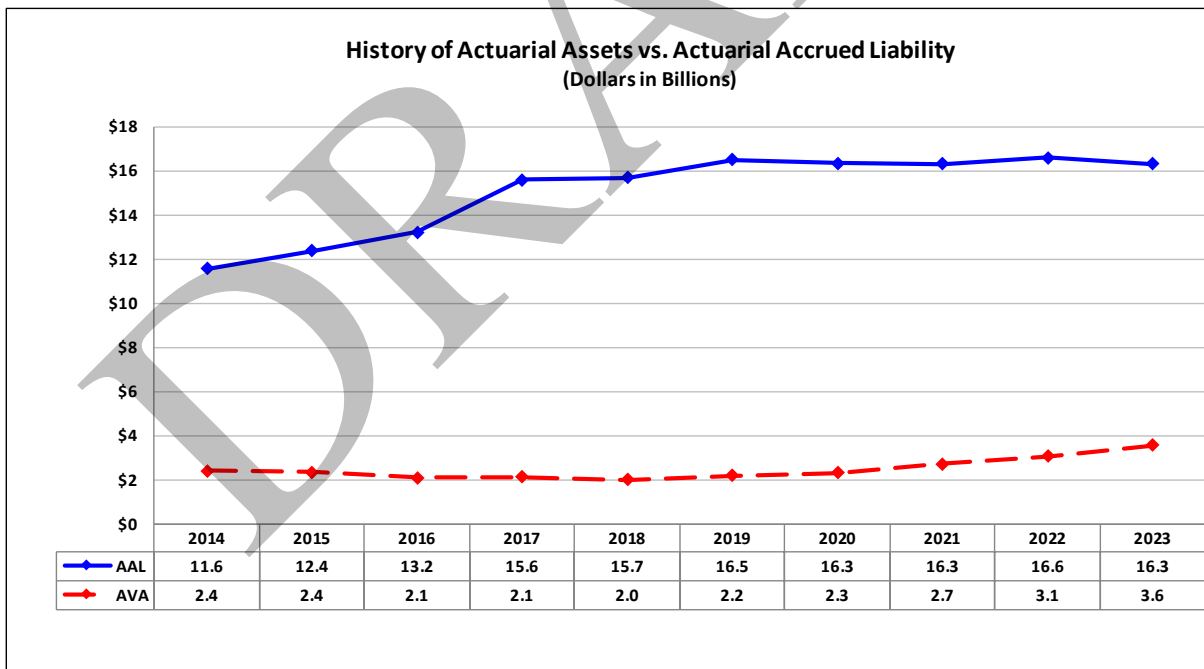
Executive Summary (Continued)

Non-Hazardous Retirement Fund

The unfunded actuarial accrued liability of the non-hazardous retirement fund decreased by \$760 million since the prior year's valuation to \$12.752 billion. This decrease was approximately \$251 million more than expected, primarily due to lower liabilities due to the assumption changes based on the 2022 experience study. The decrease in the liability due to the assumption changes was offset by liability losses as a result of salary increases for individual members being greater than assumed.

For FYE 2023, the non-hazardous retirement fund distributed \$1,049 million in benefit payments and administrative expenses, and received \$1,360 million in employer and employee contributions. As of June 30, 2023, plan assets for this system were \$3,540 million (excluding assets in the 401(h) account). To stabilize the financial condition of this system, it is imperative that contributions to the system continue to exceed the benefit payments.

Below is a chart with the historical actuarial value of assets and actuarial accrued liability. The divergence in the assets and liability at the beginning of the ten-year period was generally due to: (1) actual contributions being insufficient to finance the unfunded actuarial accrued liability, and (2) assumption changes.

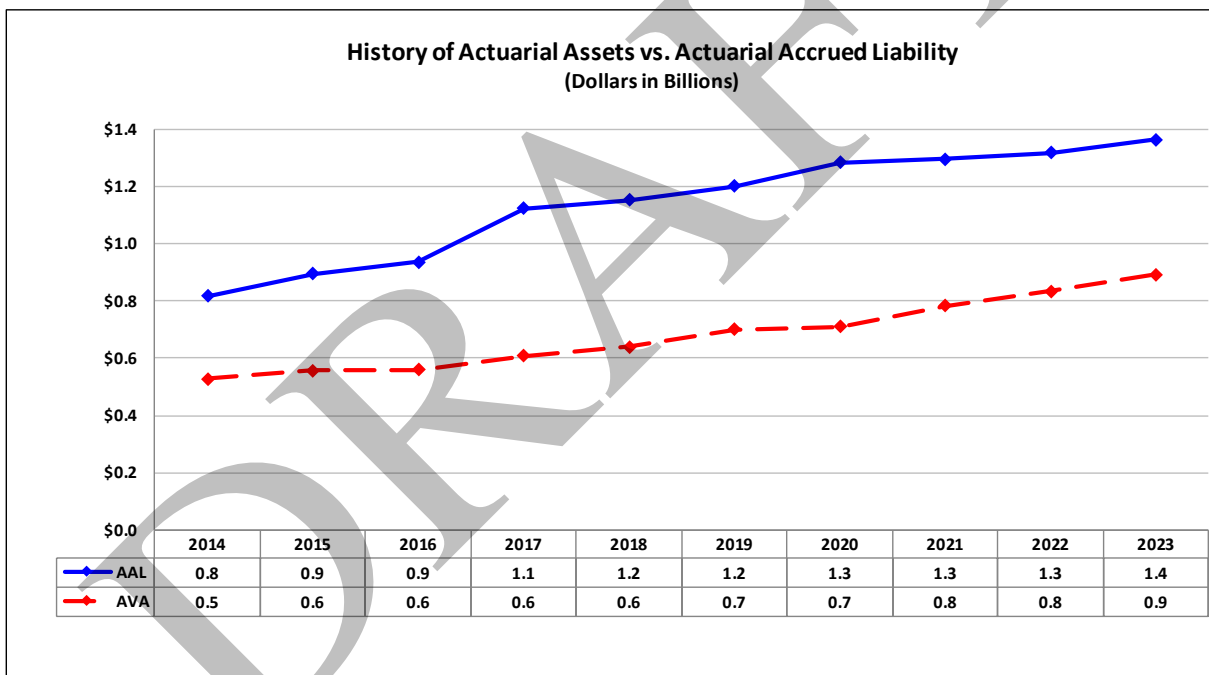


Executive Summary (Continued)

Hazardous Retirement Fund

The unfunded actuarial accrued liability of the hazardous retirement fund decreased by \$13 million since the prior year's valuation to \$472 million. This decrease was approximately \$22 million less than expected, primarily due to liability losses as a result of salary increases for individual members being greater than assumed. The increase in the liability due to demographic losses was offset by a decrease in liabilities due to the assumption changes based on the 2022 experience study.

Below is a chart with the historical actuarial value of assets and actuarial accrued liability. The divergence in the assets and liability at the beginning of the ten-year period was generally due to: (1) actual contributions being insufficient to finance the unfunded actuarial accrued liability, and (2) assumption changes.



Executive Summary (Continued)

Summary of Change in Financial Condition of the Insurance Funds

The unfunded actuarial accrued liability of the non-hazardous insurance fund decreased by \$29 million since the prior year's valuation to \$344 million. This decrease was approximately \$57 million less than expected, primarily due to liability losses related to the 2024 premium experience and retiree contribution changes discussed below. The increase in the liability due to demographic losses was offset by a decrease in liabilities due to the assumption changes based on the 2022 experience study.

Similarly, the funding surplus (actuarial accrued liability in excess of assets) of the hazardous insurance fund increased by \$5 million since the prior year's valuation to \$256 million. This increase was approximately \$6 million less than expected.

On average, pre-Medicare premiums were approximately 7% higher than expected and Medicare premiums were approximately 4% lower than expected. In conjunction with the review of the healthcare per capita claims cost, the assumed increase in future healthcare costs, or trend assumption, is also reviewed on an annual basis. The trend assumption for the pre-Medicare Plans was increased in the 2023 actuarial valuation as a result of our review. These changes increased liability for the non-hazardous and hazardous insurance funds by approximately \$38 million and \$13 million, respectively.

Additionally, the Board of Trustees adopted to lower the retiree contribution for the Medicare Advantage plans from \$252.51 to be based on the Humana premiums (\$93.35 as of January 1, 2024). The Board also adopted the Medical Only plan as the KPPA "contribution plan", which further lowered member contributions for those with less than 20 years of service. These changes increased liability for the non-hazardous and hazardous insurance funds by approximately \$123 million and \$14 million, respectively.



SECTION 2

DISCUSSION

Discussion

The Kentucky Employees Retirement System (KERS) is a defined benefit pension plan that provides coverage for employees of state government, non-teaching staff at regional state supported universities, local health departments, regional mental health/mental retardation agencies, and other quasi-state agencies. KERS includes both non-hazardous and hazardous duty benefits. This report presents the results of the June 30, 2023 actuarial funding valuation for both the Retirement Funds and Insurance Funds.

The primary purposes of the valuation report are to describe the current actuarial condition of KERS and provide the actuarially determined employer contributions for fiscal years ending June 30, 2025 and June 30, 2026. In addition, the report analyzes changes in KERS's financial condition, and provides various summaries of the data.

The actuarially determined contribution consist of two components: a normal cost rate and an amortization cost to finance the unfunded actuarial accrued liability. The normal cost rate is the theoretical amount which would be required to pay the members' benefits, based on the current plan provisions, if this amount had been contributed from each member's entry date and if the fund's experience exactly followed the actuarial assumptions. This is the amount that it should cost to provide the benefits for an average member. Since members contribute to the fund, only the excess of the normal cost rate over the member contribution rate is included in the employer contribution. The amortization cost is the amount necessary to amortize the unfunded actuarial accrued liability. The payroll growth rate and discount rate assumptions are selected by the Board. The funding period is specified in Section 61.565 of Kentucky Statute.

All of the actuarial and financial tables referenced by the other sections of this Report appear in Section 3. Section 4 provides additional details related to the calculation of the amortization of the unfunded actuarial accrued liability. Section 5 provides member data and statistical information. Section 6 provides a discussion of various risk measures, which are intended to aid stakeholders in understanding the effects of future experience differing from the assumptions used in performing an actuarial valuation. Appendices A and B provide summaries of the principle actuarial assumptions and methods and plan provisions. Appendix C provides a glossary of technical terms that are used throughout this report. Finally, Appendix D provides the allocation of the amortization cost amongst KERS Non-Hazardous employers in accordance with Statutes enacted with the passing of House Bill 8 during the 2021 legislation session.

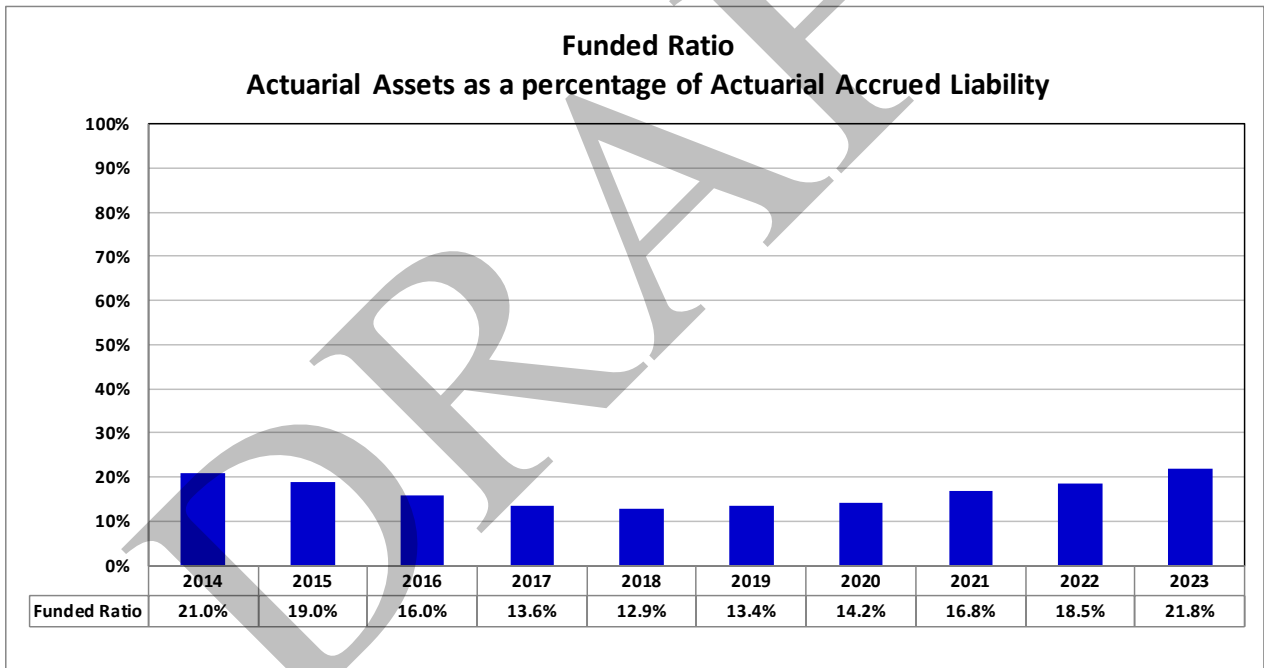


Funding Progress

The following charts provide a ten-year history of the retirement funds’ funded ratio (i.e. the Actuarial Value of Assets divided by the Actuarial Accrued Liability). The decline in the funded ratio in the first half of this ten-year period was generally due to: (1) actual contributions being insufficient to finance the unfunded actuarial accrued liability, and (2) decreases in the assumed rate of return.

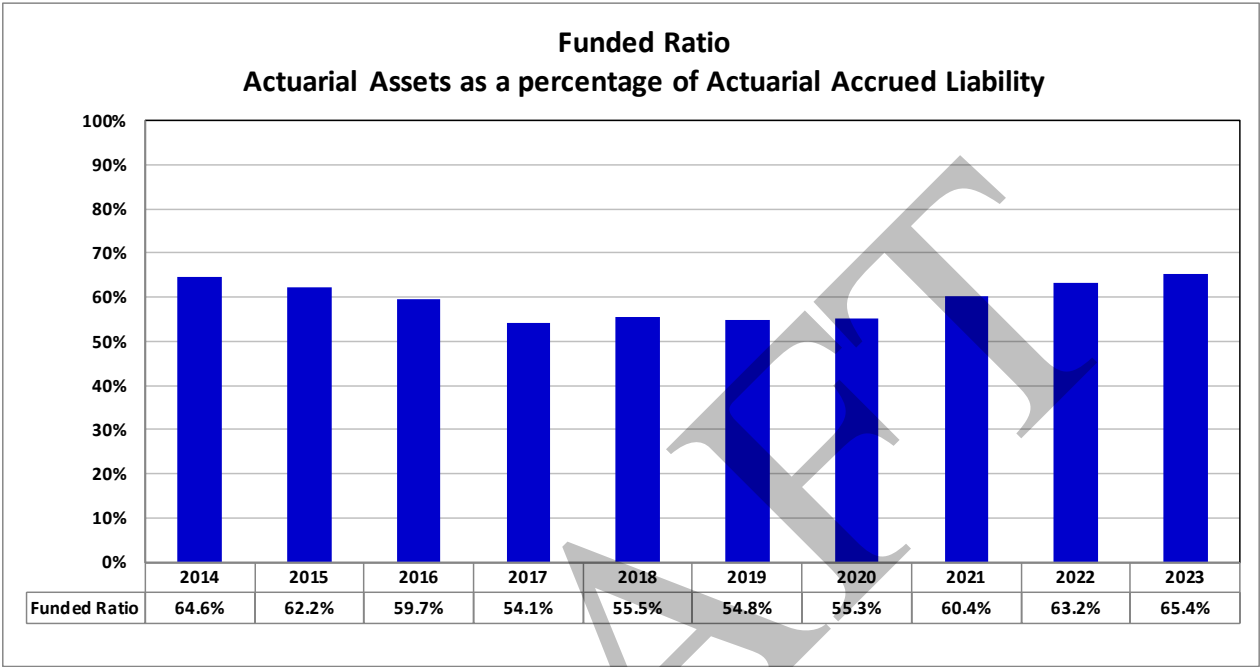
The funded ratio has been gradually increasing for the past several years for both the non-hazardous and hazardous funds. Assuming the full actuarially determined contributions are paid in future years and absent material future unfavorable experience, the funded ratio is expected to continue improving. Also, the dollar amount of the unfunded actuarial accrued liability, or the difference between the actuarial accrued liability and the actuarial value of assets, is also expected to continue a decreasing trend. Table 9, Schedule of Funding Progress, in the following section of the report provides additional detail regarding the funding progress of the retirement funds.

Non-Hazardous Retirement Fund



Funding Progress (Continued)

Hazardous Retirement Fund



Asset Gains/ (Losses)

The actuarial value of assets (“AVA”) is based on a smoothed market value of assets, using a systematic approach to phase-in the difference between the actual and expected investment return on the market value of assets (adjusted for receipts and disbursements during the year). This is appropriate because it dampens the short-term volatility inherent in investment markets. The return is computed net of investment expenses.

Non-Hazardous Retirement Fund

The actuarial value of assets for the retirement fund increased from \$3.065 billion to \$3.552 billion since the prior valuation. The rate of return on the market value of assets on a dollar-weighted basis for the prior fiscal year was 6.8% which is greater than the 5.25% expected annual return. The return on an actuarial (smoothed) asset value was 5.5%, which resulted in a \$8 million gain for the fiscal year. The market value of assets is \$13 million less than the actuarial value of assets, which signifies that the retirement fund is in a position of net deferred investment losses to be realized in future years.

Hazardous Retirement Fund

Likewise, the actuarial value of assets for the hazardous retirement fund increased from \$832 million to \$891 million since the prior valuation. The rate of return on the market value of assets on a dollar-weighted basis for the prior fiscal year was 9.4% which is greater than the 6.25% expected annual return. The return on an actuarial (smoothed) asset value was 6.3%, which resulted in a \$0.7 million gain for the fiscal year. The market value of assets is \$2 million more than the actuarial value of assets, which signifies that the retirement fund is in a position of net deferred investment gains to be realized in future years.

Table 6 in the following section of this report provides asset information that was included in the annual financial statements of the funds, as well as the estimated yield on a market value basis. Tables 7 and 8 provide the development of the actuarial value of assets and the estimated yield on an actuarial value basis.

Actuarial Gains/ (Losses)

The annual actuarial valuation is a snapshot analysis of the benefit liabilities, assets and funded position of the funds as of the first day of the plan year. In any one fiscal year, the experience can be better or worse from that which is assumed or expected. The actuarial assumptions do not necessarily attempt to model what the experience will be for any one given fiscal year, but instead try to model the overall experience over many years. Therefore, as long as the actual experience of a retirement system is reasonably close to the current assumptions, the long-term funding requirements of the system will remain relatively consistent.

Below are tables that separately show a reconciliation of the unfunded liability since the prior actuarial valuation for the retirement and health insurance funds, which include the effect of asset and liability gains and losses, changes in assumptions, and changes in plan provisions. See the discussion in the Executive Summary for additional information related to the liability experience and additional information in this section of the report related to the asset experience, plan changes, and assumption changes.

Retirement Experience Gain or (Loss) (Dollar amounts expressed in thousands)

	Non-Hazardous	Hazardous
A. Calculation of total actuarial gain or loss		
1. Unfunded actuarial accrued liability (UAAL), previous year	\$ 13,511,368	\$ 484,389
2. Normal cost and administrative expenses	172,661	27,496
3. Less: contributions for the year	(1,359,585)	(90,266)
4. Interest accrual	678,190	28,313
5. Expected UAAL (Sum of Items 1 - 4)	\$ 13,002,634	\$ 449,932
6. Actual UAAL as of June 30, 2023	\$ 12,751,807	\$ 471,576
7. Total gain (loss) for the year (Item 5 - Item 6)	\$ 250,827	\$ (21,644)
B. Source of gains and losses		
8. Asset gain (loss) for the year	\$ 7,922	\$ 731
9. Liability experience gain (loss) for the year	(446,156)	(46,572)
10. Plan Change	(2,073)	—
11. Assumption change	691,134	24,197
12. Total	\$ 250,827	\$ (21,644)



Actuarial Gains/ (Losses) (Continued)

Insurance Experience Gain or (Loss) (Dollar amounts expressed in thousands)

	Non-Hazardous	Hazardous
A. Calculation of total actuarial gain or loss		
1. Unfunded actuarial accrued liability (UAAL), previous year	\$ 372,833	\$ (250,657)
2. Normal cost and administrative expenses	31,633	6,839
3. Less: contributions for the year	(137,466)	(3,074)
4. Interest accrual	19,995	(15,548)
5. Expected UAAL (Sum of Items 1 - 4)	286,995	(262,440)
6. Actual UAAL as of June 30, 2023	\$ 344,214	(256,007)
7. Total gain (loss) for the year (Item 5 - Item 6)	\$ (57,219)	\$ (6,433)
B. Source of gains and losses		
8. Asset gain (loss) for the year	\$ (1,780)	\$ 1,558
9. Liability experience gain (loss) for the year	(163,089)	(22,782)
10. Plan Change	(2,161)	—
11. Assumption change	109,811	14,791
12. Total	\$ (57,219)	\$ (6,433)



Actuarial Assumptions and Methods

In determining costs and liabilities, actuaries use assumptions about the future, such as rates of salary increase, probabilities of retirement, termination, death and disability, and an annual investment return assumption. The Board of Trustees, in consultation with the actuary, sets the actuarial assumptions and methods used in the actuarial valuation.

An experience study was conducted after the June 30, 2022 actuarial valuation and the Board adopted updated assumptions for use in this actuarial valuation. The updated assumptions include:

Demographic Assumptions:

- Post-retirement mortality rates were updated based on KPPA experience.
- Mortality improvement assumption was updated to the ultimate rates of the MP-2020 mortality improvement scale.
- Rates of termination prior to retirement were increased based on KERS experience.
- Rates of disability incidence for the non-hazardous fund were decreased based on KERS experience.

Economic Assumptions:

- The rate of inflation was increased from 2.30% to 2.50%.
- The salary productivity assumption was reduced by 0.20%, resulting in no change in the salary increase assumption for long-service employees of 3.30% in the non-hazardous fund and 3.55% in the hazardous fund.
- The investment return assumption for each insurance fund was increased from 6.25% to 6.50%.
- The Tier 3 cash balance interest crediting rate assumption was increased to 5.90% for the non-hazardous fund and to 6.75% for the hazardous fund.

In conjunction with the review of the healthcare per capita claims cost, the assumed increase in future healthcare costs, or trend assumption, is reviewed on an annual basis. All other assumptions were adopted by the Board and are based on an experience study conducted based on experience through June 30, 2022. It is our opinion that the assumptions are internally consistent, reasonable, and reflect anticipated future experience of the System. Appendix A includes a summary of the actuarial assumptions and methods used in this valuation.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. This report does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.



Benefit Provisions

Appendix B of this report includes a summary of the major benefit provisions for System. The following is a summary of the changes in benefits enacted since the last actuarial valuation.

House Bill 506 passed during the 2023 legislative session and reinstated the Partial Lump Sum Option Form of payment for members who retire on and after January 1, 2024, with the lump-sum options expanded to include 48 or 60 times the member's monthly retirement allowance. Since this optional form of payment results in a reduced, actuarial equivalent, monthly retirement allowance for members who elect a partial lump-sum option, this provision does not have a fiscal impact to the accrued liability.

House Bill 506 also adjusted the minimum required separation period before a retiree may become reemployed and continue to receive their retirement allowance to one month for all circumstances for each plan. This is a minimal change for members in the hazardous plan, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe this provision of House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members.

Similarly, this is a relatively small change for future retirees in the non-hazardous plan. But as the minimum separation period was previously three months in almost every circumstance, we have assumed that there would be a 1.0% increase in the rate of retirement for each of the first two years a non-hazardous member becomes retirement eligible under the age of 65, in order to reflect a shift in the retirement pattern.

There were no other material plan provision changes since the prior valuation.



SECTION 3

ACTUARIAL TABLES

Actuarial Tables

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2	19	ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS
3	20	DEVELOPMENT OF REQUIRED CONTRIBUTION RATE
4	21	ACTUARIAL BALANCE SHEET – NON-HAZARDOUS MEMBERS
5	22	ACTUARIAL BALANCE SHEET – HAZARDOUS MEMBERS
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7	24	DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS – NON-HAZARDOUS MEMBERS
8	25	DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS – HAZARDOUS MEMBERS
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INSURANCE BENEFITS		
12	30	DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITY
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19	37	SCHEDULE OF FUNDING PROGRESS
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RETIREMENT BENEFITS

ACTUARIAL TABLES

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Development of Unfunded Actuarial Accrued Liability Retirement Benefits

(Dollar amounts expressed in thousands)

		June 30, 2023	
		Non-Hazardous (1)	Hazardous (2)
1.	Projected payroll of active members	\$ 1,615,868	\$ 211,602
2.	Present value of future pay	\$ 12,142,967	\$ 1,450,768
3.	Normal cost rate		
a.	Total normal cost rate	11.13%	15.00%
b.	Less: member contribution rate	-5.00%	-8.00%
c.	Employer normal cost rate	6.13%	7.00%
4.	Actuarial accrued liability for active members		
a.	Present value of future benefits	\$ 5,585,999	\$ 646,412
b.	Less: present value of future normal costs	(1,295,406)	(212,696)
c.	Actuarial accrued liability	\$ 4,290,593	\$ 433,716
5.	Total actuarial accrued liability		
a.	Retirees and beneficiaries	\$ 11,316,494	\$ 868,920
b.	Inactive members	697,191	60,400
c.	Active members (Item 4c)	4,290,593	433,716
d.	Total	\$ 16,304,278	\$ 1,363,036
6.	Actuarial value of assets	\$ 3,552,471	\$ 891,460
7.	Unfunded actuarial accrued liability (UAAL) (Item 5d - Item 6)	\$ 12,751,807	\$ 471,576
8.	Funded Ratio	21.8%	65.4%



Actuarial Present Value of Future Benefits**Retirement Benefits****(Dollar amounts expressed in thousands)**

		June 30, 2023	
		Non-Hazardous (1)	Hazardous (2)
1.	Active members		
a.	Service retirement	\$ 4,934,964	\$ 560,252
b.	Deferred termination benefits and refunds	427,537	61,225
c.	Survivor benefits	70,846	5,583
d.	Disability benefits	152,652	19,352
e.	Total	\$ 5,585,999	\$ 646,412
2.	Retired members		
a.	Service retirement	\$ 10,300,830	\$ 792,519
b.	Disability retirement	232,690	16,936
c.	Beneficiaries	782,974	59,465
d.	Total	\$ 11,316,494	\$ 868,920
3.	Inactive members		
a.	Vested terminations	\$ 643,058	\$ 47,294
b.	Nonvested terminations	54,133	13,106
c.	Total	\$ 697,191	\$ 60,400
4.	Total actuarial present value of future benefits	\$ 17,599,684	\$ 1,575,732



Development of Actuarially Determined Contribution Rate Retirement Benefits

	June 30, 2023	
	Non-Hazardous (1)	Hazardous (2)
1. Total normal cost rate		
a. Service retirement	7.14%	9.36%
b. Deferred termination benefits and refunds	3.18%	4.76%
c. Survivor benefits	0.30%	0.27%
d. Disability benefits	<u>0.51%</u>	<u>0.61%</u>
e. Total	11.13%	15.00%
2. Less: member contribution rate	<u>-5.00%</u>	<u>-8.00%</u>
3. Total employer normal cost rate	6.13%	7.00%
4. Administrative expenses	<u>0.86%</u>	<u>0.71%</u>
5. Net employer normal cost rate	6.99%	7.71%
6. UAAL amortization contribution rate	<u>N/A</u>	<u>16.03%</u>
7. Total calculated employer contribution payable as a percentage of covered payroll	6.99%	23.74%
8. Total amortization cost to be allocated amongst employers	\$ 854,588	N/A

Note: Per House Bill 8 (passed during the 2021 legislative session), amortization cost for the KERS Non-Hazardous fund is allocated amongst employers based on their 2019 Actuarial Accrued Liability. See appendix D for more information. Amortization cost for the hazardous fund is included in the contribution rate, payable as a percentage of payroll.



Actuarial Balance Sheet
Non-Hazardous Members Retirement
(Dollar amounts expressed in thousands)

	June 30, 2023 (1)	June 30, 2022 (2)
1. Assets - Present and Expected Future Resources		
a. Current assets (actuarial value)	\$ 3,552,471	\$ 3,065,263
b. Present value of future member contributions	\$ 607,148	\$ 525,509
c. Present value of future employer contributions		
i. Normal cost contributions	\$ 688,258	\$ 644,919
ii. Unfunded accrued liability contributions	12,751,807	13,511,368
iii. Total future employer contributions	\$ 13,440,065	\$ 14,156,287
d. Total assets	\$ 17,599,684	\$ 17,747,059
2. Liabilities - Present Value of Expected Future Benefit Payments		
a. Active members		
i. Present value of future normal costs	\$ 1,295,406	\$ 1,170,428
ii. Accrued liability	4,290,593	3,876,036
iii. Total present value of future benefits	\$ 5,585,999	\$ 5,046,464
b. Present value of benefits payable on account of current retired members and beneficiaries	\$ 11,316,494	\$ 11,991,589
c. Present value of benefits payable on account of current inactive members	\$ 697,191	\$ 709,006
d. Total liabilities	\$ 17,599,684	\$ 17,747,059



Actuarial Balance Sheet
Hazardous Members Retirement
(Dollar amounts expressed in thousands)

	<u>June 30, 2023</u> (1)	<u>June 30, 2022</u> (2)
1. Assets - Present and Expected Future Resources		
a. Current assets (actuarial value)	\$ 891,460	\$ 832,436
b. Present value of future member contributions	\$ 116,061	\$ 100,732
c. Present value of future employer contributions		
i. Normal cost contributions	\$ 96,635	\$ 87,873
ii. Unfunded accrued liability contributions	471,576	484,389
iii. Total future employer contributions	\$ 568,211	\$ 572,262
d. Total assets	\$ 1,575,732	\$ 1,505,430
2. Liabilities - Present Value of Expected Future Benefit Payments		
a. Active members		
i. Present value of future normal costs	\$ 212,696	\$ 188,605
ii. Accrued liability	433,716	370,497
iii. Total present value of future benefits	\$ 646,412	\$ 559,102
b. Present value of benefits payable on account of current retired members and beneficiaries	\$ 868,920	\$ 889,452
c. Present value of benefits payable on account of current inactive members	\$ 60,400	\$ 56,876
d. Total liabilities	\$ 1,575,732	\$ 1,505,430



Reconciliation of Retirement Net Assets**(Dollar amounts expressed in thousands)¹**

	Year Ending	
	June 30, 2023	June 30, 2023
	(1)	(2)
	Non-Hazardous	Hazardous
1. Value of assets at beginning of year	\$ 3,013,845	\$ 810,978
2. Revenue for the year		
a. Contributions		
i. Member contributions	\$ 84,579	\$ 17,459
ii. Employer contributions	1,034,991	72,778
iii. Other contributions (less 401h)	240,016	29
iv. Total	\$ 1,359,585	\$ 90,266
b. Income		
i. Interest, dividends, and other income	\$ 102,553	\$ 26,482
ii. Investment expenses	(17,072)	(5,824)
iii. Net	\$ 85,481	\$ 20,658
c. Net realized and unrealized gains (losses)	130,399	55,822
d. Total revenue	\$ 1,575,465	\$ 166,746
3. Expenditures for the year		
a. Disbursements		
i. Refunds	\$ 11,847	\$ 4,041
ii. Regular annuity benefits	1,023,704	78,636
iii. Other benefit payments	0	0
iv. Transfers to other systems	0	0
v. Total	\$ 1,035,551	\$ 82,677
b. Administrative expenses and depreciation	13,817	1,513
c. Total expenditures	\$ 1,049,368	\$ 84,190
4. Increase in net assets (Item 2. - Item 3.)	\$ 526,097	\$ 82,556
5. Value of assets at end of year (Item 1. + Item 4.)	\$ 3,539,943	\$ 893,533
6. Net external cash flow		
a. Dollar amount	\$ 310,217	\$ 6,076
b. Percentage of market value	9.5%	0.7%
7. Estimated annual return on net assets	6.8%	9.4%

¹ Amounts may not add due to rounding¹ Excludes 401h assets

Development of Actuarial Value of Assets**Non-Hazardous Members Retirement
(Dollar amounts expressed in thousands)***

Year Ending	June 30, 2023		
1. Actuarial value of assets at beginning of year	\$	3,065,263	
2. Market value of assets at beginning of year	\$	3,013,845	
3. Net new investments			
a. Contributions	\$	1,359,585	
b. Benefit payments		(1,035,551)	
c. Administrative expenses		(13,817)	
d. Subtotal	\$	310,217	
4. Market value of assets at end of year	\$	3,539,943	
5. Net earnings (Item 4. - Item 2. - Item 3.d.)	\$	215,880	
6. Assumed investment return rate for fiscal year		5.25%	
7. Expected return for immediate recognition	\$	166,370	
8. Excess return for phased recognition	\$	49,510	
9. Phased-in recognition, 20% of excess return on assets for prior years:			
	<u>Fiscal Year</u> <u>Ending June 30,</u>	<u>Excess</u> <u>Return</u>	<u>Recognized</u> <u>Amount</u>
a.	2023	\$ 49,510	\$ 9,902
b.	2022	(325,078)	(65,016)
c.	2021	389,946	77,989
d.	2020	(65,343)	(13,069)
e.	2019	4,070	814
f.	Total		\$ 10,621
10. Actuarial value of assets as of June 30, 2023 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	\$	3,552,471	
11. Ratio of actuarial value to market value		100.4%	
12. Estimated annual return on actuarial value of assets		5.5%	

* Amounts may not add due to rounding



Development of Actuarial Value of Assets
Hazardous Members Retirement
(Dollar amounts expressed in thousands)*

Year Ending	June 30, 2023
1. Actuarial value of assets at beginning of year	\$ 832,436
2. Market value of assets at beginning of year	\$ 810,978
3. Net new investments	
a. Contributions	\$ 90,266
b. Benefit payments	(82,677)
c. Administrative expenses	(1,513)
d. Subtotal	<u>\$ 6,076</u>
4. Market value of assets at end of year	\$ 893,533
5. Net earnings (Item 4. - Item 2. - Item 3.d.)	\$ 76,480
6. Assumed investment return rate for fiscal year	6.25%
7. Expected return for immediate recognition	\$ 50,876
8. Excess return for phased recognition	\$ 25,604
9. Phased-in recognition, 20% of excess return on assets for prior years:	

* Amounts may not add due to rounding



Schedule of Funding Progress
Retirement Benefits
(Dollar amounts expressed in thousands)

June 30, (1)	Actuarial Value of Assets (AVA) (2)	Actuarial Accrued Liability (AAL) (3)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2) (4)	Funded Ratio (2)/(3) (5)	Annual Covered Payroll (6)	UAAL as % of Payroll (4)/(6) (7)
Non-Hazardous Members						
2014	\$ 2,423,957	\$ 11,550,110	\$ 9,126,153	21.0%	\$ 1,577,496	578.5%
2015	2,350,990	12,359,673	10,008,683	19.0%	1,544,234	648.1%
2016	2,112,286	13,224,698	11,112,412	16.0%	1,529,249	726.7%
2017	2,123,623	15,591,641	13,468,018	13.6%	1,531,535	879.4%
2018	2,019,278	15,675,232	13,655,954	12.9%	1,471,477	928.0%
2019	2,206,280	16,466,428	14,260,148	13.4%	1,437,647	991.9%
2020	2,323,298	16,348,961	14,025,663	14.2%	1,387,761	1010.7%
2021	2,735,876	16,321,372	13,585,496	16.8%	1,349,330	1006.8%
2022	3,065,263	16,576,631	13,511,368	18.5%	1,355,267	997.0%
2023	3,552,471	16,304,278	12,751,807	21.8%	1,615,868	789.2%
Hazardous Members						
2014	\$ 527,897	\$ 816,850	\$ 288,953	64.6%	\$ 129,076	223.9%
2015	556,688	895,433	338,745	62.2%	128,680	263.2%
2016	559,487	936,706	377,219	59.7%	147,563	255.6%
2017	607,159	1,121,420	514,261	54.1%	162,418	316.6%
2018	639,262	1,151,923	512,661	55.5%	158,213	324.0%
2019	671,647	1,226,195	554,548	54.8%	150,446	368.6%
2020	709,587	1,283,769	574,182	55.3%	170,826	336.1%
2021	782,496	1,295,243	512,747	60.4%	162,836	314.9%
2022	832,436	1,316,825	484,389	63.2%	165,637	292.4%
2023	891,460	1,363,036	471,576	65.4%	211,602	222.9%
Total KERS Members						
2014	\$ 2,951,854	\$ 12,366,960	\$ 9,415,106	23.9%	\$ 1,706,572	551.7%
2015	2,907,678	13,255,106	10,347,428	21.9%	1,672,914	618.5%
2016	2,671,773	14,161,404	11,489,631	18.9%	1,676,812	685.2%
2017	2,730,782	16,713,061	13,982,279	16.3%	1,693,953	825.4%
2018	2,658,540	16,827,155	14,168,615	15.8%	1,629,690	869.4%
2019	2,877,927	17,692,623	14,814,696	16.3%	1,588,093	932.9%
2020	3,032,885	17,632,730	14,599,845	17.2%	1,558,587	936.7%
2021	3,518,372	17,616,615	14,098,243	20.0%	1,512,166	932.3%
2022	3,897,699	17,893,456	13,995,757	21.8%	1,520,904	920.2%
2023	4,443,931	17,667,314	13,223,383	25.2%	1,827,470	723.6%



Summary of Principal Assumptions and Methods

Below is a summary of the principal economic assumptions, cost method, and the method for financing the unfunded actuarial accrued liability:

	Non-Hazardous June 30, 2023	Hazardous June 30, 2023
Valuation date:	June 30, 2023	June 30, 2023
Actuarial cost method:	Entry Age Normal	Entry Age Normal
Amortization method:	Level percentage of payroll (0% payroll growth assumed)	Level percentage of payroll (0% payroll growth assumed)
Amortization period for contribution rate:	30-year closed period at June 30, 2019 Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases	30-year closed period at June 30, 2019 Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases
Asset valuation method:	5-Year Smoothed Market	5-Year Smoothed Market
Actuarial assumptions:		
Investment rate of return	5.25%	6.25%
Projected salary increases	3.30% to 15.30% (varies by service)	3.55% to 20.05% (varies by service)
Inflation	2.50%	2.50%
Post-retirement benefit adjustments	0.00%	0.00%
Retiree Mortality	System-specific mortality table based on mortality experience from 2013 to 2022, projected with the ultimate rates from MP-2020 mortality improvement scale using a base year of 2023.	System-specific mortality table based on mortality experience from 2013 to 2022, projected with the ultimate rates from MP-2020 mortality improvement scale using a base year of 2023.



Solvency Test
Retirement Benefits
(Dollar amounts expressed in thousands)

June 30, (1)	Actuarial Accrued Liability				Portion of Aggregate Accrued Liabilities Covered by Assets		
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed)	Valuation Assets	Active	Retired	ER Financed
	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Non-Hazardous Members							
2014	\$ 928,558	\$ 8,870,693	\$ 1,750,860	\$ 2,423,957	100.0%	16.9%	0.0%
2015	925,934	9,437,468	1,996,271	2,350,990	100.0%	15.1%	0.0%
2016	920,120	10,010,168	2,294,410	2,112,286	100.0%	11.9%	0.0%
2017	934,559	11,608,346	3,048,736	2,123,623	100.0%	10.2%	0.0%
2018	892,033	11,929,019	2,854,180	2,019,278	100.0%	9.4%	0.0%
2019	881,020	12,513,231	3,072,177	2,206,280	100.0%	10.6%	0.0%
2020	869,196	12,467,522	3,012,243	2,323,298	100.0%	11.7%	0.0%
2021	877,142	12,425,951	3,018,279	2,735,876	100.0%	15.0%	0.0%
2022	859,591	12,700,595	3,016,445	3,065,263	100.0%	17.4%	0.0%
2023	889,146	12,013,685	3,401,447	3,552,471	100.0%	22.2%	0.0%
Hazardous Members							
2014	\$ 83,664	\$ 581,231	\$ 151,955	\$ 527,897	100.0%	76.4%	0.0%
2015	83,606	633,189	178,638	556,688	100.0%	74.7%	0.0%
2016	86,705	648,482	201,519	559,487	100.0%	72.9%	0.0%
2017	93,350	746,350	281,720	607,159	100.0%	68.8%	0.0%
2018	89,106	810,311	252,506	639,262	100.0%	67.9%	0.0%
2019	86,663	879,818	259,714	671,647	100.0%	66.5%	0.0%
2020	95,528	898,128	290,113	709,587	100.0%	68.4%	0.0%
2021	97,559	916,431	281,253	782,496	100.0%	74.7%	0.0%
2022	94,538	946,328	275,959	832,436	100.0%	78.0%	0.0%
2023	103,310	929,320	330,406	891,460	100.0%	84.8%	0.0%



INSURANCE BENEFITS

ACTUARIAL TABLES

Development of Unfunded Actuarial Accrued Liability Insurance Benefits

(Dollar amounts expressed in thousands)

		June 30, 2023	
		Non-Hazardous (1)	Hazardous (2)
1.	Projected payroll of active members	\$ 1,615,868	\$ 211,602
2.	Present value of future pay	\$ 11,122,094	\$ 1,423,305
3.	Normal cost rate		
a.	Total normal cost rate	1.94%	2.77%
b.	Less: member contribution rate	-0.54%	-0.75%
c.	Employer normal cost rate	1.40%	2.02%
4.	Actuarial accrued liability for active members		
a.	Present value of future benefits	\$ 1,029,739	\$ 148,296
b.	Less: present value of future normal costs	(192,974)	(34,973)
c.	Actuarial accrued liability	\$ 836,765	\$ 113,323
5.	Total actuarial accrued liability		
a.	Retirees and beneficiaries	\$ 886,696	\$ 235,809
b.	Inactive members	153,648	14,380
c.	Active members (Item 4c)	836,765	113,323
d.	Total	\$ 1,877,109	\$ 363,512
6.	Actuarial value of assets	\$ 1,532,895	\$ 619,519
7.	Unfunded actuarial accrued liability (UAAL) (Item 5d - Item 6)	\$ 344,214	\$ (256,007)
8.	Funded Ratio	81.7%	170.4%



Development of Actuarially Determined Contribution Rate Insurance Benefits

	June 30, 2023	
	Non-Hazardous (1)	Hazardous (2)
1. Total normal cost rate	1.94%	2.77%
2. Less: member contribution rate	<u>-0.54%</u>	<u>-0.75%</u>
3. Total employer normal cost rate	1.40%	2.02%
4. Administrative expenses	<u>0.05%</u>	<u>0.06%</u>
5. Net employer normal cost rate	1.45%	2.08%
6. UAAL amortization contribution rate	<u>N/A</u>	<u>-11.29%</u>
7. Total calculated employer contribution payable as a percentage of covered payroll Max (0%, item 5. + item 6.)	1.45%	0.00%
8. Total amortization cost to be allocated amongst employers	\$ 1,973	N/A

Note: Per House Bill 8 (passed during the 2021 legislative session), amortization cost for the KERS Non-Hazardous fund is allocated amongst employers based on their 2019 Actuarial Accrued Liability. See appendix D for more information. Amortization cost for the hazardous fund is included in the contribution rate, payable as a percentage of payroll.



Actuarial Balance Sheet
Non-Hazardous Members Insurance
(Dollar amounts expressed in thousands)

	June 30, 2023 (1)	June 30, 2022 (2)
1. Assets - Present and Expected Future Resources		
a. Current assets (actuarial value)	\$ 1,532,895	\$ 1,409,553
b. Present value of future member contributions	\$ 71,426	\$ 58,444
c. Present value of future employer contributions		
i. Normal cost contributions	\$ 121,548	\$ 151,638
ii. Unfunded accrued liability contributions	344,214	372,833
iii. Total future employer contributions	\$ 465,762	\$ 524,471
d. Total assets	\$ 2,070,083	\$ 1,992,468
2. Liabilities - Present Value of Expected Future Benefit Payments		
a. Active members		
i. Present value of future normal costs	\$ 192,974	\$ 210,082
ii. Accrued liability	836,765	815,335
iii. Total present value of future benefits	\$ 1,029,739	\$ 1,025,417
b. Present value of benefits payable on account of current retired members and beneficiaries	\$ 886,696	\$ 881,211
c. Present value of benefits payable on account of current inactive members	\$ 153,648	\$ 85,840
d. Total liabilities	\$ 2,070,083	\$ 1,992,468



Actuarial Balance Sheet
Hazardous Members Insurance
(Dollar amounts expressed in thousands)

	<u>June 30, 2023</u> (1)	<u>June 30, 2022</u> (2)
1. Assets - Present and Expected Future Resources		
a. Current assets (actuarial value)	\$ 619,519	\$ 597,701
b. Present value of future member contributions	\$ 12,197	\$ 10,480
c. Present value of future employer contributions		
i. Normal cost contributions	\$ 22,776	\$ 35,517
ii. Unfunded accrued liability contributions	(256,007)	(250,657)
iii. Total future employer contributions	\$ (233,231)	\$ (215,140)
d. Total assets	\$ 398,485	\$ 393,041
2. Liabilities - Present Value of Expected Future Benefit Payments		
a. Active members		
i. Present value of future normal costs	\$ 34,973	\$ 45,997
ii. Accrued liability	113,323	114,459
iii. Total present value of future benefits	\$ 148,296	\$ 160,456
b. Present value of benefits payable on account of current retired members and beneficiaries	\$ 235,809	\$ 223,706
c. Present value of benefits payable on account of current inactive members	\$ 14,380	\$ 8,879
d. Total liabilities	\$ 398,485	\$ 393,041



Reconciliation of Insurance Net Assets**(Dollar amounts expressed in thousands)¹**

	Year Ending	
	June 30, 2023	June 30, 2023
	(1)	(2)
	Non-Hazardous	Hazardous
1. Value of assets at beginning of year	\$ 1,364,419	\$ 588,162
2. Revenue for the year		
a. Contributions		
i. Member contributions	\$ 8,358	\$ 1,584
ii. Employer contributions	123,223	37
iii. Other contributions (less 401h)	5,885	1,452
iv. Total	\$ 137,466	\$ 3,074
b. Income		
i. Interest, dividends, and other income	\$ 42,390	\$ 17,853
ii. Investment expenses	(10,321)	(4,765)
iii. Net	\$ 32,069	\$ 13,089
c. Net realized and unrealized gains (losses)	100,361	40,684
d. Total revenue	\$ 269,896	\$ 56,846
3. Expenditures for the year		
a. Disbursements		
i. Refunds	\$ 0	\$ 0
ii. Healthcare premium subsidies	103,952	19,748
iii. Other benefit payments ²	(3,160)	(220)
iv. Transfers to other systems	0	0
v. Total	\$ 100,792	\$ 19,528
b. Administrative expenses and depreciation	771	123
c. Total expenditures	\$ 101,563	\$ 19,652
4. Increase in net assets (Item 2. - Item 3.)	\$ 168,333	\$ 37,194
5. Value of assets at end of year (Item 1. + Item 4.)	\$ 1,532,752	\$ 625,356
6. Net external cash flow		
a. Dollar amount	\$ 35,903	\$ (16,578)
b. Percentage of market value	2.5%	-2.7%
7. Estimated annual return on net assets	9.6%	9.3%

¹ Amounts may not add due to rounding and include 401h assets² Benefit payments have been offset by Medicare Drug Reimbursements, Insurance Premiums, and Humana Gain Share Payments

Development of Actuarial Value of Assets**Non-Hazardous Members Insurance
(Dollar amounts expressed in thousands)***

Year Ending	June 30, 2023		
1. Actuarial value of assets at beginning of year	\$	1,409,553	
2. Market value of assets at beginning of year	\$	1,364,419	
3. Net new investments			
a. Contributions	\$	137,466	
b. Benefit payments		(100,792)	
c. Administrative expenses		(771)	
d. Subtotal	\$	35,903	
4. Market value of assets at end of year	\$	1,532,752	
5. Net earnings (Item 4. - Item 2. - Item 3.d.)	\$	132,430	
6. Assumed investment return rate for fiscal year		6.25%	
7. Expected return for immediate recognition	\$	86,398	
8. Excess return for phased recognition	\$	46,032	
9. Phased-in recognition, 20% of excess return on assets for prior years:			
	<div>Fiscal Year Ending June 30,</div>	<div>Excess Return</div>	<div>Recognized Amount</div>
a.	2023	\$ 46,032	\$ 9,206
b.	2022	(178,776)	(35,755)
c.	2021	201,770	40,354
d.	2020	(52,052)	(10,410)
e.	2019	(11,768)	(2,354)
f.	Total		\$ 1,041
10. Actuarial value of assets as of June 30, 2023 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	\$	1,532,895	
11. Ratio of actuarial value to market value		100.0%	
12. Estimated annual return on actuarial value of assets		6.1%	

* Amounts may not add due to rounding



Development of Actuarial Value of Assets**Hazardous Members Insurance**
(Dollar amounts expressed in thousands)*

Year Ending	June 30, 2023	
1. Actuarial value of assets at beginning of year	\$	597,701
2. Market value of assets at beginning of year	\$	588,162
3. Net new investments		
a. Contributions	\$	3,074
b. Benefit payments		(19,528)
c. Administrative expenses		(123)
d. Subtotal	\$	(16,578)
4. Market value of assets at end of year	\$	625,356
5. Net earnings (Item 4. - Item 2. - Item 3.d.)	\$	53,772
6. Assumed investment return rate for fiscal year		6.25%
7. Expected return for immediate recognition	\$	36,242
8. Excess return for phased recognition	\$	17,530
9. Phased-in recognition, 20% of excess return on assets for prior years:		
	<u>Fiscal Year</u> <u>Ending June 30,</u>	<u>Excess</u> <u>Return</u>
a.	2023	\$ 17,530
b.	2022	(66,985)
c.	2021	96,144
d.	2020	(32,268)
e.	2019	(3,651)
f.	Total	\$ 2,154
10. Actuarial value of assets as of June 30, 2023 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	\$	619,519
11. Ratio of actuarial value to market value		99.1%
12. Estimated annual return on actuarial value of assets		6.5%

* Amounts may not add due to rounding



Schedule of Funding Progress
Insurance Benefits
(Dollar amounts expressed in thousands)

June 30, (1)	Actuarial Value of Assets (AVA) (2)	Actuarial Accrued Liability (AAL) (3)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2) (4)	Funded Ratio (2)/(3) (5)	Annual Covered Payroll (6)	UAAL as % of Payroll (4)/(6) (7)
Non-Hazardous Members						
2014	\$ 621,237	\$ 2,226,760	\$ 1,605,523	27.9%	\$ 1,577,496	101.8%
2015	695,018	2,413,705	1,718,687	28.8%	1,544,234	111.3%
2016	743,270	2,456,678	1,713,408	30.3%	1,529,249	112.0%
2017	823,918	2,683,496	1,859,578	30.7%	1,531,535	121.4%
2018	887,121	2,435,505	1,548,384	36.4%	1,471,477	105.2%
2019	991,427	2,733,065	1,741,638	36.3%	1,437,647	121.1%
2020	1,095,959	2,564,788	1,468,829	42.7%	1,387,761	105.8%
2021	1,291,472	2,574,112	1,282,640	50.2%	1,349,330	95.1%
2022	1,409,553	1,782,386	372,833	79.1%	1,355,267	27.5%
2023	1,532,895	1,877,109	344,214	81.7%	1,615,868	21.3%
Hazardous Members						
2014	\$ 419,396	\$ 396,987	\$ (22,409)	105.6%	\$ 129,076	-17.4%
2015	451,514	374,904	(76,610)	120.4%	128,680	-59.5%
2016	473,160	377,745	(95,415)	125.3%	147,563	-64.7%
2017	493,458	419,439	(74,019)	117.6%	162,418	-45.6%
2018	511,441	393,481	(117,960)	130.0%	158,213	-74.6%
2019	525,315	426,704	(98,611)	123.1%	150,446	-65.5%
2020	539,251	427,977	(111,274)	126.0%	170,826	-65.1%
2021	575,025	424,455	(150,570)	135.5%	162,836	-92.5%
2022	597,701	347,044	(250,657)	172.2%	165,637	-151.3%
2023	619,519	363,512	(256,007)	170.4%	211,602	-121.0%
Total KERS Members						
2014	\$ 1,040,633	\$ 2,623,747	\$ 1,583,114	39.7%	\$ 1,706,572	92.8%
2015	1,146,532	2,788,609	1,642,077	41.1%	1,672,914	98.2%
2016	1,216,430	2,834,423	1,617,993	42.9%	1,676,812	96.5%
2017	1,317,376	3,102,935	1,785,559	42.5%	1,693,953	105.4%
2018	1,398,562	2,828,986	1,430,424	49.4%	1,629,690	87.8%
2019	1,516,742	3,159,769	1,643,027	48.0%	1,588,093	103.5%
2020	1,635,210	2,992,765	1,357,555	54.6%	1,558,587	87.1%
2021	1,866,497	2,998,567	1,132,070	62.2%	1,512,166	74.9%
2022	2,007,254	2,129,430	122,176	94.3%	1,520,904	8.0%
2023	2,152,414	2,240,621	88,207	96.1%	1,827,470	4.8%



Solvency Test
Insurance Benefits
(Dollar amounts expressed in thousands)

June 30, (1)	Actuarial Accrued Liability				Valuation Assets (5)	Portion of Aggregate Accrued Liabilities Covered by Assets		
	Active Member Contributions (2)	Retired Members & Beneficiaries (3)	Active Members (Employer Financed) (4)	Active (6)		Retired (7)	ER Financed (8)	
Non-Hazardous Members								
2014	\$ -	\$ 1,425,605	\$ 801,155	\$ 621,237	100.0%	43.6%	0.0%	
2015	-	1,428,350	985,355	695,018	100.0%	48.7%	0.0%	
2016	-	1,483,636	973,042	743,270	100.0%	50.1%	0.0%	
2017	-	1,575,294	1,108,202	823,918	100.0%	52.3%	0.0%	
2018	-	1,475,953	959,552	887,121	100.0%	60.1%	0.0%	
2019	-	1,686,604	1,046,461	991,427	100.0%	58.8%	0.0%	
2020	-	1,589,743	975,045	1,095,959	100.0%	68.9%	0.0%	
2021	-	1,609,775	964,337	1,291,472	100.0%	80.2%	0.0%	
2022	-	967,051	815,335	1,409,553	100.0%	100.0%	54.3%	
2023	-	1,040,344	836,765	1,532,895	100.0%	100.0%	58.9%	
Hazardous Members								
2014	\$ -	\$ 206,477	\$ 190,509	\$ 419,396	100.0%	100.0%	100.0%	
2015	-	221,115	153,789	451,514	100.0%	100.0%	100.0%	
2016	-	228,361	149,384	473,160	100.0%	100.0%	100.0%	
2017	-	243,816	175,623	493,458	100.0%	100.0%	100.0%	
2018	-	248,775	144,706	511,441	100.0%	100.0%	100.0%	
2019	-	282,069	144,635	525,315	100.0%	100.0%	100.0%	
2020	-	281,924	146,053	539,251	100.0%	100.0%	100.0%	
2021	-	288,014	136,441	575,025	100.0%	100.0%	100.0%	
2022	-	232,585	114,459	597,701	100.0%	100.0%	100.0%	
2023	-	250,189	113,323	619,519	100.0%	100.0%	100.0%	



SECTION 4

AMORTIZATION BASES

Amortization of Unfunded Liability

Non-Hazardous Members Retirement

<u>Valuation Year Base Established</u>	<u>Original Amortization Base</u>	<u>Remaining at June 30, 2023</u>	<u>Payments for FYE 2025</u>	<u>Funding Period at June 30, 2023</u>
June 30, 2019	\$ 14,260,148	\$ 13,488,943	\$ 938,364	26
June 30, 2020	(153,145)	(30,739)	(2,708)	17
June 30, 2021	(342,123)	(348,582)	(29,636)	18
June 30, 2022	172,536	(64,626)	(5,319)	19
June 30, 2023	(293,189)	(293,189)	(46,113)	20
Total		\$ 12,751,807	\$ 854,588	
Projected Payroll for FYE 2025			N/A	
Amortization Payments as a Percentage of Payroll			N/A	

Hazardous Members Retirement

<u>Valuation Year Base Established</u>	<u>Original Amortization Base</u>	<u>Remaining at June 30, 2023</u>	<u>Payments for FYE 2025</u>	<u>Funding Period at June 30, 2023</u>
June 30, 2019	\$ 554,548	\$ 527,304	\$ 40,306	26
June 30, 2020	24,023	18,101	1,706	17
June 30, 2021	(49,498)	(49,198)	(4,491)	18
June 30, 2022	(19,031)	(21,188)	(1,878)	19
June 30, 2023	(3,443)	(3,443)	(1,729)	20
Total		\$ 471,576	\$ 33,914	
Projected Payroll for FYE 2025			\$ 211,602	
Amortization Payments as a Percentage of Payroll			16.03%	

Note:

Budgeted contribution rates for FYE 2024 were known at the time of the June 30, 2023 Valuation.

Amortization bases established at this valuation date were adjusted accordingly.

Per House Bill 8 (passed during the 2021 legislative session), amortization cost for the KERS

Non-Hazardous fund is allocated amongst employers based on their 2019 Actuarial Accrued Liability.

See appendix D for more information. Amortization cost for the hazardous fund is included in the contribution rate, payable as a percentage of payroll.



Amortization of Unfunded Liability

Non-Hazardous Members Insurance

Valuation Year Base Established	Original Amortization Base	Remaining at June 30, 2023	Payments for FYE 2025	Funding Period at June 30, 2023
June 30, 2019	\$ 1,741,638	\$ 1,644,445	\$ 128,822	26
June 30, 2020	(246,890)	(236,611)	(22,715)	17
June 30, 2021	(159,148)	(164,212)	(15,279)	18
June 30, 2022	(883,398)	(938,609)	(84,872)	19
June 30, 2023	39,201	39,201	(3,983)	20
Total		\$ 344,214	\$ 1,973	
Projected Payroll for FYE 2025			N/A	
Amortization Payments as a Percentage of Payroll			N/A	

Hazardous Members Insurance

Valuation Year Base Established	Original Amortization Base	Remaining at June 30, 2023	Payments for FYE 2025	Funding Period at June 30, 2023
June 30, 2019	\$ (98,611)	\$ (97,539)	\$ (7,641)	26
June 30, 2020	(9,508)	(10,035)	(963)	17
June 30, 2021	(39,458)	(42,842)	(3,986)	18
June 30, 2022	(97,145)	(110,047)	(9,951)	19
June 30, 2023	4,456	4,456	(1,220)	20
Total		\$ (256,007)	\$ (23,761)	
Projected Payroll for FYE 2025			\$ 210,488	
Amortization Payments as a Percentage of Payroll			-11.29%	

Note:

Budgeted contribution rates for FYE 2024 were known at the time of the June 30, 2023 Valuation.

Amortization bases established at this valuation date were adjusted accordingly.

Per House Bill 8 (passed during the 2021 legislative session), amortization cost for the KERS

Non-Hazardous fund is allocated amongst employers based on their 2019 Actuarial Accrued Liability.

See appendix D for more information. Amortization cost for the hazardous fund is included in the contribution rate, payable as a percentage of payroll.



SECTION 5

MEMBERSHIP INFORMATION

Membership Tables

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33	54	SCHEDULE OF ANNUITANTS ADDED TO AND REMOVED FROM ROLLS



Summary of Membership Data
(Total dollar amounts expressed in thousands)

	Non-Hazardous June 30, 2023 (1)	Hazardous June 30, 2023 (2)	Total June 30, 2023 (3)	Total June 30, 2022 (4)
1. Active members				
a. Males	11,682	2,734	14,416	13,658
b. Females	19,701	1,152	20,853	19,510
c. Total members	31,383	3,886	35,269	33,168
d. Total annualized prior year salaries	\$ 1,615,868	\$ 211,602	\$ 1,827,470	\$ 1,520,904
e. Average salary ³	\$ 51,489	\$ 54,452	\$ 51,815	\$ 45,855
f. Average age	45.7	39.7	45.0	45.4
g. Average service	10.9	7.2	10.5	11.0
h. Member contributions with interest	\$ 889,146	\$ 103,310	\$ 992,456	\$ 954,129
i. Average contributions with interest ³	\$ 28,332	\$ 26,585	\$ 28,140	\$ 28,767
2. Vested inactive members ²				
a. Number	31,085	2,326	33,411	33,915
b. Total annual deferred benefits	\$ 88,710	\$ 5,407	\$ 94,117	\$ 94,819
c. Average annual deferred benefit ³	\$ 2,854	\$ 2,325	\$ 2,817	\$ 2,796
d. Average age at the valuation date	53.7	48.6	53.3	52.7
3. Nonvested inactive members ²				
a. Number	24,895	6,251	31,146	29,749
b. Total member contributions with interest	\$ 52,432	\$ 12,980	\$ 65,412	\$ 60,683
c. Average contributions with interest ³	\$ 2,106	\$ 2,076	\$ 2,100	\$ 2,040
4. Service retirees ¹				
a. Number	41,427	4,166	45,593	45,437
b. Total annual benefits	\$ 878,520	\$ 67,170	\$ 945,690	\$ 944,366
c. Average annual benefit ³	\$ 21,206	\$ 16,123	\$ 20,742	\$ 20,784
d. Average age at the valuation date	70.8	66.0	70.3	69.9
5. Disabled retirees ¹				
a. Number	1,652	159	1,811	1,861
b. Total annual benefits	\$ 21,829	\$ 1,518	\$ 23,347	\$ 24,048
c. Average annual benefit ³	\$ 13,214	\$ 9,547	\$ 12,892	\$ 12,922
d. Average age at the valuation date	67.5	61.1	66.9	66.5
6. Beneficiaries ¹				
a. Number	5,330	562	5,892	5,747
b. Total annual benefits	\$ 83,931	\$ 6,179	\$ 90,110	\$ 86,643
c. Average annual benefit ³	\$ 15,747	\$ 10,995	\$ 15,294	\$ 15,076
d. Average age at the valuation date	70.6	67.6	70.3	70.1

¹ 2,423 members receiving benefits in both the non-hazardous and hazardous fund. Members' headcounts and hazardous benefits included in the hazardous summary above. Members' additional \$25,156,000 in non-hazardous annual benefits not included in summary above.

² Vested inactive member section includes Tier 1 members eligible for a benefit equal to the actuarially equivalent of two times the member's contribution balance.

³ Average dollar amounts shown are expressed to the dollar.



Summary of Historical Active Membership

June 30, (1)	Active Members		Covered Payroll ¹		Average Annual Pay	
	Number (2)	Percent Increase /(Decrease) (3)	Amount in Thousands (4)	Percent Increase /(Decrease) (5)	Amount (6)	Percent Increase /(Decrease) (7)
Non-Hazardous Members						
2014	40,365		\$ 1,577,496		\$ 39,081	
2015	39,056	-3.2%	1,544,234	-2.1%	39,539	1.2%
2016	37,779	-3.3%	1,529,249	-1.0%	40,479	2.4%
2017	37,234	-1.4%	1,531,535	0.1%	41,133	1.6%
2018	35,139	-5.6%	1,471,477	-3.9%	41,876	1.8%
2019	33,696	-4.1%	1,437,647	-2.3%	42,665	1.9%
2020	31,703	-5.9%	1,387,761	-3.5%	43,774	2.6%
2021	30,186	-4.8%	1,349,330	-2.8%	44,701	2.1%
2022	29,551	-2.1%	1,355,267	0.4%	45,862	2.6%
2023	31,383	6.2%	1,615,868	19.2%	51,489	12.3%
Hazardous Members						
2014	4,024		\$ 129,076		\$ 32,077	
2015	3,886	-3.4%	128,680	-0.3%	33,114	3.2%
2016	3,959	1.9%	147,563	14.7%	37,273	12.6%
2017	4,047	2.2%	162,418	10.1%	40,133	7.7%
2018	3,929	-2.9%	158,213	-2.6%	40,268	0.3%
2019	3,705	-5.7%	150,446	-4.9%	40,606	0.8%
2020	4,094	10.5%	170,826	13.5%	41,726	2.8%
2021	3,827	-6.5%	162,836	-4.7%	42,549	2.0%
2022	3,617	-5.5%	165,637	1.7%	45,794	7.6%
2023	3,886	7.4%	211,602	27.8%	54,452	18.9%

¹ Covered payroll is the annualized, projected compensation for the following year and does not include payroll attributable to working retirees.

Distribution of Active Members by Age and by Years of Service**Non-Hazardous Members**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 20	32 \$23,180	1 \$22,522	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	33 \$23,160
20-24	586 \$28,946	330 \$39,306	100 \$42,649	22 \$42,483	8 \$43,081	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1,046 \$33,917
25-29	727 \$31,784	590 \$39,746	323 \$44,495	265 \$44,754	187 \$46,577	262 \$48,149	1 \$56,620	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2,355 \$39,988
30-34	541 \$33,589	483 \$40,975	226 \$47,385	245 \$46,894	217 \$45,971	1,030 \$51,523	206 \$53,856	1 \$47,311	0 \$0	0 \$0	0 \$0	0 \$0	2,949 \$45,557
35-39	492 \$35,162	347 \$41,514	172 \$46,258	176 \$49,584	187 \$48,527	954 \$53,649	884 \$56,418	239 \$57,033	6 \$53,682	0 \$0	0 \$0	0 \$0	3,457 \$49,890
40-44	441 \$35,454	356 \$42,226	165 \$46,378	198 \$48,109	183 \$51,526	797 \$54,181	849 \$56,592	1,039 \$59,940	411 \$60,232	41 \$60,428	0 \$0	0 \$0	4,480 \$53,128
45-49	366 \$36,449	295 \$42,019	133 \$43,675	144 \$48,830	142 \$49,736	666 \$53,462	657 \$57,094	883 \$60,623	1,081 \$63,364	301 \$63,932	3 \$87,750	0 \$0	4,671 \$55,724
50-54	300 \$35,094	249 \$41,787	132 \$48,594	139 \$48,498	164 \$49,256	605 \$50,495	617 \$55,335	701 \$59,589	926 \$61,410	574 \$67,685	103 \$68,826	9 \$75,471	4,519 \$55,790
55-59	197 \$34,573	209 \$41,135	91 \$44,501	110 \$47,378	107 \$50,153	531 \$49,865	490 \$52,305	635 \$55,584	622 \$59,001	421 \$65,252	126 \$72,633	40 \$78,255	3,579 \$54,174
60-64	128 \$36,792	122 \$42,359	53 \$46,911	84 \$53,143	88 \$47,842	375 \$49,091	429 \$53,010	547 \$53,664	503 \$55,818	282 \$62,735	75 \$68,615	51 \$73,269	2,737 \$53,413
65 & Over	61 \$44,847	61 \$46,375	33 \$47,713	36 \$65,196	32 \$65,889	235 \$50,646	289 \$55,091	327 \$55,813	234 \$58,049	143 \$63,319	47 \$73,254	59 \$74,363	1,557 \$56,607
Total	3,871 \$33,594	3,043 \$41,100	1,428 \$45,720	1,419 \$48,154	1,315 \$48,943	5,455 \$51,877	4,422 \$55,409	4,372 \$58,133	3,783 \$60,480	1,762 \$65,147	354 \$70,885	159 \$75,054	31,383 \$51,489



Distribution of Active Members by Age and by Years of Service

Hazardous Members

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 20	2 \$51,775	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2 \$51,775
20-24	186 \$38,066	115 \$58,852	24 \$58,297	6 \$55,402	1 \$42,804	1 \$72,440	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	333 \$47,132
25-29	143 \$40,237	125 \$53,940	100 \$54,682	92 \$57,089	49 \$58,470	55 \$56,120	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	564 \$51,717
30-34	120 \$41,328	78 \$55,277	49 \$55,168	67 \$51,982	38 \$55,848	226 \$58,551	42 \$59,627	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	620 \$53,735
35-39	82 \$39,227	52 \$51,949	29 \$52,078	35 \$50,034	28 \$61,497	137 \$57,091	125 \$60,245	43 \$62,561	0 \$0	0 \$0	0 \$0	0 \$0	531 \$54,507
40-44	60 \$39,262	32 \$53,516	20 \$61,526	20 \$55,455	17 \$54,717	94 \$57,814	97 \$57,552	159 \$60,122	16 \$71,921	1 \$55,940	0 \$0	0 \$0	516 \$56,436
45-49	50 \$39,444	32 \$55,804	11 \$50,902	22 \$55,464	16 \$57,532	80 \$55,576	57 \$60,996	104 \$64,751	49 \$65,380	4 \$61,000	0 \$0	0 \$0	425 \$57,796
50-54	33 \$36,616	33 \$47,910	15 \$48,450	17 \$61,456	14 \$62,629	69 \$54,831	65 \$59,789	93 \$63,054	35 \$65,426	16 \$63,105	0 \$0	0 \$0	390 \$57,105
55-59	20 \$34,288	16 \$51,671	13 \$60,489	19 \$56,298	8 \$55,376	72 \$55,986	51 \$57,796	60 \$58,369	21 \$67,036	9 \$62,673	2 \$93,798	1 \$58,815	292 \$56,543
60-64	10 \$37,500	7 \$58,091	5 \$45,979	6 \$62,908	9 \$67,242	29 \$51,553	33 \$56,031	29 \$61,967	20 \$60,096	1 \$60,968	1 \$84,316	0 \$0	150 \$56,550
65 & Over	1 \$45,689	3 \$37,432	0 \$0	1 \$27,088	1 \$67,811	16 \$56,485	18 \$52,699	15 \$56,147	5 \$65,012	3 \$51,552	0 \$0	0 \$0	63 \$54,399
Total	707 \$39,259	493 \$54,662	266 \$54,941	285 \$54,971	181 \$58,539	779 \$56,876	488 \$58,864	503 \$61,608	146 \$65,610	34 \$61,450	3 \$90,637	1 \$58,815	3,886 \$54,452



Distribution of Annuitant Monthly Benefit by Status and Age
Non-Hazardous Retirees and Beneficiaries
(Dollar amounts expressed in thousands)

	Retirement		Disability		Survivors & Beneficiaries		Total	
Current Age	Number of Annuitants	Total Annual Benefit Amount	Number of Annuitants	Total Annual Benefit Amount	Number of Annuitants	Total Annual Benefit Amount	Number of Annuitants	Total Annual Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Under 50	352	\$ 8,138	59	\$ 796	546	\$ 6,445	957	\$ 15,380
50 - 54	1,295	32,098	103	1,496	209	2,911	1,607	36,505
55 - 59	3,097	74,626	206	3,105	286	3,892	3,589	81,623
60 - 64	5,437	124,567	283	3,814	488	7,024	6,208	135,405
65 - 69	8,990	186,904	360	4,846	665	10,371	10,015	202,120
70 - 74	9,689	205,498	289	3,646	848	15,086	10,826	224,230
75 - 79	6,708	140,543	176	2,110	818	14,704	7,702	157,357
80 - 84	3,498	67,709	105	1,209	690	12,118	4,293	81,036
85 - 89	1,593	27,257	57	672	461	7,360	2,111	35,289
90 And Over	768	11,181	14	136	319	4,019	1,101	15,335
Total	41,427	\$ 878,520	1,652	\$ 21,829	5,330	\$ 83,931	48,409	\$ 984,280

*Amounts may not add due to rounding



Distribution of Annuitant Monthly Benefit by Status and Age
Hazardous Retirees and Beneficiaries
(Dollar amounts expressed in thousands)

Current Age (1)	Retirement		Disability		Survivors & Beneficiaries		Total	
	Number of Annuitants (2)	Total Annual Benefit Amount (3)	Number of Annuitants (4)	Total Annual Benefit Amount (5)	Number of Annuitants (6)	Total Annual Benefit Amount (7)	Number of Annuitants (8)	Total Annual Benefit Amount (9)
Under 50	236	\$ 4,925	26	\$ 302	69	\$ 713	331	\$ 5,939
50 - 54	405	7,897	17	196	29	437	451	8,531
55 - 59	540	9,705	34	299	31	347	605	10,352
60 - 64	649	11,398	25	262	75	996	749	12,655
65 - 69	763	12,056	26	216	83	943	872	13,215
70 - 74	789	11,412	20	174	89	1,108	898	12,694
75 - 79	514	6,976	4	39	84	830	602	7,845
80 - 84	186	2,001	3	10	53	426	242	2,437
85 - 89	70	646	4	20	34	256	108	922
90 And Over	14	155	0	0	15	121	29	277
Total	4,166	\$ 67,170	159	\$ 1,518	562	\$ 6,179	4,887	\$ 74,867

*Amounts may not add due to rounding



Non-Hazardous Retired Lives Summary

Form of Payment (1)	Male Lives		Female Lives		Total	
	Number (2)	Monthly Benefit Amount (3)	Number (4)	Monthly Benefit Amount (5)	Number (6)	Monthly Benefit Amount (7)
Basic	4,510	\$ 7,900,032	13,587	\$ 19,446,072	18,097	\$ 27,346,105
Joint & Survivor:						
100% to Beneficiary	2,922	5,212,084	1,711	2,184,594	4,633	7,396,678
66 2/3% to Beneficiary	783	2,130,068	664	1,223,230	1,447	3,353,298
50% to Beneficiary	1,096	2,748,752	1,614	3,133,549	2,710	5,882,301
Pop-up Option	4,010	9,641,591	3,953	7,621,020	7,963	17,262,611
Social Security Option:						
Age 62 Basic	356	723,836	870	1,481,539	1,226	2,205,375
Age 62 Survivorship	681	1,400,388	584	935,826	1,265	2,336,215
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	0	0	0	0
5 Years Certain	0	0	0	0	0	0
10 Years Certain	0	0	0	0	0	0
10 Years Certain & Life	994	1,764,021	2,388	3,620,153	3,382	5,384,174
15 Years Certain & Life	460	738,013	740	1,050,660	1,200	1,788,673
20 Years Certain & Life	447	970,075	709	1,103,601	1,156	2,073,675
Total:	16,259	\$ 33,228,860	26,820	\$ 41,800,243	43,079	\$ 75,029,104



Hazardous Retired Lives Summary

Form of Payment (1)	Male Lives		Female Lives		Total	
	Number (2)	Monthly Benefit Amount (3)	Number (4)	Monthly Benefit Amount (5)	Number (6)	Monthly Benefit Amount (7)
Basic	754	\$ 851,378	618	\$ 697,590	1,372	\$ 1,548,968
Joint & Survivor:						
100% to Beneficiary	512	636,774	81	97,986	593	734,761
66 2/3% to Beneficiary	137	202,100	38	50,153	175	252,254
50% to Beneficiary	185	290,951	79	118,437	264	409,388
Pop-up Option	982	1,561,452	222	316,292	1,204	1,877,745
Social Security Option:						
Age 62 Basic	59	69,526	29	24,587	88	94,113
Age 62 Survivorship	137	167,056	20	21,679	157	188,735
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	0	0	0	0
5 Years Certain	0	0	0	0	0	0
10 Years Certain	53	102,407	17	24,581	70	126,988
10 Years Certain & Life	117	151,520	84	84,132	201	235,652
15 Years Certain & Life	55	68,326	35	32,672	90	100,998
20 Years Certain & Life	72	95,412	39	58,951	111	154,363
Total:	3,063	\$ 4,196,903	1,262	\$ 1,527,062	4,325	\$ 5,723,965



Non-Hazardous Beneficiary Lives Summary

Form of Payment (1)	Male Lives		Female Lives		Total	
	Number (2)	Monthly Benefit Amount (3)	Number (4)	Monthly Benefit Amount (5)	Number (6)	Monthly Benefit Amount (7)
Basic	34	\$ 25,616	53	\$ 71,084	87	\$ 96,700
Joint & Survivor:						
100% to Beneficiary	382	344,005	1,610	1,948,572	1,992	2,292,577
66 2/3% to Beneficiary	78	79,044	314	455,208	392	534,252
50% to Beneficiary	182	162,309	492	445,720	674	608,029
Pop-up Option	285	456,281	956	1,734,866	1,241	2,191,147
Social Security Option:						
Age 62 Basic	1	1,293	12	11,412	13	12,705
Age 62 Survivorship	79	111,779	342	606,221	421	718,000
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	2	611	2	611
5 Years Certain	42	41,568	64	65,233	106	106,801
10 Years Certain	81	85,619	96	72,688	177	158,307
10 Years Certain & Life	34	35,086	50	52,726	84	87,812
15 Years Certain & Life	20	23,896	48	44,948	68	68,844
20 Years Certain & Life	23	33,782	50	84,674	73	118,456
Total:	1,241	\$ 1,400,279	4,089	\$ 5,593,963	5,330	\$ 6,994,242



Hazardous Beneficiary Lives Summary

Form of Payment (1)	Male Lives		Female Lives		Total	
	Number (2)	Monthly Benefit Amount (3)	Number (4)	Monthly Benefit Amount (5)	Number (6)	Monthly Benefit Amount (7)
Basic	3	\$ 1,399	14	\$ 10,163	17	\$ 11,562
Joint & Survivor:						
100% to Beneficiary	18	13,372	189	147,731	207	161,103
66 2/3% to Beneficiary	1	481	21	10,767	22	11,247
50% to Beneficiary	6	3,731	47	22,522	53	26,253
Pop-up Option	12	15,150	156	183,979	168	199,128
Social Security Option:						
Age 62 Basic	0	0	2	47	2	47
Age 62 Survivorship	2	801	53	53,682	55	54,482
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	0	0	0	0
5 Years Certain	1	3,247	6	10,191	7	13,438
10 Years Certain	2	2,253	8	10,618	10	12,871
10 Years Certain & Life	0	0	3	1,624	3	1,624
15 Years Certain & Life	2	3,644	1	893	3	4,537
20 Years Certain & Life	2	4,048	13	14,571	15	18,620
Total:	49	\$ 48,125	513	\$ 466,787	562	\$ 514,912



Schedule of Retirees Added to And Removed from Rolls**(Dollar amounts except average allowance expressed in thousands)**

Year Ended	Added to Rolls	Removed from Rolls	Rolls End of the Year		% Increase in Annual Benefit	Average Annual Benefit
	Number	Number	Number	Annual Benefits		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Non-Hazardous						
2014	2,067	1,038	41,223	\$ 866,047		\$ 21,009
2015	2,140	1,094	42,269	883,578	2.0%	20,904
2016	2,441	706	44,004	934,930	5.8%	21,246
2017	2,181	1,269	44,916	921,302	-1.5%	20,512
2018	2,853	1,243	46,526	952,951	3.4%	20,482
2019	2,226	1,342	47,410	968,706	1.7%	20,433
2020	1,806	1,883	47,333	967,963	-0.1%	20,450
2021	2,026	1,659	47,700	972,434	0.5%	20,386
2022	2,471	1,976	48,195	981,369	0.9%	20,362
2023	2,115	1,901	48,409	984,280	0.3%	20,333
Hazardous						
2014	256	66	3,620	\$ 54,272		\$ 14,992
2015	203	65	3,758	56,431	4.0%	15,016
2016	237	29	3,966	59,001	4.6%	14,877
2017	206	79	4,093	59,162	0.3%	14,455
2018	321	44	4,370	64,050	8.3%	14,657
2019	227	60	4,537	67,523	5.4%	14,883
2020	214	123	4,628	69,081	2.3%	14,927
2021	263	165	4,726	70,803	2.5%	14,982
2022	300	176	4,850	73,689	4.1%	15,194
2023	210	173	4,887	74,867	1.6%	15,320



SECTION 6

ASSESSMENT AND DISCLOSURE OF RISK

Risks Associated with Measuring the Accrued Liability And Actuarially Determined Contribution (As Required by ASOP No. 51)

The determination of KERS's accrued liability and actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. The risk measures illustrated in this section are intended to aid stakeholders in understanding the effects of future experience differing from the assumptions used in performing an actuarial valuation. These risk measures may also help with illustrating the potential volatility in the funded status and actuarially determined contributions that result from differences between actual experience and the expected experience based on the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience (economic and demographic) differing from the assumptions, changes in assumptions due to changing conditions, changes in contribution requirements due to modifications to the funding policy, and changes in the liability and cost due to changes in plan provisions or applicable law. The scope of this actuarial valuation does not include any analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the System's future financial condition include:

- Investment risk – actual investment returns may differ from expected returns;
- Longevity risk – members may live longer or shorter than expected and receive pensions for a time period different than assumed;
- Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future contributions differing from expected;
- Salary and payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liabilities or contributions differing from expected;
- Asset/Liability mismatch – changes in assets may be inconsistent with changes in liabilities, thereby altering the relative difference between the assets and liabilities which may alter the funded status and contribution requirements;
- Contribution risk – actual contributions may differ from expected future contributions (for example, actual contributions not being paid in accordance with the System's funding policy, withdrawal liability assessments or other anticipated payments to the plan are not being paid, or material changes occurring in the anticipated number of covered employees, covered payroll, or another relevant contribution base).

Effects of certain experience can generally be anticipated. For example, if investment returns since the most recent actuarial valuation are less (or more) than the assumed rate of return, then the funded status of the plan can be expected to decrease (or increase) more than anticipated.

The required contributions in this report were established in accordance with applicable Statutes and assumptions adopted by the Board. However, stakeholders should be aware that the scheduled contributions specified in State Code do not necessarily guarantee that the contribution requirements will not increase in a future year.



Employer Risk with Contribution Rates

Currently contributions for the hazardous fund are collected from participating employers based on the employer's total payroll of employees who are earning benefits in KERS (i.e. covered payroll). The actuarially determined contribution rate is comprised of two components - the normal cost rate (to pay for the benefits accruing in the next year) and the unfunded amortization (to pay for the benefits accrued by members in previous years). The unfunded amortization is calculated by first determining the dollar amount necessary to pay for the unfunded liability based on KERS's funding policy, and then by dividing that dollar amount by expected covered payroll to convert that contribution requirement to a percentage of payroll (i.e. a contribution rate).

As the contribution requirement, as a percentage of payroll, increases then there is increased incentive for participating employers to make deliberate business action to reduce their payroll reported to the System in order to reduce their pension cost. House Bill 8 passed during the 2021 legislative session and changed how the amortization cost would be collected and allocated amongst employers in the non-hazardous fund. This portion of the contribution requirement is no longer collected as a percentage of payroll for the non-hazardous fund.

Plan Specific Risk Measures

Risks faced by a pension plan evolve over time. A relatively new plan with virtually no assets and paying few benefits will experience lower investment risk than a mature plan with a significant amount of assets and large number of members receiving benefits. There are a few measures that can assist stakeholders in understanding and comparing the maturity of a plan to other systems, which include:

- **Ratio of market value of assets to payroll:** The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. If assets are approximately the same as covered payroll, an investment return that is 5% different than assumed would equal 5% of payroll. In another example, if the assets are approximately twice as large as covered payroll, an investment return that is 5% different than assumed would equal 10% of payroll. A ratio that increases over time generally indicates the potential of an increasing volatility in employer contribution rates as a percentage of payroll.
- **Ratio of actuarial accrued liability to payroll:** The ratio of actuarial accrued liability to payroll can be used as a measure to indicate the potential volatility of contributions due to volatility in the liability experience. For instance, if the actuarial accrued liability is 5 times the size of the covered payroll, then a change in the liability that is 2% different than expected would be a change in magnitude that is 10% of payroll. A ratio that increases over time generally indicates the potential of an increasing volatility in employer contribution rates as a percentage of payroll.
- **Percentage of Expected Contributions Actually Received:** This measure identifies the percentage difference between the contributions the fund expects to receive during the fiscal year to and actual contributions received by the fund during the fiscal year. A percentage that is less than 100% means that actual contributions the fund received were less than the expected contributions determined by a prior actuarial valuation. On the other hand, a percentage that is greater than 100% means that actual contributions the fund received were more than the expected contributions.



- **Ratio of active to retired members:** A relatively mature open plan is likely to have close to the same number of actives to retirees resulting in a ratio that is around 1.0. On the other hand, a super-mature plan, or a plan that is closed to new entrants will have more retirees than active members resulting in a ratio below 1.0. As this ratio declines, a larger portion of the total actuarial accrued liability in the System is attributable to retirees. This metric also typically moves in tandem with the liability to payroll metric, which provides an indication of potential contribution volatility.

The following tables provide a summary of these measures for KERS Non-Hazardous and Hazardous Funds for the current year and the prior four years so stakeholders can identify how these measures are trending. While ASOP No. 51 requires this disclosure with respect to only the retirement funds, we have included this information for the insurance funds for completeness.

KERS Non-Hazardous										
	Retirement Fund					Insurance Fund				
	June 30,					June 30,				
	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019
Ratio of the market value of assets to total payroll	2.19	2.22	2.24	1.66	1.55	0.95	1.01	1.05	0.76	0.69
Ratio of actuarial accrued liability to payroll	10.09	12.23	12.10	11.78	11.45	1.16	1.32	1.91	1.85	1.90
Ratio of net cash flow to market value of assets	9.5%	5.2%	7.3%	1.0%	5.5%	2.5%	2.4%	7.1%	5.2%	6.2%
Percentage of Expected Contribution Actually Received	100% ¹	100%	94%	93%	91%	100% ¹	100%	99%	96%	95%
Ratio of actives to retirees and beneficiaries	0.65	0.61	0.63	0.67	0.71					

¹ Expected contribution for FYE2023 based on the actuarially determined contribution from the June 30, 2021 valuation.

KERS Hazardous										
	Retirement Fund					Insurance Fund				
	June 30,					June 30,				
	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019
Ratio of the market value of assets to total payroll	4.22	4.90	5.32	4.04	4.53	2.96	3.55	3.89	3.05	3.55
Ratio of actuarial accrued liability to payroll	6.44	7.95	7.95	7.52	8.15	1.72	2.10	2.61	2.51	2.84
Ratio of net cash flow to market value of assets	0.7%	-0.5%	0.3%	0.4%	-0.1%	-2.7%	-2.9%	-2.8%	-2.5%	-2.5%
Percentage of Expected Contribution Actually Received	138% ¹	108%	101%	114%	102%	N/A ¹	N/A ¹	N/A ¹	N/A ¹	96%
Ratio of actives to retirees and beneficiaries	0.80	0.75	0.81	0.88	0.82					

¹ Expected contribution for FYE2023 based on the actuarially determined contribution rate of 31.82% from the June 30, 2021 valuation, and expected compensation based on census data from the June 30, 2022 valuation. As of the 2018 valuation (FYE2020), the required employer contribution was 0% of pay for the insurance fund.



Low-Default-Risk Obligation Measure

Introduction

In December 2021, the Actuarial Standards Board (ASB) adopted a revision to Actuarial Standard of Practice (ASOP) No. 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions. The revised ASOP No. 4 requires the calculation and disclosure of a liability referred to by the ASOP as the “Low-Default-Risk Obligation Measure” (LDROM). The rationale that the ASB cited for the calculation and disclosure of the LDROM was included in the Transmittal Memorandum of ASOP No. 4 and is presented below (emphasis added):

“The ASB believes that the calculation and disclosure of this measure provides **appropriate, useful information for the intended user regarding the funded status of a pension plan**. The calculation and disclosure of this additional measure is **not intended to suggest that this is the “right” liability measure** for a pension plan. However, the ASB does believe that **this additional disclosure provides a more complete assessment of a plan’s funded status and provides additional information regarding the security of benefits that members have earned as of the measurement date.**”

Comparing the Accrued Liabilities and the LDROM

One of the fundamental financial objectives of the Kentucky Employees’ Retirement System (KERS) is to finance each member’s retirement benefits over the period from the member’s date of hire until the member’s projected date of retirement (entry age actuarial cost method) as a level percentage of payroll. To fulfill this objective, the discount rate that is used to value the accrued liabilities is set equal to the **expected return** on each fund’s diversified portfolio of assets (referred to sometimes as the investment return assumption). For the non-hazardous retirement fund, the investment return assumption is 5.25%. For the hazardous retirement fund, the investment return assumption is 6.25%.

The LDROM is meant to approximately represent the lump sum cost to a plan to purchase low-default-risk fixed income securities whose resulting cash flows essentially replicate in timing and amount the benefits earned (or the costs accrued) as of the measurement date. The LDROM is very dependent upon market interest rates at the time of the LDROM measurement. The lower the market interest rates, the higher the LDROM, and vice versa. The LDROM results presented in this report are based on the entry age actuarial cost method and discount rates based upon the intermediate rate from the FTSE Pension Discount Curve and Liability Index published by the Society of Actuaries. This rate is 4.90% as of June 30, 2023. This measure may not be appropriate for assessing the need for or amount of future contributions. This measure may not be appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan’s benefit obligation.

The difference between the two measures (Valuation and LDROM) is one illustration of the savings the sponsor anticipates by taking on risk in a diversified portfolio.

Non-Hazardous Retirement Fund		Hazardous Retirement Fund	
Valuation Accrued Liabilities	LDROM	Valuation Accrued Liabilities	LDROM
\$16,304,277,475	\$16,938,373,374	\$1,363,036,563	\$1,597,201,368



APPENDIX A

ACTUARIAL ASSUMPTIONS AND METHODS

Summary of Actuarial Methods and Assumptions

The following presents a summary of the actuarial assumptions and methods used in the valuation of the Kentucky Employees Retirement System.

In general, the assumptions and methods used in the valuation are based on the actuarial experience study as of June 30, 2022 and adopted by the Board in June 2023.

Investment return rate:

Assumed annual rate of 5.25% net of investment expenses for the non-hazardous retirement fund

Assumed annual rate of 6.25% net of investment expenses for the hazardous retirement fund

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

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 ¹			Members participating before 9/1/2008 ²		Members participating between 9/1/2008 and 1/1/2014 ³	Members participating after 1/1/2014 ³
	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%							

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

² The annual rate of retirement is 100% at age 65.

³ The annual rate of retirement is 100% at age 60.

Non-Hazardous: There is a 1% increase in the first two years a member becomes eligible under the age of 65. 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: 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 funds, and the PUB-2010 Public Safety Mortality table for the hazardous funds, 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 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 MP-2020 mortality improvement scale 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 Age Related Morbidity/Claims Utilization:

To model the impact of aging on the underlying health care costs for Medicare retirees, the valuation relied on the Society of Actuaries' 2013 Study "Health Care Costs – From Birth to Death". Table 4 (Development of Plan Specific Medicare Age Curve) was used to model the impact of aging for ages 65 and over.



Health Care Cost Trend Rates:

Year	Non-Medicare Plans ¹	Medicare Plans ¹	Dollar Contribution ²
2025	6.80%	8.50%	1.50%
2026	6.55%	8.00%	1.50%
2027	6.30%	8.00%	1.50%
2028	6.05%	8.00%	1.50%
2029	5.80%	7.50%	1.50%
2030	5.55%	7.00%	1.50%
2031	5.30%	6.50%	1.50%
2032	5.05%	6.00%	1.50%
2033	4.90%	5.50%	1.50%
2034	4.75%	5.00%	1.50%
2035	4.60%	4.50%	1.50%
2036	4.45%	4.05%	1.50%
2037	4.30%	4.05%	1.50%
2038 & Beyond	4.05%	4.05%	1.50%

¹All increases are assumed to occur on January 1. The 2024 premiums were known at the time of the valuation and were incorporated into the liability measurement.

²Applies to members participating on or after July 1, 2003. All increases are assumed to occur on July 1.

Health care trend assumptions are based on the model issued by the Society of Actuaries "Getzen model of Long-Run Medical Cost Trends for the SOA; Thomas E. Getzen, iHEA and Temple University 2014 © Society of Actuaries.

The underlying assumptions used to develop the health care trend rates include:

- A short run period-this is a period for which anticipated health care trend rates are manually set based on local information as well as plan-specific and carrier information.
- Long term real GDP growth – 1.75%
- Long term rate of inflation – 2.30%
- Long term nominal GDP growth – 4.05%
- Year that excess rate converges to 0 – 2036

Health care trend rates are thus the manually set rates for the short run period and rates which decline to an ultimate trend rate which equals the assumed nominal long-term GDP growth rate.

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 ¹	5%	LivingWell Basic	4%
Essential Plan	8%	LivingWell CDHP	35%
Premium Plan	87%	LivingWell PPO	61%

¹ Includes Mirror Plans

- 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 5.90% for the non-hazardous fund and 6.75% 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.

Participant Data

Participant data was supplied in electronic text files. There were separate files for (i) active and inactive members, and (ii) members and beneficiaries receiving benefits.

The data for active and terminated members included date of birth, gender, date of participation, benefit tier indicator, service with the current system, total vesting service, salary, employee contribution account balances, and employer pay credits for members participating in the cash balance plan. For retired members and beneficiaries, the data included date of birth, gender, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, and form of payment code.

Assumptions were made to correct for missing, bad, or inconsistent data. These had no material impact on the results presented.

Changes in assumptions since the prior valuation:

Demographic and economic assumptions were updated based on the 2022 Experience Study.

A 1% increase in the rate of retirement for each of the first two years a non-hazardous member becomes retirement eligible under the age of 65 is assumed to reflect the shift in retirement pattern due to House Bill 506.

In conjunction with the review of the healthcare per capita claims cost, the assumed increase in future healthcare costs, or trend assumption, is reviewed on an annual basis. The trend assumption was increased during the select period in this valuation as a result of our review.



Development of Baseline Claims Cost

For non-Medicare retirees, the initial per capita costs were based on the plan premiums effective January 1, 2024, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. The spouse/dependent premium of \$1,129.72 for non-Medicare retirees is based on a blending of Family and Couple premiums for the current retirees that have over 4 years of hazardous service. The fully-insured premiums paid to the Kentucky Employees' Health Plan (KEHP) are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit rate subsidy for the non-Medicare eligible retirees. Actuarial Standard of Practice No. 6 (ASOP No. 6) requires aging subsidies (or implicit rate subsidies) to be recognized. However, the health insurance trusts are only used to reimburse KEHP for the employer's portion of the blended premiums. Said another way, the trusts are not used to fund the difference between the underlying retiree claims and the blended KEHP premiums. As a result, the retiree health care liabilities developed in this report for the non-Medicare retirees are based solely on the premiums charged by KEHP, without any age-adjustment. GASB Statements No. 74 and No. 75 prohibit such a deviation from ASOP No. 6. The liabilities developed in this report are solely for the purpose of funding the benefits paid by the health insurance funds and are not appropriate for financial statement disclosures required by GASB. GRS provides separate GASB reports which include the liabilities associated with the implicit rate subsidy.

2024 MONTHLY COSTS FOR THOSE NOT ELIGIBLE FOR MEDICARE		
AGE	MEMBER	SPOUSE/DEPENDENTS
<65	\$929.46	\$1,129.72

For Medicare retirees, the initial per capita costs were estimated based on the plan premiums effective January 1, 2024, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. Age graded and sex distinct premiums are utilized for retirees over the age of 65. These costs are appropriate for the unique age and sex distribution currently existing. Over the future years covered by this valuation, the age and sex distribution will most likely change. Therefore, our process "distributes" the average premium over all age/sex combinations and assigns a unique premium for each combination. The age/sex specific costs more accurately reflect the health care utilization and cost at that age.

2024 MONTHLY COSTS FOR THOSE ELIGIBLE FOR MEDICARE		
AGE	MALE	FEMALE
65	\$ 81.35	\$ 76.72
75	95.18	92.87
85	100.65	101.83

Appendix B of the report provides a full schedule of premiums.



The percentage of the insurance premium paid by KERS is calculated based on the Medical Only premium amounts. The majority of KERS Medicare retirees are covered under the Premium Medicare Advantage plan. Because the premiums for the Medical Only plan are higher than the Premium Medical Advantage plan, retirees with less than 20 years of service pay a smaller contribution toward their insurance coverage. To model the impact of the employer contribution being based on the Medical Only Plan rather than the plan selected by the retiree, the employer share for retirees qualifying for percentage-based subsidies was blended to reflect retiree plan selection.

The above assumption implicitly implies that the Medical Only plan premiums will increase at a rate of 4.90% as of January 1, 2024, decreasing over 9 years to an ultimate trend rate of 4.05%, and that the remaining Medicare plan premiums will increase at the Medicare trend assumption used in the actuarial valuation.

Blake Orth is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.



Blake Orth, FSA, EA, MAAA

APPENDIX B

BENEFIT PROVISIONS

**Summary of Benefit Provisions for
Kentucky Employees Retirement System
(KERS)**

KERS Non-Hazardous Employees

Retirement: Tier 1, Participation before 9/1/2008

Normal Retirement Eligibility	Age 65 with at least 1 month of service credit; or Any age with at least 27 years of service
Benefit Amount	<p>If a member has at least 48 months of service, the monthly benefit is 2.00% times final average compensation times years of service. For members who did not have 13 months of service credit for 1/1/1998-1/1/1999, the monthly benefit is 1.97% times final average compensation times years of service.</p> <p>If a member has less than 48 months of service, the monthly benefit is the actuarial equivalent of two times the member’s contributions with interest.</p> <p>Final average compensation is based on the member’s highest 5 years of compensation.</p>
Early Retirement Eligibility	Any age (prior to age 65) with at least 25 years of service; or Age 55 with at least 5 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member’s retirement eligibility precedes the member’s normal retirement date.



KERS Non-Hazardous Employees (continued)*Retirement: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014*

Normal Retirement Eligibility	Age 65 with at least 5 years of service; or Rule of 87 (Age 57 or older if age plus service equals 87)
Benefit Amount	The monthly benefit is equal to the applicable benefit multiplier times final average compensation times years of service.

Years of Service	Benefit Multiplier
10 or less	1.10%
10-20	1.30%
20-26	1.50%
26-30	1.75%
Greater than 30*	2.00%

* The 2.00% benefit multiplier only applies to service credit in excess of 30 years. If a member has greater than 30 years of service at retirement, service prior to 30 years will be multiplied by the 1.75% benefit multiplier.

Final compensation is based on the member's last 5 years of compensation.

Early Retirement Eligibility	Age 60 with at least 10 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member's retirement date precedes the member's normal retirement eligibility.

Retirement: Tier 3, Participation on or after 1/1/2014

Normal Retirement Eligibility	Age 65 with at least 5 years of service; or Rule of 87 (Age 57 or older if age plus service equals 87)
Benefit Amount	Each year that the member is active, a 4.00% employer pay credit and the employee's 5.00% contribution will be credited to each member's hypothetical cash balance account. The hypothetical account will earn interest at a minimum rate of 4%, annually. If the System's geometric average net investment return for the previous five years exceeds 4%, then the hypothetical account will be credited with an additional amount of interest in that year equal to 75% of the amount of the return which exceeds 4%. All interest credits will be applied to the hypothetical account balance on June 30 based on the account balance as of June 30 of the previous year. At retirement, the member's hypothetical account balance may be converted into an annuity based on an actuarial factor.
Early Retirement Eligibility	N/A



KERS Non-Hazardous Employees (continued)

Deferred Vested Benefit: Tier 1, Participation before 9/1/2008

Eligibility	At least 1 month of service credit
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014

Eligibility	5 years of service
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit Tier 3, Participation on or after 1/1/2014

Eligibility	5 years of service
Benefit Amount	At termination of employment, members may choose to leave their account balance with the System and retire once they are eligible. The hypothetical account balance will earn 4% annual interest after termination. Members may also choose to withdrawal their entire accumulated balance. If a member does not have 5 years of service at termination, the member is eligible to receive a partial refund of their account balance. This refund includes the member's contributions with interest.

Disability Retirement: Participation before 8/1/2004

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	Disability benefits are calculated in the same manner as the normal retirement benefit with years of service and final compensation being determined as of the date of disability, except that service credit shall be added to the person's total service beginning with the last date of paid employment and continuing to the member's 65 th birthday, with total service not exceeding 25 years. Total service credit added shall not be greater than the member's actual service at disability. For members with at least 25 years of service on the last day of paid employment but less than 27 years of service, total service shall be 27 years. For members with 27 or more years of service credit, actual service will be used.



KERS Non-Hazardous Employees (continued)

Disability Retirement: Participation on or after 8/1/2004 but before 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 20% of the member's final monthly rate of pay or the member's normal retirement benefit (without reduction for early retirement) with years and final compensation being determined as of the date of disability.

Disability Retirement: Participation on or after 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 20% of the member's final monthly rate of pay or the member's retirement benefit calculated at the member's normal retirement date.

Duty-Related Disability Benefit

Disability Benefit	If the disability is a direct result of an act in the line of duty, the benefit shall not be less than 25% of the member's final monthly final rate of pay. If the disability is deemed to be Total and Permanent (and the member is working in a non-hazardous position that could be certified as a hazardous position), then this benefit shall not be less than 75% of the member's monthly average pay.
Child Benefit	Additionally, each eligible dependent child will receive 10% of the member's monthly average pay up to a maximum of 40%. Member and dependent payment shall not exceed 100% of member's monthly average pay.

Pre-Retirement Death Benefit

Eligibility	Eligible for early or normal retirement; or Under age 65 with at least 60 months of service and actively working at the time of death; or At least 144 months of service, if no longer actively working
Spouse Benefit	The member's retirement benefit calculated in the same manner as if the member had retired on the day of the member's death and elected a 100% joint and survivor benefit. The benefit is actuarially reduced if the member dies prior to their normal retirement age.



KERS Non-Hazardous Employees (continued)

Pre-Retirement Death Benefit (Death in the Line of Duty)

Eligibility	One month of service credit
Spouse Benefit	A \$10,000 lump sum payment plus a monthly payment of 75% of the deceased member's final monthly average pay. Each dependent child will receive 10% of the final monthly average pay (not to exceed a total child benefit of 25% while the spouse is alive). A spouse may also elect the non-line of duty death benefit.
Child Benefit	In the event there is no surviving spouse, the benefit is 50% of final monthly average pay for one child, 65% of final monthly average pay for two children, or 75% of final monthly average pay for three or more eligible children.

Post-Retirement Death Benefit

Eligibility	48 months of service, and in receipt of retirement benefits
Death Benefit	A \$5,000 lump sum payment

Member Contributions

Tier 1, Participation before 9/1/2008	5% of creditable compensation. Members who do not receive a retirement benefit are entitled to a full refund of contributions with interest. The annual interest rate is set by the Board, not less than 2.0%.
Tier 2, Participation on or after 9/1/2008 but before 1/1/2014	5% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest. The annual interest rate is 2.5%.
Tier 3, Participation after 1/1/2014	5% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest.

Change in Retirement Plan Benefits for Non-Hazardous Members since the Prior Valuation

House Bill 506 passed during the 2023 legislative session and reinstated the Partial Lump Sum Option Form of payment for members who retire on and after January 1, 2024, and adjusted the minimum required separation period before a retiree may become reemployed and continue to receive their retirement allowance to one month for all circumstances.



KERS Hazardous Employees

Retirement: Tier 1, Participation before 9/1/2008

Normal Retirement Eligibility	Age 55 with at least 1 month of service credit; or Any age with at least 20 years of service
Benefit Amount	<p>If a member has at least 60 months of service, the monthly benefit is 2.49% times final average compensation times years of service.</p> <p>If a member has less than 60 months of service, the monthly benefit is the actuarial equivalent of two times the member’s contributions with interest.</p> <p>Final average compensation is based on the member’s highest 3 years of compensation.</p>
Early Retirement Eligibility	Age 50 with at least 15 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member’s retirement date precedes the member’s normal retirement eligibility.



KERS Hazardous Employees (continued)*Retirement: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014*

Normal Retirement Eligibility	Age 60 with at least 5 years of service; or Any age with at least 25 years of service
Benefit Amount	The monthly benefit is equal to the applicable benefit multiplier times final average compensation times years of service.

Years of Service	Benefit Multiplier
10 or less	1.30%
10-20	1.50%
20-25	2.25%
Greater than 25	2.50%

Final average compensation is based on the member's highest 3 years of compensation.

Early Retirement Eligibility	Age 50 with at least 15 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member's retirement date precedes the member's normal retirement eligibility.

Retirement: Tier 3, Participation on or after 1/1/2014

Normal Retirement Eligibility	Age 60 with at least 5 years of service; or Any age with at least 25 years of service
Benefit Amount	Each year that the member is active, a 7.50% employer pay credit and the employee's 8.00% contribution will be credited to each member's hypothetical cash balance account. The hypothetical account will earn interest at a minimum rate of 4%, annually. If the System's geometric average net investment return for the previous five years exceeds 4%, then the hypothetical account will be credited with an additional amount of interest in that year equal to 75% of the amount of the return which exceeds 4%. All interest credits will be applied to the hypothetical account balance on June 30 based on the account balance as of June 30 of the previous year. At retirement, the member's hypothetical account balance may be converted into an annuity based on an actuarial factor.
Early Retirement Eligibility	N/A



KERS Hazardous Employees (continued)

Deferred Vested Benefit: Tier 1, Participation before 9/1/2008

Eligibility	At least 1 month of service credit
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014

Eligibility	5 years of service
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit Tier 3, Participation on or after 1/1/2014

Eligibility	5 years of service
Benefit Amount	At termination of employment, members may choose to leave their account balance with the System and retire once they are eligible. The hypothetical account balance will earn 4% annual interest after termination. Members may also choose to withdrawal their entire accumulated balance. If a member does not have 5 years of service at termination, the member is eligible to receive a partial refund of their account balance. This refund includes the member's contributions with interest.

Disability Retirement: Participation before 8/1/2004

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	Disability benefits are calculated in the same manner as the normal retirement benefit with years of service and final compensation being determined as of the date of disability, except that if the member has less than 20 years of service at disability, service credit shall be added to the person's total service beginning with the last date of paid employment and continuing to the member's 55 th birthday, with total service not exceeding 20 years. Total service credit added shall not be greater than the member's actual service at disability.



KERS Hazardous Employees (continued)

Disability Retirement: Participation on or after 8/1/2004 but before 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 25% of the member's final monthly rate of pay or the member's normal retirement benefit (without reduction for early retirement) with years and final compensation being determined as of the date of disability.

Disability Retirement: Participation on or after 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 25% of the member's final monthly rate of pay or the member's retirement benefit calculated at the member's normal retirement date.

Line of Duty Disability Benefit

Disability Benefit	If the disability is a direct result of an act in the line of duty, the benefit shall not be less than 25% of the member's final monthly final rate of pay. If the disability is deemed to be Total and Permanent, then this benefit shall not be less than 75% of the member's monthly average pay.
Child Benefit	Additionally, each eligible dependent child will receive 10% of the member's monthly average pay up to a maximum of 40%. Member and dependent payment shall not exceed 100% of member's monthly average pay.

Pre-Retirement Death Benefit

Eligibility	Eligible for early or normal retirement; or Under age 55 with at least 60 months of service and actively working at the time of death; or At least 144 months of service, if no longer actively working
Spouse Benefit	The member's retirement benefit calculated in the same manner as if the member had retired on the day of the member's death and elected a 100% joint and survivor benefit. The benefit is actuarially reduced if the member dies prior to their normal retirement age.



KERS Hazardous Employees (continued)

Pre-Retirement Death Benefit (Death in the Line of Duty)

Eligibility	One month of service credit
Spouse Benefit	A \$10,000 lump sum payment plus a monthly payment of 75% of the deceased member's final monthly average pay. Each dependent child will receive 10% of the final monthly average pay (not to exceed a total child benefit of 25% while the spouse is alive). A spouse may also elect the non-line of duty death benefit.
Non-Spouse Benefit	If the beneficiary is only one person who is a dependent receiving at least 50% of his or her support from the member, the beneficiary may elect a lump-sum payment of \$10,000.
Child Benefit	In the event there is no surviving spouse, the benefit is 50% of final monthly average pay for one child, 65% of final average pay for two children, or 75% of final average pay for three or more eligible children.

Post-Retirement Death Benefit

Eligibility	48 months of service, and in receipt of retirement benefits
Death Benefit	A \$5,000 lump sum payment

Member Contributions

Tier 1, Participation before 9/1/2008	8% of creditable compensation. Members who do not receive a retirement benefit are entitled to a full refund of contributions with interest. The annual interest rate is set by the Board, not less than 2.0%.
Tier 2, Participation on or after 9/1/2008 but before 1/1/2014	8% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest. The annual interest rate is 2.5%.
Tier 3, Participation after 1/1/2014	8% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest.

Change in Retirement Plan Benefits for Hazardous Members since the Prior Valuation

House Bill 506 passed during the 2023 legislative session and reinstated the Partial Lump Sum Option Form of payment for members who retire on and after January 1, 2024, and adjusted the minimum required separation period before a retiree may become reemployed and continue to receive their retirement allowance to one month for all circumstances.



Summary of Main Retiree Insurance Benefit Provisions

Insurance: Participation began before 7/1/2003

Benefit Eligibility Recipient of a retirement allowance

Benefit Amount

Non-Hazardous Service	Percentage of Member Premium Paid by Retirement System	Hazardous Service	Percentage of Member & Dependent Premium Paid by Retirement System
Less than 4 years	0%	Less than 4 years	0%
4 – 9 years	25%	4 – 9 years	25%
10 – 14 years	50%	10 – 14 years	50%
15 – 19 years	75%	15 – 19 years	75%
20 or more years	100%	20 or more years	100%

The percentage paid by the retirement system is applied to the 'contribution' plan selected by the Board.

Duty Disability Retirement If disability was a result of injuries sustained while in the line of duty, the member receives 100% of the maximum contribution for the member and dependents. This benefit is provided to members in the Non-hazardous and Hazardous plans alike.

Duty Death in Service If an active employee's death was a result of injuries sustained while in the line of duty, the member's spouse and children receive a fully subsidized health insurance benefit. This benefit is provided to members in the Non-hazardous and Hazardous plans alike.

Non-Duty Death in Service If the surviving spouses is in receipt of a pension allowance, he or she is eligible for continued health coverage. The percentage of the premium paid for by the retirement system is based on the member's years of hazardous service at the time of death.

Surviving Spouse of a Retiree A surviving spouse of a retiree, who is in receipt of a pension allowance, will receive a premium subsidy based on the member's years of hazardous service.

Hazardous employees who retired prior to August 1, 1998 System's contribution for spouse and dependents is based on total service.



Insurance: Participation began on or after 7/1/2003

Benefit Eligibility

Recipient of a retirement allowance with at least 120 months of service at retirement (180 months if participation began on or after 9/1/2008)

Non-Hazardous Subsidy

Monthly contribution of \$10 for each year of earned non-hazardous service. The monthly contribution is increased by 1.5% each July 1. As of July 1, 2023, the Non-Hazardous monthly contribution was \$14.41/year of service. Upon the retiree's death, the surviving spouse may continue coverage (if in receipt of a retirement allowance) but will be 100% responsible for the premiums.

Effective January 1, 2023, members will receive an additional dollar contribution of \$5 for every year of non-hazardous service a member attains over 27 years. This additional dollar contribution does not increase by 1.5% annually and is only payable for non-Medicare retirees. Also, it is only payable when the applicable insurance fund is at least 90% funded on an actuarial value of asset basis as of the last actuarial valuation.

Hazardous Subsidy

Monthly contribution of \$15 for each year of earned hazardous service. The monthly contribution is increased by 1.5% each July 1. As of July 1, 2023, the Hazardous monthly contribution was \$21.62/year of service. Upon the retiree's death, the surviving spouse of a hazardous duty member will receive a monthly contribution of \$10 (\$14.41 as of July 1, 2023) for each year of hazardous service.

Effective January 1, 2023, members will receive an additional dollar contribution of \$5 for every year of hazardous service a Tier 1 member attains over 20 years and a Tier 2 member attains 25 years. This additional dollar contribution does not increase by 1.5% annually and is only payable for non-Medicare retirees. Also, it is only payable when the applicable insurance fund is at least 90% funded on an actuarial value of asset basis as of the last actuarial valuation.

Duty Disability Retirement

If disability was a result of injuries sustained while in the line of duty or was duty-related, the member receives a benefit based on at least 20 years of service. This benefit is provided to members in the Non-Hazardous and Hazardous plans alike.

If the disability is deemed to be Total and Permanent, the insurance premium for the member, the member's spouse, and the member's dependent children shall also be paid in full by the System. For non-hazardous members to be eligible for this benefit, they must be working in a position that could be certified as a hazardous position.



Duty Death in Service

If an active employee's death was a result of injuries sustained while in the line of duty, the member's spouse and children receive a fully subsidized health insurance benefit. This benefit is provided to members in the Non-Hazardous and Hazardous plans alike.

Non-Duty Death in Service

If the surviving spouse is in receipt of a pension allowance, he or she is eligible for continued health coverage. The percentage of the premium paid for by the retirement system is based on the member's years of hazardous service at the time of death.

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Monthly Health Plan Premiums – Effective January 1, 2024

Plan Option	Non-Medicare Plan Options				
	Single	Parent Plus	Couple	Family	Family X-Ref
LivingWell PPO	\$949.04	\$1,320.40	\$1,981.62	\$2,185.78	\$1,126.28
LivingWell CDHP	930.76	1,269.28	1,866.24	2,078.08	1,068.66
LivingWell Basic	901.04	1,234.80	1,863.04	2,069.88	1,057.40

Medicare Plan Options	
Medical Only Plan	\$188.73
Essential Mirror Plan	228.98
Premium Mirror Plan	328.11
Essential Medical Advantage Plan	4.07
Premium Medical Advantage Plan	93.35

Contribution plan selected by the Board was the LivingWell PPO plan option for non-Medicare retirees.
Contribution plan selected by the Board was the Medical Only plan for the Medicare retirees.

Dollar Contribution Amount for Participation on or after 7/1/2003

Monthly contribution amounts per year of service as of July 1, 2023.

Non-Hazardous Service	Hazardous Service
\$14.41	\$21.62

Changes in Health Insurance Benefits since the Prior Valuation

None.



APPENDIX C

GLOSSARY

Glossary

Actuarial Accrued Liability (AAL): That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of Future Plan Benefits which is not provided for by future Normal Costs. It is equal to the Actuarial Present Value of Future Plan Benefits minus the actuarial present value of future Normal Costs.

Actuarial Assumptions: Assumptions as to future experience under the Fund. These include assumptions about the occurrence of future events affecting costs or liabilities, such as:

- mortality, withdrawal, disablement, and retirement;
- future increases in salary;
- future rates of investment earnings and future investment and administrative expenses;
- characteristics of members not specified in the data, such as marital status;
- characteristics of future members;
- future elections made by members; and
- other relevant items.

Actuarial Cost Method or Funding Method: A procedure for allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability. These items are used to determine the ADC.

Actuarial Gain or Actuarial Loss: A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the fund's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

Actuarially Equivalent: Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.



Actuarial Present Value (APV): The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:

- a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)
- b. multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and
- c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Actuarial Present Value of Future Plan Benefits: The Actuarial Present Value of those benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive, non-retired members either entitled to a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.

Actuarial Valuation: The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial valuation for a governmental retirement system typically also includes calculations that provide the financial information of the plan, such as the funded ratio, unfunded actuarial accrued liability and the ADC.

Actuarial Value of Assets or Valuation Assets: The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly actuaries use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.

Actuarially Determined: Values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.

Actuarially Determined Contribution (ADC): The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ADC consists of the Employer Normal Cost and the Amortization Payment.

Amortization Method: A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.



Amortization Payment: The portion of the pension plan contribution or ADC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Closed Amortization Period: A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.

Decrements: Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.

Defined Benefit Plan: A retirement plan that is not a Defined Contribution Plan. Typically a defined benefit plan is one in which benefits are defined by a formula applied to the member's compensation and/or years of service.

Defined Contribution Plan: A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, and the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.

Employer Normal Cost: The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.

Experience Study: A periodic review and analysis of the actual experience of the Fund which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.

Funded Ratio: The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA.

Funding Period or Amortization Period: The term "Funding Period" is used two ways. In the first sense, it is the period used in calculating the Amortization Payment as a component of the ADC. This funding period is specified in State statute. In the second sense, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on a statutory employer contribution rate, and assuming no future actuarial gains or losses.

GASB: Governmental Accounting Standards Board.

GASB 67 and GASB 68: Governmental Accounting Standards Board Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting and reporting rules for public retirement systems and the employers that sponsor, participate in, or contribute to them. Statement No. 67 sets the accounting rules for the financial reporting of the retirement systems, while Statement No. 68 sets the rules for the employers that sponsor, participate in, or contribute to public retirement systems.

Normal Cost: That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded



Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits which are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability or retirement.

Open Amortization Period: An open amortization period is one which is used to determine the Amortization Payment but may not decrease by exactly one year in the subsequent year's actuarial valuation. For instance, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year.

Unfunded Actuarial Accrued Liability: The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

Valuation Date or Actuarial Valuation Date: The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.



APPENDIX D

KERS NON-HAZARDOUS EMPLOYER CONTRIBUTION BY AGENCY



November 13, 2023

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

Re: Sensitivity Analysis Based on Results of the June 30, 2023 Actuarial Valuation – KERS

Dear Members of the Board:

Per Kentucky State Statute 61.670, we are providing this supplemental information regarding the sensitivity of the valuation results to changes in some of the economic assumptions. Specifically, the enclosed tables show the impact for the **Kentucky Employees Retirement System (KERS)** due to changes in the investment return assumption, the inflation rate assumption, and the payroll growth rate assumption.

Background

Investment Assumption

The investment return assumption is used to discount future expected benefit payments to the valuation date in order to determine the liabilities of the plans. The lower the investment return assumption, the less the benefit payments are discounted and the higher the valuation liability. The current investment return assumption is 5.25% for the non-hazardous retirement fund, 6.25% for the hazardous retirement fund, and 6.50% for both insurance funds. The sensitivity analysis shows the financial impact of a 1.00% increase and a 1.00% decrease in the investment return assumption. For purposes of this sensitivity analysis, the inflation assumption and payroll growth assumption remain unchanged from the valuation assumption.

Inflation Assumption

The inflation assumption underlies most of the other economic assumptions, including the investment return, salary increases, and payroll growth rate. This is a macroeconomic assumption and as such the same assumption is used in the valuation of each of the retirement systems. The current assumption is 2.50% for all funds. The sensitivity analysis shows the financial impact of a 0.25% increase and a 0.25% decrease in the inflation assumption. Note, the change in the inflation assumption results in a corresponding change in the investment return assumption, the individual salary increase assumption for projecting members' benefit amounts, the payroll growth rate assumption, and the healthcare trend assumption that is used in the valuation of the health insurance funds.

Board of Trustees
November 13, 2023
Page 2

Payroll Growth Assumption

Participating employers of the hazardous fund make contributions to the system as a percentage of covered payroll. Therefore, as payroll changes over time these amortization payments will also change. If actual covered payroll increases at a rate that is less than assumed, then the retirement system receives fewer contribution dollars than expected to finance the unfunded liability, which means the contribution rate in future years will be required to increase in order to finance the unfunded liability over the same time period. The current payroll growth assumption is 0.00% for both the retirement and insurance funds. The analysis shows the impact of a 1.00% increase and a 1.00% decrease in the payroll growth assumption.

For completeness, we have included this sensitivity for the non-hazardous fund. House Bill 8 passed during the 2021 legislative session and changed how contributions are collected and allocated amongst employers. The portion of the required contribution that amortizes (or pays for) the unfunded liability for the non-hazardous fund is no longer collected as a percentage of payroll. This sensitivity for the non-hazardous fund shows the impact of assuming that the amortization cost contributions paid by employers either decrease by 1% or increase by 1% annually (versus the valuation assumption that they remain level through the end of the funding period).

Please note that the payroll growth assumption does not impact the valuation liabilities, unfunded liability, or funded status of the system. Rather, this assumption only impacts the amortization rate for financing the existing unfunded actuarial accrued liability and the actuarially determined employer contribution. For purposes of this analysis, the investment return assumption and the inflation assumption are held at their current valuation assumptions.

Certification

The information provided in this letter compliments the information provided in the June 30, 2023 actuarial valuation report. Please refer to the June 30, 2023 actuarial valuation report for additional discussion of the actuarial valuation, including the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

Actual results can, and almost certainly will, differ as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rate, and funding periods. The actuarial calculations are intended to provide information for rational decision making. The purpose of this information is to provide stakeholders the financial sensitivity of the unfunded liability and contribution rates to changes in the inflation, assumed rate of return, and payroll growth assumption.

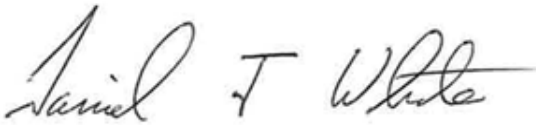


Board of Trustees
November 13, 2023
Page 3

To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All three of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

Gabriel, Roeder, Smith & Company



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



Janie Shaw, ASA, EA, MAAA
Consultant



Krysti Kiesel, ASA, MAAA
Senior Analyst and Actuary



Sensitivity Analysis - Discount Rate**Non-Hazardous Members**

(Dollar amounts expressed in thousands)

	Decrease Discount Rate	Valuation Results	Increase Discount Rate
(1)	(2)	(3)	(4)
Payroll Growth Rate	0.00%	0.00%	0.00%
Inflation Rate	2.50%	2.50%	2.50%
Discount Rate - Retirement	4.25%	5.25%	6.25%
Discount Rate - Insurance	5.50%	6.50%	7.50%
Retirement			
Actuarial Accrued Liability	\$ 18,233,890	\$ 16,304,278	\$ 14,704,220
Actuarial Value of Assets	3,552,471	3,552,471	3,552,471
Unfunded Actuarial Accrued Liability	14,681,419	12,751,807	11,151,749
Funded Ratio	19.5%	21.8%	24.2%
Normal Cost Rate	10.12%	6.99%	4.86%
Amortization Cost	\$ 919,511	\$ 854,588	\$ 797,018
Insurance			
Actuarial Accrued Liability	\$ 2,088,635	\$ 1,877,109	\$ 1,699,268
Actuarial Value of Assets	1,532,895	1,532,895	1,532,895
Unfunded Actuarial Accrued Liability	555,740	344,214	166,373
Funded Ratio	73.4%	81.7%	90.2%
Normal Cost Rate	2.01%	1.45%	1.02%
Amortization Cost	\$ 17,997	\$ 1,973	\$ 0
Combined			
Actuarial Accrued Liability	\$ 20,322,525	\$ 18,181,387	\$ 16,403,488
Actuarial Value of Assets	5,085,366	5,085,366	5,085,366
Unfunded Actuarial Accrued Liability	15,237,159	13,096,021	11,318,122
Funded Ratio	25.0%	28.0%	31.0%
Normal Cost Rate	12.13%	8.44%	5.88%
Amortization Cost	\$ 937,508	\$ 856,561	\$ 797,018



Sensitivity Analysis - Inflation Rate**Non-Hazardous Members**

(Dollar amounts expressed in thousands)

	Decrease Inflation Rate	Valuation Results	Increase Inflation Rate
(1)	(2)	(3)	(4)
Payroll Growth Rate	-0.25%	0.00%	0.25%
Inflation Rate	2.25%	2.50%	2.75%
Discount Rate - Retirement	5.00%	5.25%	5.50%
Discount Rate - Insurance	6.25%	6.50%	6.75%
Retirement			
Actuarial Accrued Liability	\$ 16,722,008	\$ 16,304,278	\$ 15,905,049
Actuarial Value of Assets	3,552,471	3,552,471	3,552,471
Unfunded Actuarial Accrued Liability	13,169,537	12,751,807	12,352,578
Funded Ratio	21.2%	21.8%	22.3%
Normal Cost Rate	7.43%	6.99%	6.58%
Amortization Cost	\$ 888,560	\$ 854,588	\$ 822,034
Insurance			
Actuarial Accrued Liability	\$ 1,898,039	\$ 1,877,109	\$ 1,857,357
Actuarial Value of Assets	1,532,895	1,532,895	1,532,895
Unfunded Actuarial Accrued Liability	365,144	344,214	324,462
Funded Ratio	80.8%	81.7%	82.5%
Normal Cost Rate	1.51%	1.45%	1.39%
Amortization Cost	\$ 4,011	\$ 1,973	\$ 40
Combined			
Actuarial Accrued Liability	\$ 18,620,047	\$ 18,181,387	\$ 17,762,406
Actuarial Value of Assets	5,085,366	5,085,366	5,085,366
Unfunded Actuarial Accrued Liability	13,534,681	13,096,021	12,677,040
Funded Ratio	27.3%	28.0%	28.6%
Normal Cost Rate	8.94%	8.44%	7.97%
Amortization Cost	\$ 892,571	\$ 856,561	\$ 822,074



Sensitivity Analysis - Payroll Growth**Non-Hazardous Members**

(Dollar amounts expressed in thousands)

	Decrease Payroll Growth	Valuation Results	Increase Payroll Growth
(1)	(2)	(3)	(4)
Payroll Growth Rate	-1.00%	0.00%	1.00%
Inflation Rate	2.50%	2.50%	2.50%
Discount Rate - Retirement	5.25%	5.25%	5.25%
Discount Rate - Insurance	6.50%	6.50%	6.50%
Retirement			
Actuarial Accrued Liability	\$ 16,304,278	\$ 16,304,278	\$ 16,304,278
Actuarial Value of Assets	3,552,471	3,552,471	3,552,471
Unfunded Actuarial Accrued Liability	12,751,807	12,751,807	12,751,807
Funded Ratio	21.8%	21.8%	21.8%
Normal Cost Rate	6.99%	6.99%	6.99%
Amortization Cost	\$ 939,030	\$ 854,588	\$ 774,554
Insurance			
Actuarial Accrued Liability	\$ 1,877,109	\$ 1,877,109	\$ 1,877,109
Actuarial Value of Assets	1,532,895	1,532,895	1,532,895
Unfunded Actuarial Accrued Liability	344,214	344,214	344,214
Funded Ratio	81.7%	81.7%	81.7%
Normal Cost Rate	1.45%	1.45%	1.45%
Amortization Cost	\$ 4,974	\$ 1,973	\$ 0
Combined			
Actuarial Accrued Liability	\$ 18,181,387	\$ 18,181,387	\$ 18,181,387
Actuarial Value of Assets	5,085,366	5,085,366	5,085,366
Unfunded Actuarial Accrued Liability	13,096,021	13,096,021	13,096,021
Funded Ratio	28.0%	28.0%	28.0%
Normal Cost Rate	8.44%	8.44%	8.44%
Amortization Cost	\$ 944,004	\$ 856,561	\$ 774,554



Sensitivity Analysis - Discount Rate**Hazardous Members**

(Dollar amounts expressed in thousands)

	Decrease Discount Rate	Valuation Results	Increase Discount Rate
(1)	(2)	(3)	(4)
Payroll Growth Rate	0.00%	0.00%	0.00%
Inflation Rate	2.50%	2.50%	2.50%
Discount Rate - Retirement	5.25%	6.25%	7.25%
Discount Rate - Insurance	5.50%	6.50%	7.50%
Retirement			
Actuarial Accrued Liability	\$ 1,529,508	\$ 1,363,036	\$ 1,228,415
Actuarial Value of Assets	891,460	891,460	891,460
Unfunded Actuarial Accrued Liability	638,048	471,576	336,955
Funded Ratio	58.3%	65.4%	72.6%
Actuarially Determined Contribution Rate	32.19%	23.74%	16.72%
Insurance			
Actuarial Accrued Liability	\$ 404,767	\$ 363,512	\$ 329,221
Actuarial Value of Assets	619,519	619,519	619,519
Unfunded Actuarial Accrued Liability	(214,752)	(256,007)	(290,298)
Funded Ratio	153.1%	170.4%	188.2%
Actuarially Determined Contribution Rate	0.00%	0.00%	0.00%
Combined			
Actuarial Accrued Liability	\$ 1,934,275	\$ 1,726,548	\$ 1,557,636
Actuarial Value of Assets	1,510,979	1,510,979	1,510,979
Unfunded Actuarial Accrued Liability	423,296	215,569	46,657
Funded Ratio	78.1%	87.5%	97.0%
Actuarially Determined Contribution Rate	32.19%	23.74%	16.72%



Sensitivity Analysis - Inflation Rate**Hazardous Members**

(Dollar amounts expressed in thousands)

	Decrease Inflation Rate	Valuation Results	Increase Inflation Rate
(1)	(2)	(3)	(4)
Payroll Growth Rate	-0.25%	0.00%	0.25%
Inflation Rate	2.25%	2.50%	2.75%
Discount Rate - Retirement	6.00%	6.25%	6.50%
Discount Rate - Insurance	6.25%	6.50%	6.75%
Retirement			
Actuarial Accrued Liability	\$ 1,397,841	\$ 1,363,036	\$ 1,329,957
Actuarial Value of Assets	891,460	891,460	891,460
Unfunded Actuarial Accrued Liability	506,381	471,576	438,497
Funded Ratio	63.8%	65.4%	67.0%
Actuarially Determined Contribution Rate	25.76%	23.74%	21.84%
Insurance			
Actuarial Accrued Liability	\$ 368,077	\$ 363,512	\$ 359,219
Actuarial Value of Assets	619,519	619,519	619,519
Unfunded Actuarial Accrued Liability	(251,442)	(256,007)	(260,300)
Funded Ratio	168.3%	170.4%	172.5%
Actuarially Determined Contribution Rate	0.00%	0.00%	0.00%
Combined			
Actuarial Accrued Liability	\$ 1,765,918	\$ 1,726,548	\$ 1,689,176
Actuarial Value of Assets	1,510,979	1,510,979	1,510,979
Unfunded Actuarial Accrued Liability	254,939	215,569	178,197
Funded Ratio	85.6%	87.5%	89.5%
Actuarially Determined Contribution Rate	25.76%	23.74%	21.84%



Sensitivity Analysis - Payroll Growth**Hazardous Members**

(Dollar amounts expressed in thousands)

	Decrease Payroll Growth	Valuation Results	Increase Payroll Growth
(1)	(2)	(3)	(4)
Payroll Growth Rate	-1.00%	0.00%	1.00%
Inflation Rate	2.50%	2.50%	2.50%
Discount Rate - Retirement	6.25%	6.25%	6.25%
Discount Rate - Insurance	6.50%	6.50%	6.50%
Retirement			
Actuarial Accrued Liability	\$ 1,363,036	\$ 1,363,036	\$ 1,363,036
Actuarial Value of Assets	891,460	891,460	891,460
Unfunded Actuarial Accrued Liability	471,576	471,576	471,576
Funded Ratio	65.4%	65.4%	65.4%
Actuarially Determined Contribution Rate	25.45%	23.74%	22.13%
Insurance			
Actuarial Accrued Liability	\$ 363,512	\$ 363,512	\$ 363,512
Actuarial Value of Assets	619,519	619,519	619,519
Unfunded Actuarial Accrued Liability	(256,007)	(256,007)	(256,007)
Funded Ratio	170.4%	170.4%	170.4%
Actuarially Determined Contribution Rate	0.00%	0.00%	0.00%
Combined			
Actuarial Accrued Liability	\$ 1,726,548	\$ 1,726,548	\$ 1,726,548
Actuarial Value of Assets	1,510,979	1,510,979	1,510,979
Unfunded Actuarial Accrued Liability	215,569	215,569	215,569
Funded Ratio	87.5%	87.5%	87.5%
Actuarially Determined Contribution Rate	25.45%	23.74%	22.13%



State Police Retirement System (SPRS)

Actuarial Valuation Report
as of June 30, 2023

DRAFT





October 31, 2023

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

Subject: Actuarial Valuation as of June 30, 2023

Dear Trustees of the Board:

This report describes the current actuarial condition of the State Police Retirement System (SPRS) and provides the actuarially determined employer contribution rate for fiscal years ending June 30, 2025 and June 30, 2026. In addition, the report analyzes changes in SPRS's financial condition, and provides various summaries of the data.

Separate reports are issued with regard to valuation results determined in accordance with Governmental Accounting Standards Board (GASB) Statements 67, 68, 74 and 75. Results of this report should not be used for any other purpose without consultation with the undersigned. Valuations are prepared annually as of June 30, the first day of the plan year for SPRS. This report was prepared at the request of the Board of Trustees of the Kentucky Retirement Systems (Board) and is intended for use by the Kentucky Public Pensions Authority (KPPA) staff and those designated or approved by the Board.

FINANCING OBJECTIVES AND FUNDING POLICY

The employer contribution rates determined by these actuarial valuations are intended to become effective twelve months after the valuation date and, as such, are intended to be used by the Board for recommending required contribution rates effective July 1, 2024, as well as the subsequent fiscal year beginning July 1, 2025 and ending June 30, 2026.

The employer contribution rate is determined in accordance with Section 61.565 of Kentucky Statute. As specified by the Statute, the employer contribution is comprised of a normal cost contribution and an actuarial accrued liability contribution. The actuarial accrued liability contribution is calculated by amortizing the unfunded accrued liability as of June 30, 2019 over a closed 30-year amortization period (26 years remaining as of June 30, 2023). Gains and losses incurring in years after June 30, 2019 are amortized as separate closed 20-year amortization bases.

Board of Trustees
October 31, 2023
Page 2

If the contributions made are equal to the Actuarially Determined Contribution (ADC), and if all actuarial assumptions are met, there will not be an unfunded accrued liability at the end of the 26-year period remaining from the original closed 30-year amortization base. Accordingly, the ADC under the funding policy can be considered a “Reasonable Actuarially Determined Contribution” as required by the Actuarial Standards of Practice.

ASSUMPTIONS AND METHODS

The Board of Trustees, in consultation with the actuary, sets the actuarial assumptions and methods used in the actuarial valuation. Except where noted in this report, the assumptions used in this actuarial valuation are based on an experience study conducted with experience through June 30, 2022, adopted by the Board of Trustees on June 5, 2023 for first use in this June 30, 2023 actuarial valuation.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can, and almost certainly will, differ as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rate, and funding periods. The actuarial calculations are intended to provide information for rational decision making.

BENEFIT PROVISIONS

The benefit provisions reflected in these valuations are those which were in effect on June 30, 2023. House Bill 506 passed during the 2023 legislative session and reinstated the Partial Lump Sum Option Form of payment for members who retire on and after January 1, 2024, and adjusted the minimum required separation period before a retiree may become reemployed and continue to receive their retirement allowance to one month for all circumstances. There were no other material benefit provision changes since the prior valuation.

DATA

Member data for retired, active and inactive members was supplied as of June 30, 2023, by KPPA staff. The staff also supplied asset information as of June 30, 2023. We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent with the prior year's data. GRS is not responsible for the accuracy or completeness of the information provided to us by KPPA.



Board of Trustees
October 31, 2023
Page 3

CERTIFICATION

We certify that the information presented herein is accurate and fairly portrays the actuarial position of SPRS as of June 30, 2023.

All of our work conforms with generally accepted actuarial principles and practices, and is in conformity with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of Kentucky Code of Laws and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All three of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

Gabriel, Roeder, Smith & Company



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



Jamie Shaw, ASA, EA, MAAA
Consultant



Krysti Kiesel, ASA, MAAA
Senior Analyst and Actuary



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SECTION 1

EXECUTIVE SUMMARY

DRAFT

Summary of Principal Results
(Dollar amounts expressed in thousands)

	SPRS	
	June 30, 2023	June 30, 2022
Actuarially Determined Contribution:		
Retirement	65.79%	85.39%
Insurance	<u>2.31%</u>	<u>3.68%</u>
Total	68.10%	89.07%
Contribution Rate for Next Fiscal Year¹	68.10%	99.43%
Assets:		
Retirement		
• Actuarial value (AVAR)	\$589,848	\$559,973
• Market value (MVAR)	\$591,514	\$551,699
• Ratio of actuarial to market value of assets	99.7%	101.5%
Insurance		
• Actuarial value (AVAI)	\$245,172	\$234,239
• Market value (MVAI)	\$248,109	\$231,242
• Ratio of actuarial to market value of assets	98.8%	101.3%
Funded Status:		
Retirement		
• Actuarial accrued liability	\$1,091,795	\$1,067,447
• Unfunded accrued liability on AVAR	\$501,947	\$507,474
• Funded ratio on AVAR	54.0%	52.5%
• Unfunded accrued liability on MVAR	\$500,281	\$515,748
• Funded ratio on MVAR	54.2%	51.7%
Insurance		
• Actuarial accrued liability	\$244,059	\$232,798
• Unfunded accrued liability on AVAI	(\$1,113)	(\$1,441)
• Funded ratio on AVAI	100.5%	100.6%
• Unfunded accrued liability on MVAI	(\$4,050)	\$1,556
• Funded ratio on MVAI	101.7%	99.3%
Membership:		
• Number of		
- Active Members	868	844
- Retirees and Beneficiaries	1,697	1,702
- Inactive Members	<u>714</u>	<u>667</u>
- Total	3,279	3,213
• Projected payroll of active members	\$65,913	\$47,885
• Average salary of active members	\$75,937	\$56,736

¹ Contribution rates calculated with the June 30, 2023 valuation are effective for fiscal years ending June 30, 2025 and June 30 2026. Contribution rates for fiscal year ending June 30, 2024 calculated with the June 30, 2021 valuation.

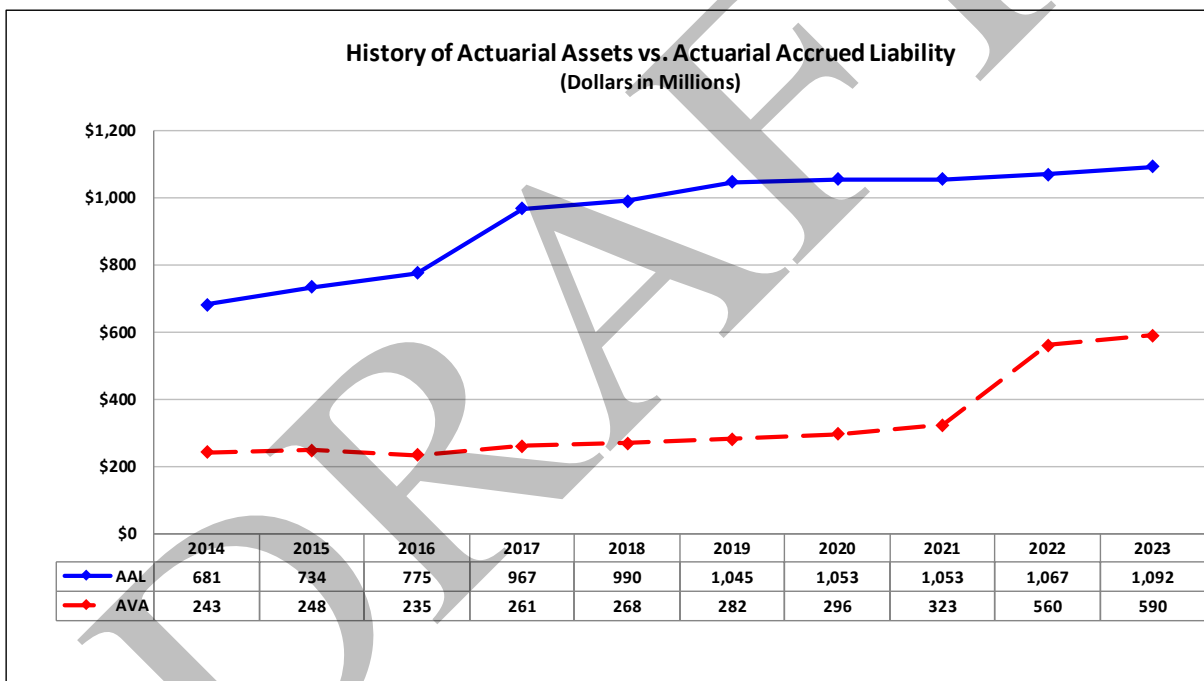


Executive Summary (Continued)

Retirement Fund

The unfunded actuarial accrued liability of the retirement fund decreased by \$6 million since the prior year's valuation to \$502 million. This decrease was approximately \$19 million less than expected, primarily due to liability losses as a result of salary increases for individual members being greater than assumed. The increase in the liability due to demographic losses was offset by a decrease in liabilities due to the assumption changes based on the 2022 experience study.

Below is a chart with the historical actuarial value of assets and actuarial accrued liability. The increase in the actuarial value of assets in FY 2022 was due to a one-time \$215 million appropriation made by the Commonwealth.



Insurance Fund

The funding surplus (actuarial accrued liability in excess of assets) of the insurance fund decreased by \$0.3 million since the prior year's valuation to \$1.1 million. The funding surplus was expected to decrease by \$6.5 million and therefore was \$6.8 lower than expected, primarily due to liability losses related to the 2024 premium experience and retiree contribution changes discussed below. The increase in the liability due to demographic losses was offset by a decrease in liabilities due to the assumption changes based on the 2022 experience study.

On average, pre-Medicare premiums were approximately 7% higher than expected and Medicare premiums were approximately 4% lower than expected. In conjunction with the review of the healthcare per capita claims cost, the assumed increase in future healthcare costs, or trend assumption, is also reviewed on an annual basis. The trend assumption for the pre-Medicare Plans was increased in the 2023 actuarial valuation as a result of our review. These changes increased liability for insurance fund by approximately \$12 million.

Additionally, the Board of Trustees adopted to lower the retiree contribution for the Medicare Advantage plans from \$252.51 to be based on the Humana premiums (\$93.35 as of January 1, 2024). The Board also adopted the Medical Only plan as the KPPA "contribution plan", which further lowered member contributions for those with less than 20 years of service. These changes increased liability for the insurance fund by approximately \$3 million.

SECTION 2

DISCUSSION

Discussion

The State Police Retirement System (SPRS) is a defined benefit pension plan that provides coverage for uniformed state police officers. SPRS includes hazardous duty benefits only. This report presents the results of the June 30, 2023 actuarial funding valuation for both the Retirement Fund and Insurance Fund.

The primary purposes of the valuation report are to describe the current actuarial condition of SPRS and provide the actuarially determined employer contribution rates for fiscal years ending June 30, 2025 and June 30, 2026. In addition, the report analyzes changes in SPRS's financial condition, and provides various summaries of the data.

The actuarially determined contribution consist of two components: a normal cost rate and an amortization cost to finance the unfunded actuarial accrued liability. The normal cost rate is the theoretical amount which would be required to pay the members' benefits, based on the current plan provisions, if this amount had been contributed from each member's entry date and if the fund's experience exactly followed the actuarial assumptions. This is the amount that it should cost to provide the benefits for an average member. Since members contribute to the fund, only the excess of the normal cost rate over the member contribution rate is included in the employer contribution. The amortization cost is the amount necessary to amortize the unfunded actuarial accrued liability. The payroll growth rate and discount rate assumptions are selected by the Board. The funding period is specified in Section 61.565 of Kentucky Statute.

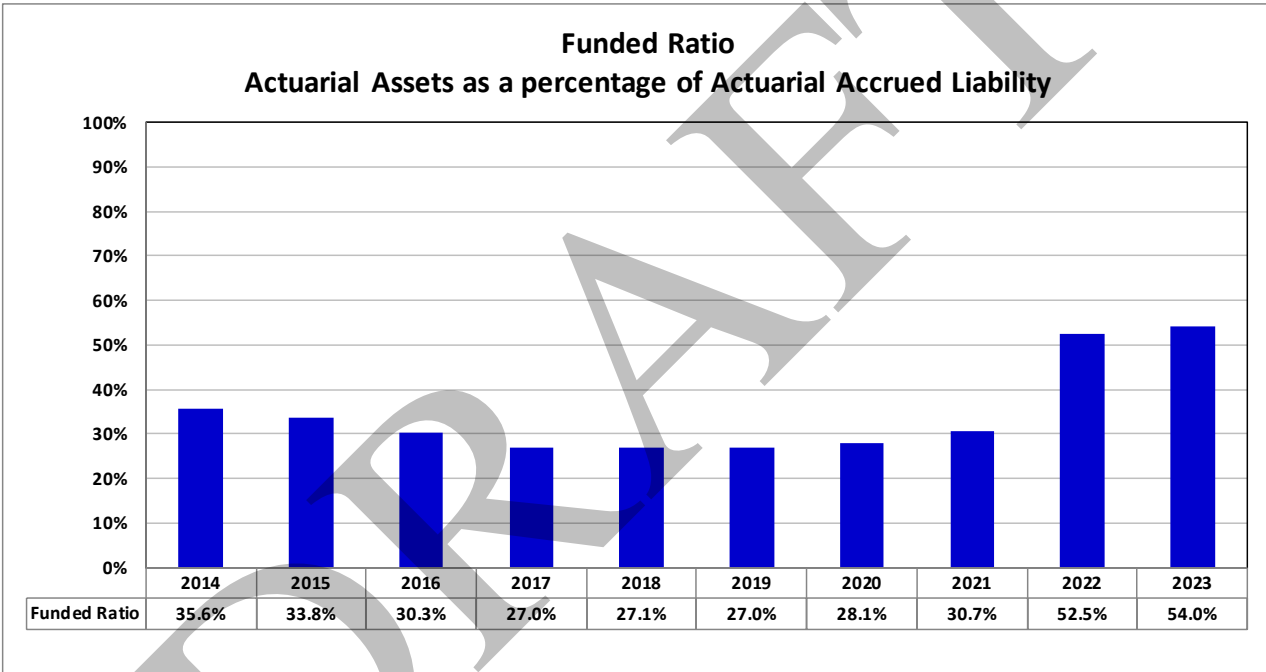
All of the actuarial and financial tables referenced by the other sections of this Report appear in Section 3. Section 4 provides additional details related to the calculation of the amortization of the unfunded actuarial accrued liability. Section 5 provides member data and statistical information. Section 6 provides a discussion of various risk measures, which are intended to aid stakeholders in understanding the effects of future experience differing from the assumptions used in performing an actuarial valuation. Appendices A and B provide summaries of the principle actuarial assumptions and methods and plan provisions. Finally, Appendix C provides a glossary of technical terms that are used throughout this report.



Funding Progress

The following chart provides a ten-year history of the retirement fund’s funded ratio (i.e. the Actuarial Value of Assets divided by the Actuarial Accrued Liability). The significant increase in the funded ratio from 2021 to 2022 was due to a \$215 million appropriation made by the Commonwealth in fiscal year 2022.

Assuming the full actuarially determined contributions are paid in future years and absent material future unfavorable experience, the funded ratio is expected to continue improving. Also, the dollar amount of the unfunded actuarial accrued liability, or the difference between the actuarial accrued liability and the actuarial value of assets, is expected to continue a decreasing trend. Table 9, Schedule of Funding Progress, in the following section of the report provides additional detail regarding the funding progress of the retirement fund.



Asset Gains/ (Losses)

The actuarial value of assets (“AVA”) is based on a smoothed market value of assets, using a systematic approach to phase-in the difference between the actual and expected investment return on the market value of assets (adjusted for receipts and disbursements during the year). This is appropriate because it dampens the short-term volatility inherent in investment markets. The return is computed net of investment expenses.

Retirement Fund

The actuarial value of assets for the retirement fund increased from \$560 million to \$590 million since the prior valuation. The rate of return on the market value of assets on a dollar-weighted basis for the prior fiscal year was 7.4% which is more than the 5.25% expected annual return. The return on an actuarial (smoothed) asset value was 5.5%, which resulted in a \$1.4 million gain for the fiscal year. The market value of assets is \$1.7 million more than the actuarial value of assets, which signifies that the retirement fund is in a position of net deferred investment gains to be realized in future years.

Table 6 in the following section of this report provides asset information that was included in the annual financial statements of the funds, as well as the estimated yield on a market value basis. Table 7 provides the development of the actuarial value of assets and the estimated yield on an actuarial value basis.

Actuarial Gains/ (Losses)

The annual actuarial valuation is a snapshot analysis of the benefit liabilities, assets and funded position of the funds as of the first day of the plan year. In any one fiscal year, the experience can be better or worse from that which is assumed or expected. The actuarial assumptions do not necessarily attempt to model what the experience will be for any one given fiscal year, but instead try to model the overall experience over many years. Therefore, as long as the actual experience of a retirement system is reasonably close to the current assumptions, the long-term funding requirements of the system will remain relatively consistent.

Below is a table that separately shows a reconciliation of the unfunded liability since the prior actuarial valuation for the retirement and health insurance funds, which include the effect of asset and liability gains and losses, changes in assumptions, and changes in plan provisions. See the discussion in the Executive Summary for additional information related to the liability experience and additional information in this section of the report related to the asset experience, plan changes, and assumption changes.

Experience Gain or (Loss) (Dollar amounts expressed in thousands)		
	<u>Retirement</u>	<u>Insurance</u>
A. Calculation of total actuarial gain or loss		
1. Unfunded actuarial accrued liability (UAAL), previous year	\$ 507,474	\$ (1,441)
2. Normal cost and administrative expenses	13,164	3,433
3. Less: contributions for the year	(63,370)	(9,637)
4. Interest accrual	<u>25,324</u>	<u>(284)</u>
5. Expected UAAL (Sum of Items 1 - 4)	\$ 482,592	\$ (7,929)
6. Actual UAAL as of June 30, 2023	\$ 501,947	\$ (1,113)
7. Total gain (loss) for the year (Item 5 - Item 6)	\$ (19,355)	\$ (6,816)
B. Source of gains and losses		
8. Asset gain (loss) for the year	\$ 1,393	\$ 1,091
9. Liability experience gain (loss) for the year	(52,004)	(13,544)
10. Plan Change	—	—
11. Assumption change	<u>31,256</u>	<u>5,637</u>
12. Total	\$ (19,355)	\$ (6,816)



Actuarial Assumptions and Methods

In determining costs and liabilities, actuaries use assumptions about the future, such as rates of salary increase, probabilities of retirement, termination, death and disability, and an annual investment return assumption. The Board of Trustees, in consultation with the actuary, sets the actuarial assumptions and methods used in the actuarial valuation.

An experience study was conducted after the June 30, 2022 actuarial valuation and the Board adopted updated assumptions for use in this actuarial valuation. The updated assumptions include:

Demographic Assumptions:

- Post-retirement mortality rates were updated based on KPPA experience.
- Mortality improvement assumption was updated to the ultimate rates of the MP-2020 mortality improvement scale.
- Rates of termination prior to retirement were increased based on SPRS experience.
- The percentage of members assumed to cover spouses in the retiree health insurance plan at retirement was increased based on SPRS experience.

Economic Assumptions:

- The rate of inflation was increased from 2.30% to 2.50%.
- The salary productivity assumption was reduced by 0.20%, resulting in no change in the salary increase assumption for long-service employees of 3.55%.
- The investment return assumption for the insurance fund was increased from 6.25% to 6.50%.
- The Tier 3 cash balance interest crediting rate assumption was increased to 5.90%.

In conjunction with the review of the healthcare per capita claims cost, the assumed increase in future healthcare costs, or trend assumption, is reviewed on an annual basis. All other assumptions were adopted by the Board and are based on an experience study conducted based on experience through June 30, 2022. It is our opinion that the assumptions are internally consistent, reasonable, and reflect anticipated future experience of the System. Appendix A includes a summary of the actuarial assumptions and methods used in this valuation.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. This report does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.



Benefit Provisions

Appendix B of this report includes a summary of the major benefit provisions for System. The following is a summary of the changes in benefits enacted since the last actuarial valuation.

House Bill 506 passed during the 2023 legislative session and reinstated the Partial Lump Sum Option Form of payment for members who retire on and after January 1, 2024, with the lump-sum options expanded to include 48 or 60 times the member's monthly retirement allowance. Since this optional form of payment results in a reduced, actuarial equivalent, monthly retirement allowance for members who elect a partial lump-sum option, this provision does not have a fiscal impact to the accrued liability.

House Bill 506 also adjusted the minimum required separation period before a retiree may become reemployed and continue to receive their retirement allowance to one month for all circumstances for each plan. This is a minimal change for members in SPRS, as the minimum separation period is currently one month for members who become reemployed on a full-time basis in a hazardous position. The requirement was previously three months only for members who become reemployed on a part-time basis or in any non-hazardous position. We believe this provision of House Bill 506 will have an insignificant impact on the retirement pattern of hazardous members.

There were no other material plan provision changes since the prior valuation.

Annual Cost of Tier 3 Pay Credit for Unused Sick Leave (HB 259 Enacted in the 2022 Legislative Session)

Effective July 1, 2023, members earning benefits in the Tier 3 cash balance plan with five or more years of service credit will receive an additional employer pay credit equal to an amount by multiplying the member's unused sick leave in excess of 480 hours (i.e. 60 days) by the member's hourly base pay. Tier 3 members who retire from the State Police Retirement System will receive an additional employer pay credit equal to an amount by multiplying the member's hours of accumulated sick leave upon termination of employment by the member's hourly base pay.

Section KRS 7A.255 was also amended to require the Department of State Police and the Kentucky Public Pensions Authority to jointly report to the Public Pension Oversight Board on the costs and effectiveness of this benefit provided to the Tier 3 members. The increase in the Tier 3 normal cost rate due to this benefit enhancement is 6.65% of pay. As a result, the dollar amount of this benefit enhancement for FY 2025 is \$1,468,000 which is equal to the increase in the Tier 3 normal cost rate multiplied by the \$22,077,000 Tier 3 payroll.

The incremental difference in the Tier 3 normal cost rate will remain relatively unchanged in future years, however the amount of the dollar cost of this benefit enhancement will increase over time as the number of members (and covered payroll) increase as new members enter the System and earn Tier 3 benefits.

SECTION 3

ACTUARIAL TABLES

Actuarial Tables

<u>TABLE NUMBER</u>	<u>PAGE</u>	<u>CONTENT OF TABLE</u>
1	15	DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITY
2	16	ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS
3	17	DEVELOPMENT OF REQUIRED CONTRIBUTION RATE
4	18	ACTUARIAL BALANCE SHEET – RETIREMENT
5	19	ACTUARIAL BALANCE SHEET – INSURANCE
6	20	RECONCILIATION OF SYSTEM NET ASSETS
7	21	DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS – RETIREMENT
8	22	DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS – INSURANCE
9	23	SCHEDULE OF FUNDING PROGRESS
10	24	SUMMARY OF PRINCIPAL ASSUMPTIONS AND METHODS
11	25	SOLVENCY TEST

Development of Unfunded Actuarial Accrued Liability

(Dollar amounts expressed in thousands)

		June 30, 2023	
		Retirement (1)	Insurance (2)
1.	Projected payroll of active members	\$ 65,913	\$ 65,913
2.	Present value of future pay	\$ 674,636	\$ 611,054
3.	Normal cost rate		
a.	Total normal cost rate	26.97%	5.39%
b.	Less: member contribution rate	-8.00%	-0.57%
c.	Employer normal cost rate	18.97%	4.82%
4.	Actuarial accrued liability for active members		
a.	Present value of future benefits	\$ 437,878	\$ 91,268
b.	Less: present value of future normal costs	(171,766)	(23,797)
c.	Actuarial accrued liability	\$ 266,112	\$ 67,471
5.	Total actuarial accrued liability		
a.	Retirees and beneficiaries	\$ 814,982	\$ 172,154
b.	Inactive members	10,701	4,434
c.	Active members (Item 4c)	266,112	67,471
d.	Total	\$ 1,091,795	\$ 244,059
6.	Actuarial value of assets	\$ 589,848	\$ 245,172
7.	Unfunded actuarial accrued liability (UAAL) (Item 5d - Item 6)	\$ 501,947	\$ (1,113)
8.	Funded Ratio	54.0%	100.5%



Actuarial Present Value of Future Benefits

(Dollar amounts expressed in thousands)

		June 30, 2023	
		Retirement	Insurance
		(1)	(2)
1.	Active members		
a.	Service retirement	\$ 415,601	
b.	Deferred termination benefits and refunds	6,438	
c.	Survivor benefits	2,977	
d.	Disability benefits	12,862	
e.	Total	\$ 437,878	\$ 91,268
2.	Retired members		
a.	Service retirement	\$ 736,532	
b.	Disability retirement	11,537	
c.	Beneficiaries	66,913	
d.	Total	\$ 814,982	\$ 172,154
3.	Inactive members		
a.	Vested terminations	\$ 10,178	\$ 4,434
b.	Nonvested terminations	523	N/A
c.	Total	\$ 10,701	\$ 4,434
4.	Total actuarial present value of future benefits	\$ 1,263,561	\$ 267,856

Development of Actuarially Determined Contribution Rate

	June 30, 2023	
	Retirement (1)	Insurance (2)
1. Total normal cost rate		
a. Service retirement	24.17%	
b. Deferred termination benefits and refunds	1.24%	
c. Survivor benefits	0.32%	
d. Disability benefits	<u>1.24%</u>	
e. Total	26.97%	5.39%
2. Less: member contribution rate	<u>-8.00%</u>	<u>-0.57%</u>
3. Total employer normal cost rate	18.97%	4.82%
4. Administrative expenses	<u>0.44%</u>	<u>0.11%</u>
5. Net employer normal cost rate	19.41%	4.93%
6. UAAL amortization contribution rate	<u>46.38%</u>	<u>-2.62%</u>
7. Total calculated employer contribution	65.79%	2.31%

Actuarial Balance Sheet
Retirement Benefits
(Dollar amounts expressed in thousands)

	June 30, 2023 (1)	June 30, 2022 (2)
1. Assets - Present and Expected Future Resources		
a. Current assets (actuarial value)	\$ 589,848	\$ 559,973
b. Present value of future member contributions	\$ 53,971	\$ 39,070
c. Present value of future employer contributions		
i. Normal cost contributions	\$ 117,795	\$ 82,233
ii. Unfunded accrued liability contributions	501,947	507,474
iii. Total future employer contributions	\$ 619,742	\$ 589,707
d. Total assets	\$ 1,263,561	\$ 1,188,750
2. Liabilities - Present Value of Expected Future Benefit Payments		
a. Active members		
i. Present value of future normal costs	\$ 171,766	\$ 121,303
ii. Accrued liability	266,112	197,247
iii. Total present value of future benefits	\$ 437,878	\$ 318,550
b. Present value of benefits payable on account of current retired members and beneficiaries	\$ 814,982	\$ 859,688
c. Present value of benefits payable on account of current inactive members	\$ 10,701	\$ 10,512
d. Total liabilities	\$ 1,263,561	\$ 1,188,750



Actuarial Balance Sheet
Insurance Benefits
(Dollar amounts expressed in thousands)

	June 30, 2023 (1)	June 30, 2022 (2)
1. Assets - Present and Expected Future Resources		
a. Current assets (actuarial value)	\$ 245,172	\$ 234,239
b. Present value of future member contributions	\$ 5,024	\$ 3,535
c. Present value of future employer contributions		
i. Normal cost contributions	\$ 18,773	\$ 21,309
ii. Unfunded accrued liability contributions	(1,113)	(1,441)
iii. Total future employer contributions	\$ 17,660	\$ 19,868
d. Total assets	\$ 267,856	\$ 257,642
2. Liabilities - Present Value of Expected Future Benefit Payments		
a. Active members		
i. Present value of future normal costs	\$ 23,797	\$ 24,844
ii. Accrued liability	67,471	60,134
iii. Total present value of future benefits	\$ 91,268	\$ 84,978
b. Present value of benefits payable on account of current retired members and beneficiaries	\$ 172,154	\$ 169,471
c. Present value of benefits payable on account of current inactive members	\$ 4,434	\$ 3,193
d. Total liabilities	\$ 267,856	\$ 257,642



Reconciliation of Net Assets
(Dollar amounts expressed in thousands)¹

	Year Ending	
	June 30, 2023	June 30, 2023
	(1)	(2)
	Retirement	Insurance
1. Value of assets at beginning of year	\$ 551,699	\$ 231,242
2. Revenue for the year		
a. Contributions		
i. Member contributions	\$ 5,250	\$ 348
ii. Employer contributions	58,120	9,289
iii. Other contributions (less 401h)	0	0
iv. Total	\$ 63,370	\$ 9,637
b. Income		
i. Interest, dividends, and other income	\$ 17,942	\$ 7,186
ii. Investment expenses	(2,563)	(1,859)
iii. Net	\$ 15,379	\$ 5,328
c. Net realized and unrealized gains (losses)	25,329	16,192
d. Total revenue	\$ 104,079	\$ 31,156
3. Expenditures for the year		
a. Disbursements		
i. Refunds	\$ 166	\$ 0
ii. Regular annuity benefits / Healthcare premiums	63,804	14,290
iii. Other benefit payments ²	0	(75)
iv. Transfers to other systems	0	0
v. Total	\$ 63,970	\$ 14,215
b. Administrative expenses and depreciation	293	74
c. Total expenditures	\$ 64,263	\$ 14,289
4. Increase in net assets (Item 2. - Item 3.)	\$ 39,815	\$ 16,867
5. Value of assets at end of year (Item 1. + Item 4.)	\$ 591,514	\$ 248,109
6. Net external cash flow		
a. Dollar amount	\$ (893)	\$ (4,652)
b. Percentage of market value	-0.2%	-1.9%
7. Estimated annual return on net assets	7.4%	9.4%

¹ Amounts may not add due to rounding. Retirement assets exclude 401h assets. Insurance assets include 401h assets

² Insurance benefit payments have been offset by Medicare Drug Reimbursements, Insurance Premiums, and Humana Gain Share Payments



Development of Actuarial Value of Assets
Retirement Benefits
(Dollar amounts expressed in thousands)*

Year Ending	June 30, 2023
1. Actuarial value of assets at beginning of year	\$ 559,973
2. Market value of assets at beginning of year	\$ 551,699
3. Net new investments	
a. Contributions	\$ 63,370
b. Benefit payments	(63,970)
c. Administrative expenses	(293)
d. Subtotal	<u>\$ (893)</u>
4. Market value of assets at end of year	\$ 591,514
5. Net earnings (Item 4. - Item 2. - Item 3.d.)	\$ 40,708
6. Assumed investment return rate for fiscal year	5.25%
7. Expected return for immediate recognition	\$ 28,941
8. Excess return for phased recognition	\$ 11,768
9. Phased-in recognition, 20% of excess return on assets for prior years:	

* Amounts may not add due to rounding



Development of Actuarial Value of Assets**Insurance Benefits****(Dollar amounts expressed in thousands)***

Year Ending	June 30, 2023
1. Actuarial value of assets at beginning of year	\$ 234,239
2. Market value of assets at beginning of year	\$ 231,242
3. Net new investments	
a. Contributions	\$ 9,637
b. Benefit payments	(14,215)
c. Administrative expenses	(74)
d. Subtotal	\$ (4,652)
4. Market value of assets at end of year	\$ 248,109
5. Net earnings (Item 4. - Item 2. - Item 3.d.)	\$ 21,520
6. Assumed investment return rate for fiscal year	6.25%
7. Expected return for immediate recognition	\$ 14,307
8. Excess return for phased recognition	\$ 7,212
9. Phased-in recognition, 20% of excess return on assets for prior years:	
Fiscal Year Ending June 30,	Excess Return
a. 2023	\$ 7,212
b. 2022	(26,141)
c. 2021	37,840
d. 2020	(11,419)
e. 2019	(1,099)
f. Total	\$ 1,278
10. Actuarial value of assets as of June 30, 2023 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	\$ 245,172
11. Ratio of actuarial value to market value	98.8%
12. Estimated annual return on actuarial value of assets	6.7%

* Amounts may not add due to rounding



Schedule of Funding Progress
(Dollar amounts expressed in thousands)

June 30, (1)	Actuarial Value of Assets (AVA) (2)	Actuarial Accrued Liability (AAL) (3)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2) (4)	Funded Ratio (2)/(3) (5)	Annual Covered Payroll (6)	UAAL as % of Payroll (4)/(6) (7)
Retirement						
2014	\$ 242,742	\$ 681,118	\$ 438,376	35.6%	\$ 44,616	982.6%
2015	248,388	734,156	485,768	33.8%	45,765	1061.4%
2016	234,568	775,160	540,592	30.3%	45,551	1186.8%
2017	261,320	967,145	705,825	27.0%	48,598	1452.4%
2018	268,259	989,528	721,269	27.1%	48,808	1477.8%
2019	282,162	1,045,318	763,156	27.0%	47,752	1598.2%
2020	296,126	1,053,158	757,032	28.1%	46,145	1640.6%
2021	323,250	1,053,259	730,009	30.7%	45,338	1610.1%
2022	559,973	1,067,447	507,474	52.5%	47,885	1059.8%
2023	589,848	1,091,795	501,947	54.0%	65,913	761.5%
Insurance						
2014	\$ 155,595	\$ 234,271	\$ 78,676	66.4%	\$ 44,616	176.3%
2015	167,775	254,839	87,064	65.8%	45,765	190.2%
2016	172,704	257,197	84,493	67.1%	45,551	185.5%
2017	180,464	276,641	96,177	65.2%	48,598	197.9%
2018	187,535	262,088	74,553	71.6%	48,808	152.7%
2019	197,395	276,809	79,414	71.3%	47,752	166.3%
2020	207,018	276,144	69,126	75.0%	46,145	149.8%
2021	223,251	272,406	49,155	82.0%	45,338	108.4%
2022	234,239	232,798	(1,441)	100.6%	47,885	-3.0%
2023	245,172	244,059	(1,113)	100.5%	65,913	-1.7%



Summary of Principal Assumptions and Methods

Below is a summary of the principal economic assumptions, cost method, and the method for financing the unfunded actuarial accrued liability:

Valuation date:	June 30, 2023
Actuarial cost method:	Entry Age Normal
Amortization method:	Level percentage of payroll (0% payroll growth assumed)
Amortization period for contribution rate:	30-year closed period at June 30, 2019 Gains/losses incurring after 2019 will be amortized over separate closed 20-year amortization bases
Asset valuation method:	5-Year Smoothed Market
Actuarial assumptions:	
Investment rate of return, retirement	5.25%
Investment rate of return, insurance	6.50%
Projected salary increases	3.55% to 16.05% (varies by service)
Inflation	2.50%
Post-retirement pension benefit adjustments	0.00%
Retiree Mortality	System-specific mortality table based on mortality experience from 2013 to 2022, projected with the ultimate rates from MP-2020 mortality improvement scale using a base year of 2023.



Solvency Test
(Dollar amounts expressed in thousands)

June 30, (1)	Actuarial Accrued Liability				Valuation Assets (5)	Portion of Aggregate Accrued Liabilities Covered by Assets					
	Active Member Contributions (2)	Retired Members & Beneficiaries (3)	Active Members (Employer Financed) (4)	Active (6)		Retired (7)	ER Financed (8)				
Retirement											
2014	\$	41,831	\$	563,011	\$	76,276	\$	242,742	100.0%	35.7%	0.0%
2015		41,567		605,855		86,734		248,388	100.0%	34.1%	0.0%
2016		41,871		636,499		96,791		234,568	100.0%	30.3%	0.0%
2017		44,798		773,982		148,365		261,320	100.0%	28.0%	0.0%
2018		43,835		800,788		144,905		268,259	100.0%	28.0%	0.0%
2019		41,948		848,397		154,973		282,162	100.0%	28.3%	0.0%
2020		40,831		863,580		148,747		296,126	100.0%	29.6%	0.0%
2021		42,035		860,801		150,423		323,250	100.0%	32.7%	0.0%
2022		42,027		870,200		155,220		559,973	100.0%	59.5%	0.0%
2023		47,394		825,683		218,718		589,848	100.0%	65.7%	0.0%
Insurance											
2014	\$	-	\$	143,402	\$	90,869	\$	155,595	100.0%	100.0%	13.4%
2015		-		170,447		84,392		167,775	100.0%	98.4%	0.0%
2016		-		177,094		80,103		172,704	100.0%	97.5%	0.0%
2017		-		186,390		90,251		180,464	100.0%	96.8%	0.0%
2018		-		183,151		78,937		187,535	100.0%	100.0%	5.6%
2019		-		199,959		76,850		197,395	100.0%	98.7%	0.0%
2020		-		207,638		68,506		207,018	100.0%	99.7%	0.0%
2021		-		206,707		65,699		223,251	100.0%	100.0%	25.2%
2022		-		172,664		60,134		234,239	100.0%	100.0%	100.0%
2023		-		176,588		67,471		245,172	100.0%	100.0%	100.0%



SECTION 4

AMORTIZATION BASES

Amortization of Unfunded Liability**Retirement**

<u>Valuation Year Base Established</u>	<u>Original Amortization Base</u>	<u>Remaining at June 30, 2023</u>	<u>Payments for FYE 2025</u>	<u>Funding Period at June 30, 2023</u>
June 30, 2019	\$ 763,156	\$ 716,633	\$ 49,853	26
June 30, 2020	3,748	4,770	420	17
June 30, 2021	(231,783)	(235,486)	(20,021)	18
June 30, 2022	16,308	15,860	1,305	19
June 30, 2023	170	170	(989)	20
Total		\$ 501,947	\$ 30,568	
Projected Payroll for FYE 2025			\$ 65,913	
Amortization Payments as a Percentage of Payroll			46.38%	

Insurance

<u>Valuation Year Base Established</u>	<u>Original Amortization Base</u>	<u>Remaining at June 30, 2023</u>	<u>Payments for FYE 2025</u>	<u>Funding Period at June 30, 2023</u>
June 30, 2019	\$ 79,414	\$ 71,905	\$ 5,633	26
June 30, 2020	(5,896)	(6,061)	(582)	17
June 30, 2021	(18,445)	(19,086)	(1,776)	18
June 30, 2022	(48,536)	(51,961)	(4,698)	19
June 30, 2023	4,090	4,090	(303)	20
Total		\$ (1,113)	\$ (1,726)	
Projected Payroll for FYE 2025			\$ 65,913	
Amortization Payments as a Percentage of Payroll			-2.62%	

Note:

Budgeted contribution rates for FYE 2024 were known at the time of the June 30, 2023 Valuation. Amortization bases established at this valuation date were adjusted accordingly.



SECTION 5

MEMBERSHIP INFORMATION

Membership Tables

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19	34	SCHEDULE OF ANNUITANTS ADDED TO AND REMOVED FROM ROLLS

Summary of Membership Data
(Total dollar amounts expressed in thousands)

	June 30, 2023 (1)	June 30, 2022 (4)
1. Active members		
a. Males	841	820
b. Females	27	24
c. Total members	868	844
d. Total annualized prior year salaries	\$ 65,913	\$ 47,885
e. Average salary ²	\$ 75,937	\$ 56,736
f. Average age	36.9	36.5
g. Average service	10.5	10.1
h. Member contributions with interest	\$ 47,394	\$ 42,027
i. Average contributions with interest ²	\$ 54,601	\$ 49,795
2. Vested inactive members ¹		
a. Number	324	318
b. Total annual deferred benefits	\$ 1,121	\$ 1,120
c. Average annual deferred benefit ²	\$ 3,460	\$ 3,522
d. Average age at the valuation date	45.0	44.6
3. Nonvested inactive members ¹		
a. Number	390	349
b. Total member contributions with interest	\$ 521	\$ 474
c. Average contributions with interest ²	\$ 1,336	\$ 1,358
4. Service retirees		
a. Number	1,385	1,397
b. Total annual benefits	\$ 55,037	\$ 55,549
c. Average annual benefit ²	\$ 39,738	\$ 39,763
d. Average age at the valuation date	64.4	63.7
5. Disabled retirees		
a. Number	54	55
b. Total annual benefits	\$ 905	\$ 929
c. Average annual benefit ²	\$ 16,759	\$ 16,891
d. Average age at the valuation date	58.3	57.6
6. Beneficiaries		
a. Number	258	250
b. Total annual benefits	\$ 7,352	\$ 7,302
c. Average annual benefit ²	\$ 28,496	\$ 29,208
d. Average age at the valuation date	68.1	68.1

¹ Vested inactive member section includes Tier 1 members eligible for a benefit equal to the actuarially equivalent of two times the member's contribution balance.

² Average dollar amounts shown are expressed to the dollar.



Summary of Historical Active Membership

June 30, (1)	Active Members		Covered Payroll ¹		Average Annual Pay	
	Number (2)	Percent Increase /(Decrease) (3)	Amount in Thousands (4)	Percent Increase /(Decrease) (5)	Amount (6)	Percent Increase /(Decrease) (7)
2014	855		\$ 44,616		\$ 52,182	
2015	937	9.6%	45,765	2.6%	48,842	-6.4%
2016	908	-3.1%	45,551	-0.5%	50,167	2.7%
2017	903	-0.6%	48,598	6.7%	53,819	7.3%
2018	886	-1.9%	48,808	0.4%	55,088	2.4%
2019	883	-0.3%	47,752	-2.2%	54,079	-1.8%
2020	798	-9.6%	46,145	-3.4%	57,826	6.9%
2021	775	-2.9%	45,338	-1.7%	58,501	1.2%
2022	844	8.9%	47,885	5.6%	56,736	-3.0%
2023	868	2.8%	65,913	37.6%	75,937	33.8%

¹ Covered payroll is the annualized, projected compensation for the following year and does not include payroll attributable to working retirees.



Distribution of Active Members by Age and by Years of Service**SPRS Members**

Attained Age	Years of Credited Service												Total Count & Avg. Comp.
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	
Under 20	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
20-24	29 \$33,406	40 \$58,522	9 \$63,251	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	78 \$49,730
25-29	15 \$34,489	47 \$60,439	24 \$64,280	3 \$64,923	38 \$67,883	20 \$69,129	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	147 \$61,616
30-34	6 \$35,519	13 \$61,553	4 \$60,390	5 \$62,812	16 \$67,415	77 \$71,909	20 \$75,049	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	141 \$68,692
35-39	1 \$42,289	6 \$59,109	1 \$61,559	1 \$61,632	5 \$66,607	46 \$73,685	82 \$77,041	10 \$87,184	0 \$0	0 \$0	0 \$0	0 \$0	152 \$75,209
40-44	2 \$47,452	1 \$61,787	0 \$0	0 \$0	4 \$67,638	14 \$73,422	48 \$77,119	71 \$93,231	18 \$99,741	2 \$123,990	0 \$0	0 \$0	160 \$86,372
45-49	0 \$0	0 \$0	0 \$0	1 \$63,250	0 \$0	6 \$71,619	19 \$77,020	33 \$90,889	44 \$99,664	5 \$109,297	1 \$112,923	0 \$0	109 \$91,746
50-54	0 \$0	0 \$0	0 \$0	0 \$0	1 \$68,029	3 \$89,897	7 \$80,222	15 \$87,093	17 \$102,950	11 \$111,002	2 \$153,962	0 \$0	56 \$97,942
55-59	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1 \$70,286	6 \$93,760	6 \$104,159	6 \$118,885	2 \$121,053	0 \$0	21 \$105,391
60-64	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	2 \$76,506	1 \$85,633	1 \$102,579	0 \$0	0 \$0	4 \$85,306
65 & Over	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
Total	53 \$34,649	107 \$59,796	38 \$63,555	10 \$63,371	64 \$67,653	166 \$72,508	177 \$76,922	137 \$91,332	86 \$100,480	25 \$113,255	5 \$132,590	0 \$0	868 \$75,937



**Distribution of Annuitant Monthly Benefit by Status and Age
Retirees and Beneficiaries**

(Dollar amounts expressed in thousands)

Current Age (1)	Retirement		Disability		Survivors & Beneficiaries		Total	
	Number of Annuitants (2)	Total Annual Benefit Amount (3)	Number of Annuitants (4)	Total Annual Benefit Amount (5)	Number of Annuitants (6)	Total Annual Benefit Amount (7)	Number of Annuitants (8)	Total Annual Benefit Amount (9)
Under 50	131	\$ 4,783	14	\$ 239	34	\$ 510	179	\$ 5,532
50 - 54	224	9,030	11	216	14	284	249	9,530
55 - 59	186	7,300	5	80	12	232	203	7,612
60 - 64	170	7,004	6	94	16	341	192	7,440
65 - 69	166	6,895	8	113	27	796	201	7,803
70 - 74	251	10,061	5	72	47	1,492	303	11,625
75 - 79	149	6,213	3	65	53	1,747	205	8,025
80 - 84	77	2,606	2	25	23	777	102	3,408
85 - 89	21	706	0	0	20	717	41	1,423
90 And Over	10	441	0	0	12	455	22	896
Total	1,385	\$ 55,037	54	\$ 905	258	\$ 7,352	1,697	\$ 63,294

*Amounts may not add due to rounding



Retired Lives Summary

Form of Payment (1)	Male Lives		Female Lives		Total	
	Number (2)	Monthly Benefit Amount (3)	Number (4)	Monthly Benefit Amount (5)	Number (6)	Monthly Benefit Amount (7)
Basic	158	\$ 476,472	17	\$ 42,925	175	\$ 519,397
Joint & Survivor:						
100% to Beneficiary	182	534,668	2	9,093	184	543,761
66 2/3% to Beneficiary	94	344,155	2	7,542	96	351,697
50% to Beneficiary	76	272,750	2	7,515	78	280,265
Pop-up Option	674	2,368,933	6	11,214	680	2,380,147
Social Security Option:						
Age 62 Basic	24	61,303	0	0	24	61,303
Age 62 Survivorship	93	175,182	1	4,416	94	179,597
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	0	0	0	0
5 Years Certain	0	0	0	0	0	0
10 Years Certain	10	35,046	0	0	10	35,046
10 Years Certain & Life	36	118,422	3	6,759	39	125,181
15 Years Certain & Life	17	46,210	2	9,579	19	55,789
20 Years Certain & Life	38	125,665	2	3,979	40	129,644
Total:	1,402	\$ 4,558,806	37	\$ 103,021	1,439	\$ 4,661,827



Beneficiary Lives Summary

Form of Payment (1)	Male Lives		Female Lives		Total	
	Number (2)	Monthly Benefit Amount (3)	Number (4)	Monthly Benefit Amount (5)	Number (6)	Monthly Benefit Amount (7)
Basic	2	\$ 820	8	\$ 10,995	10	\$ 11,815
Joint & Survivor:						
100% to Beneficiary	8	12,812	60	165,210	68	178,022
66 2/3% to Beneficiary	3	1,678	22	53,853	25	55,530
50% to Beneficiary	2	2,249	22	34,331	24	36,580
Pop-up Option	1	365	65	195,041	66	195,406
Social Security Option:						
Age 62 Basic	0	0	3	3,103	3	3,103
Age 62 Survivorship	2	934	50	101,754	52	102,688
Partial Deferred (Old Plan)	0	0	0	0	0	0
Widows Age 60	0	0	0	0	0	0
5 Years Certain	0	0	0	0	0	0
10 Years Certain	1	2,038	2	14,018	3	16,056
10 Years Certain & Life	0	0	0	0	0	0
15 Years Certain & Life	0	0	1	721	1	721
20 Years Certain & Life	1	6,686	5	6,092	6	12,777
Total:	20	\$ 27,583	238	\$ 585,118	258	\$ 612,701



Schedule of Retirees Added to And Removed from Rolls**(Dollar amounts except average allowance expressed in thousands)**

Year Ended	Added to Rolls	Removed from Rolls	Rolls End of the Year		% Increase in Annual Benefit	Average Annual Benefit
	Number	Number	Number	Annual Benefits		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2014	95	28	1,413	\$ 53,432		\$ 37,815
2015	62	15	1,460	54,930	2.8%	37,624
2016	65	10	1,515	56,650	3.1%	37,393
2017	30	9	1,536	57,253	1.1%	37,274
2018	81	17	1,600	59,626	4.1%	37,266
2019	74	27	1,647	61,404	3.0%	37,282
2020	61	39	1,669	62,432	1.7%	37,407
2021	55	51	1,673	62,700	0.4%	37,477
2022	76	47	1,702	63,780	1.7%	37,473
2023	43	48	1,697	63,294	-0.8%	37,298



SECTION 6

ASSESSMENT AND DISCLOSURE OF RISK

Risks Associated with Measuring the Accrued Liability And Actuarially Determined Contribution (As Required by ASOP No. 51)

The determination of SPRS's accrued liability and actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. The risk measures illustrated in this section are intended to aid stakeholders in understanding the effects of future experience differing from the assumptions used in performing an actuarial valuation. These risk measures may also help with illustrating the potential volatility in the funded status and actuarially determined contributions that result from differences between actual experience and the expected experience based on the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience (economic and demographic) differing from the assumptions, changes in assumptions due to changing conditions, changes in contribution requirements due to modifications to the funding policy, and changes in the liability and cost due to changes in plan provisions or applicable law. The scope of this actuarial valuation does not include any analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the System's future financial condition include:

- Investment risk – actual investment returns may differ from expected returns;
- Longevity risk – members may live longer or shorter than expected and receive pensions for a time period different than assumed;
- Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future contributions differing from expected;
- Salary and payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liabilities or contributions differing from expected;
- Asset/Liability mismatch – changes in assets may be inconsistent with changes in liabilities, thereby altering the relative difference between the assets and liabilities which may alter the funded status and contribution requirements;
- Contribution risk – actual contributions may differ from expected future contributions (for example, actual contributions not being paid in accordance with the System's funding policy, withdrawal liability assessments or other anticipated payments to the plan are not being paid, or material changes occurring in the anticipated number of covered employees, covered payroll, or another relevant contribution base).

Effects of certain experience can generally be anticipated. For example, if investment returns since the most recent actuarial valuation are less (or more) than the assumed rate of return, then the funded status of the plan can be expected to decrease (or increase) more than anticipated.

The required contributions in this report were established in accordance with applicable Statutes and assumptions adopted by the Board. However, stakeholders should be aware that the scheduled contributions specified in State Code do not necessarily guarantee that the contribution requirements will not increase in a future year.



Employer Risk with Contribution Rates

Currently contributions are collected from the Commonwealth based on the total payroll of employees who are earning benefits in SPRS (i.e. covered payroll). The actuarially determined contribution rate is comprised of two components - the normal cost rate (to pay for the benefits accruing in the next year) and the unfunded amortization (to pay for the benefits accrued by members in previous years). The unfunded amortization is calculated by first determining the dollar amount necessary to pay for the unfunded liability based on SPRS's funding policy, and then by dividing that dollar amount by expected covered payroll to convert that contribution requirement to a percentage of payroll (i.e. a contribution rate).

As the contribution requirement, as a percentage of payroll, increases then there is increased incentive for participating employers to make deliberate business action to reduce their payroll reported to the System in order to reduce their pension cost.

Plan Specific Risk Measures

Risks faced by a pension plan evolve over time. A relatively new plan with virtually no assets and paying few benefits will experience lower investment risk than a mature plan with a significant amount of assets and large number of members receiving benefits. There are a few measures that can assist stakeholders in understanding and comparing the maturity of a plan to other systems, which include:

- Ratio of market value of assets to payroll: The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. If assets are approximately the same as covered payroll, an investment return that is 5% different than assumed would equal 5% of payroll. In another example, if the assets are approximately twice as large as covered payroll, an investment return that is 5% different than assumed would equal 10% of payroll. A ratio that increases over time generally indicates the potential of an increasing volatility in employer contribution rates as a percentage of payroll.
- Ratio of actuarial accrued liability to payroll: The ratio of actuarial accrued liability to payroll can be used as a measure to indicate the potential volatility of contributions due to volatility in the liability experience. For instance, if the actuarial accrued liability is 5 times the size of the covered payroll, then a change in the liability that is 2% different than expected would be a change in magnitude that is 10% of payroll. A ratio that increases over time generally indicates the potential of an increasing volatility in employer contribution rates as a percentage of payroll.
- Percentage of Expected Contributions Actually Received: This measure identifies the percentage difference between the contributions the fund expects to receive during the fiscal year to and actual contributions received by the fund during the fiscal year. A percentage that is less than 100% means that actual contributions the fund received were less than the expected contributions determined by a prior actuarial valuation. On the other hand, a percentage that is greater than 100% means that actual contributions the fund received were more than the expected contributions.



- Ratio of active to retired members: A relatively mature open plan is likely to have close to the same number of actives to retirees resulting in a ratio that is around 1.0. On the other hand, a super-mature plan, or a plan that is closed to new entrants will have more retirees than active members resulting in a ratio below 1.0. As this ratio declines, a larger portion of the total actuarial accrued liability in the System is attributable to retirees. This metric also typically moves in tandem with the liability to payroll metric, which provides an indication of potential contribution volatility.

The following tables provide a summary of these measures for SPRS for the current year and the prior four years so stakeholders can identify how these measures are trending. While ASOP No. 51 requires this disclosure with respect to only the retirement fund, we have included this information for the insurance fund for completeness.

	SPRS									
	Retirement Fund					Insurance Fund				
	June 30,					June 30,				
	2023	2022	2021	2020	2019	2023	2022	2021	2020	2019
Ratio of the market value of assets to total payroll	8.97	11.52	7.86	6.37	5.99	3.76	4.83	5.45	4.36	4.21
Ratio of actuarial accrued liability to payroll	16.56	22.29	23.23	22.82	21.89	3.70	4.86	6.01	5.98	5.80
Ratio of net cash flow to market value of assets	-0.2%	47.9%	0.2%	0.5%	1.4%	-1.9%	-2.2%	-1.9%	-0.5%	-0.2%
Percentage of Expected Contribution Actually Received	142% ¹	107%	104%	103%	101%	137% ¹	107%	102%	101%	100%
Ratio of actives to retirees and beneficiaries	0.51	0.50	0.46	0.48	0.54					

¹ Expected contribution for FYE2023 based on the actuarially determined contribution rate of 99.43% from the June 30, 2021 valuation and expected compensation based on census data from the June 30, 2022 valuation.

Low-Default-Risk Obligation Measure

Introduction

In December 2021, the Actuarial Standards Board (ASB) adopted a revision to Actuarial Standard of Practice (ASOP) No. 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions. The revised ASOP No. 4 requires the calculation and disclosure of a liability referred to by the ASOP as the “Low-Default-Risk Obligation Measure” (LDROM). The rationale that the ASB cited for the calculation and disclosure of the LDROM was included in the Transmittal Memorandum of ASOP No. 4 and is presented below (emphasis added):

“The ASB believes that the calculation and disclosure of this measure provides **appropriate, useful information for the intended user regarding the funded status of a pension plan**. The calculation and disclosure of this additional measure is **not intended to suggest that this is the “right” liability measure** for a pension plan. However, the ASB does believe that **this additional disclosure provides a more complete assessment of a plan’s funded status and provides additional information regarding the security of benefits that members have earned as of the measurement date.**”

Comparing the Accrued Liabilities and the LDROM

One of the fundamental financial objectives of the State Police Retirement System (SPRS) is to finance each member’s retirement benefits over the period from the member’s date of hire until the member’s projected date of retirement (entry age actuarial cost method) as a level percentage of payroll. To fulfill this objective, the discount rate that is used to value the accrued liabilities of SPRS is set equal to the **expected return** on each fund’s diversified portfolio of assets (referred to sometimes as the investment return assumption). For the retirement fund, the investment return assumption is 5.25%.

The LDROM is meant to approximately represent the lump sum cost to a plan to purchase low-default-risk fixed income securities whose resulting cash flows essentially replicate in timing and amount the benefits earned (or the costs accrued) as of the measurement date. The LDROM is very dependent upon market interest rates at the time of the LDROM measurement. The lower the market interest rates, the higher the LDROM, and vice versa. The LDROM results presented in this report are based on the entry age actuarial cost method and discount rates based upon the intermediate rate from the FTSE Pension Discount Curve and Liability Index published by the Society of Actuaries. This rate is 4.90% as of June 30, 2023. This measure may not be appropriate for assessing the need for or amount of future contributions. This measure may not be appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan’s benefit obligation.

The difference between the two measures (Valuation and LDROM) is one illustration of the savings the sponsor anticipates by taking on risk in a diversified portfolio.

Retirement Fund	
Valuation Accrued Liabilities	LDROM
\$1,091,794,728	\$1,137,046,120



APPENDIX A

ACTUARIAL ASSUMPTIONS AND METHODS

Summary of Actuarial Methods and Assumptions

The following presents a summary of the actuarial assumptions and methods used in the valuation of the State Police Retirement System.

In general, the assumptions and methods used in the valuation are based on the actuarial experience study as of June 30, 2022 and adopted by the Board in June 2023.

Investment return rate:

Assumed annual rate of 5.25% 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 ¹	Members participating on or after 9/1/2008 ²	Members participating after 1/1/2014 ²
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%	

¹ The annual rate of service retirement is 100% at age 55.

² 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 MP-2020 mortality improvement scale 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 Age Related Morbidity/Claims Utilization:

To model the impact of aging on the underlying health care costs for Medicare retirees, the valuation relied on the Society of Actuaries' 2013 Study "Health Care Costs – From Birth to Death". Table 4 (Development of Plan Specific Medicare Age Curve) was used to model the impact of aging for ages 65 and over.

Health Care Cost Trend Rates:

Year	Non-Medicare Plans ¹	Medicare Plans ¹	Dollar Contribution ²
2025	6.80%	8.50%	1.50%
2026	6.55%	8.00%	1.50%
2027	6.30%	8.00%	1.50%
2028	6.05%	8.00%	1.50%
2029	5.80%	7.50%	1.50%
2030	5.55%	7.00%	1.50%
2031	5.30%	6.50%	1.50%
2032	5.05%	6.00%	1.50%
2033	4.90%	5.50%	1.50%
2034	4.75%	5.00%	1.50%
2035	4.60%	4.50%	1.50%
2036	4.45%	4.05%	1.50%
2037	4.30%	4.05%	1.50%
2038 & Beyond	4.05%	4.05%	1.50%

¹All increases are assumed to occur on January 1. The 2024 premiums were known at the time of the valuation and were incorporated into the liability measurement

²Applies to members participating on or after July 1, 2003. All increases are assumed to occur on July 1.

Health care trend assumptions are based on the model issued by the Society of Actuaries "Getzen model of Long-Run Medical Cost Trends for the SOA; Thomas E. Getzen, iHEA and Temple University 2014 © Society of Actuaries.

The underlying assumptions used to develop the health care trend rates include:

- A short run period-this is a period for which anticipated health care trend rates are manually set based on local information as well as plan-specific and carrier information.
- Long term real GDP growth – 1.75%
- Long term rate of inflation – 2.30%
- Long term nominal GDP growth – 4.05%
- Year that excess rate converges to 0 – 2036

Health care trend rates are thus the manually set rates for the short run period and rates which decline to an ultimate trend rate which equals the assumed nominal long-term GDP growth rate.

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 ¹	5%	LivingWell Basic	4%
Essential Plan	8%	LivingWell CDHP	35%
Premium Plan	87%	LivingWell PPO	61%

¹Includes Mirror Plans

- 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 5.90%. 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.

Participant Data

Participant data was supplied in electronic text files. There were separate files for (i) active and inactive members, and (ii) members and beneficiaries receiving benefits.

The data for active and terminated members included date of birth, gender, date of participation, benefit tier indicator, service with the current system, total vesting service, salary, employee contribution account balances, and employer pay credits for members participating in the cash balance plan. For retired members and beneficiaries, the data included date of birth, gender, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, and form of payment code.

Assumptions were made to correct for missing, bad, or inconsistent data. These had no material impact on the results presented.

Changes in assumptions since the prior valuation:

Demographic and economic assumptions were updated based on the 2022 Experience Study.

In conjunction with the review of the healthcare per capita claims cost, the assumed increase in future healthcare costs, or trend assumption, is reviewed on an annual basis. The trend assumption was increased during the select period in this valuation as a result of our review.

Development of Baseline Claims Cost

For non-Medicare retirees, the initial per capita costs were based on the plan premiums effective January 1, 2024, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. The spouse/dependent premium of \$1,129.72 for non-Medicare retirees is based on a blending of Family and Couple premiums for the current retirees that have over 4 years of hazardous service. The fully-insured premiums paid to the Kentucky Employees' Health Plan (KEHP) are blended rates based on the combined experience of active and retired members. Because the average cost of providing health care benefits to retirees under age 65 is higher than the average cost of providing health care benefits to active employees, there is an implicit rate subsidy for the non-Medicare eligible retirees. Actuarial Standard of Practice No. 6 (ASOP No. 6) requires aging subsidies (or implicit rate subsidies) to be recognized. However, the health insurance trusts are only used to reimburse KEHP for the employer's portion of the blended premiums. Said another way, the trusts are not used to fund the difference between the underlying retiree claims and the blended KEHP premiums. As a result, the retiree health care liabilities developed in this report for the non-Medicare retirees are based solely on the premiums charged by KEHP, without any age-adjustment. GASB Statements No. 74 and No. 75 prohibit such a deviation from ASOP No. 6. The liabilities developed in this report are solely for the purpose of funding the benefits paid by the health insurance funds and are not appropriate for financial statement disclosures required by GASB. GRS provides separate GASB reports which include the liabilities associated with the implicit rate subsidy.

2024 MONTHLY COSTS FOR THOSE NOT ELIGIBLE FOR MEDICARE		
AGE	MEMBER	SPOUSE/DEPENDENTS
<65	\$929.46	\$1,129.72

For Medicare retirees, the initial per capita costs were estimated based on the plan premiums effective January 1, 2024, and are used for both current and future retirees. An inherent assumption in this methodology is that the projected future retirees will have a similar distribution by plan type as the current retirees. Age graded and sex distinct premiums are utilized for retirees over the age of 65. These costs are appropriate for the unique age and sex distribution currently existing. Over the future years covered by this valuation, the age and sex distribution will most likely change. Therefore, our process "distributes" the average premium over all age/sex combinations and assigns a unique premium for each combination. The age/sex specific costs more accurately reflect the health care utilization and cost at that age.

2024 MONTHLY COSTS FOR THOSE ELIGIBLE FOR MEDICARE		
AGE	MALE	FEMALE
65	\$ 81.35	\$ 76.72
75	95.18	92.87
85	100.65	101.83

Appendix B of the report provides a full schedule of premiums.



The percentage of the insurance premium paid by SPRS is calculated based on the Medical Only premium amounts. The majority of SPRS Medicare retirees are covered under the Premium Medicare Advantage plan. Because the premiums for the Medical Only plan are higher than the Premium Medical Advantage plan, retirees with less than 20 years of service pay a smaller contribution toward their insurance coverage. To model the impact of the employer contribution being based on the Medical Only Plan rather than the plan selected by the retiree, the employer share for retirees qualifying for percentage-based subsidies was blended to reflect retiree plan selection.

The above assumption implicitly implies that the Medical Only plan premiums will increase at a rate of 4.90% as of January 1, 2024, decreasing over 9 years to an ultimate trend rate of 4.05%, and that the remaining Medicare plan premiums will increase at the Medicare trend assumption used in the actuarial valuation.

Blake Orth is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.



Blake Orth, FSA, EA, MAAA

APPENDIX B

BENEFIT PROVISIONS

Summary of Benefit Provisions for
State Police Retirement System
(SPRS)

SPRS Employees

Retirement: Tier 1, Participation before 9/1/2008

Normal Retirement Eligibility	Age 55 with at least 1 month of service credit; or Any age with at least 20 years of service
Benefit Amount	<p>If a member has at least 60 months of service, the monthly benefit is 2.50% times final average compensation times years of service.</p> <p>If a member has less than 60 months of service, the monthly benefit is the actuarial equivalent of two times the member’s contributions with interest.</p> <p>Final average compensation is based on the member’s highest 3 years of compensation.</p>
Early Retirement Eligibility	Age 50 with at least 15 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member’s retirement eligibility precedes the member’s normal retirement date.



SPRS Employees (continued)*Retirement: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014*

Normal Retirement Eligibility	Age 60 with at least 5 years of service; or Any age with at least 25 years of service
Benefit Amount	The monthly benefit is equal to the applicable benefit multiplier times final average compensation times years of service.

Years of Service	Benefit Multiplier
10 or less	1.30%
10-20	1.50%
20-25	2.25%
Greater than 25	2.50%

Final compensation is based on the member's highest 3 years of compensation.

Early Retirement Eligibility	Age 50 with at least 15 years of service
Early Retirement Reduction	Normal Retirement benefit reduced 6.5% per year for the first five years and 4.5% per year for the next five years for each year the member's retirement date precedes the member's normal retirement eligibility.

Retirement: Tier 3, Participation on or after 1/1/2014

Normal Retirement Eligibility	Age 60 with at least 5 years of service; or Any age with at least 25 years of service
Benefit Amount	<p>Each year that the member is active, a 7.50% employer pay credit and the employee's 8.00% contribution will be credited to each member's hypothetical cash balance account. The hypothetical account will earn interest at a minimum rate of 4%, annually. If the System's geometric average net investment return for the previous five years exceeds 4%, then the hypothetical account will be credited with an additional amount of interest in that year equal to 75% of the amount of the return which exceeds 4%. All interest credits will be applied to the hypothetical account balance on June 30 based on the account balance as of June 30 of the previous year.</p> <p>Each June 30 (beginning June 30, 2023), members with at least five years of service credit will receive an employer pay credit based on their unused sick leave in excess of 480 hours. Members will also receive an employer pay credit based on their balance of unused sick leave upon termination of employment.</p> <p>At retirement, the member's hypothetical account balance may be converted into an annuity based on an actuarial factor.</p>
Early Retirement Eligibility	N/A



SPRS Employees (continued)

Deferred Vested Benefit: Tier 1, Participation before 9/1/2008

Eligibility	At least 1 month of service credit
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit: Tier 2, Participation on or after 9/1/2008 but before 1/1/2014

Eligibility	5 years of service
Benefit Amount	Normal retirement benefit deferred to normal retirement age, or a reduced retirement benefit at an early retirement age

Deferred Vested Benefit Tier 3, Participation on or after 1/1/2014

Eligibility	5 years of service
Benefit Amount	At termination of employment, members may choose to leave their account balance with the System and retire once they are eligible. The hypothetical account balance will earn 4% annual interest after termination. Members may also choose to withdraw their entire accumulated balance. If a member does not have 5 years of service at termination, the member is eligible to receive a partial refund of their account balance. This refund includes the member's contributions with interest.

Disability Retirement: Participation before 8/1/2004

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	Disability benefits are calculated in the same manner as the normal retirement benefit with years of service and final compensation being determined as of the date of disability, except that if the member has less than 20 years of service at disability, service credit shall be added to the person's total service beginning with the last date of paid employment and continuing to the member's 55 th birthday, with total service not exceeding 20 years. Total service credit added shall not be greater than the member's actual service at disability.



SPRS Employees (continued)

Disability Retirement: Participation on or after 8/1/2004 but before 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 25% of the member's final monthly rate of pay or the member's normal retirement benefit (without reduction for early retirement) with years and final compensation being determined as of the date of disability.

Disability Retirement: Participation on or after 1/1/2014

Eligibility	60 months of service (requirement is waived if line of duty disability)
Disability Benefit	The higher of 25% of the member's final monthly rate of pay or the member's retirement benefit calculated at the member's normal retirement date.

Line of Duty Disability Benefit

Disability Benefit	If the disability is a direct result of an act in the line of duty, the benefit shall not be less than 25% of the member's final monthly final rate of pay. If the disability is deemed to be Total and Permanent, then this benefit shall not be less than 75% of the member's monthly average pay.
Child Benefit	Additionally, each eligible dependent child will receive 10% of the member's monthly average pay up to a maximum of 40%. Member and dependent payment shall not exceed 100% of member's monthly average pay.

Pre-Retirement Death Benefit

Eligibility	Eligible for early or normal retirement; or Under age 55 with at least 60 months of service and actively working at the time of death; or At least 144 months of service, if no longer actively working
Spouse Benefit	The member's retirement benefit calculated in the same manner as if the member had retired on the day of the member's death and elected a 100% joint and survivor benefit. The benefit is actuarially reduced if the member dies prior to their normal retirement age.



SPRS Employees (continued)

Pre-Retirement Death Benefit (Death in the Line of Duty)

Eligibility	One month of service credit
Spouse Benefit	A \$10,000 lump sum payment plus a monthly payment of 75% of the deceased member's final monthly average pay. Each dependent child will receive 10% of the final monthly average pay (not to exceed a total child benefit of 25% while the spouse is alive). A spouse may also elect the non-line of duty death benefit.
Non-Spouse Benefit	If the beneficiary is only one person who is a dependent receiving at least 50% of his or her support from the member, the beneficiary may elect a lump sum payment of \$10,000.
Child Benefit	In the event there is no surviving spouse, the benefit is 50% of final monthly average pay for one child, 65% of final average pay for two children, or 75% of final average pay for three or more eligible children.

Post-Retirement Death Benefit

Eligibility	48 months of service, and in receipt of retirement benefits
Death Benefit	A \$5,000 lump sum payment

Member Contributions

Tier 1, Participation before 9/1/2008	8% of creditable compensation. Members who do not receive a retirement benefit are entitled to a full refund of contributions with interest. The annual interest rate is set by the Board, not less than 2.0%.
Tier 2, Participation on or after 9/1/2008 but before 1/1/2014	8% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest. The annual interest rate is 2.5%.
Tier 3, Participation after 1/1/2014	8% of creditable compensation plus 1% of creditable compensation, which is deposited into the 401(h) account and is not refundable. Members who do not receive a retirement benefit are entitled to a refund of non-401(h) contributions with interest.

Changes in Retirement Benefits since the Prior Valuation

House Bill 506 passed during the 2023 legislative session and reinstated the Partial Lump Sum Option Form of payment for members who retire on and after January 1, 2024, and adjusted the minimum required separation period before a retiree may become reemployed and continue to receive their retirement allowance to one month for all circumstances.



Summary of Main Retiree Insurance Benefit Provisions

Insurance: Participation began before 7/1/2003

Benefit Eligibility Recipient of a retirement allowance

Benefit Amount

Non-Hazardous Service	Percentage of Member Premium Paid by Retirement System	Hazardous Service	Percentage of Member & Dependent Premium Paid by Retirement System
Less than 4 years	0%	Less than 4 years	0%
4 – 9 years	25%	4 – 9 years	25%
10 – 14 years	50%	10 – 14 years	50%
15 – 19 years	75%	15 – 19 years	75%
20 or more years	100%	20 or more years	100%

The percentage paid by the retirement system is applied to the 'contribution' plan selected by the Board.

Duty Disability Retirement If disability was a result of injuries sustained while in the line of duty, the member receives 100% of the maximum contribution for the member and dependents.

Duty Death in Service If an active employee's death was a result of injuries sustained while in the line of duty, the member's spouse and children receive a fully subsidized health insurance benefit.

Non-Duty Death in Service If the surviving spouses is in receipt of a pension allowance, he or she is eligible for continued health coverage. The percentage of the premium paid for by the retirement system is based on the member's years of hazardous service at the time of death.

Surviving Spouse of a Retiree A surviving spouse of a retiree, who is in receipt of a pension allowance, will receive a premium subsidy based on the member's years of hazardous service.

Hazardous employees who retired prior to August 1, 1998 System's contribution for spouse and dependents is based on total service.



Insurance: Participation began on or after 7/1/2003

Benefit Eligibility

Recipient of a retirement allowance with at least 120 months of service at retirement (180 months if participation began on or after 9/1/2008)

Non-Hazardous Subsidy

Monthly contribution of \$10 for each year of earned non-hazardous service. The monthly contribution is increased by 1.5% each July 1. As of July 1, 2023, the Non-Hazardous monthly contribution was \$14.41/year of service. Upon the retiree's death, the surviving spouse may continue coverage (if in receipt of a retirement allowance) but will be 100% responsible for the premiums.

Effective January 1, 2023, members will receive an insurance dollar contribution of \$5 for every year of non-hazardous service a member attains over 27 years. This additional dollar contribution does not increase by 1.5% annually and is only payable for non-Medicare retirees. Also, it is only payable when the applicable insurance fund is at least 90% funded on an actuarial value of asset basis as of the last actuarial valuation.

Hazardous Subsidy

Monthly contribution of \$15 for each year of earned hazardous service. The monthly contribution is increased by 1.5% each July 1. As of July 1, 2023, the hazardous monthly contribution was \$21.62/year of service. Upon the retiree's death, the surviving spouse of a hazardous duty member will receive a monthly contribution of \$10 (\$14.41 as of July 1, 2023) for each year of hazardous service.

Effective January 1, 2023, members will receive an insurance dollar contribution of \$5 for every year of hazardous service a Tier 1 member attains over 20 years and a Tier 2 member attains over 25 years. This additional dollar contribution does not increase by 1.5% annually and is only payable for non-Medicare retirees. Also, it is only payable when the applicable insurance fund is at least 90% funded on an actuarial value of asset basis as of the last actuarial valuation.

Duty Disability Retirement

If disability was a result of injuries sustained while in the line of duty or was duty-related, the member receives a benefit based on at least 20 years of service. This benefit is provided to members in the Non-Hazardous and Hazardous plans alike.

If the disability is deemed to be Total and Permanent, the insurance premium for the member, the member's spouse, and the member's dependent children shall also be paid in full by the System. For non-hazardous members to be eligible for this benefit, they must be working in a position that could be certified as a hazardous position.



Duty Death in Service

If an active employee's death was a result of injuries sustained while in the line of duty, the member's spouse and children receive a fully subsidized health insurance benefit.

Non-Duty Death in Service

If the surviving spouse is in receipt of a pension allowance, he or she is eligible for continued health coverage. The percentage of the premium paid for by the retirement system is based on the member's years of hazardous service at the time of death.

DRAFT

Monthly Health Plan Premiums – Effective January 1, 2024

Plan Option	Non-Medicare Plan Options				
	Single	Parent Plus	Couple	Family	Family X-Ref
LivingWell PPO	\$949.04	\$1,320.40	\$1,981.62	\$2,185.78	\$1,126.28
LivingWell CDHP	930.76	1,269.28	1,866.24	2,078.08	1,068.66
LivingWell Basic	901.04	1,234.80	1,863.04	2,069.88	1,057.40

Medicare Plan Options	
Medical Only Plan	\$188.73
Essential Mirror Plan	228.98
Premium Mirror Plan	328.11
Essential Medical Advantage Plan	4.07
Premium Medical Advantage Plan	93.35

Contribution plan selected by the Board was the LivingWell PPO plan option for non-Medicare retirees.
Contribution plan selected by the Board was the Medical Only plan for the Medicare retirees.

Dollar Contribution Amount for Participation on or after 7/1/2003

Monthly contribution amounts per year of service as of July 1, 2023.

Non-Hazardous Service	Hazardous Service
\$14.41	\$21.62

Note: Non-Hazardous benefits are applicable to SPRS members with prior service in a Non-Hazardous System.

Changes in Health Insurance Benefits since the Prior Valuation

None.



APPENDIX C

GLOSSARY

Glossary

Actuarial Accrued Liability (AAL): That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of Future Plan Benefits which is not provided for by future Normal Costs. It is equal to the Actuarial Present Value of Future Plan Benefits minus the actuarial present value of future Normal Costs.

Actuarial Assumptions: Assumptions as to future experience under the Fund. These include assumptions about the occurrence of future events affecting costs or liabilities, such as:

- mortality, withdrawal, disablement, and retirement;
- future increases in salary;
- future rates of investment earnings and future investment and administrative expenses;
- characteristics of members not specified in the data, such as marital status;
- characteristics of future members;
- future elections made by members; and
- other relevant items.

Actuarial Cost Method or Funding Method: A procedure for allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability. These items are used to determine the ADC.

Actuarial Gain or Actuarial Loss: A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the fund's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

Actuarially Equivalent: Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

Actuarial Present Value (APV): The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:

- a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)
- b. multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and
- c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Actuarial Present Value of Future Plan Benefits: The Actuarial Present Value of those benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive, non-retired members either entitled to a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.

Actuarial Valuation: The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial valuation for a governmental retirement system typically also includes calculations that provide the financial information of the plan, such as the funded ratio, unfunded actuarial accrued liability and the ADC.

Actuarial Value of Assets or Valuation Assets: The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly actuaries use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.

Actuarially Determined: Values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.

Actuarially Determined Contribution (ADC): The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ADC consists of the Employer Normal Cost and the Amortization Payment.

Amortization Method: A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay



method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.

Amortization Payment: The portion of the pension plan contribution or ADC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Closed Amortization Period: A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.

Decrements: Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.

Defined Benefit Plan: A retirement plan that is not a Defined Contribution Plan. Typically a defined benefit plan is one in which benefits are defined by a formula applied to the member's compensation and/or years of service.

Defined Contribution Plan: A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, and the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.

Employer Normal Cost: The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.

Experience Study: A periodic review and analysis of the actual experience of the Fund which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.

Funded Ratio: The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA.

Funding Period or Amortization Period: The term "Funding Period" is used two ways. In the first sense, it is the period used in calculating the Amortization Payment as a component of the ADC. This funding period is specified in State statute. In the second sense, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on a statutory employer contribution rate, and assuming no future actuarial gains or losses.

GASB: Governmental Accounting Standards Board.

GASB 67 and GASB 68: Governmental Accounting Standards Board Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting and reporting rules for public retirement systems and the employers that sponsor, participate in, or contribute to them. Statement No. 67 sets the accounting rules for the financial reporting of the retirement systems, while Statement No. 68 sets the rules for the employers that sponsor, participate in, or contribute to public retirement systems.



Normal Cost: That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits which are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability or retirement.

Open Amortization Period: An open amortization period is one which is used to determine the Amortization Payment but may not decrease by exactly one year in the subsequent year's actuarial valuation. For instance, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year.

Unfunded Actuarial Accrued Liability: The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

Valuation Date or Actuarial Valuation Date: The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.



October 31, 2023

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

Re: Sensitivity Analysis Based on Results of the June 30, 2023 Actuarial Valuation – SPRS

Dear Members of the Board:

Per Kentucky State Statute 61.670, we are providing this supplemental information regarding the sensitivity of the valuation results to changes in some of the economic assumptions. Specifically, the attached tables show the impact for the **State Police Retirement System (SPRS)** due to changes in the investment return assumption, the inflation rate assumption, and the payroll growth rate assumption.

Background

Investment Assumption

The investment return assumption is used to discount future expected benefit payments to the valuation date in order to determine the liabilities of the plans. The lower the investment return assumption, the less the benefit payments are discounted and the higher the valuation liability. The current investment return assumption is 5.25% for the retirement fund and 6.50% for the insurance fund. The sensitivity analysis shows the financial impact of a 1.00% increase and a 1.00% decrease in the investment return assumption. For purposes of this sensitivity analysis, the inflation assumption and payroll growth assumption remain unchanged from the valuation assumption.

Inflation Assumption

The inflation assumption underlies most of the other economic assumptions, including the investment return, salary increases, and payroll growth rate. This is a macroeconomic assumption and as such the same assumption is used in the valuation of each of the retirement systems. The current assumption is 2.50% for all funds. The sensitivity analysis shows the financial impact of a 0.25% increase and a 0.25% decrease in the inflation assumption. Note, the change in the inflation assumption results in a corresponding change in the investment return assumption, the individual salary increase assumption for projecting members' benefit amounts, the payroll growth rate assumption, and the healthcare trend assumption that is used in the valuation of the health insurance funds.

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October 31, 2023
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Payroll Growth Assumption

Participating employers of SPRS make contributions to the system as a percentage of covered payroll. Therefore, as payroll changes over time these amortization payments will also change. If actual covered payroll increases at a rate that is less than assumed, then the retirement system receives fewer contribution dollars than expected to finance the unfunded liability, which means the contribution rates in future years will be required to increase in order to finance the unfunded liability over the same time period. The current payroll growth assumption is 0.00% for both the retirement and insurance funds. The analysis shows the impact of a 1.00% increase and a 1.00% decrease in the payroll growth assumption.

Please note that the payroll growth assumption does not impact the valuation liabilities, unfunded liability, or funded status of the system. Rather, this assumption only impacts the amortization rate for financing the existing unfunded actuarial accrued liability and the actuarially determined employer contribution. For purposes of this analysis, the investment return assumption and the inflation assumption are held at their current valuation assumptions.

Certification

The information provided in this letter compliments the information provided in the June 30, 2023 actuarial valuation report. Please refer to the June 30, 2023 actuarial valuation report for additional discussion of the actuarial valuation, including the nature of actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions.

Actual results can, and almost certainly will, differ as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rate, and funding periods. The actuarial calculations are intended to provide information for rational decision making. The purpose of this information is to provide stakeholders the financial sensitivity of the unfunded liability and contribution rates to changes in the inflation, assumed rate of return, and payroll growth assumption.

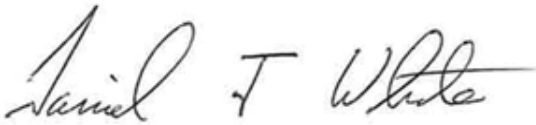


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To the best of our knowledge, this report is complete and accurate and is in accordance with generally recognized actuarial practices and methods. Mr. White and Ms. Shaw are Enrolled Actuaries. All three of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. In addition, all three are independent of KPPA and are experienced in performing valuations for large public retirement systems. This communication shall not be construed to provide tax advice, legal advice or investment advice.

Sincerely,

Gabriel, Roeder, Smith & Company



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



Janie Shaw, ASA, EA, MAAA
Consultant



Krysti Kiesel, ASA, MAAA
Senior Analyst and Actuary



Sensitivity Analysis - Discount Rate
(Dollar amounts expressed in thousands)

	Decrease Discount Rate	Valuation Results	Increase Discount Rate
(1)	(2)	(3)	(4)
Payroll Growth Rate	0.00%	0.00%	0.00%
Inflation Rate	2.50%	2.50%	2.50%
Discount Rate - Retirement	4.25%	5.25%	6.25%
Discount Rate - Insurance	5.50%	6.50%	7.50%

Retirement

Actuarial Accrued Liability	\$ 1,230,025	\$ 1,091,795	\$ 978,378
Actuarial Value of Assets	589,848	589,848	589,848
Unfunded Actuarial Accrued Liability	640,177	501,947	388,530
Funded Ratio	48.0%	54.0%	60.3%
Actuarially Determined Contribution Rate	85.29%	65.79%	49.21%

Insurance

Actuarial Accrued Liability	\$ 269,048	\$ 244,059	\$ 222,956
Actuarial Value of Assets	245,172	245,172	245,172
Unfunded Actuarial Accrued Liability	23,876	(1,113)	(22,216)
Funded Ratio	91.1%	100.5%	110.0%
Actuarially Determined Contribution Rate	7.27%	2.31%	0.00%

Combined

Actuarial Accrued Liability	\$ 1,499,073	\$ 1,335,854	\$ 1,201,334
Actuarial Value of Assets	835,020	835,020	835,020
Unfunded Actuarial Accrued Liability	664,053	500,834	366,314
Funded Ratio	55.7%	62.5%	69.5%
Actuarially Determined Contribution Rate	92.56%	68.10%	49.21%



Sensitivity Analysis - Inflation Rate
(Dollar amounts expressed in thousands)

	Decrease Inflation Rate	Valuation Results	Increase Inflation Rate
(1)	(2)	(3)	(4)
Payroll Growth Rate	-0.25%	0.00%	0.25%
Inflation Rate	2.25%	2.50%	2.75%
Discount Rate - Retirement	5.00%	5.25%	5.50%
Discount Rate - Insurance	6.25%	6.50%	6.75%

Retirement

Actuarial Accrued Liability	\$ 1,122,610	\$ 1,091,795	\$ 1,062,461
Actuarial Value of Assets	589,848	589,848	589,848
Unfunded Actuarial Accrued Liability	532,762	501,947	472,613
Funded Ratio	52.5%	54.0%	55.5%
Actuarially Determined Contribution Rate	71.10%	65.79%	60.75%

Insurance

Actuarial Accrued Liability	\$ 245,842	\$ 244,059	\$ 242,369
Actuarial Value of Assets	245,172	245,172	245,172
Unfunded Actuarial Accrued Liability	670	(1,113)	(2,803)
Funded Ratio	99.7%	100.5%	101.2%
Actuarially Determined Contribution Rate	2.78%	2.31%	1.87%

Combined

Actuarial Accrued Liability	\$ 1,368,452	\$ 1,335,854	\$ 1,304,830
Actuarial Value of Assets	835,020	835,020	835,020
Unfunded Actuarial Accrued Liability	533,432	500,834	469,810
Funded Ratio	61.0%	62.5%	64.0%
Actuarially Determined Contribution Rate	73.88%	68.10%	62.62%



Sensitivity Analysis - Payroll Growth
(Dollar amounts expressed in thousands)

	Decrease Payroll Growth	Valuation Results	Increase Payroll Growth
(1)	(2)	(3)	(4)
Payroll Growth Rate	-1.00%	0.00%	1.00%
Inflation Rate	2.50%	2.50%	2.50%
Discount Rate - Retirement	5.25%	5.25%	5.25%
Discount Rate - Insurance	6.50%	6.50%	6.50%

Retirement

Actuarial Accrued Liability	\$ 1,091,795	\$ 1,091,795	\$ 1,091,795
Actuarial Value of Assets	589,848	589,848	589,848
Unfunded Actuarial Accrued Liability	501,947	501,947	501,947
Funded Ratio	54.0%	54.0%	54.0%
Actuarially Determined Contribution Rate	71.58%	65.79%	60.40%

Insurance

Actuarial Accrued Liability	\$ 244,059	\$ 244,059	\$ 244,059
Actuarial Value of Assets	245,172	245,172	245,172
Unfunded Actuarial Accrued Liability	(1,113)	(1,113)	(1,113)
Funded Ratio	100.5%	100.5%	100.5%
Actuarially Determined Contribution Rate	2.29%	2.31%	2.33%

Combined

Actuarial Accrued Liability	\$ 1,335,854	\$ 1,335,854	\$ 1,335,854
Actuarial Value of Assets	835,020	835,020	835,020
Unfunded Actuarial Accrued Liability	500,834	500,834	500,834
Funded Ratio	62.5%	62.5%	62.5%
Actuarially Determined Contribution Rate	73.87%	68.10%	62.73%



KRS Board Meeting - Approval of June 30, 2023 Actuarial Valuations for KERS Hazardous, KERS Non-Hazardous and SPRS

Kentucky Public Pensions Authority
KERS Non-Hazardous Retirement Fund
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Employer Contribution (excluding Appropriations)	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll (Normal Cost)	Employer Contribution (Amortization Cost)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2023	\$ 16,304	\$ 3,552	\$ 12,752	22%	\$ 1,032	\$ 81	\$ 1,616	7.82%	\$ 906
2024	16,279	4,042	12,237	25%	968	81	1,616	6.99%	855
2025	16,225	4,245	11,980	26%	968	81	1,616	6.99%	855
2026	16,147	4,357	11,790	27%	959	81	1,616	6.64%	852
2027	16,047	4,522	11,525	28%	959	81	1,616	6.64%	852
2028	15,925	4,669	11,256	29%	959	81	1,616	6.33%	856
2029	15,782	4,814	10,968	31%	959	81	1,616	6.33%	856
2030	15,621	4,955	10,666	32%	954	81	1,616	6.05%	856
2031	15,443	5,096	10,347	33%	954	81	1,616	6.05%	856
2032	15,251	5,239	10,012	34%	950	81	1,616	5.80%	856
2033	15,047	5,389	9,658	36%	950	81	1,616	5.80%	856
2034	14,839	5,552	9,287	37%	947	81	1,616	5.58%	856
2035	14,622	5,726	8,896	39%	947	81	1,616	5.58%	856
2036	14,398	5,913	8,485	41%	943	81	1,616	5.39%	856
2037	14,172	6,120	8,052	43%	943	81	1,616	5.39%	856
2038	13,948	6,352	7,596	46%	941	81	1,616	5.26%	856
2039	13,727	6,611	7,116	48%	941	81	1,616	5.26%	856
2040	13,513	6,902	6,611	51%	943	81	1,616	5.17%	859
2041	13,306	7,229	6,077	54%	972	81	1,616	5.17%	889
2042	13,107	7,623	5,484	58%	976	81	1,616	5.10%	894
2043	12,917	8,061	4,856	62%	1,023	81	1,616	5.10%	940
2044	12,735	8,590	4,145	68%	1,023	81	1,616	5.05%	941
2045	12,563	9,165	3,398	73%	1,024	81	1,616	5.05%	943
2046	12,400	9,792	2,608	79%	1,019	81	1,616	5.00%	938
2047	12,248	10,464	1,784	85%	1,019	81	1,616	5.00%	938
2048	12,105	11,190	915	92%	1,019	81	1,616	4.96%	938
2049	11,973	11,973	-	100%	80	81	1,616	4.95%	-
2050	11,853	11,853	-	100%	80	81	1,616	4.94%	-
2051	11,746	11,746	-	100%	80	81	1,616	4.93%	-
2052	11,652	11,652	-	100%	80	81	1,616	4.92%	-

Notes and assumptions:

The projection is based on the results of the June 30, 2023 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 5.25%.

New active members are assumed to be hired as current active members are assumed to terminate employment or retire.

The total active population is assumed to decrease 2% each year for each of the next 30 years.

Covered payroll is assumed to remain level throughout the entire projection.

The contribution rate established in the Commonwealth's biennium budget is assumed to be equal to the normal cost portion of the actuarially determined contribution.

The full actuarially determined amortization cost is assumed to be allocated amongst employers each biennium.

The second year of a biannual budget is assumed to take into account any expiring amortization bases.

Per HB 1 and HB 604 (passed in the 2022 legislative session), \$240 million in additional appropriations is assumed to be received in FYE 2024



Kentucky Public Pensions Authority
KERS Hazardous Retirement Fund
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarially Determined Contribution
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2023	\$ 1,363	\$ 891	\$ 472	65%	\$ 67	\$ 17	\$ 212	31.82%	30.12%
2024	1,397	952	445	68%	50	17	212	23.74%	23.74%
2025	1,429	1,001	428	70%	50	17	212	23.74%	23.41%
2026	1,459	1,024	435	70%	48	17	212	22.77%	22.77%
2027	1,488	1,064	424	72%	48	17	212	22.77%	23.37%
2028	1,515	1,099	416	73%	49	17	212	23.04%	23.04%
2029	1,542	1,135	407	74%	49	17	212	23.04%	22.92%
2030	1,569	1,172	397	75%	48	17	212	22.84%	22.84%
2031	1,597	1,210	387	76%	48	17	212	22.84%	22.79%
2032	1,626	1,249	377	77%	48	17	212	22.74%	22.74%
2033	1,657	1,291	366	78%	48	17	212	22.74%	22.71%
2034	1,691	1,338	353	79%	48	17	212	22.67%	22.67%
2035	1,727	1,386	341	80%	48	17	212	22.67%	22.65%
2036	1,765	1,437	328	81%	48	17	212	22.63%	22.63%
2037	1,804	1,490	314	83%	48	17	212	22.63%	22.60%
2038	1,844	1,545	299	84%	48	17	212	22.57%	22.57%
2039	1,884	1,602	282	85%	48	17	212	22.57%	22.53%
2040	1,926	1,661	265	86%	46	17	212	21.70%	21.70%
2041	1,969	1,720	249	87%	46	17	212	21.70%	23.80%
2042	2,014	1,782	232	89%	53	17	212	24.86%	24.86%
2043	2,061	1,854	207	90%	53	17	212	24.86%	25.67%
2044	2,109	1,930	179	92%	55	17	212	25.88%	25.88%
2045	2,159	2,010	149	93%	55	17	212	25.88%	26.36%
2046	2,210	2,094	116	95%	54	17	212	25.68%	25.68%
2047	2,262	2,180	82	96%	54	17	212	25.68%	25.87%
2048	2,315	2,269	46	98%	55	17	212	25.90%	25.90%
2049	2,368	2,368	-	100%	15	17	212	6.86%	6.86%
2050	2,421	2,421	-	100%	15	17	212	6.87%	6.87%
2051	2,474	2,474	-	100%	15	17	212	6.88%	6.88%
2052	2,526	2,526	-	100%	15	17	212	6.87%	6.87%

Notes and assumptions:

The projection is based on the results of the June 30, 2023 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.25%.

New active members are assumed to be hired as current active members are assumed to terminate employment or retire.

The total active population is assumed to decrease 2% each year for each of the next 30 years.

Covered payroll is assumed to remain level throughout the entire projection.

The contribution rate established in the Commonwealth's biennium budget is assumed to be equal to the full actuarially determined contribution rate.



Kentucky Public Pensions Authority
SPRS Retirement Fund
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarially Determined Contribution
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2023	\$ 1,092	\$ 590	\$ 502	54%	\$ 56	\$ 5	\$ 66	85.32%	85.39%
2024	1,101	619	482	56%	43	5	66	65.79%	65.79%
2025	1,107	635	472	57%	43	5	66	65.79%	65.03%
2026	1,111	640	471	58%	42	5	66	64.12%	64.12%
2027	1,114	652	462	59%	42	5	66	64.12%	64.58%
2028	1,116	661	455	59%	42	5	66	64.01%	64.01%
2029	1,118	670	448	60%	42	5	66	64.01%	63.74%
2030	1,119	679	440	61%	42	5	66	63.49%	63.49%
2031	1,120	688	432	61%	42	5	66	63.49%	63.32%
2032	1,122	698	424	62%	42	5	66	63.17%	63.17%
2033	1,123	709	414	63%	42	5	66	63.17%	63.05%
2034	1,126	721	405	64%	41	5	66	62.95%	62.95%
2035	1,129	734	395	65%	41	5	66	62.95%	62.87%
2036	1,133	748	385	66%	41	5	66	62.77%	62.77%
2037	1,137	763	374	67%	41	5	66	62.77%	62.69%
2038	1,142	779	363	68%	41	5	66	62.58%	62.58%
2039	1,147	796	351	69%	41	5	66	62.58%	62.48%
2040	1,152	814	338	71%	41	5	66	61.75%	61.75%
2041	1,157	832	325	72%	41	5	66	61.75%	92.05%
2042	1,163	851	312	73%	61	5	66	92.56%	92.56%
2043	1,169	892	277	76%	61	5	66	92.56%	94.01%
2044	1,175	935	240	80%	62	5	66	94.36%	94.36%
2045	1,180	981	199	83%	62	5	66	94.36%	94.87%
2046	1,185	1,028	157	87%	62	5	66	94.13%	94.13%
2047	1,190	1,077	113	91%	62	5	66	94.13%	94.42%
2048	1,194	1,128	66	95%	62	5	66	94.44%	94.44%
2049	1,197	1,197	-	100%	12	5	66	18.84%	18.84%
2050	1,199	1,199	-	100%	12	5	66	18.85%	18.85%
2051	1,200	1,200	-	100%	12	5	66	18.88%	18.88%
2052	1,200	1,200	-	100%	12	5	66	18.89%	18.89%

Notes and assumptions:

The projection is based on the results of the June 30, 2023 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 5.25%.

New active members are assumed to be hired as current active members are assumed to terminate employment or retire.

The total active population is assumed to decrease 2% each year for each of the next 30 years.

Covered payroll is assumed to remain level throughout the entire projection.

The contribution rate established in the Commonwealth's biennium budget is assumed to be equal to the full actuarially determined contribution rate.



Kentucky Public Pensions Authority
KERS Non-Hazardous Insurance Fund
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll (Normal Cost)	Employer Contribution (Amortization Cost)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2023	\$ 1,877	\$ 1,533	\$ 344	82%	\$ 123	\$ 9	\$ 1,605	2.15%	\$ 88
2024	1,922	1,650	272	86%	25	9	1,605	1.45%	2
2025	1,959	1,685	274	86%	25	10	1,605	1.45%	2
2026	1,989	1,671	318	84%	20	11	1,605	1.23%	-
2027	2,011	1,683	328	84%	20	11	1,605	1.23%	-
2028	2,025	1,676	349	83%	18	12	1,605	1.01%	2
2029	2,030	1,660	370	82%	18	12	1,605	1.01%	2
2030	2,027	1,636	391	81%	15	13	1,605	0.80%	2
2031	2,017	1,603	414	80%	15	13	1,605	0.80%	2
2032	2,003	1,564	439	78%	12	14	1,605	0.63%	2
2033	1,984	1,519	465	77%	12	14	1,605	0.63%	2
2034	1,962	1,469	493	75%	10	14	1,605	0.49%	2
2035	1,938	1,416	522	73%	10	15	1,605	0.49%	2
2036	1,915	1,361	554	71%	9	15	1,605	0.39%	2
2037	1,894	1,306	588	69%	9	15	1,605	0.39%	2
2038	1,875	1,252	623	67%	7	15	1,605	0.32%	2
2039	1,860	1,198	662	64%	7	16	1,605	0.32%	2
2040	1,848	1,146	702	62%	29	16	1,605	0.27%	25
2041	1,841	1,119	722	61%	45	16	1,605	0.27%	40
2042	1,838	1,111	727	60%	129	16	1,605	0.24%	125
2043	1,840	1,195	645	65%	133	16	1,605	0.24%	129
2044	1,847	1,293	554	70%	133	16	1,605	0.21%	129
2045	1,857	1,400	457	75%	134	16	1,605	0.21%	131
2046	1,870	1,518	352	81%	131	16	1,605	0.20%	128
2047	1,883	1,641	242	87%	132	16	1,605	0.20%	129
2048	1,897	1,772	125	93%	132	16	1,605	0.17%	129
2049	1,910	1,910	-	100%	3	16	1,605	0.16%	-
2050	1,922	1,922	-	100%	2	16	1,605	0.15%	-
2051	1,933	1,933	-	100%	2	16	1,605	0.14%	-
2052	1,944	1,944	-	100%	2	16	1,605	0.14%	-

Notes and assumptions:

The projection is based on the results of the June 30, 2023 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.50%.

New active members are assumed to be hired as current active members are assumed to terminate employment or retire.

The total active population is assumed to decrease 2% each year for each of the next 30 years.

Covered payroll is assumed to remain level throughout the entire projection.

The contribution rate established in the Commonwealth's biennium budget is assumed to be equal to the normal cost portion of the actuarially determined contribution.

The full actuarially determined amortization cost is assumed to be allocated amongst employers each biennium.

The second year of a biannual budget is assumed to take into account any expiring amortization bases.



Kentucky Public Pensions Authority
KERS Hazardous Insurance Fund
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarially Determined Contribution
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2023	\$ 364	\$ 620	\$ (256)	170%	\$ -	\$ 2	\$ 210	0.00%	0.00%
2024	370	641	(271)	173%	-	2	210	0.00%	0.00%
2025	374	669	(295)	179%	-	2	210	0.00%	0.00%
2026	377	676	(299)	179%	-	2	210	0.00%	0.00%
2027	377	697	(320)	185%	-	2	210	0.00%	0.00%
2028	377	714	(337)	189%	-	2	210	0.00%	0.00%
2029	376	732	(356)	195%	-	2	210	0.00%	0.00%
2030	374	751	(377)	201%	-	2	210	0.00%	0.00%
2031	372	770	(398)	207%	-	2	210	0.00%	0.00%
2032	369	791	(422)	214%	-	2	210	0.00%	0.00%
2033	367	814	(447)	222%	-	2	210	0.00%	0.00%
2034	365	838	(473)	230%	-	2	210	0.00%	0.00%
2035	363	865	(502)	238%	-	2	210	0.00%	0.00%
2036	362	894	(532)	247%	-	2	210	0.00%	0.00%
2037	361	926	(565)	257%	-	2	210	0.00%	0.00%
2038	361	961	(600)	266%	-	2	210	0.00%	0.00%
2039	363	999	(636)	275%	-	2	210	0.00%	0.00%
2040	365	1,041	(676)	285%	-	2	210	0.00%	0.00%
2041	368	1,086	(718)	295%	-	2	210	0.00%	0.00%
2042	372	1,135	(763)	305%	-	2	210	0.00%	0.00%
2043	378	1,188	(810)	314%	-	2	210	0.00%	0.00%
2044	384	1,244	(860)	324%	-	2	210	0.00%	0.00%
2045	390	1,305	(915)	335%	-	2	210	0.00%	0.00%
2046	397	1,369	(972)	345%	-	2	210	0.00%	0.00%
2047	404	1,437	(1,033)	356%	-	2	210	0.00%	0.00%
2048	410	1,509	(1,099)	368%	-	2	210	0.00%	0.00%
2049	417	1,586	(1,169)	380%	-	2	210	0.00%	0.00%
2050	423	1,666	(1,243)	394%	-	2	210	0.00%	0.00%
2051	429	1,750	(1,321)	408%	-	2	210	0.00%	0.00%
2052	434	1,840	(1,406)	424%	-	2	210	0.00%	0.00%

Notes and assumptions:

The projection is based on the results of the June 30, 2023 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.50%.

New active members are assumed to be hired as current active members are assumed to terminate employment or retire.

The total active population is assumed to decrease 2% each year for each of the next 30 years.

Covered payroll is assumed to remain level throughout the entire projection.

The contribution rate established in the Commonwealth's biennium budget is assumed to be equal to the full actuarially determined contribution rate.



Kentucky Public Pensions Authority
SPRS Insurance Fund
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarially Determined Contribution
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2023	\$ 244	\$ 245	\$ (1)	100%	\$ 9	\$ -	\$ 66	14.11%	3.68%
2024	247	257	(10)	104%	2	-	66	2.31%	2.31%
2025	248	261	(13)	105%	2	-	66	2.31%	1.31%
2026	248	256	(8)	103%	-	-	66	0.13%	0.13%
2027	246	254	(8)	103%	-	1	66	0.13%	0.33%
2028	244	250	(6)	103%	-	1	66	0.00%	0.00%
2029	240	245	(5)	102%	-	1	66	0.00%	0.00%
2030	236	240	(4)	102%	-	1	66	0.00%	0.00%
2031	232	234	(2)	101%	-	1	66	0.00%	0.00%
2032	227	227	-	100%	-	1	66	0.00%	0.00%
2033	221	220	1	100%	-	1	66	0.00%	0.00%
2034	216	213	3	99%	-	1	66	0.00%	0.00%
2035	210	205	5	98%	-	1	66	0.00%	0.00%
2036	205	198	7	97%	-	1	66	0.00%	0.00%
2037	200	191	9	96%	-	1	66	0.00%	0.00%
2038	196	185	11	94%	-	1	66	0.00%	0.00%
2039	193	179	14	93%	-	1	66	0.00%	0.00%
2040	190	174	16	92%	-	1	66	0.00%	0.00%
2041	188	169	19	90%	-	1	66	0.00%	0.80%
2042	186	165	21	89%	5	1	66	7.98%	7.98%
2043	185	167	18	90%	5	1	66	7.98%	8.43%
2044	185	170	15	92%	6	1	66	8.76%	8.76%
2045	186	174	12	94%	6	1	66	8.76%	9.45%
2046	187	178	9	95%	6	1	66	8.94%	8.94%
2047	188	184	4	98%	6	1	66	8.94%	9.15%
2048	190	189	1	100%	6	1	66	9.19%	9.19%
2049	191	191	-	100%	-	1	66	0.66%	0.66%
2050	193	193	-	100%	-	1	66	0.69%	0.69%
2051	194	194	-	100%	-	1	66	0.74%	0.74%
2052	195	195	-	100%	1	1	66	0.80%	0.80%

Notes and assumptions:

The projection is based on the results of the June 30, 2023 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.50%.

New active members are assumed to be hired as current active members are assumed to terminate employment or retire.

The total active population is assumed to decrease 2% each year for each of the next 30 years.

Covered payroll is assumed to remain level throughout the entire projection.

The contribution rate established in the Commonwealth's biennium budget is assumed to be equal to the full actuarially determined contribution rate.





KENTUCKY RETIREMENT SYSTEMS

John E. Chilton, Chief Executive Officer

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



To: KRS Trustees
From: John Chilton, KRS CEO
Date: December 5, 2023
Subject: Employer Contribution Rates FY 2025 and FY 2026

In accordance with KRS 61.565, the employer contribution rates for the KERS and SPRS systems are determined by the annual valuation and approved by the KRS Board of Trustees in odd numbered years to align with the requirements of the Commonwealth's biennial budget planning period. These rates are confirmed by the budget bill of the General Assembly held in even numbered years.

KPPA actuaries, Gabriel Roeder Smith (GRS), have finalized the actuarial valuation by plan for the year ending June 30, 2023. Included in the valuations are the following recommendations for employer contribution rates.

PLAN	Pension	Insurance	Normal Cost	Employer Contribution Rate
KERS Nonhazardous	6.99%	1.45%	8.44%	8.44% plus UAL/AALC payment
KERS Hazardous	23.74%	0%	N/A	23.74%
SPRS	65.79%	2.31%	N/A	68.10%

Unfunded Actuarial Liability (UAL) Payment or the Actuarially Accrued Liability Contribution (AALC) Payment

These agency-specific payments are listed in the valuation under Appendix D.

Recommendation for trustee consideration:

Adopt the KERS and SPRS employer contribution rates, including the pension and insurance splits and the KERS Nonhazardous unfunded liability agency-specific payment, as recommended by the actuary, and as stated above.

Kentucky Retirement Systems

Investment Review and Update

Quarter Ending: September 30, 2023

Kentucky Retirement Systems

Economic and Market Update

Quarter Ending: September 30, 2023

Asset Class Performance

Asset Class Returns - Best to Worst

Annualized 5-Year as of 9/23

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%	U.S. Equity 12.5%	U.S. Equity 9.4%
Core Bond 0.0%	REITs 25.8%	Emrg Mrkts 18.7%	Commodities 27.1%	T-Bills 1.3%	Developed 7.6%	Commodities 6.1%
U.S. TIPS -1.3%	Developed 22.7%	U.S. TIPS 11.0%	U.S. Equity 26.7%	High Yield -11.2%	High Yield 5.9%	Developed 3.7%
High Yield -2.1%	Emrg Mrkts 18.9%	Developed 8.3%	Developed 11.8%	U.S. TIPS -11.8%	T-Bills 3.6%	High Yield 3.0%
REITs -4.8%	High Yield 14.3%	Core Bond 7.5%	U.S. TIPS 6.0%	Core Bond -13.0%	Emrg Mrkts 2.2%	REITs 2.9%
U.S. Equity -5.3%	Core Bond 8.7%	High Yield 7.1%	High Yield 5.3%	Developed -14.0%	REITs -0.2%	U.S. TIPS 2.1%
Commodities -11.2%	U.S. TIPS 8.4%	T-Bills 0.7%	T-Bills 0.0%	U.S. Equity -19.0%	U.S. TIPS -0.8%	T-Bills 1.7%
Developed -13.4%	Commodities 7.7%	Commodities -3.1%	Core Bond -1.5%	Emrg Mrkts -19.7%	Core Bond -1.2%	Emrg Mrkts 0.9%
Emrg Mrkts -14.2%	T-Bills 2.3%	REITs -7.9%	Emrg Mrkts -2.2%	REITs -26.8%	Commodities -3.4%	Core Bond 0.1%

Data Sources: Bloomberg

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

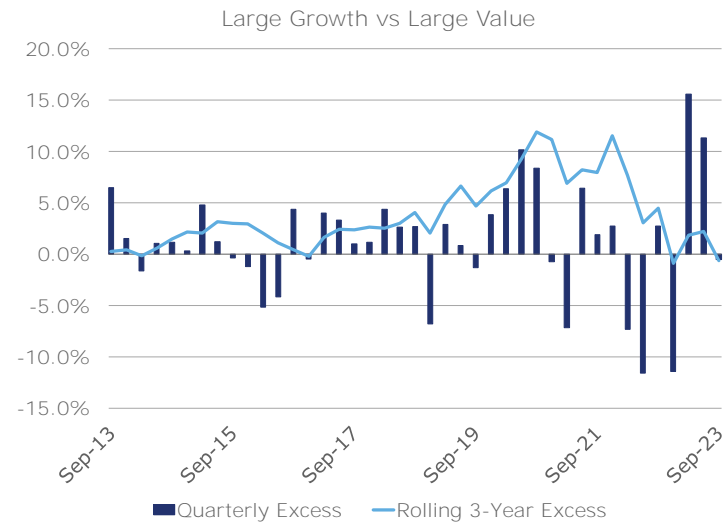
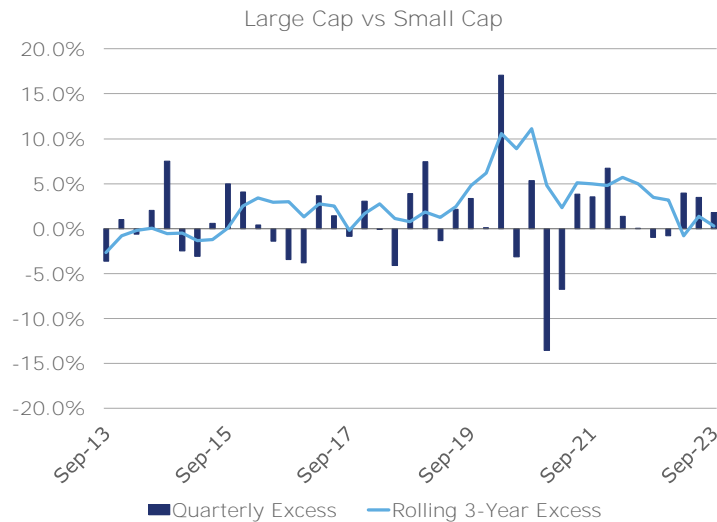
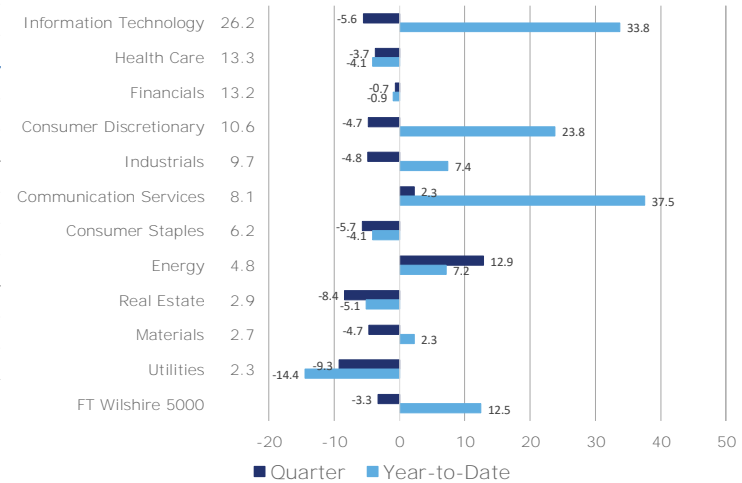
September 2023 Asset Class Assumptions

	EQUITY						FIXED INCOME / CREDIT						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)	Real Estate US RES	Global RES	Private RE	Cmdty	Real Assets	US CPI
Compound Retrun (%)	6.00	7.00	7.25	7.35	6.65	9.65	4.25	5.60	5.55	4.85	6.85	8.95	3.50	6.20	6.35	6.20	6.60	7.05	2.35
Arithmetic Return (%)	7.30	8.45	10.20	9.00	8.00	13.35	4.25	5.70	6.00	5.00	7.30	9.70	3.60	7.60	7.60	7.10	7.75	7.75	2.35
Risk (%)	17.00	18.00	26.00	19.05	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 (%)	1.60	3.15	2.60	3.00	2.15	0.00	4.25	5.90	5.95	5.15	10.15	5.20	4.45	4.45	4.45	2.30	4.25	3.50	0.00
Growth Factor 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 Factor 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
CORRELATIONS																			
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

U.S. Equity Market

As of 9/30/2023	Quarter	YTD	1 Year	3 Year	5 Year	10 Year
FT Wilshire 5000	-3.3	12.5	20.5	9.7	9.4	11.5
Wilshire U.S. Large Cap	-3.2	13.3	21.3	9.8	10.0	11.9
Wilshire U.S. Small Cap	-4.9	3.5	11.7	9.5	3.6	7.4
Wilshire U.S. Large Growth	-3.4	27.6	28.6	9.3	12.1	14.1
Wilshire U.S. Large Value	-2.9	-0.3	13.4	10.1	7.5	9.6
Wilshire U.S. Small Growth	-5.0	7.8	15.4	5.8	4.0	7.6
Wilshire U.S. Small Value	-4.7	-0.4	8.3	13.5	3.2	7.1
Wilshire REIT Index	-6.4	-0.2	3.9	5.7	2.9	6.0
MSCI USA Min. Vol. Index	-2.0	1.9	11.8	6.2	7.0	10.4
FTSE RAFI U.S. 1000 Index	-2.2	4.4	17.4	14.3	8.7	10.4

U.S. Sector Weight and Return (%)

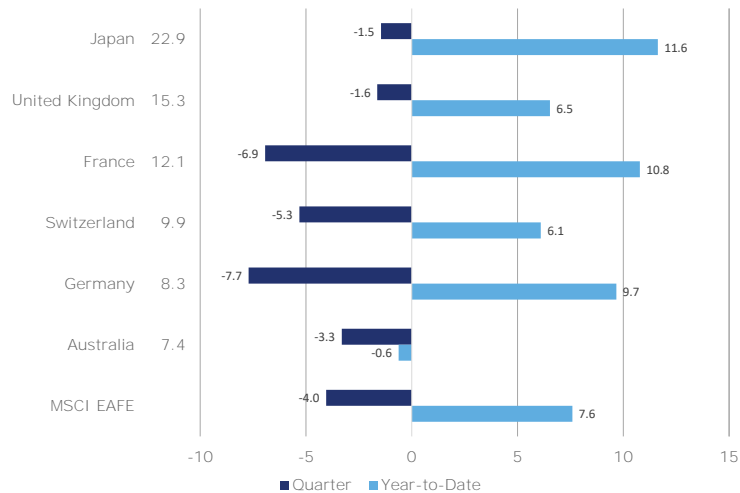


Data Sources: Bloomberg, Wilshire Atlas

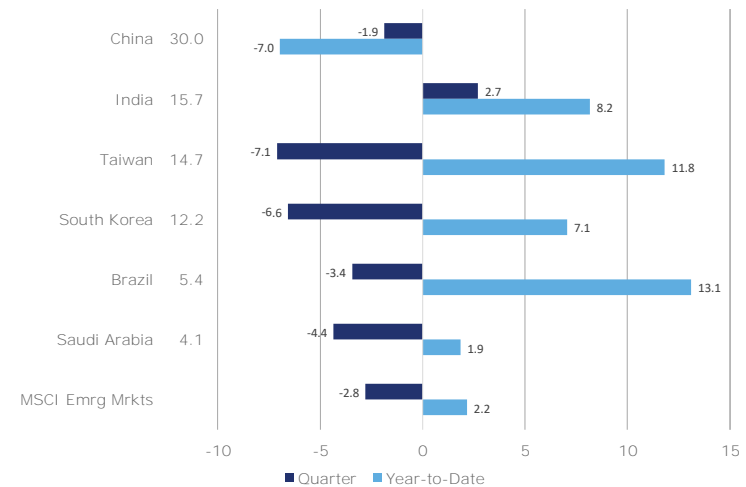
Non-U.S. Equity Market

As of 9/30/2023	Quarter	YTD	1 Year	3 Year	5 Year	10 Year
MSCI ACWI ex-US (\$G)	-3.7	5.8	21.0	4.2	3.1	3.8
MSCI EAFE (\$G)	-4.0	7.6	26.3	6.3	3.7	4.3
MSCI Emerging Markets (\$G)	-2.8	2.2	12.2	-1.3	0.9	2.5
MSCI Frontier Markets (\$G)	-0.2	4.6	14.2	1.8	-0.7	0.3
MSCI ACWI ex-US Growth (\$G)	-7.3	2.9	16.2	-1.6	2.9	4.3
MSCI ACWI ex-US Value (\$G)	0.1	8.6	25.7	10.1	3.0	3.4
MSCI ACWI ex-US Small (\$G)	-1.6	5.5	19.6	4.5	3.0	4.8
MSCI ACWI Minimum Volatility	-2.3	1.7	10.4	3.8	4.3	7.2
MSCI EAFE Minimum Volatility	-2.7	4.8	17.9	1.3	1.1	4.2
FTSE RAFI Developed ex-US	-1.6	8.7	28.6	11.4	3.9	4.2
MSCI EAFE LC (G)	-1.2	11.2	21.0	11.4	6.2	7.3
MSCI Emerging Markets LC (G)	-1.3	4.4	11.3	1.0	3.1	5.3

Developed Markets Weight and Return (%)



Emerging Markets Weight and Return (%)

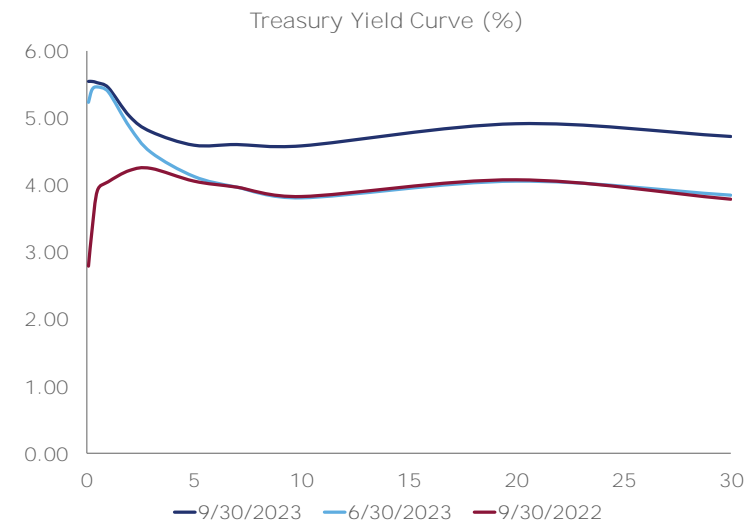
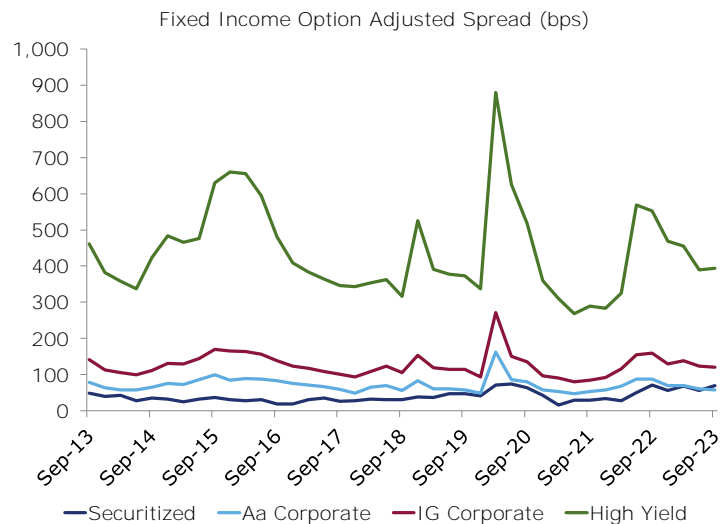


Data Sources: Bloomberg

U.S. Fixed Income

As of 9/30/2023	YTW	DUR.	QTR	YTD	1 YR	3 YR	5 YR	10 YR
Bloomberg Aggregate	5.4	6.1	-3.2	-1.2	0.6	-5.2	0.1	1.1
Bloomberg Treasury	4.9	5.9	-3.1	-1.5	-0.8	-5.8	-0.1	0.6
Bloomberg Gov't-Rel.	5.4	5.1	-2.0	0.4	2.2	-3.8	0.6	1.4
Bloomberg Securitized	5.6	6.2	-3.8	-2.1	0.0	-4.9	-0.6	0.7
Bloomberg Corporate	6.0	6.8	-3.1	0.0	3.6	-4.9	0.9	2.2
Bloomberg LT Gov't/Credit	5.5	13.7	-9.4	-5.4	-2.9	-11.9	-1.2	1.9
Bloomberg LT Treasury	4.9	15.3	-11.8	-8.6	-9.1	-15.7	-2.8	0.8
Bloomberg LT Gov't-Rel.	6.0	11.3	-7.2	-2.1	2.0	-8.5	-0.6	2.4
Bloomberg LT Corporate	6.1	12.5	-7.2	-2.7	2.6	-9.1	-0.2	2.7
Bloomberg U.S. TIPS *	4.6	7.4	-2.6	-0.8	1.2	-2.0	2.1	1.7
Bloomberg High Yield	8.9	3.5	0.5	5.9	10.3	1.8	3.0	4.2
S&P/LSTA Leveraged Loan	9.5	0.3	3.5	10.2	13.1	6.1	4.5	4.3
Treasury Bills	5.5	0.3	1.3	3.6	4.6	1.7	1.7	1.1

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

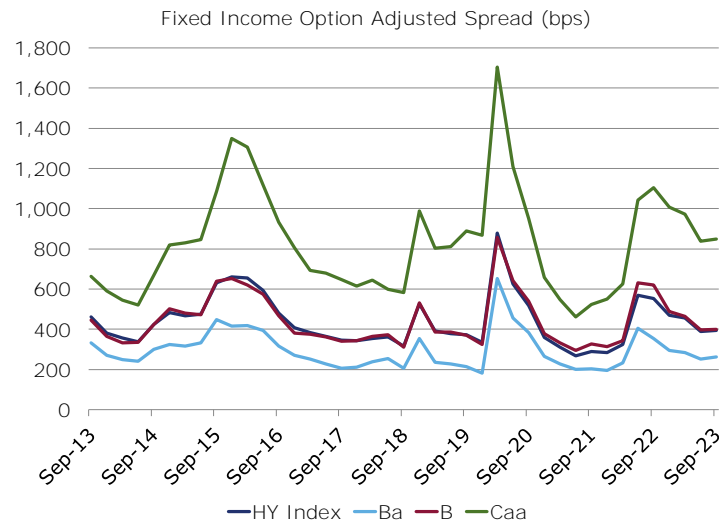


Data Sources: Bloomberg

High Yield Bond Market

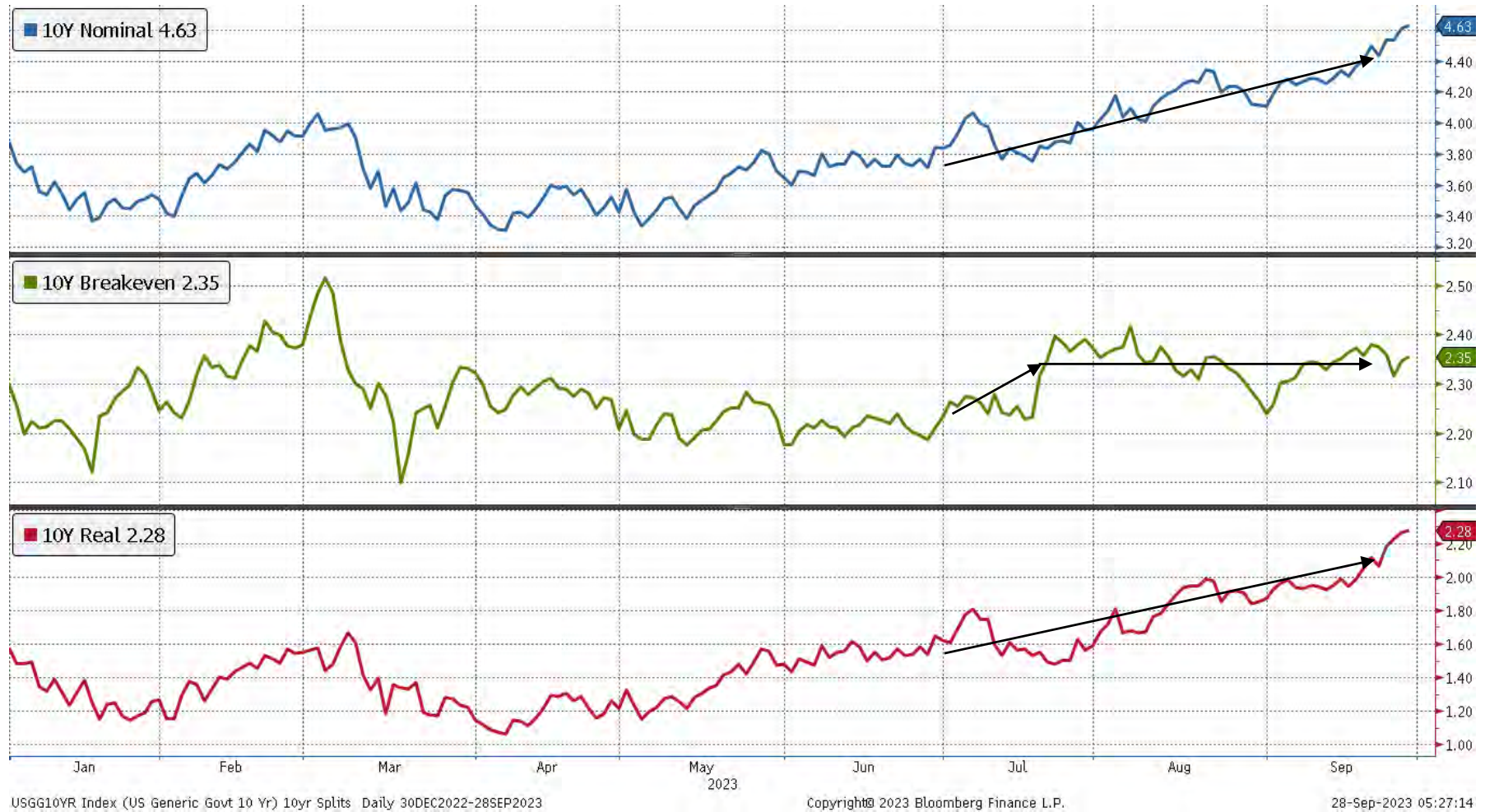
As of 9/30/2023

		YTW	QTR	YTD	1 YR	3 YR	5 YR	10 YR
Bloomberg High Yield		8.9	0.5	5.9	10.3	1.8	3.0	4.2
S&P LSTA Leveraged Loan		9.5	3.1	9.7	13.8	5.2	4.2	3.9
High Yield Quality Distribution	Weight							
Ba U.S. High Yield	47.8%	7.6	-0.4	3.9	8.4	0.8	3.7	4.6
B U.S. High Yield	40.0%	9.0	0.8	6.3	11.6	1.9	2.8	3.9
Caa U.S. High Yield	11.4%	13.3	2.5	12.1	12.7	3.8	0.7	3.7
Ca to D U.S. High Yield	0.9%	15.6	3.0	10.8	26.1	14.4	-2.8	-3.6



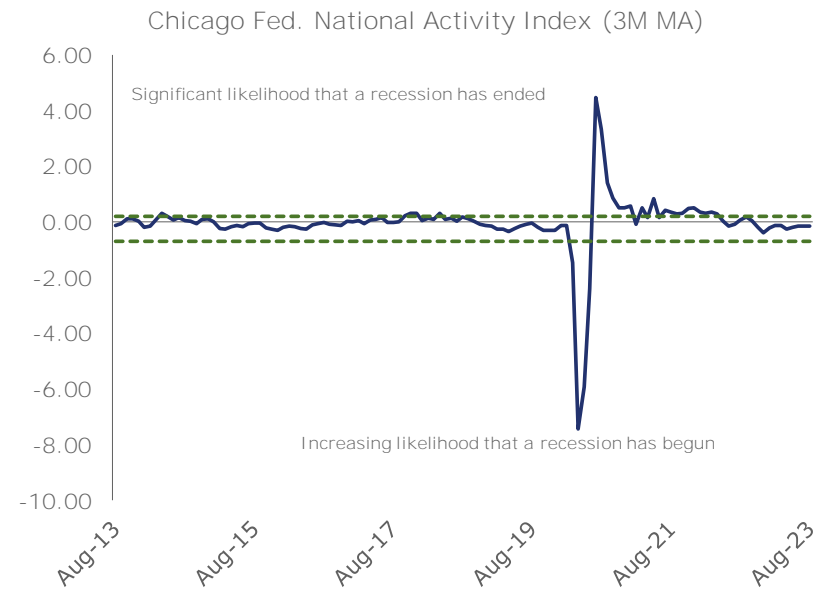
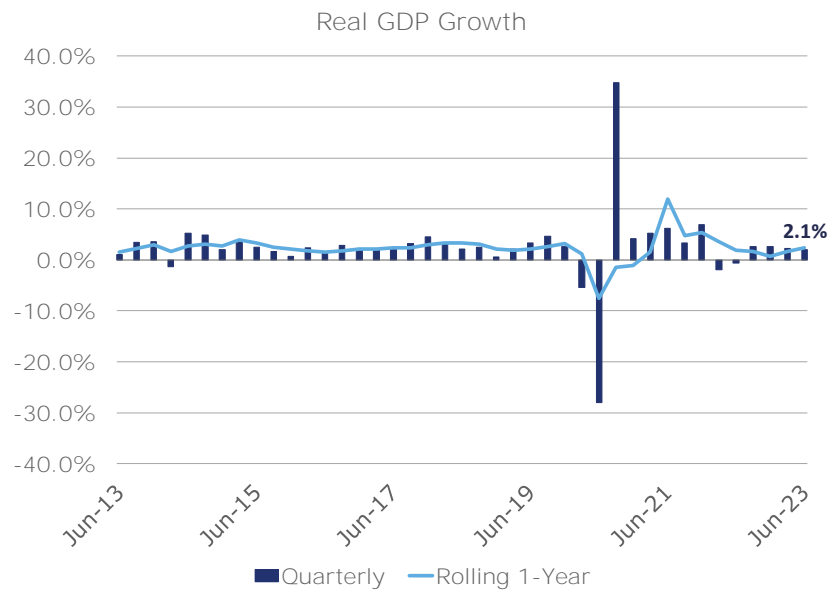
Data Sources: Bloomberg

2023 Rate Environment



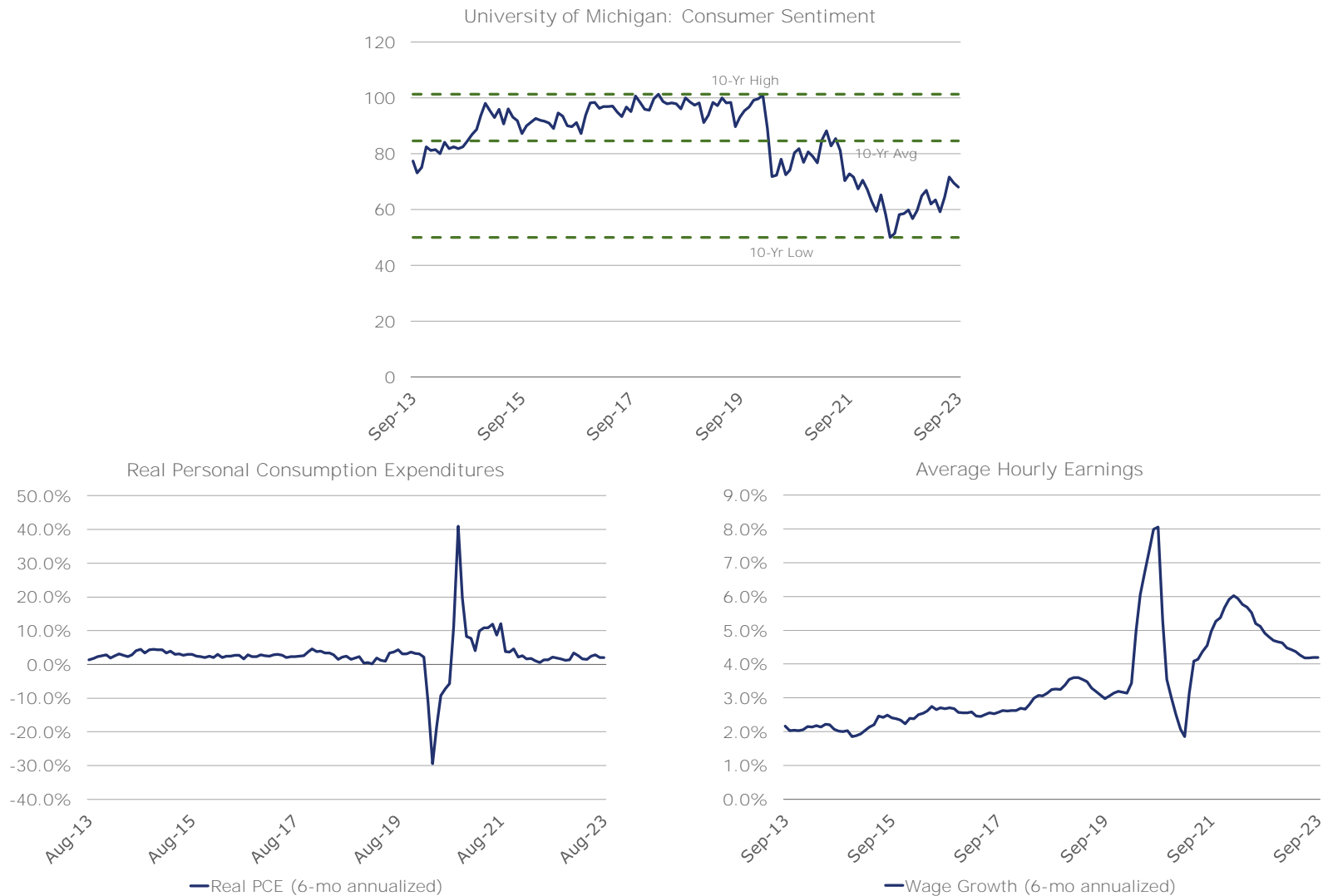
Data Sources: Wilshire, Bloomberg

Economic Growth



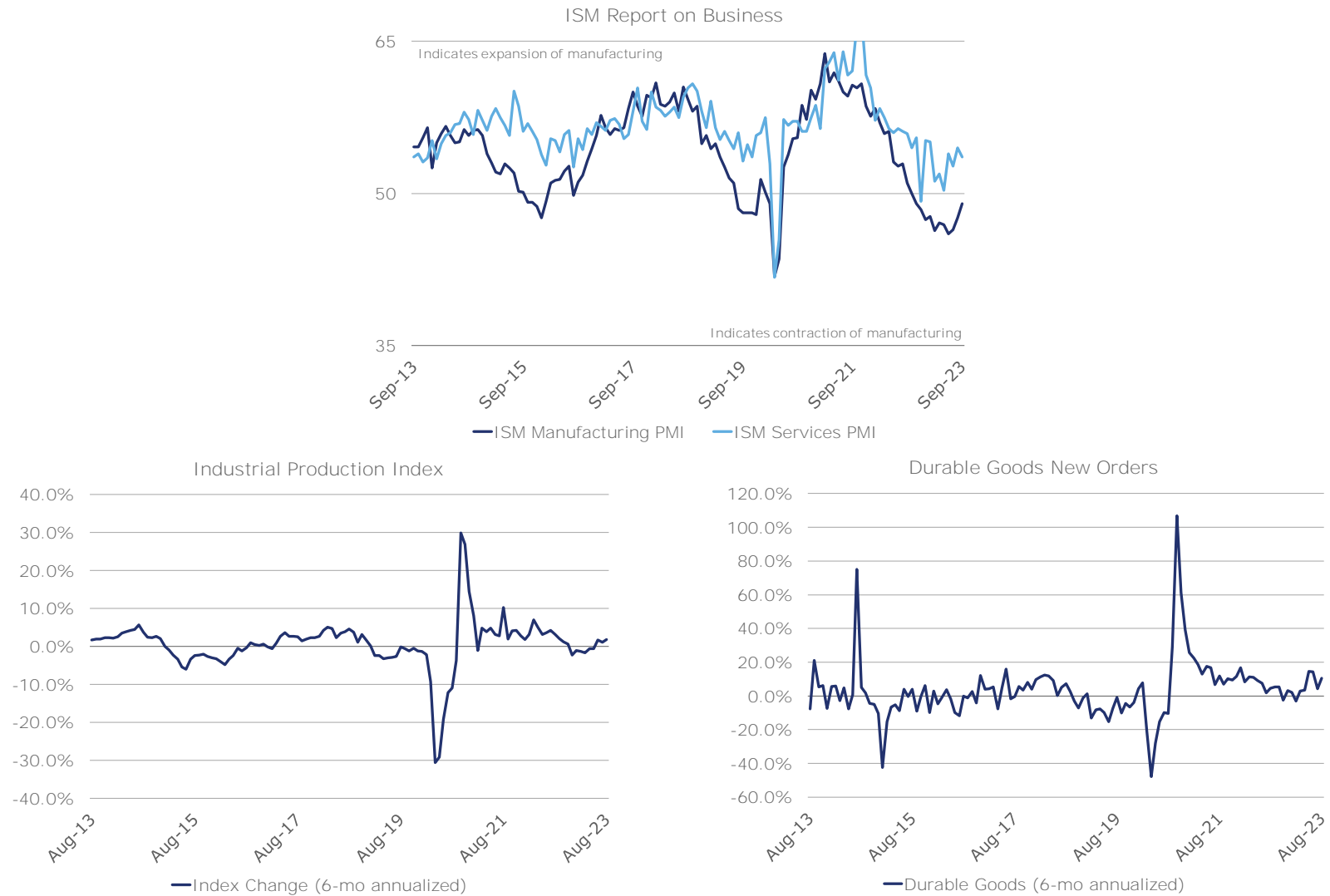
Data Sources: Bloomberg

Consumer Activity



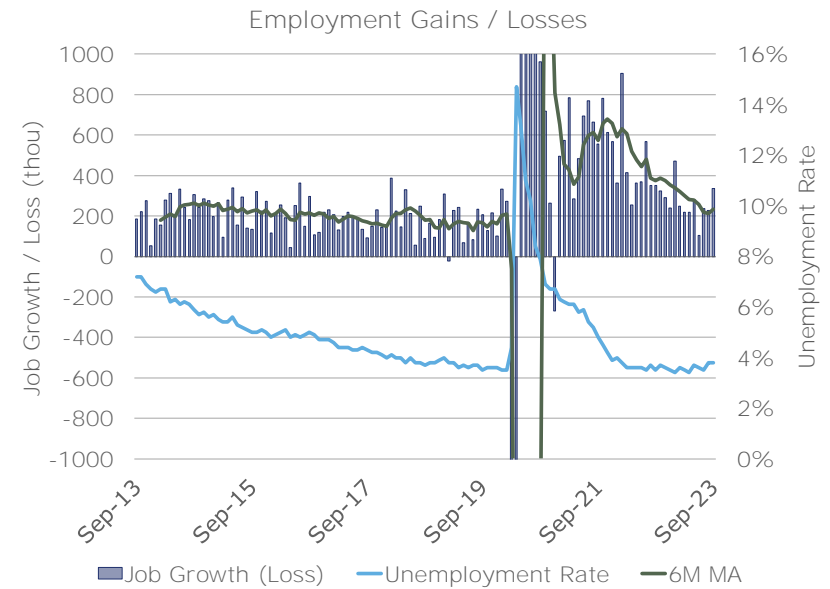
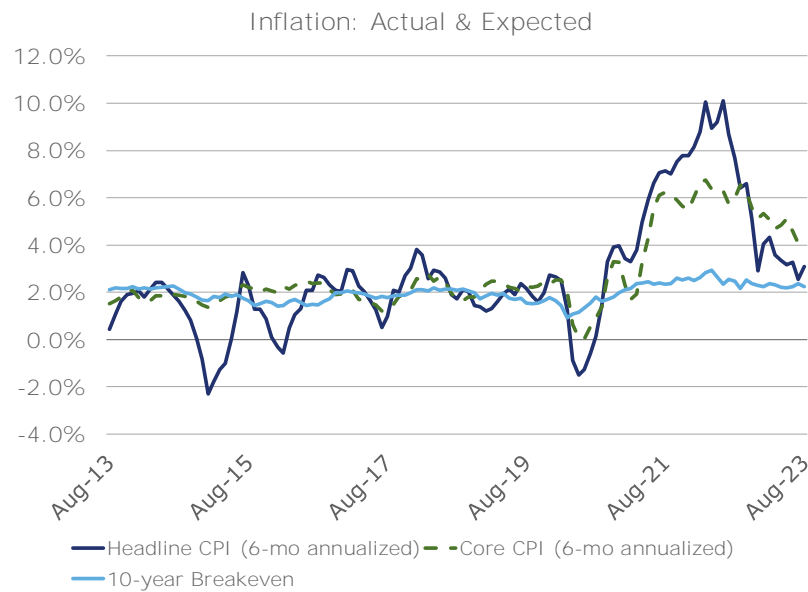
Data Sources: Bloomberg

Business Activity



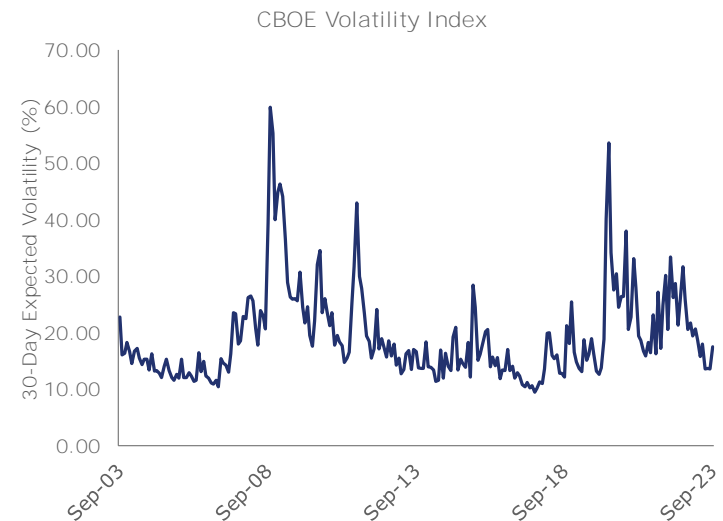
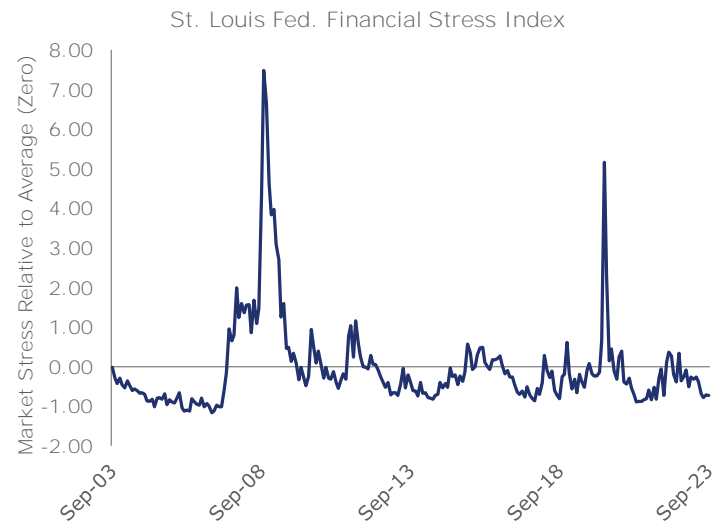
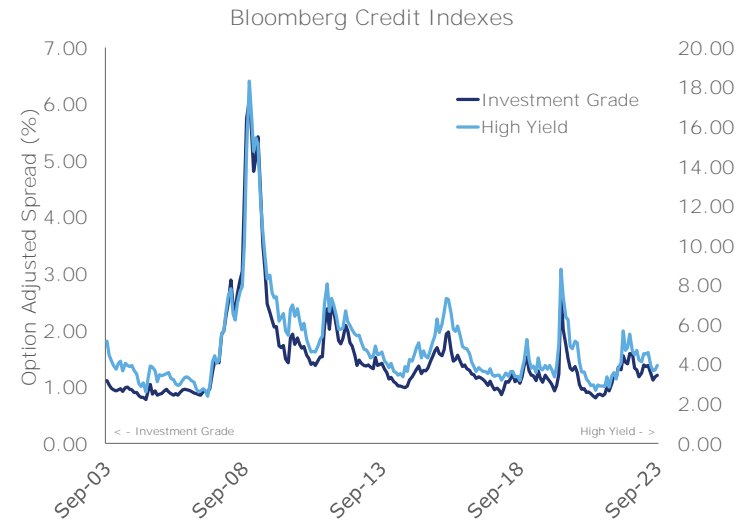
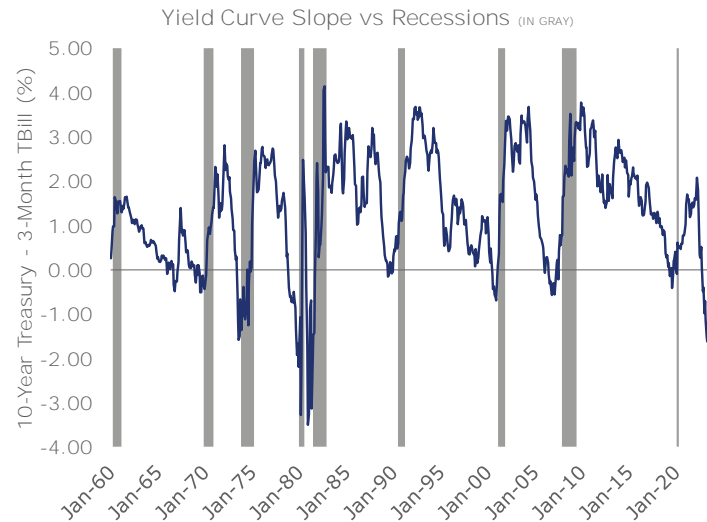
Data Sources: Bloomberg

Inflation And Employment



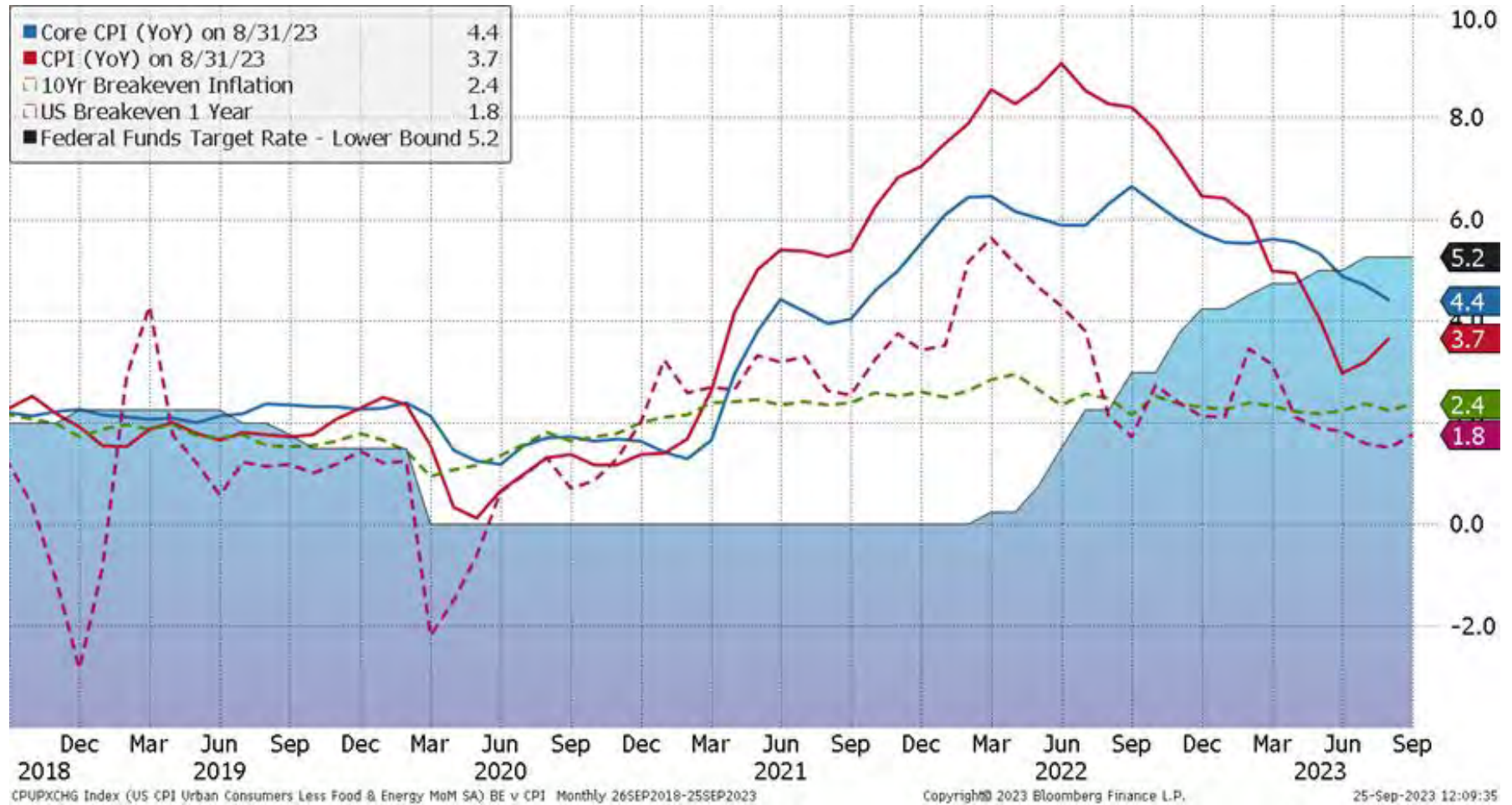
Data Sources: Bloomberg

Risk Monitor



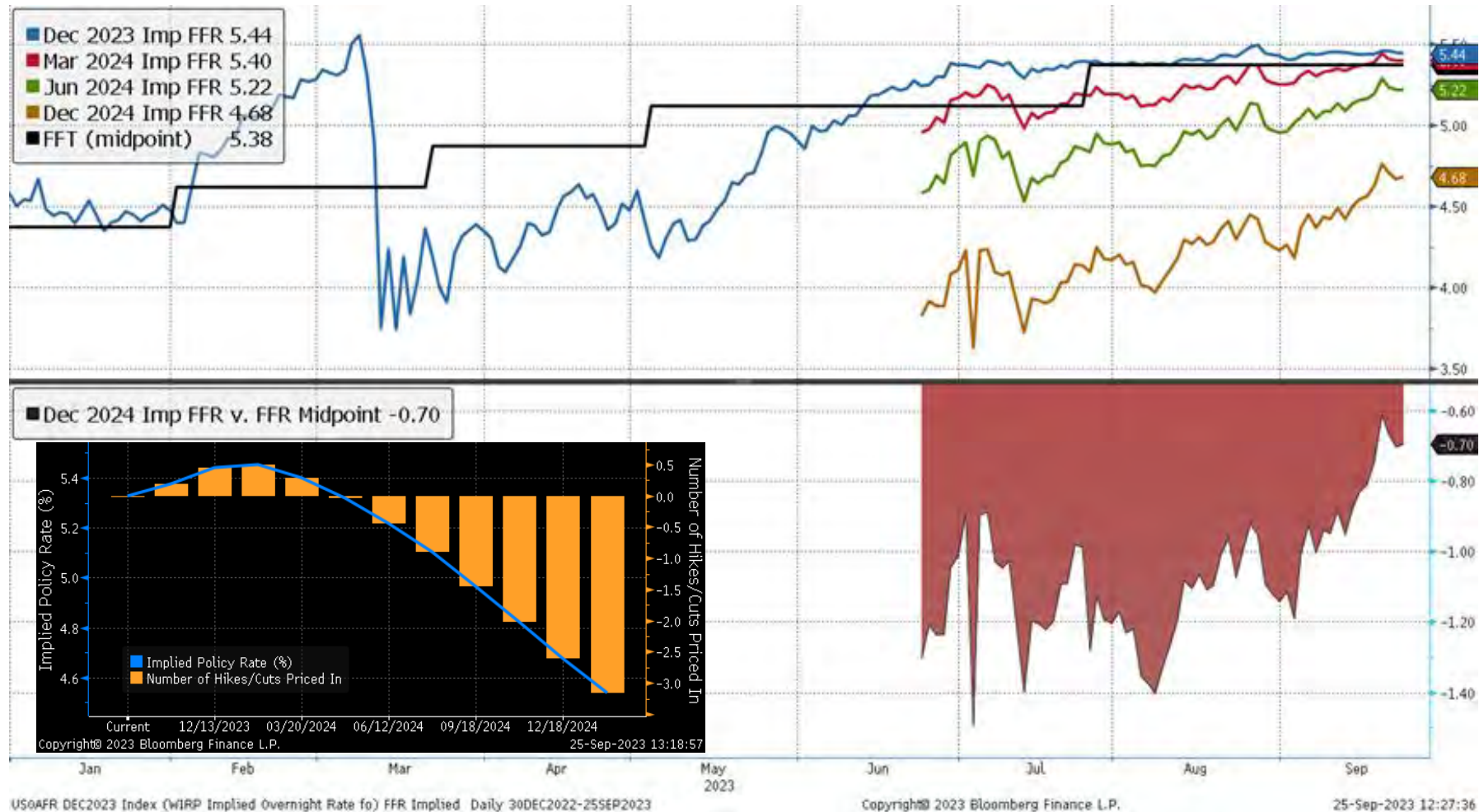
Data Sources: Bloomberg

Inflation Update v. Fed Policy: At/Near the Neutral Rate?



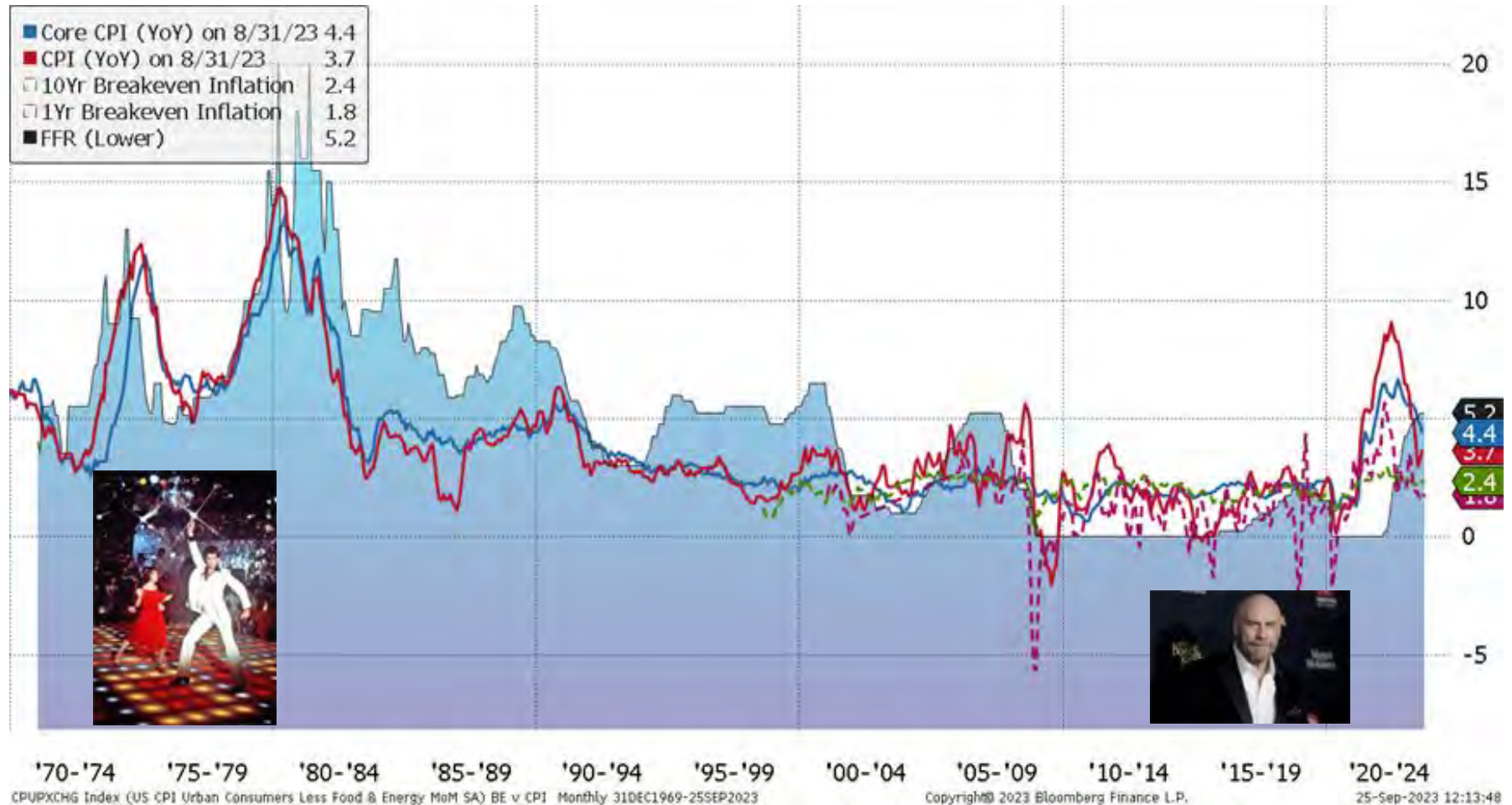
Data Sources: Bloomberg

At/Near Neutral Rate?: The Market Thinks So (and that we'll be Lower Next Year)...



Data Sources: Bloomberg

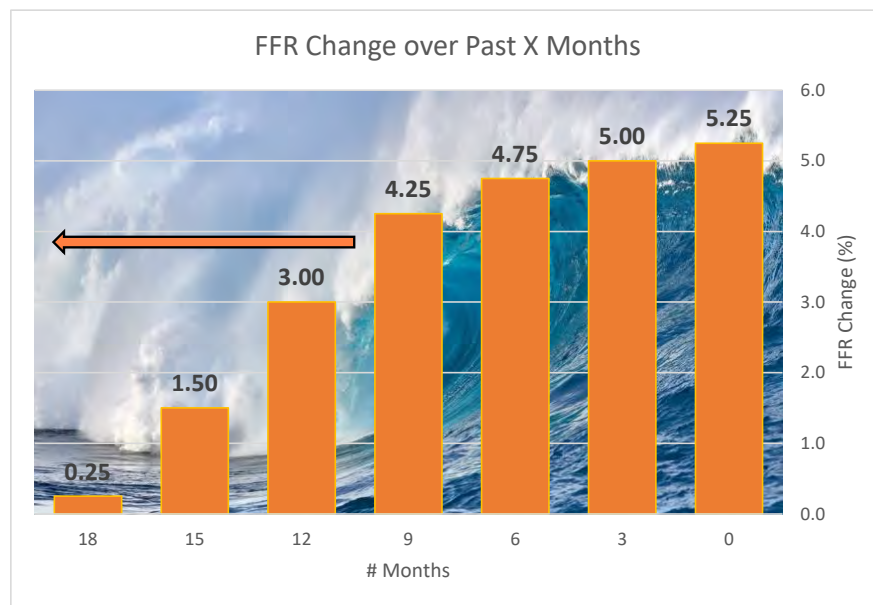
Inflation: I Know, It's Not the 70s, But the Path Back to Target Might Be Bumpy....



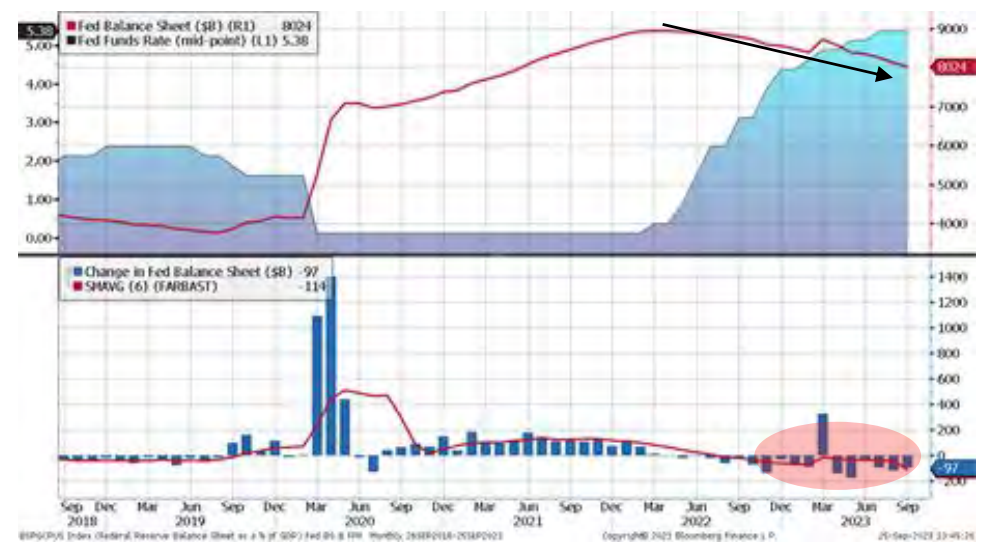
Data Sources: Bloomberg

Tightening Continues, Even If the FFR Target Rate Remains Unchanged

Impact of Fed tightening known to have long & variable lag



Fed BS run-off (~\$1T/year)



Data Sources: Bloomberg

Kentucky Retirement Systems

Performance and Asset Allocations

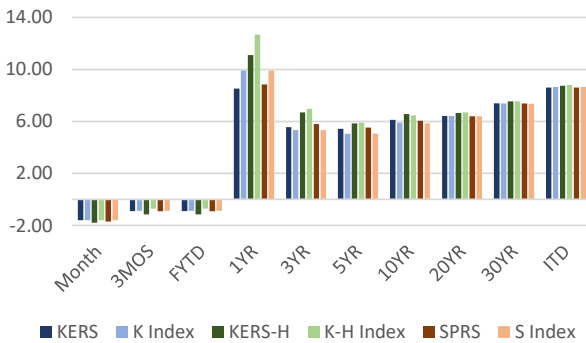
Quarter Ending: September 30, 2023

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KPPA MONTHLY PERFORMANCE UPDATE

KERS/KERS-H/SPRS

K,KH,S Pension Performance - 09/30/23



KERS, KERS-HAZ, & SPRS - PENSION FUND - PLAN NET RETURNS - 09/30/23

Plan	Market Value	Months	3 Months	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	ITD
KERS	3,575,106,963.50	-1.60	-0.89	-0.89	8.53	5.56	5.44	6.12	6.41	7.40	8.61
KY Ret. KERS Plan IPS Index		-1.59	-0.88	-0.88	9.90	5.33	5.06	5.91	6.41	7.37	8.66
KERS-H	896,168,133.75	-1.78	-1.14	-1.14	11.10	6.70	5.85	6.56	6.64	7.55	8.73
KY Ret. KERS HAZ Plan IPS Index		-1.59	-0.69	-0.69	12.68	6.98	5.91	6.45	6.69	7.55	8.80
SPRS	586,020,761.42	-1.71	-0.92	-0.92	8.84	5.80	5.53	6.05	6.39	7.38	8.60
KY Ret. SPRS Plan IPS Index		-1.59	-0.88	-0.88	9.90	5.33	5.06	5.87	6.39	7.35	8.65

KPPA PENSION FUND UNIT - NET RETURNS - 09/30/23 - PROXY PLAN ASSET PERFORMANCE

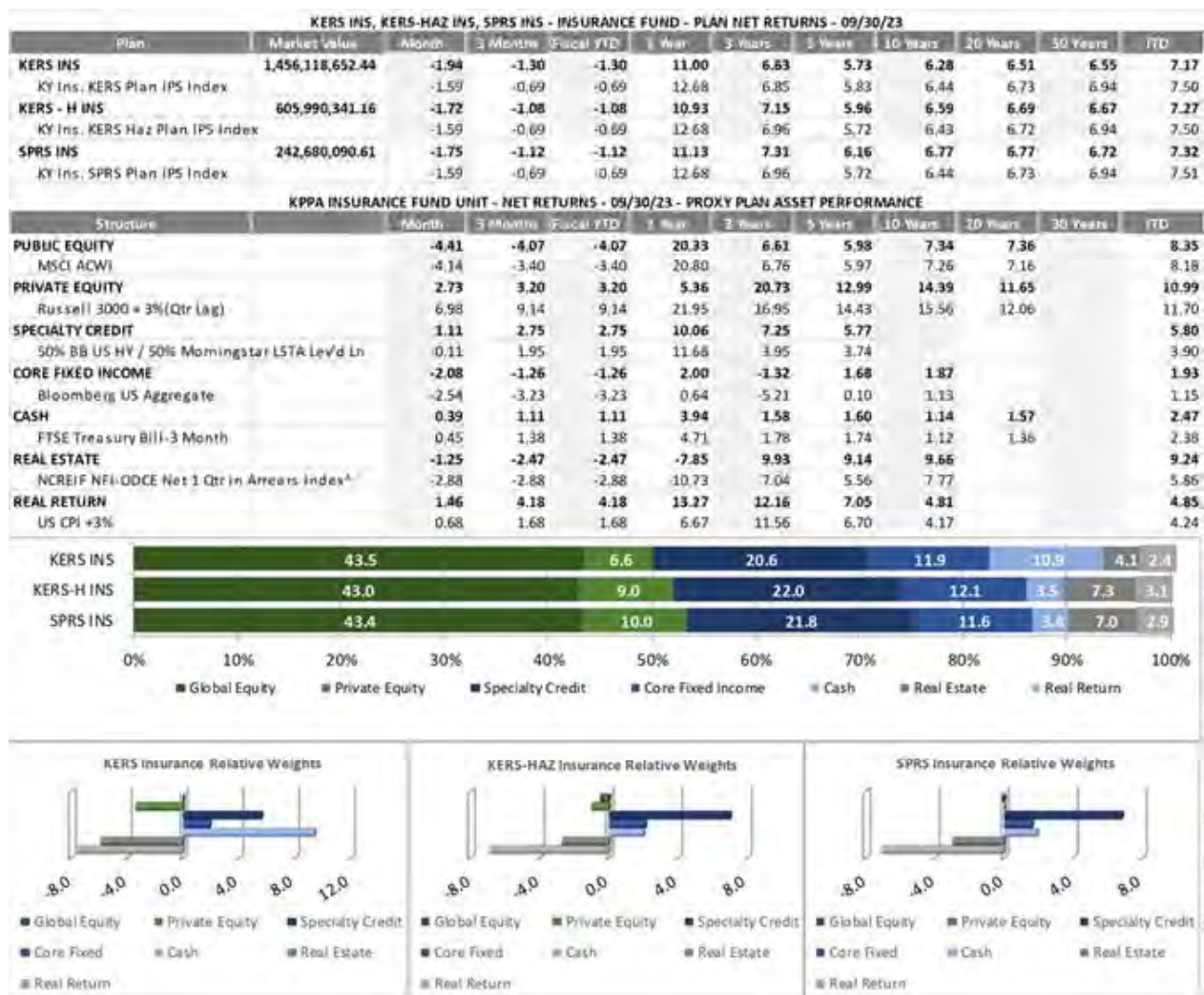
Structure	Months	3 Months	Fiscal YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	ITD
PUBLIC EQUITY	-4.39	-4.04	-4.04	20.48	6.63	6.01	7.27	7.39	8.36	10.02
MSCI ACWI	-4.14	-3.40	-3.40	20.80	6.78	5.99	7.25	7.37	8.18	9.88
PRIVATE EQUITY	2.40	2.71	2.71	3.07	17.97	13.31	13.41	11.87		11.81
Russell 3000 + 3%(Qtr Lag)	6.98	9.14	9.14	21.95	16.95	14.43	15.56	12.30		12.14
SPECIALTY CREDIT	1.07	2.64	2.64	9.63	7.15	5.78				5.91
50% BB US HY / 50% Morningstar LSTA Lev'd Ln	-0.11	1.95	1.95	11.68	3.95	3.74				3.90
CORE FIXED INCOME	-2.02	-1.14	-1.14	2.13	-1.15	1.87	2.18			2.22
Bloomberg US Aggregate	-2.54	-3.23	-3.23	0.64	-5.21	0.10	1.13			1.15
CASH	0.39	1.12	1.12	3.96	1.60	1.72	1.28	1.73	2.71	3.32
FTSE Treasury Bill-3 Month	0.45	1.38	1.38	4.71	1.78	1.74	1.12	1.36	2.35	2.94
REAL ESTATE	-1.28	-2.63	-2.63	-7.75	10.24	9.19	9.33	7.97	6.52	6.53
NCREIF NFI-ODCE Net 1 Qtr in Arrears Index*	-2.88	-2.88	-2.88	-10.73	7.04	5.56	7.77	6.86	7.53	6.35
REAL RETURN	1.40	4.71	4.71	14.98	13.61	7.27	5.04			5.12
US CPI +3%	0.68	1.68	1.68	6.67	12.54	6.67	4.11			4.19



September
2023

KPPA MONTHLY PERFORMANCE UPDATE

KERS/KERS-H/SPRS



Overview

Markets continued to struggle for direction in the first quarter of Fiscal 2024 as all major global equity markets produced negative performance during the quarter and finished on the back foot with September marking the largest monthly decline of 2023. Realized rates and expectations for the future path of rates weighted heavily on markets as the US 10Y bond yield spiked to its highest level since 2007 during the quarter and the Treasury curve inverted to a level not seen in decades as markets reassessed the higher for longer narrative and the potential impacts on growth and markets.

September 2023	KPPA MONTHLY PERFORMANCE UPDATE	KERS/KERS-H/SPRS
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After a strong first quarter of 2023, real GDP moderated to a 2.1% during the second quarter before surprisingly rebounding to 4.9% in the third quarter, the best quarterly growth rate in nearly two years fueled by consumer spending on goods and services, inventory investments and government spending. While this acceleration and the strength of recent data suggest a recession may not be imminent, expectations remain for a sharp slowdown in growth over the coming quarters as global central banks are intensifying their monetary policy tightening, with money, credit, and liquidity all decisively retreating. Over the past year and a half, the Fed, European Central Bank, Bank of Japan, and Bank of England have withdrawn a total of \$4.7trn from circulation, a significant drain but less than half of the amount added during the post-pandemic quantitative easing programs. Although equities have derated in absolute terms over the past three months, valuations remain relatively expensive relative to safe haven assets with the equity risk premium still quite low from an asset allocation perspective. Although the Q3 reporting season is delivering a relatively high proportion of EPS beats, it has not driven further upward EPS revisions and EPS revisions ratio has fallen sharply as earnings momentum appears to be stalling. Given the numerous headwinds, risk markets are likely to trade range bound with a mild bias toward the downside.

The KRS Pension Composite produced a return of -0.94% for the quarter. The KERS and SPRS Pension portfolios returned -0.89% and -0.92% respectively, while their benchmark returned -0.88%. The KERS-H Pension portfolio returned -1.14% versus its benchmark return of -0.69%. The KRS Insurance Composite produced a -1.86% return for the quarter underperforming the blended benchmark which returned -0.69%. Across portfolios, underperformance in the Public Equity and Private Equity portfolios were the primary drivers of relative performance during the quarter. While the Public Equity portfolio suffered from stock selection and style bias, the relative underperformance of the Private Equity portfolio is primarily due to the misalignment and timing of the benchmark. The current specified benchmark of Russell 3000 + 3% based on a quarter lag benefitted from the strong performance of the Public Equity markets during the quarter that ended June 2023 and was not reflective of the actual performance of Private Equity markets for the quarter ending September 2023. The underweight to Real Return was also a modest drag on performance as it was one of the few assets classes that in aggregate posted positive performance for the quarter. The overweight in the Specialty Credit portfolio was a positive contributor to performance as it outperformed on a relative basis and was one of the best performing asset classes during the quarter. The portfolios also continued to benefit from strong relative performance in the Core Fixed Income portfolio as Staff maintained an overall short duration profile which outperformed as rates rose. Since the end of the quarter, staff has been rebalancing the Core portfolio to lengthen duration as all in yields have become more compelling and rates may be nearing their cycle peaks. Overweights to cash were also positive contributors for the quarter.

September 2023	KPPA MONTHLY PERFORMANCE UPDATE	KERS/KERS-H/SPRS
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Public Equity

Global equity markets were notably weaker during the quarter, falling -3.40% per the MSCI ACWI. This brought the asset class return to 20.80% for the one-year period. US markets held up slightly better than international markets during the period (-3.25% versus -3.49%), contributing to them edging out their counterparts for the twelve-month period (20.46% versus 20.19%).

After a good start to the quarter, US markets turned lower in July as thoughts of a potential soft landing began to slide and concerns about extended policy rates and their impact took hold. Interest rates spiked with the 10-year Treasury gaining 100bps to reach new 15-year highs. As yields pushed higher, risk assets sensitive to higher borrowing costs re-priced to the downside (smaller caps and those perceived to be lower quality in particular). With the policy rate now firmly above neutral it follows that slowing economic activity is likely, as businesses and consumers start to feel the costs. The narrow market storyline continued as mega-cap tech dominated, while the average stock lost ground during the quarter (the S&P 500 has returned approximately 13% YTD, while the “magnificent 7” have returned an average 83%), the market now at historically high concentration. Despite value holding up slightly better than growth during the quarter (-3.15% versus -3.34%), market winners this year have been large cap, growth, and quality. Large cap growth has returned 24.98% YTD, while small cap growth has returned 5.24%. On the other hand, large cap value has returned less than 2%, while small cap value has fallen roughly 50bps.

Most Non-US developed markets were weaker during the quarter. This was primarily caused by slowing economic growth and persistently high inflation in the face of continued rate hikes. Underpinning the slower growth is the financial tightening that has caused a deceleration in consumption (increasing but at a slower rate), inventory destocking, and weaker manufacturing. Despite the growth deceleration, company earnings have come in ahead of expectations as they had assumed a hard landing recession. Supply chains appear to have normalized, which has led to reduced input costs which has helped to bolster earnings.

The KPPA global equity returned -4.11% during the quarter versus its benchmark return of -3.40%. Relative underperformance is primarily the result of allocation within the US equity portion of the portfolio, and weaker stock selection within the NonUS mandates, particularly those with a growth style bias.

Within the US equity allocation, the portfolio trailed its index by 24bps (-3.49% vs -3.25%). This was primarily due to allocation. The portfolio tilts towards value and smaller in market cap. The value tilt in

September 2023	KPPA MONTHLY PERFORMANCE UPDATE	KERS/KERS-H/SPRS
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the portfolio was slightly beneficial; however, the smaller size bent hampered relative performance. Small caps underperformed their large cap counterparts by just under 2%.

The international equity allocation underperformed during the quarter, falling -5.05% versus a benchmark return of -3.49%. Weakness was most pronounced in the growth portion of the portfolio as any strategy whether developed or emerging market with a growth bias struggled. This was partially

offset by the value portion of the portfolio which held up better, with two of the three mandates providing positive absolute performance.

For the trailing 12 months, the KPPA global equity portfolio returned 20.39%, trailing its benchmark by 41bps. The US equity portion of the portfolio returned 19.46% versus 20.46%. Underperformance can be attributed to the factor tilts in the portfolio (value and smaller) as stock selection among most mandates was positive. The NonUS equity portion of the portfolio returned 21.62% versus 20.19%. While stock selection was mixed, relative outperformance was driven by strong performance in the value biased mandates.

Core Fixed Income

Rates across the U.S. Treasury curve finished the quarter higher, with the long end rising the most. The yield on the 2-year Treasury, which is highly sensitive to expectations for the Fed Funds rate, started the quarter at 4.90% and closed September at 5.04%. The 10-year Treasury, which is often used as a benchmark for pricing home mortgages, began the quarter trading at 3.84% closing at 4.57%. Lastly, the yield on the 30-year bond, which tends to be highly sensitive to changes in long-term economic expectations, increased from 3.86% to 4.70%.

The Bloomberg U.S. Aggregate Bond Index returned -2.54% for September resulting in a quarterly loss of 3.23% as U.S. Treasury yields rose across the curve and credit spreads rose. Corporate bonds were the best performing spread sector for the quarter, generating 84 basis points of excess returns. Commercial mortgage-backed securities (CMBS) were next, outperforming similar duration Treasuries by 35 basis points. Asset-backed securities (ABS) rounded out the top three closing the quarter generating 29 basis points of excess returns.

The Core Fixed Income portfolio posted a loss of 2.02% for the month and a loss of 1.14% for the quarter, outperforming the benchmark by 0.52% for the month and 2.09% for the quarter. The relative outperformance is directly attributable to the underweight overall duration as rates rose and allocations to the Corporate and ABS sectors within our mandates.

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KPPA MONTHLY PERFORMANCE UPDATE

KERS/KERS-H/SPRS

Specialty Credit - Private Equity – Real Return – Real Estate

The Bloomberg US High Yield Index returned -1.18% in September and 0.46% over the quarter. Lower rated issues outperformed for the sixth consecutive month. BB, B and CCC-rated issues returned -1.46%, -1.03% and -0.81%, respectively in September. BB, B and CCC-rated issues returned -0.43%, 0.83% and 2.39% during the quarter, respectively. This continued the year-to-date trend of risk outperforming quality, as CCC-rated issues have outperformed BB-rated issues by 8.33% year-to-date. U.S. high yield

bonds saw their worst monthly total return since February as resilient economic data and hawkish Federal Reserve commentary drove interest rates sharply higher. Overall spreads ended the month 23 basis points wider and 4 basis points wider over the quarter.

Leveraged loans outperformed high yield bonds for the fifth time in six months as rising rates and steady CLO issuance provided a tailwind for the asset class. The Morningstar LSTA US Leveraged Loan Index returned 0.96% in September, ending the quarter with a gain of 3.46%. Primary issuance jumped 40% versus the prior month to the highest issuance since November 2021. Despite persistent concerns about maturity walls in the leveraged finance market, just 10% of leveraged loans mature before 2026, down from 20% at the start of the year.

Default and distressed exchange activity moderated in September with one default and one distressed exchange completed. The quarter saw five defaults and four distressed exchanges. There have been seventeen defaults thus far year-to-date, surpassing the seven defaults during all of 2022. However, as of September, bond and leveraged loan default rates ended the quarter at 1.32% and 1.90%, respectively, both below historical averages.

The Specialty Credit portfolio returned 1.07% for the month ending September and 2.64% for the quarter outperforming the custom benchmark for both time periods by 1.18% and 0.69%, respectively. However, the portfolio has performed better over longer time periods as represented by the 3-Year and 5-Year returns outperforming the benchmark by 3.20% and 2.04%, respectively.

Markdowns in Real Estate continued during the quarter, with the portfolio still seemingly affected more by higher cap rates than declining property-level performance. The portfolio's exposures to industrial, self-storage, student housing, medical office, and senior living continued to experience positive rent growth and pricing. From a valuation perspective, a look at the secondaries market suggests that there still may be more room to fall, with real estate funds pricing at significantly wider discounts than other strategies like private equity, credit, and infrastructure. Public markets sent a similarly bearish signal, with the US REIT index RMZ falling 7% during the quarter. That pushed the benchmark to a -2% YTD return and extends the 25% drop it had in 2022. While starting to pick up, real estate deal volume and price discovery remain muted, with new deals remaining concentrated in the industrial and multifamily

September 2023	KPPA MONTHLY PERFORMANCE UPDATE	KERS/KERS-H/SPRS
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sectors. However, even those sectors have seen new construction starts drop to 10-year lows because of higher financing and construction costs. The Real Estate portfolio returned -2.63% for the quarter and -7.75% for the trailing twelve months, outperforming the custom benchmark for both time periods by 0.25% and 2.98%, respectively.

Commodities were mixed during the quarter. Oil prices rose driven by supply cuts from the world's largest producers along with data showing US oil inventories fell to their lowest level in over 12 months. Natural gas prices moved higher for the second straight quarter after six months of significant declines. Prices were up 4.7% for the third quarter but are still down a massive -56.7% for the past twelve months.

Gold declined for the second straight quarter and other precious metals slumped as the DXY dollar index rose and prices were down across the agricultural complex. The Real Return portfolio returned 4.71% for the quarter and 14.98% for the trailing twelve months, outperforming the custom benchmark for both time periods by 3.03% and 8.31%, respectively. MLP exposure has been the main driver of

performance in the Real Return portfolio, returning nearly 30% over the last year. Strong cash flows, disciplined capex, and consolidation have contributed to the industry's 40% annualized returns for the past 3 years since its crash during the early months of COVID.

Liquidity

Federal Reserve officials left interest rates unchanged at the September meeting following a 25 basis point hike in July, continuing the alternate-meeting pace of hikes they have followed since May. The surprise came in the dot plot, where the median projection indicated one more hike in 2023 and just two cuts in 2024 (down from four 2024 cuts in the June projection). The Federal Reserve is sticking to the higher-for-longer message they have been signaling for the last several months, despite downside risks to growth from labor strikes and rising oil prices. Short rate markets are pricing roughly 50% odds of one more rate hike this year.

As of September, the benchmark 3-month T-Bill returned 0.45% for the month and finished the quarter returning 1.38%. The cash portfolio returned 0.39% and 1.12% for the month and quarter, respectively. The underperformance is attributable to lower rates offered by overnight repurchase agreements which is tied to the Fed Funds rate relative to market yields of the 3-month T-Bill. Since the Federal Reserve has begun to slow interest rate hikes, the difference in deposit rates compared to market rates will continue to compress going forward.

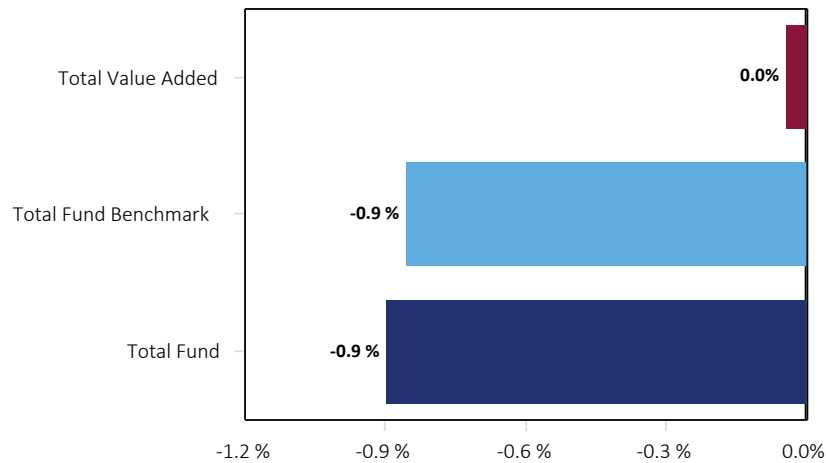
End of September key cash market interest rates: Fed Funds Effective 5.33%, 1M T-Bill 5.34% and 3M T-Bill 5.45%.

Total Fund Attribution

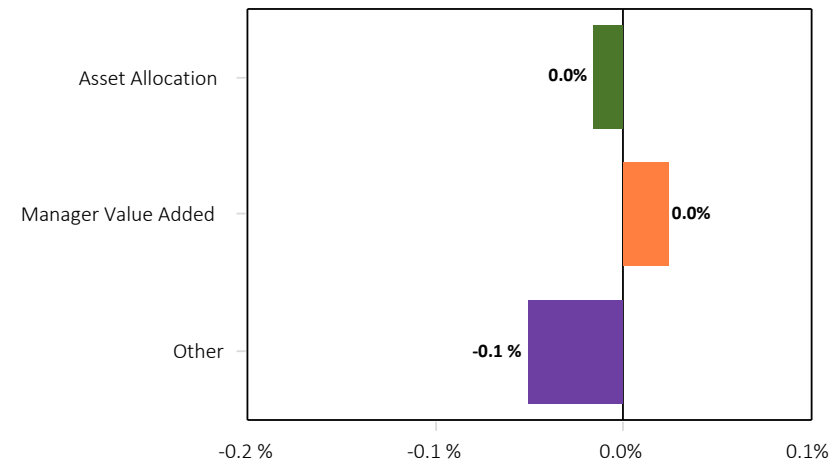
KERS Pension Plan

Periods Ended 1 Quarter Ending September 30, 2023

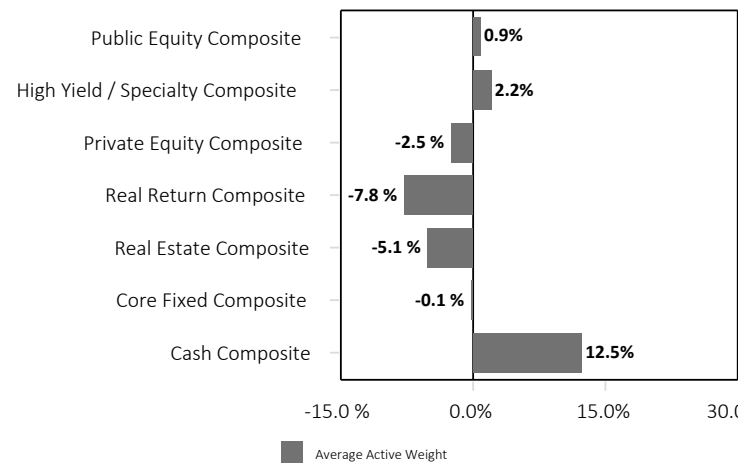
Total Fund Performance



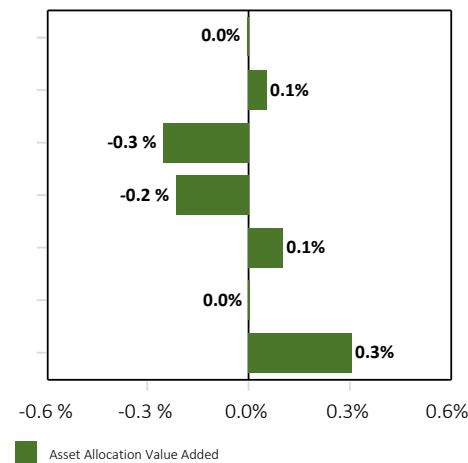
Total Value Added:0.0%



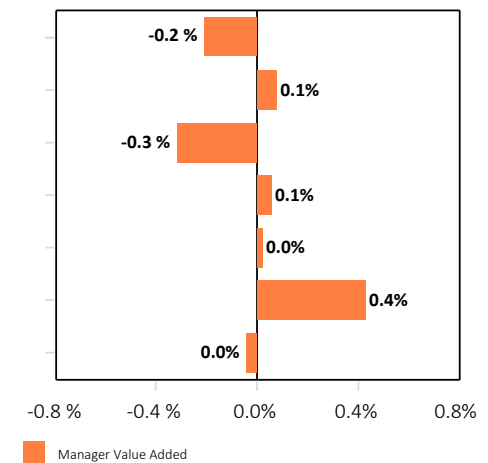
Total Asset Allocation:0.0%



Asset Allocation Value Added:0.0%



Total Manager Value Added:0.0%

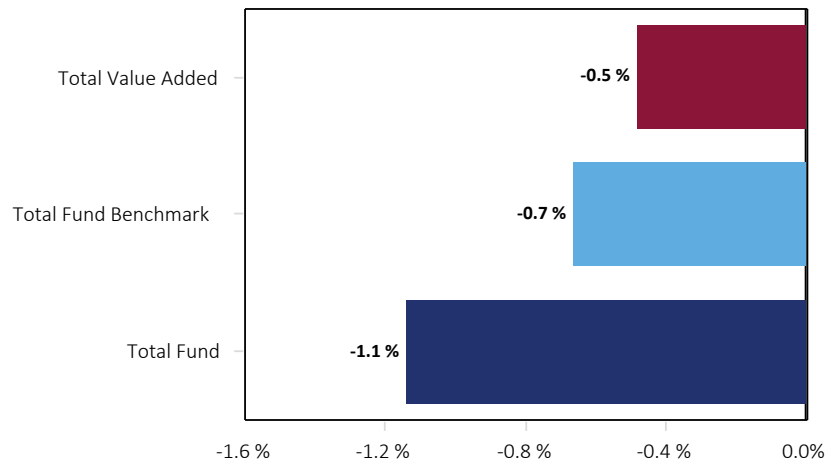


Total Fund Attribution

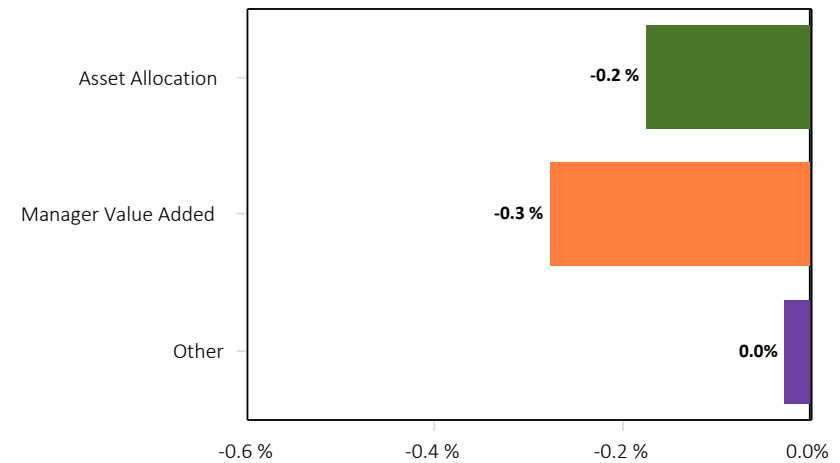
KERS (H) Pension Plan

Periods Ended 1 Quarter Ending September 30, 2023

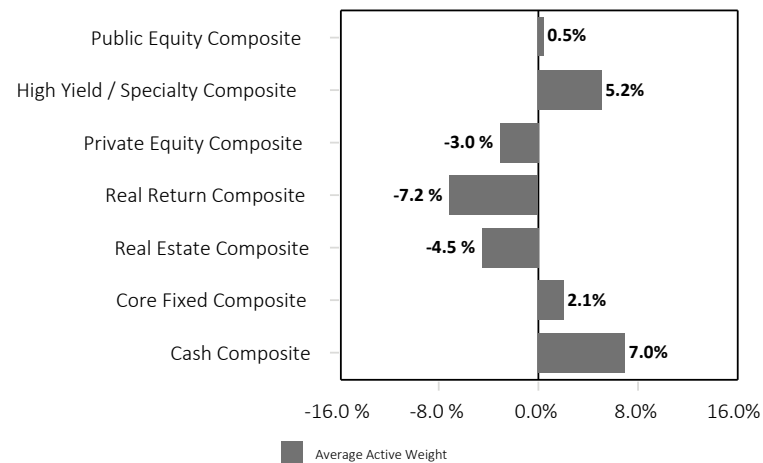
Total Fund Performance



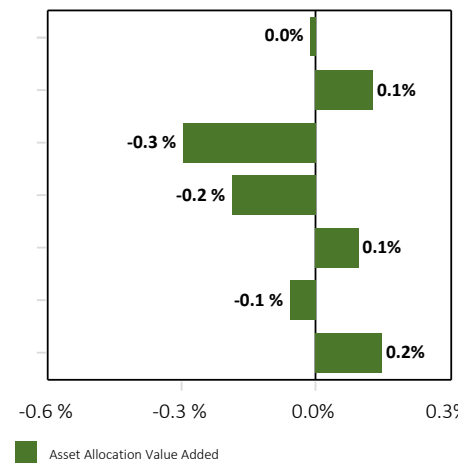
Total Value Added:-0.5 %



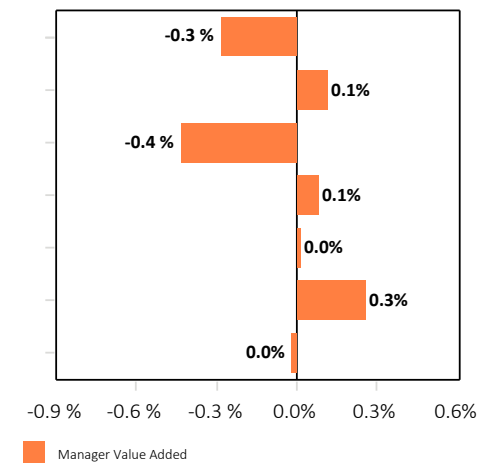
Total Asset Allocation:-0.2 %



Asset Allocation Value Added:-0.2 %



Total Manager Value Added:-0.3 %

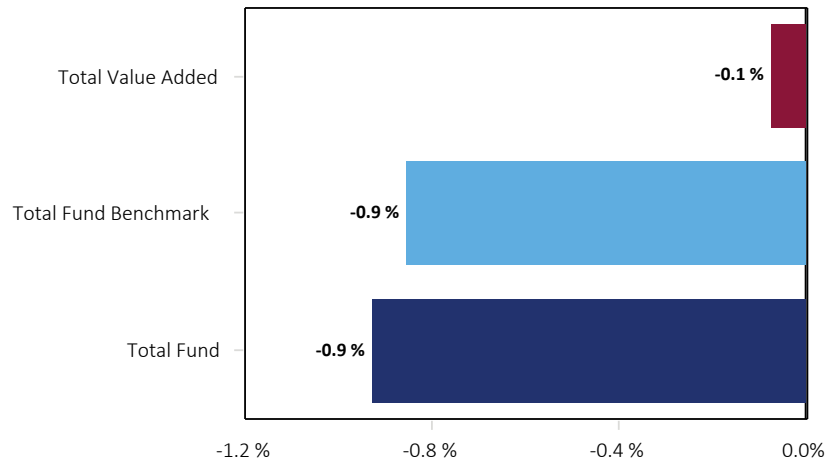


Total Fund Attribution

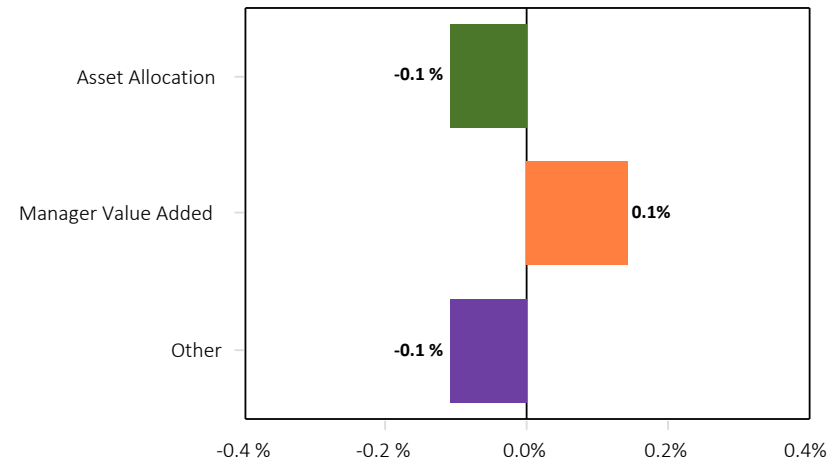
SPRS Pension Plan

Periods Ended 1 Quarter Ending September 30, 2023

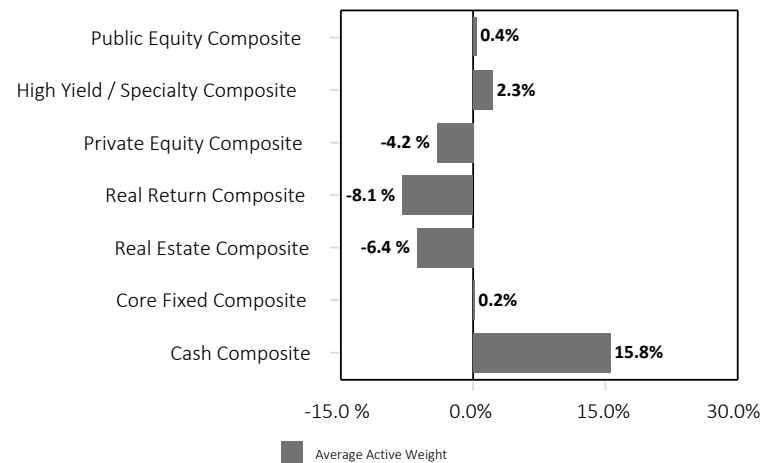
Total Fund Performance



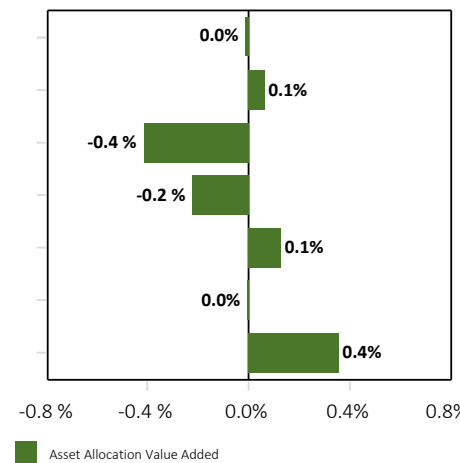
Total Value Added:-0.1 %



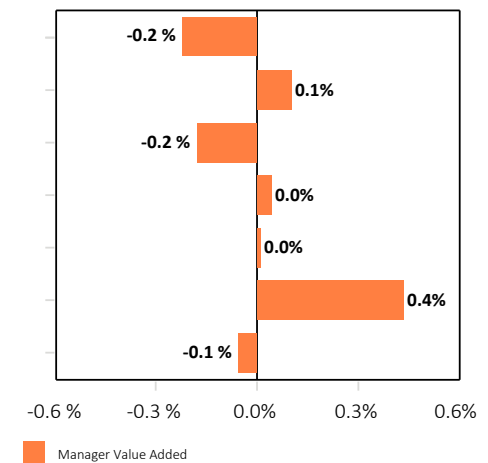
Total Asset Allocation:-0.1 %



Asset Allocation Value Added:-0.1 %



Total Manager Value Added:0.1%

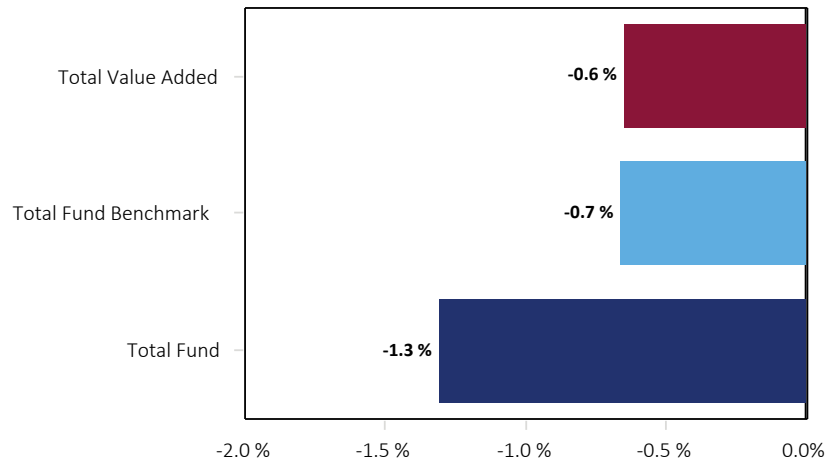


Total Fund Attribution

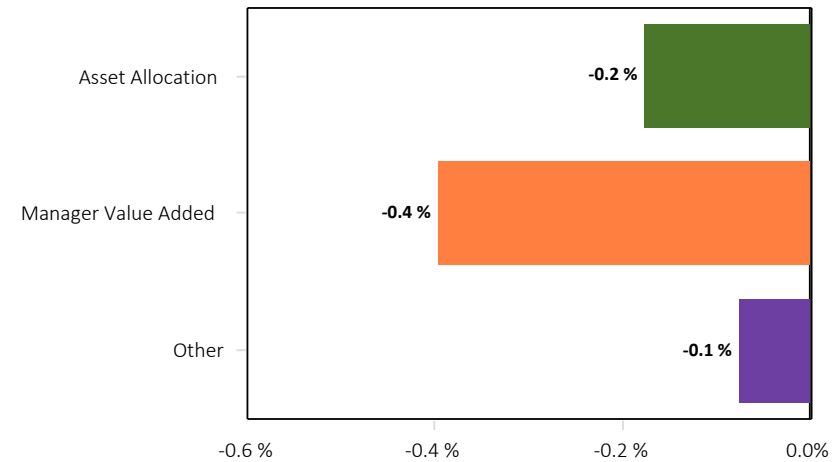
KERS Insurance Plan

Periods Ended 1 Quarter Ending September 30, 2023

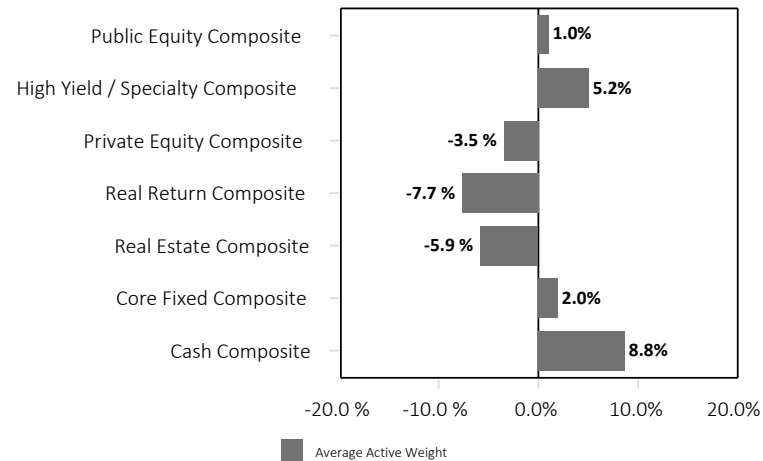
Total Fund Performance



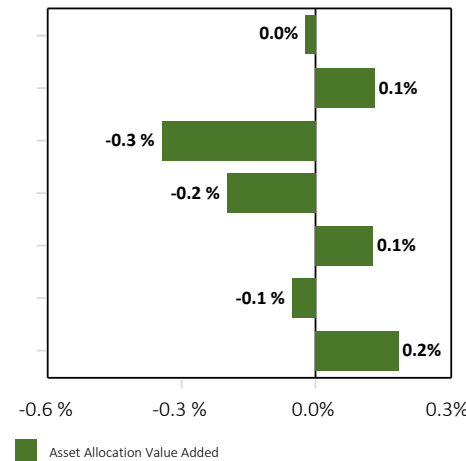
Total Value Added:-0.6 %



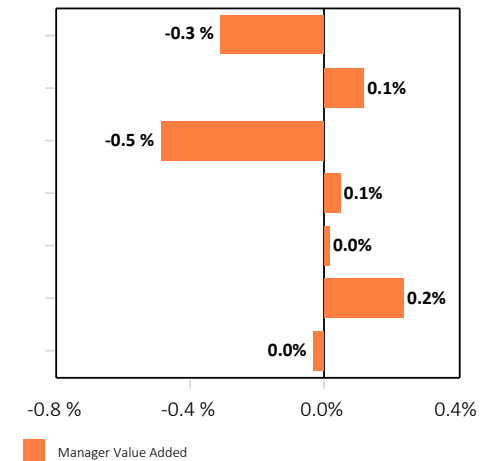
Total Asset Allocation:-0.2 %



Asset Allocation Value Added:-0.2 %



Total Manager Value Added:-0.4 %

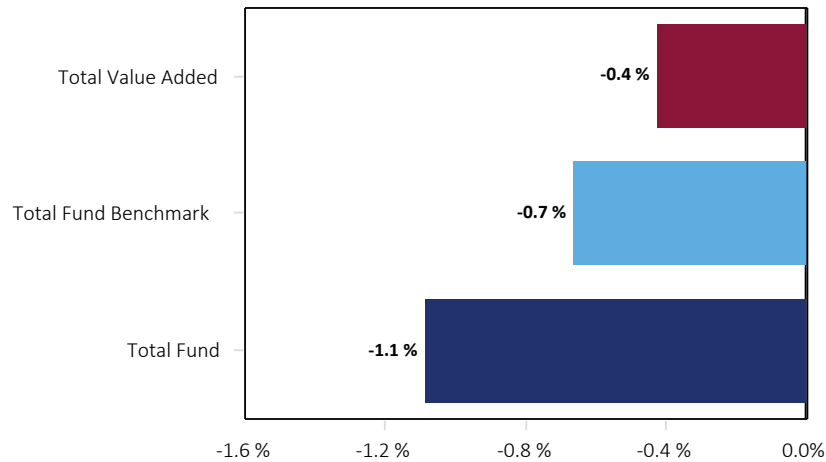


Total Fund Attribution

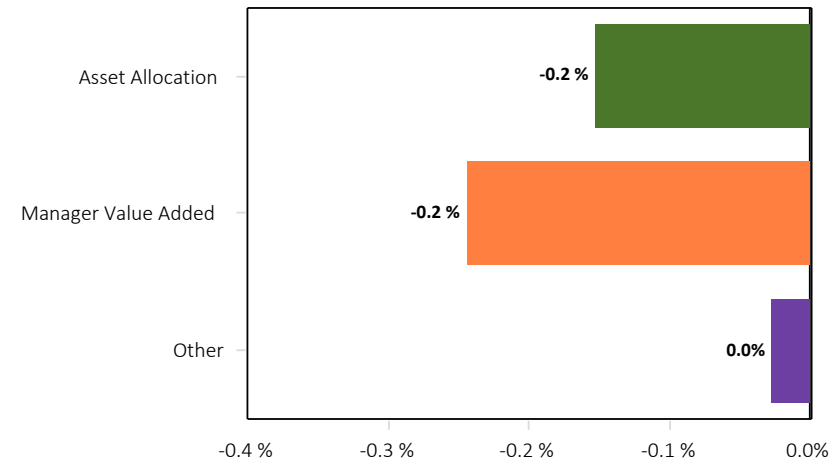
KERS (H) Insurance Plan

Periods Ended 1 Quarter Ending September 30, 2023

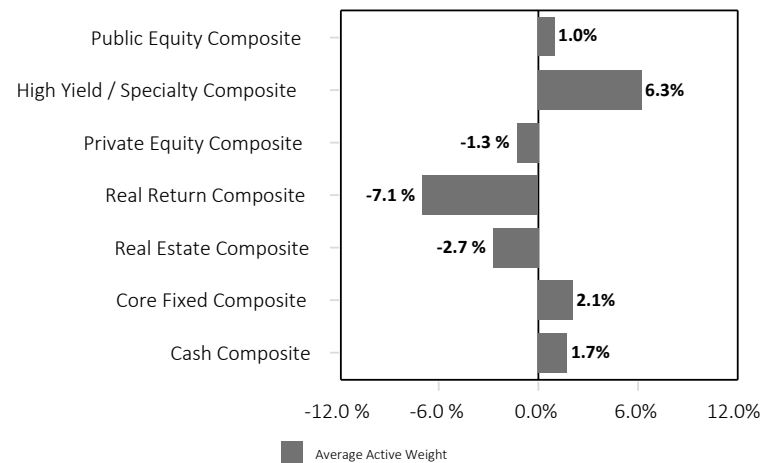
Total Fund Performance



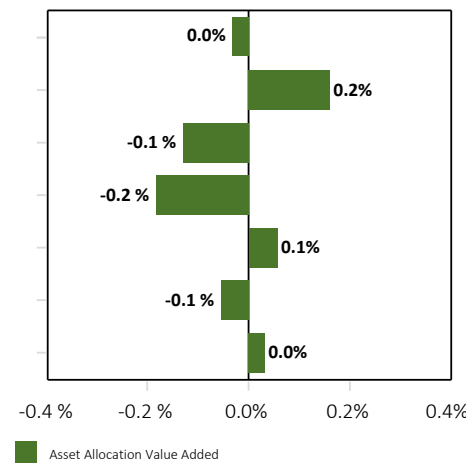
Total Value Added:-0.4 %



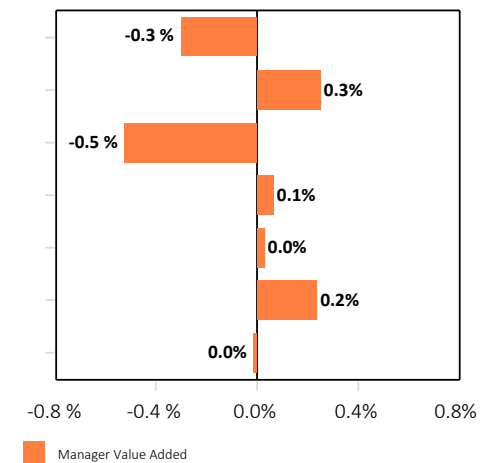
Total Asset Allocation:-0.2 %



Asset Allocation Value Added:-0.2 %



Total Manager Value Added:-0.2 %

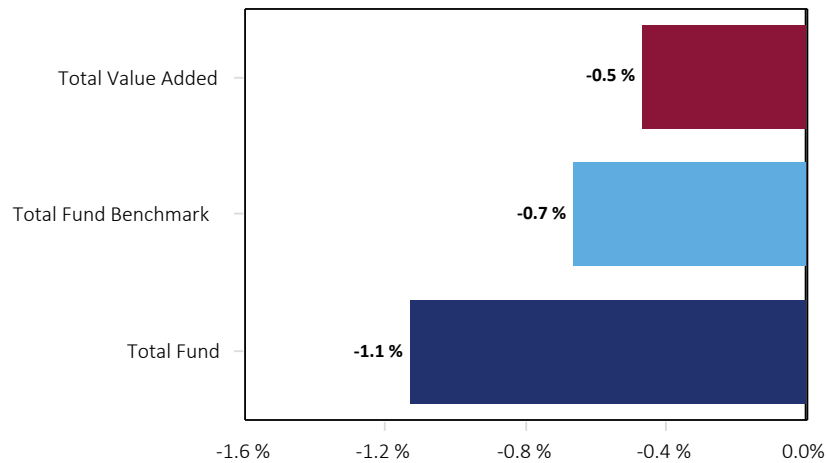


Total Fund Attribution

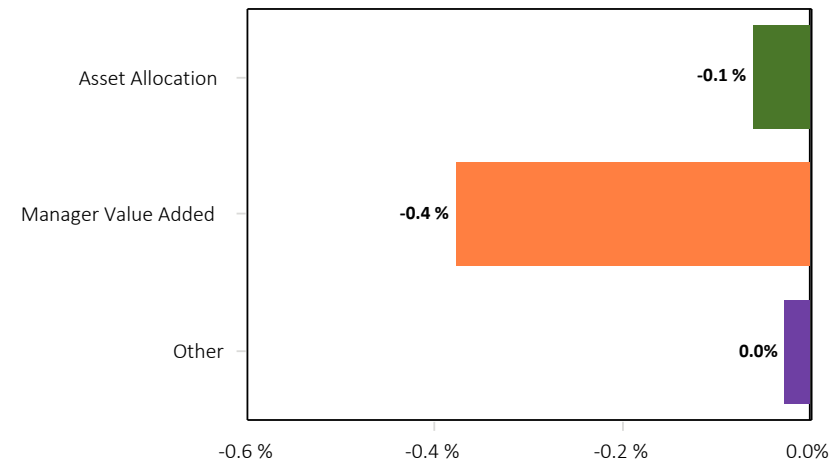
SPRS Insurance Plan

Periods Ended 1 Quarter Ending September 30, 2023

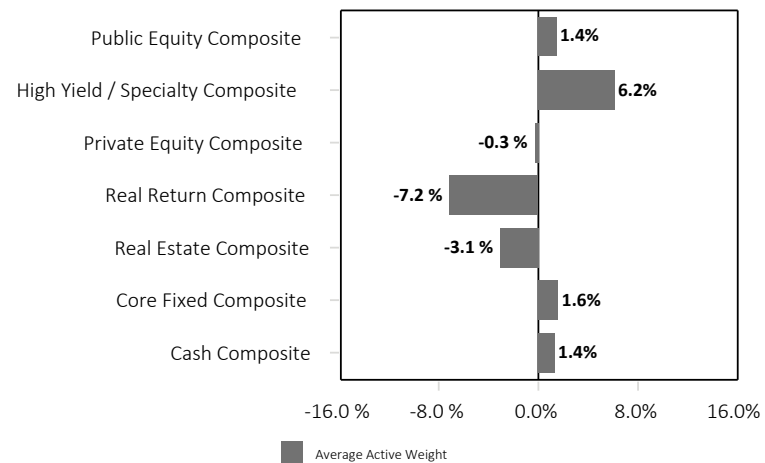
Total Fund Performance



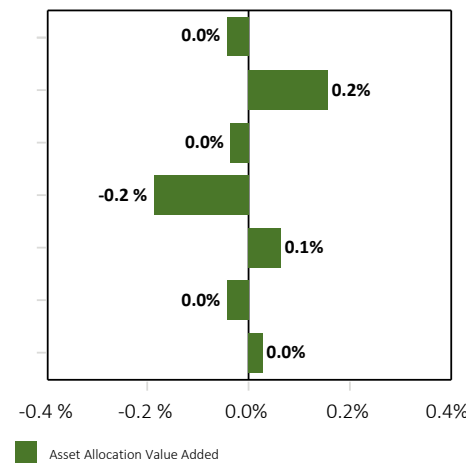
Total Value Added:-0.5 %



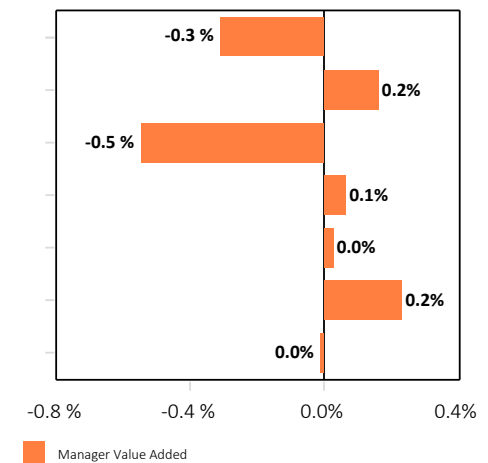
Total Asset Allocation:-0.1 %



Asset Allocation Value Added:-0.1 %



Total Manager Value Added:-0.4 %

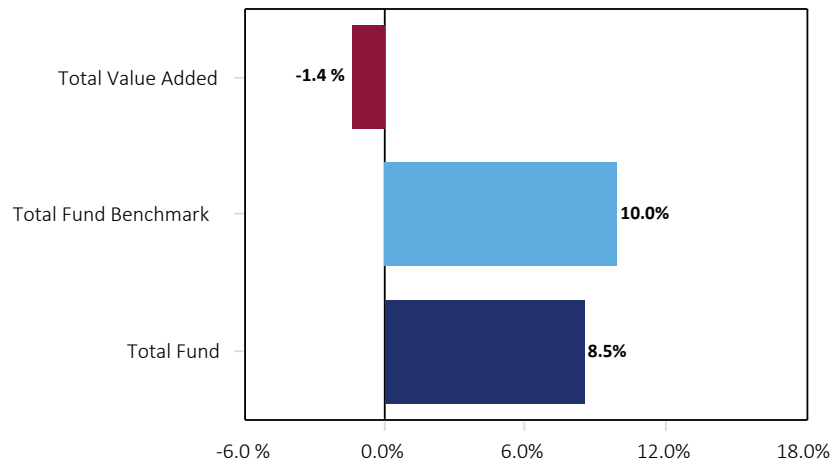


Total Fund Attribution

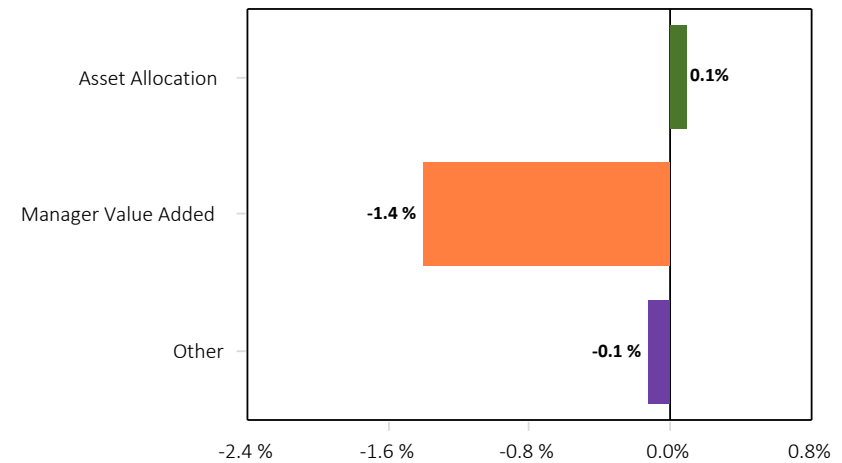
KERS Pension Plan

Periods Ended 1 Year Ending September 30, 2023

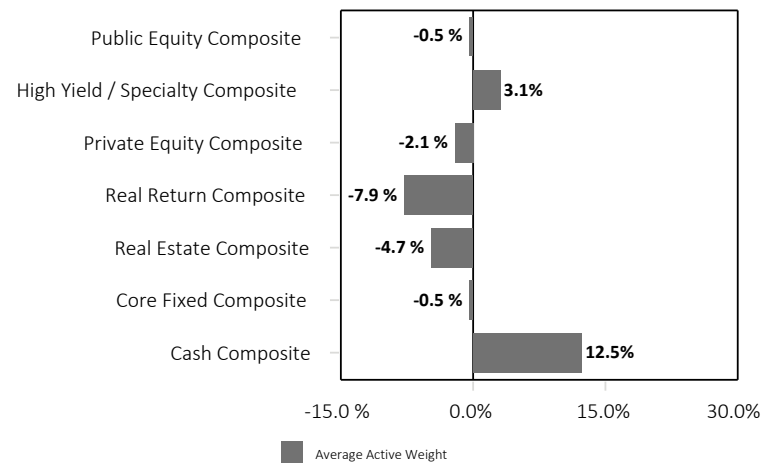
Total Fund Performance



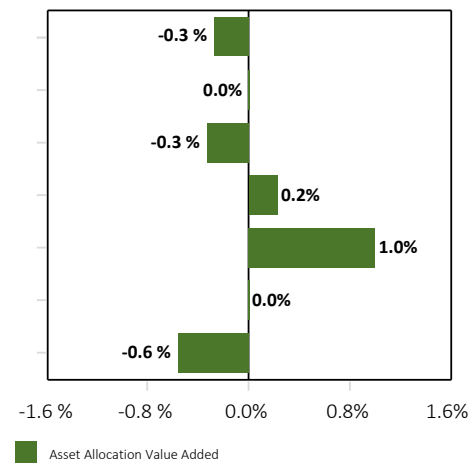
Total Value Added:-1.4 %



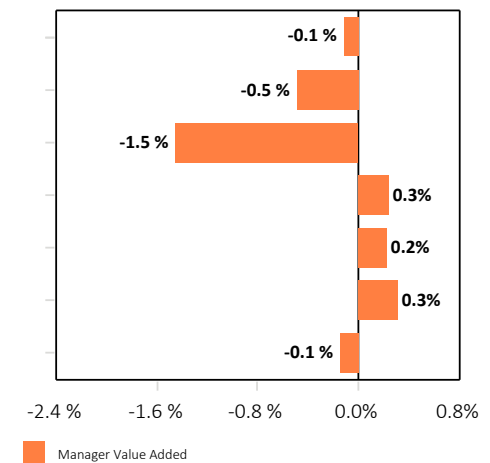
Total Asset Allocation:0.1%



Asset Allocation Value Added:0.1%



Total Manager Value Added:-1.4 %

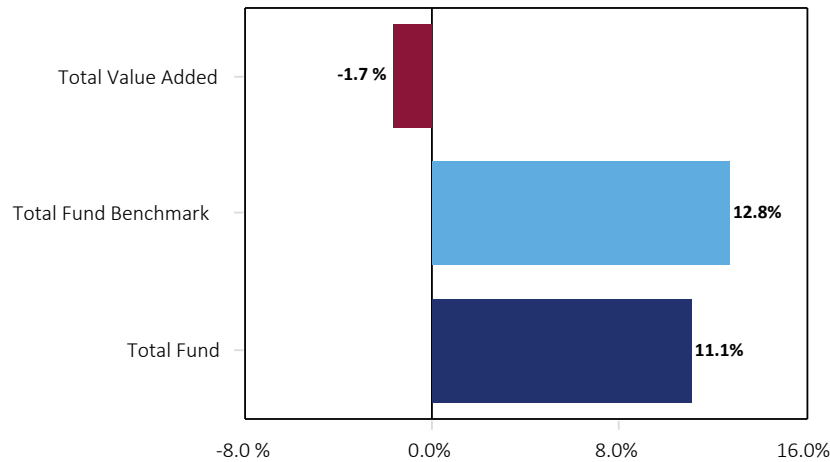


Total Fund Attribution

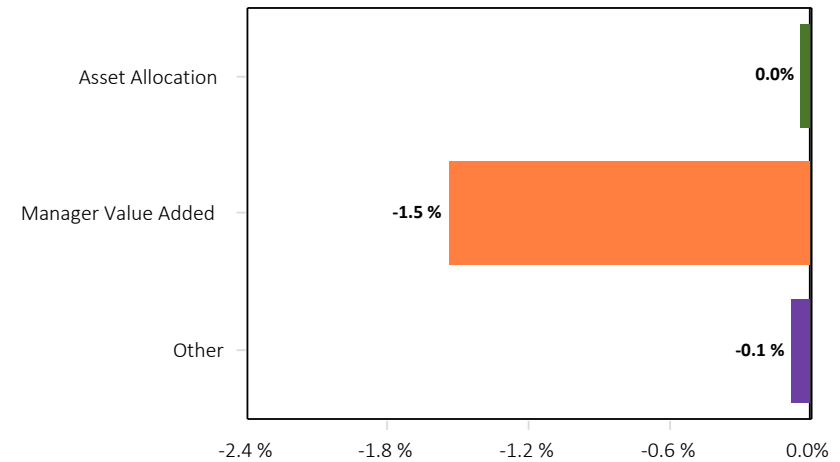
KERS (H) Pension Plan

Periods Ended 1 Year Ending September 30, 2023

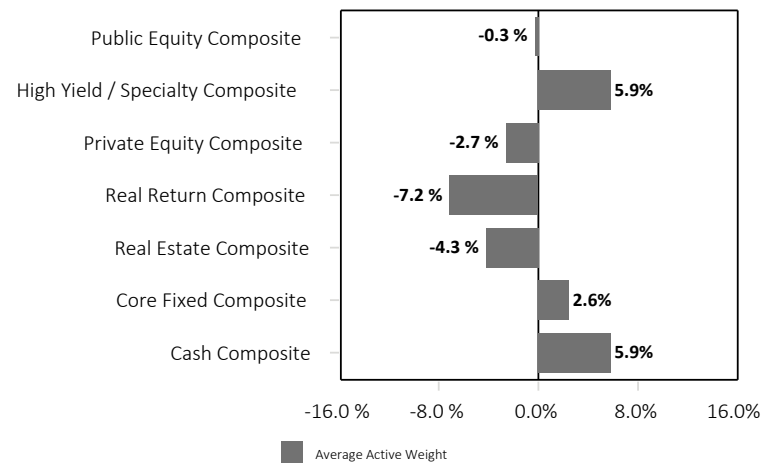
Total Fund Performance



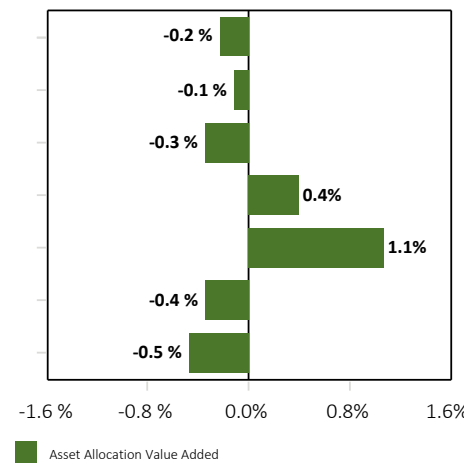
Total Value Added:-1.7 %



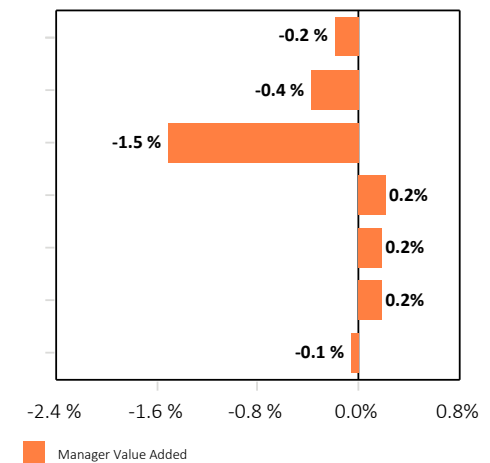
Total Asset Allocation:0.0%



Asset Allocation Value Added:0.0%



Total Manager Value Added:-1.5 %

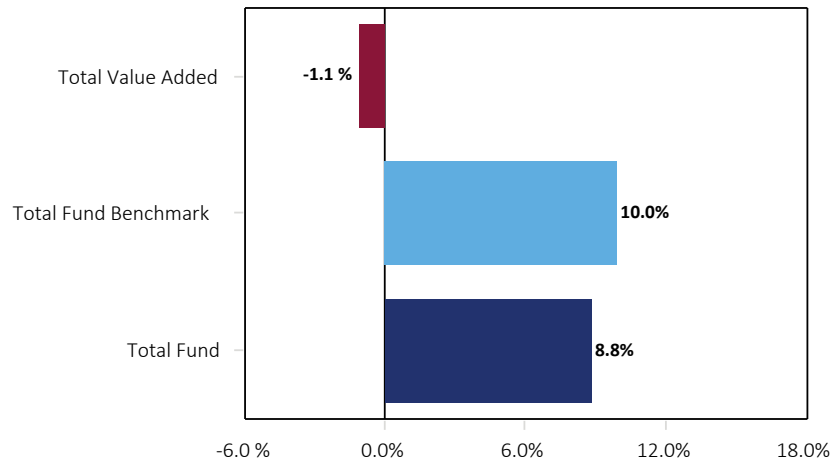


Total Fund Attribution

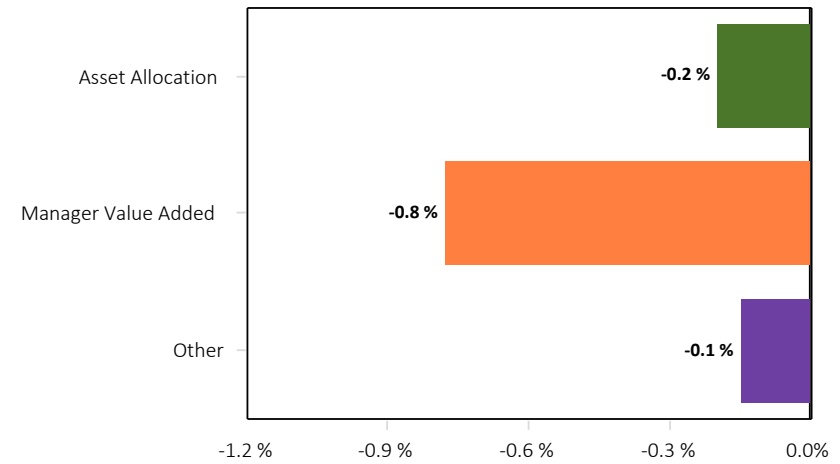
SPRS Pension Plan

Periods Ended 1 Year Ending September 30, 2023

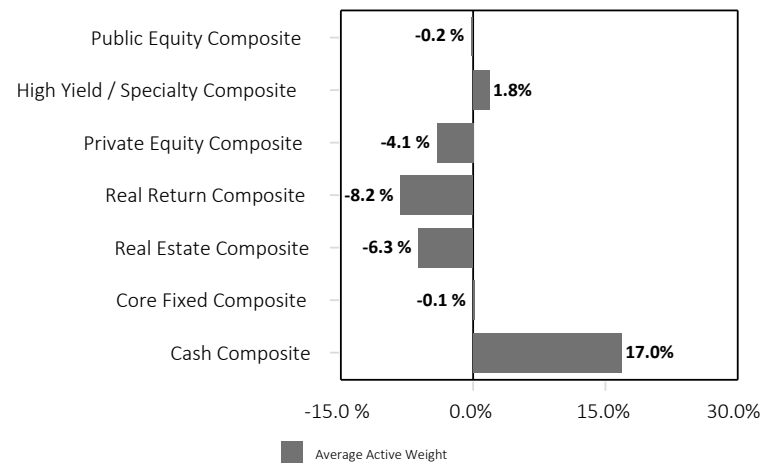
Total Fund Performance



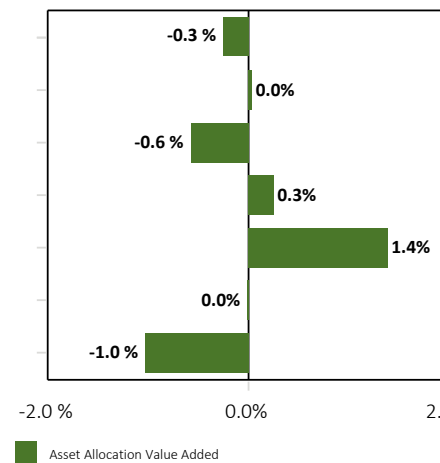
Total Value Added:-1.1 %



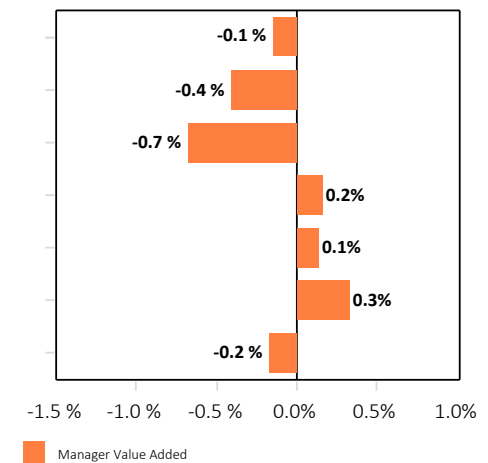
Total Asset Allocation:-0.2 %



Asset Allocation Value Added:-0.2 %



Total Manager Value Added:-0.8 %

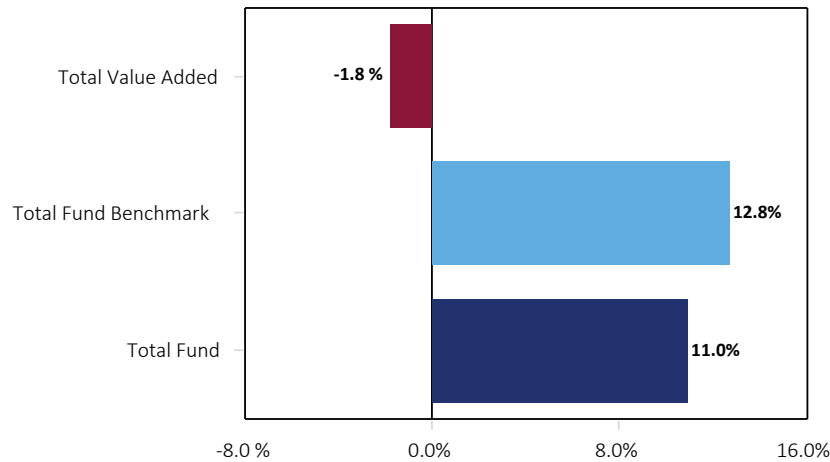


Total Fund Attribution

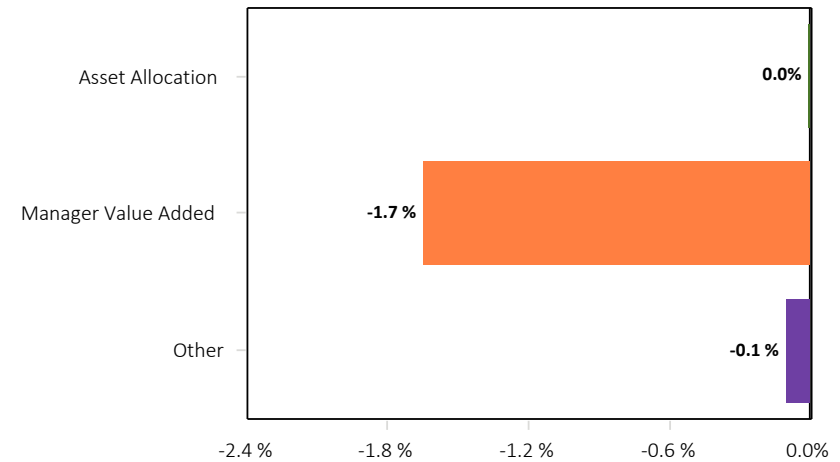
KERS Insurance Plan

Periods Ended 1 Year Ending September 30, 2023

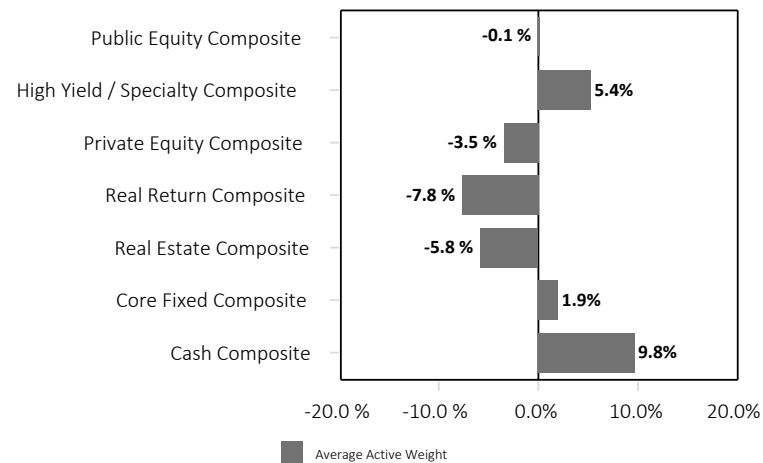
Total Fund Performance



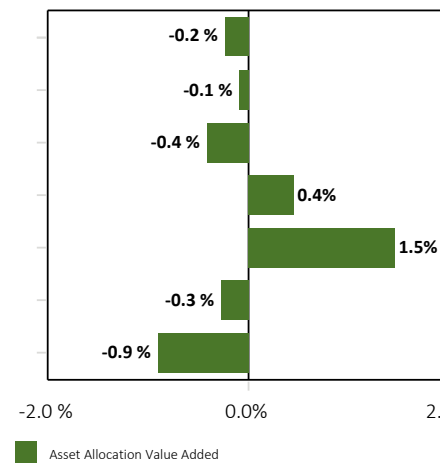
Total Value Added:-1.8 %



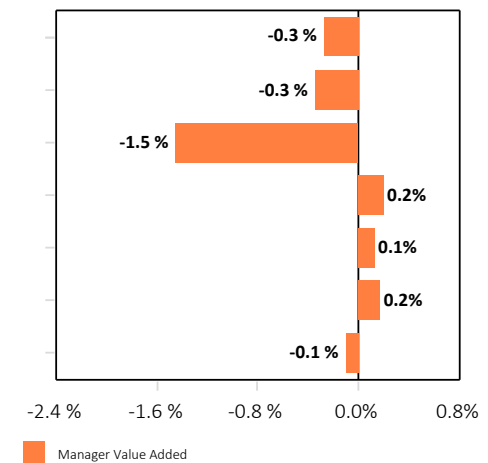
Total Asset Allocation:0.0%



Asset Allocation Value Added:0.0%



Total Manager Value Added:-1.7 %

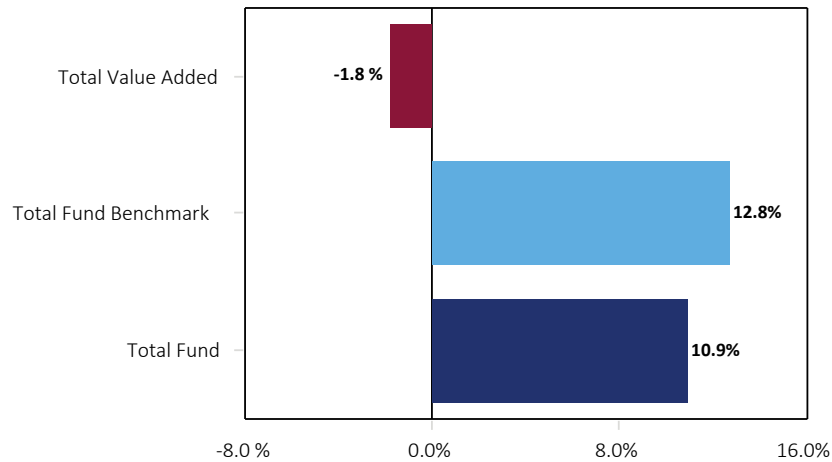


Total Fund Attribution

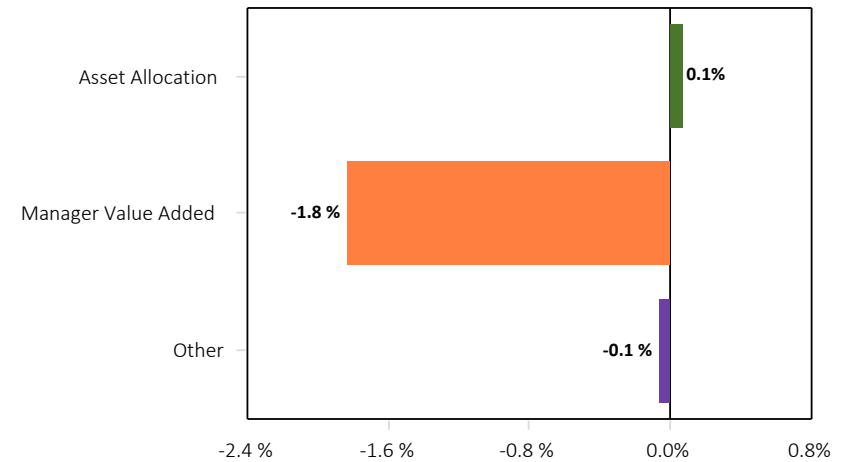
KERS (H) Insurance Plan

Periods Ended 1 Year Ending September 30, 2023

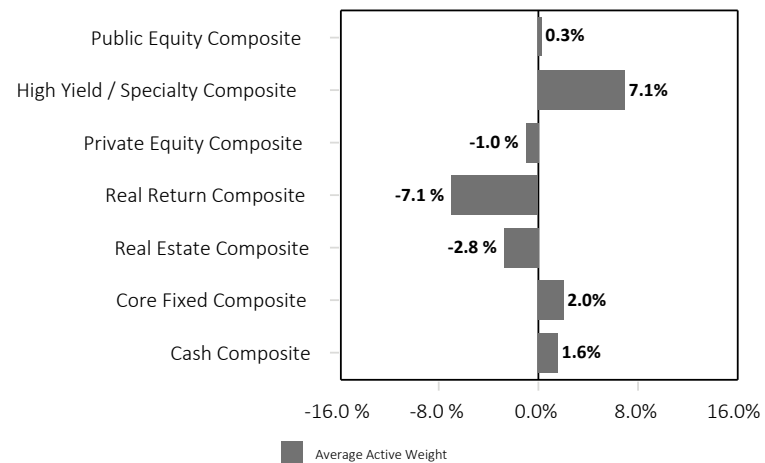
Total Fund Performance



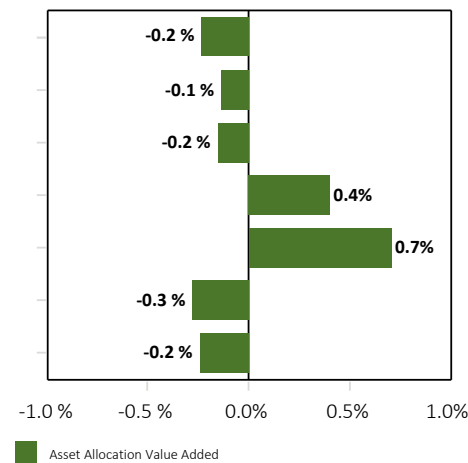
Total Value Added:-1.8 %



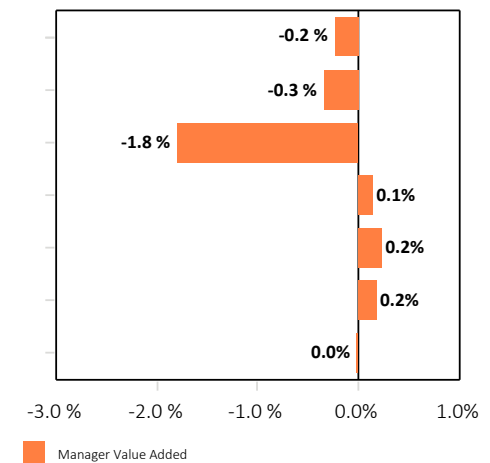
Total Asset Allocation:0.1%



Asset Allocation Value Added:0.1%



Total Manager Value Added:-1.8 %

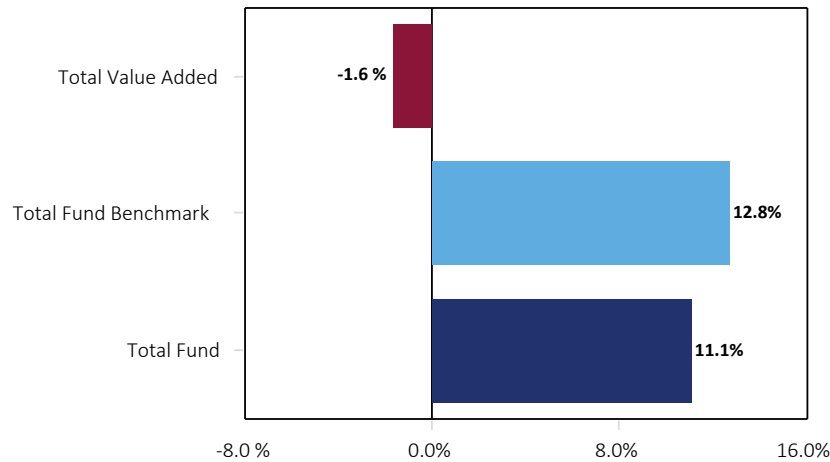


Total Fund Attribution

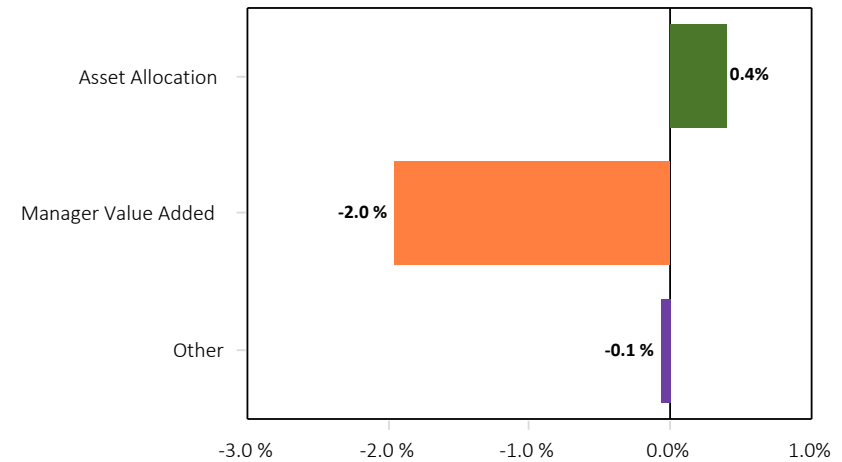
SPRS Insurance Plan

Periods Ended 1 Year Ending September 30, 2023

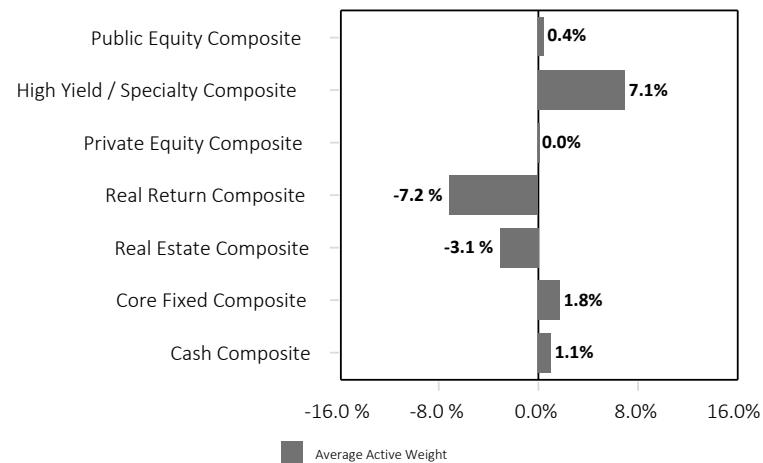
Total Fund Performance



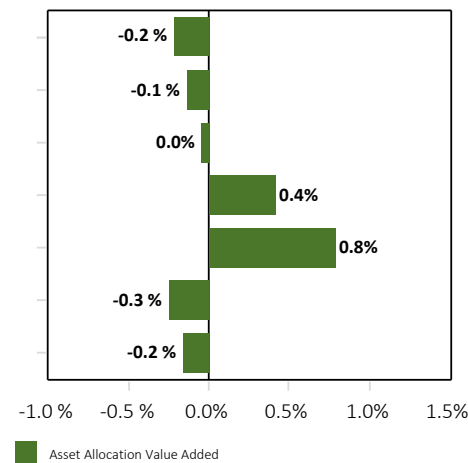
Total Value Added:-1.6 %



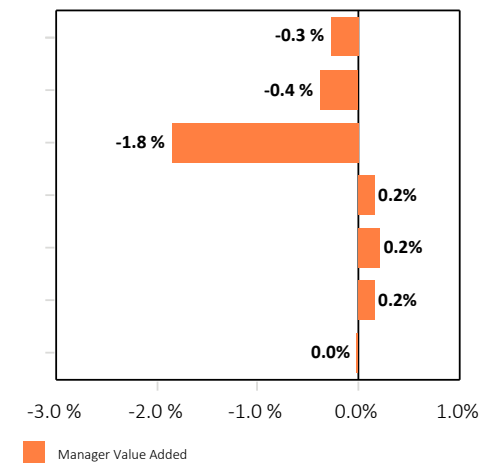
Total Asset Allocation:0.4%



Asset Allocation Value Added:0.4%



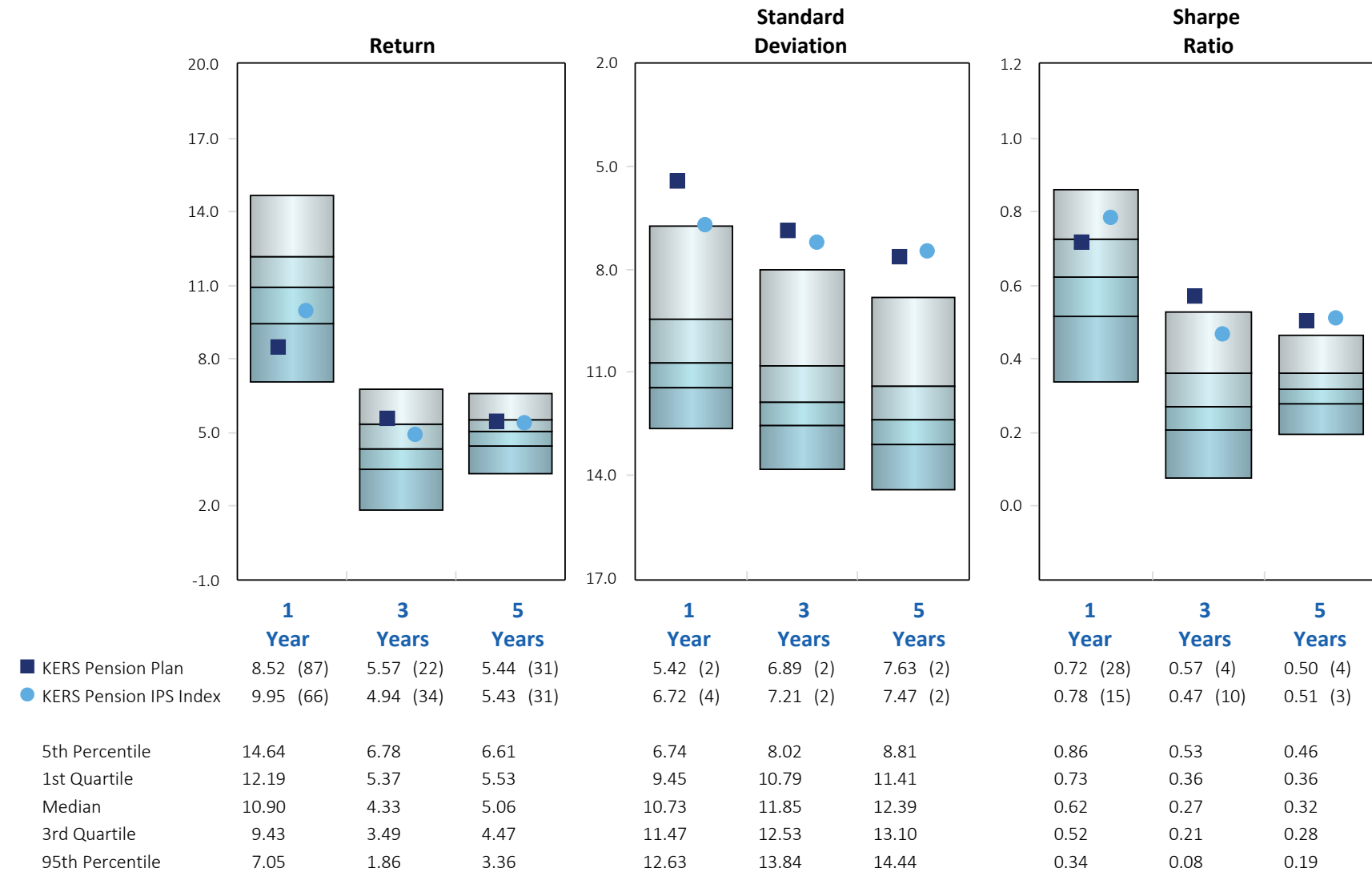
Total Manager Value Added:-2.0 %



Plan Sponsor Peer Group Analysis - Multi Statistics

KERS Pension Plan vs All Public Plans-Total Fund

Periods Ended September 30, 2023

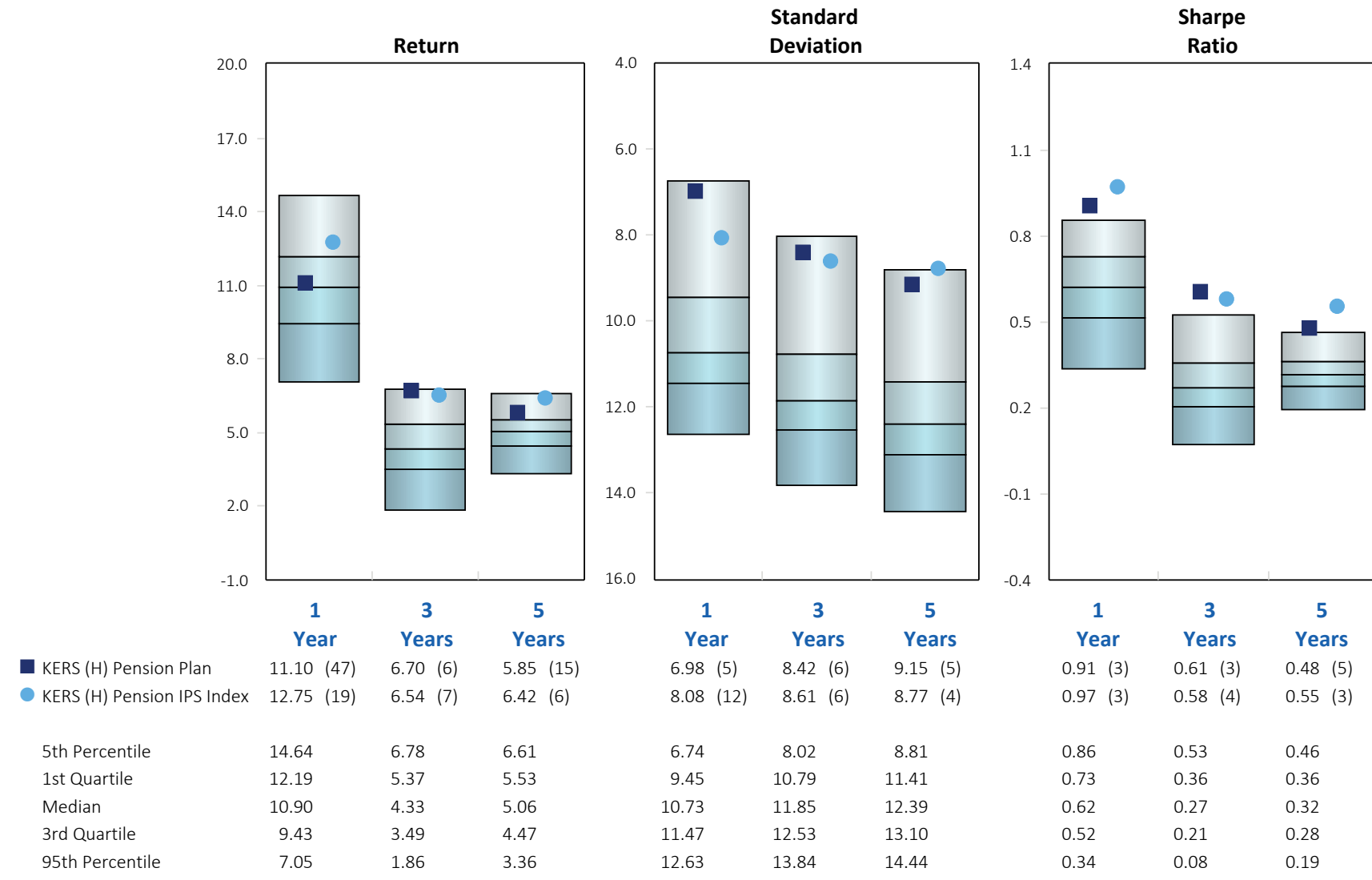


Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

Plan Sponsor Peer Group Analysis - Multi Statistics

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

Periods Ended September 30, 2023

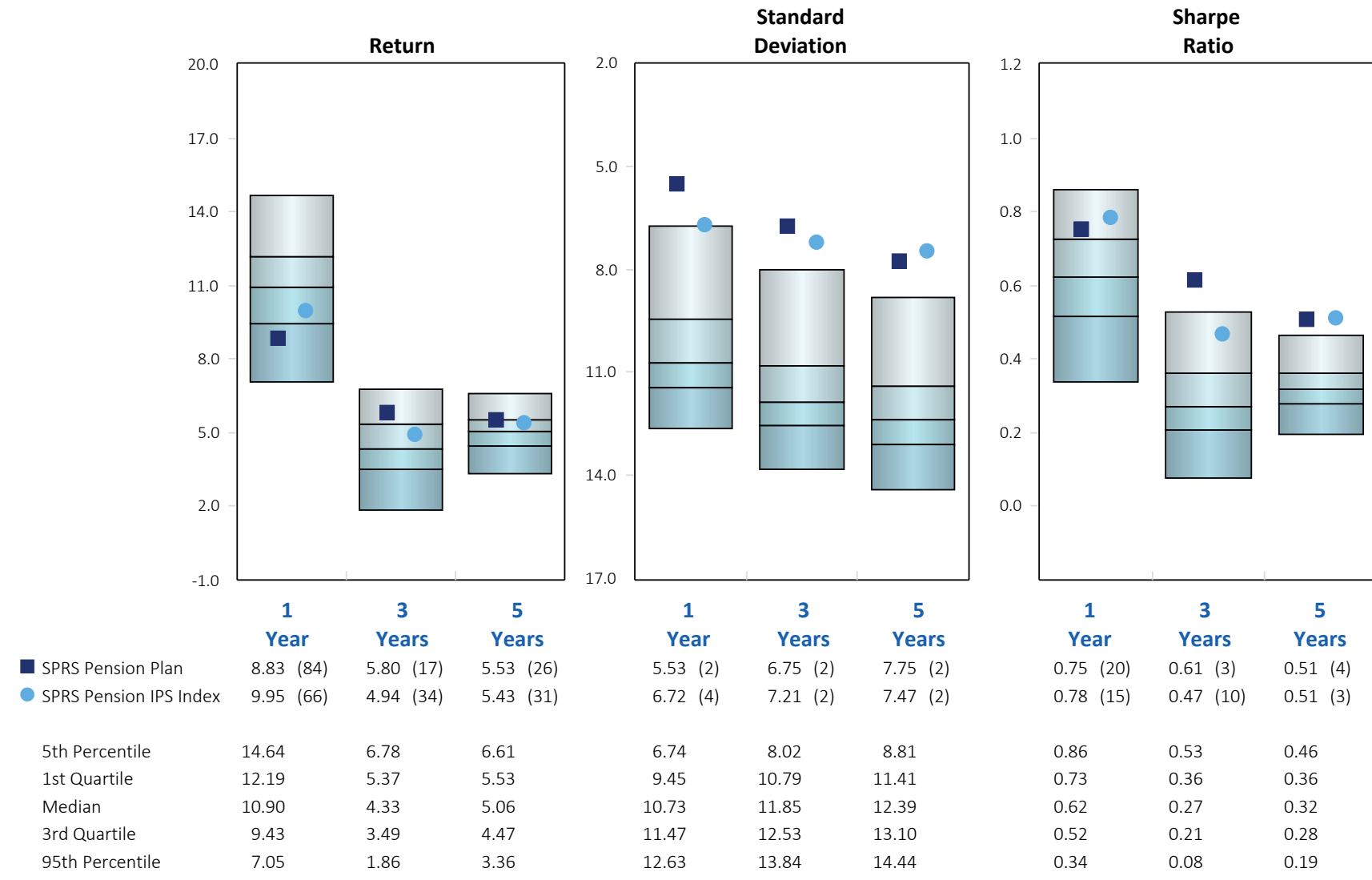


Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

Plan Sponsor Peer Group Analysis - Multi Statistics

SPRS Pension Plan vs All Public Plans-Total Fund

Periods Ended September 30, 2023

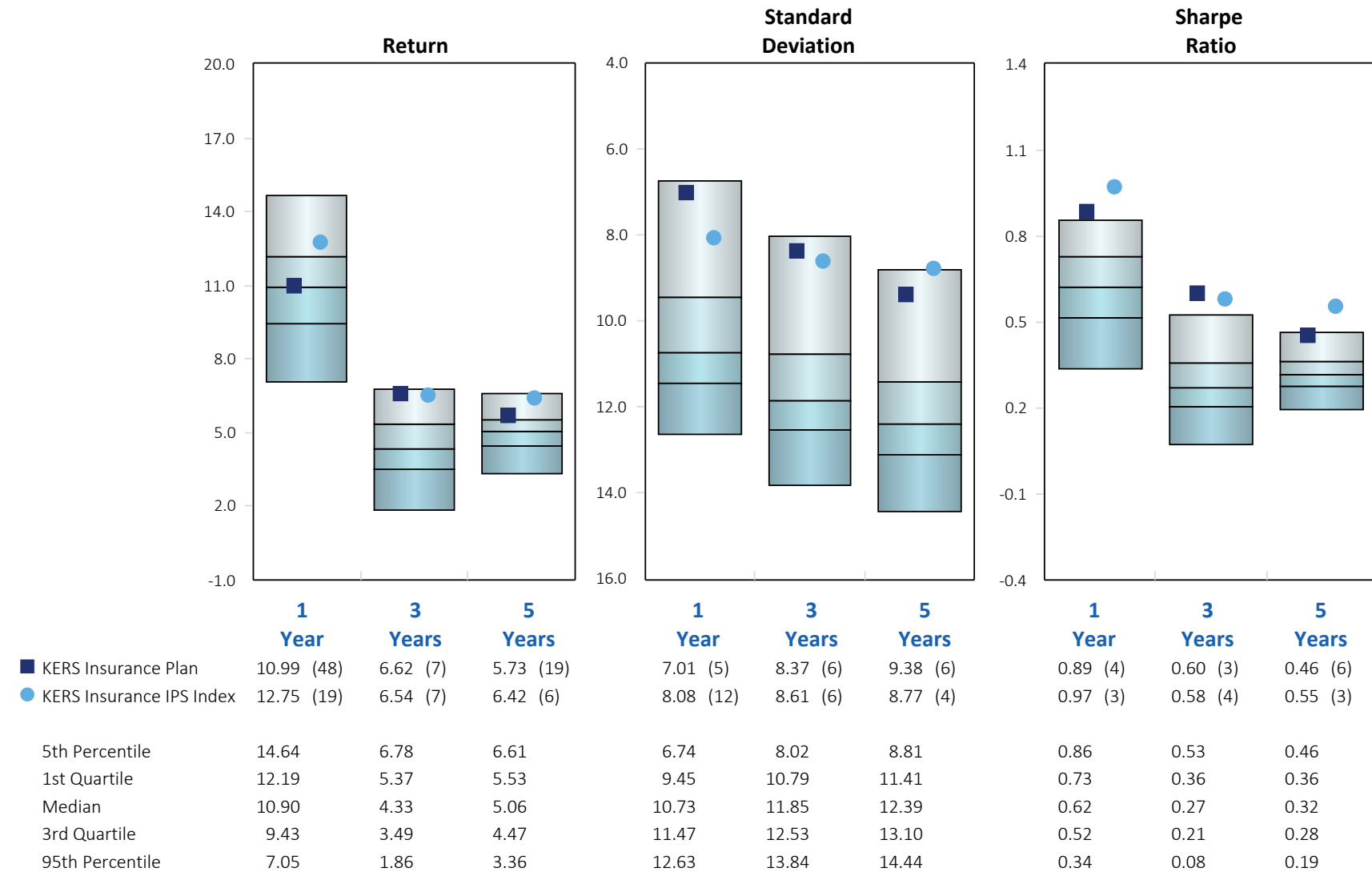


Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

Plan Sponsor Peer Group Analysis - Multi Statistics

KERS Insurance Plan vs All Public Plans-Total Fund

Periods Ended September 30, 2023

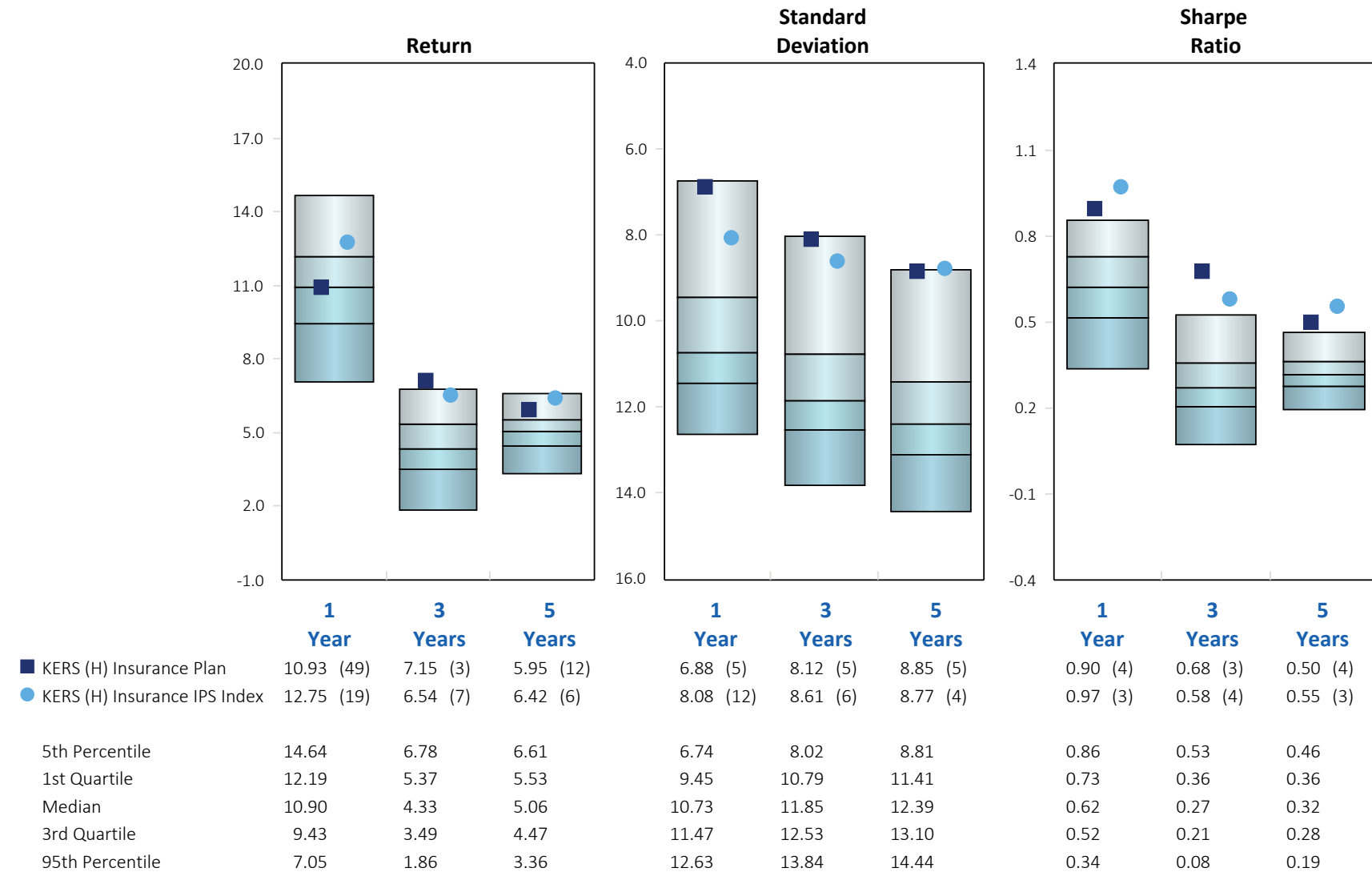


Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

Plan Sponsor Peer Group Analysis - Multi Statistics

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

Periods Ended September 30, 2023

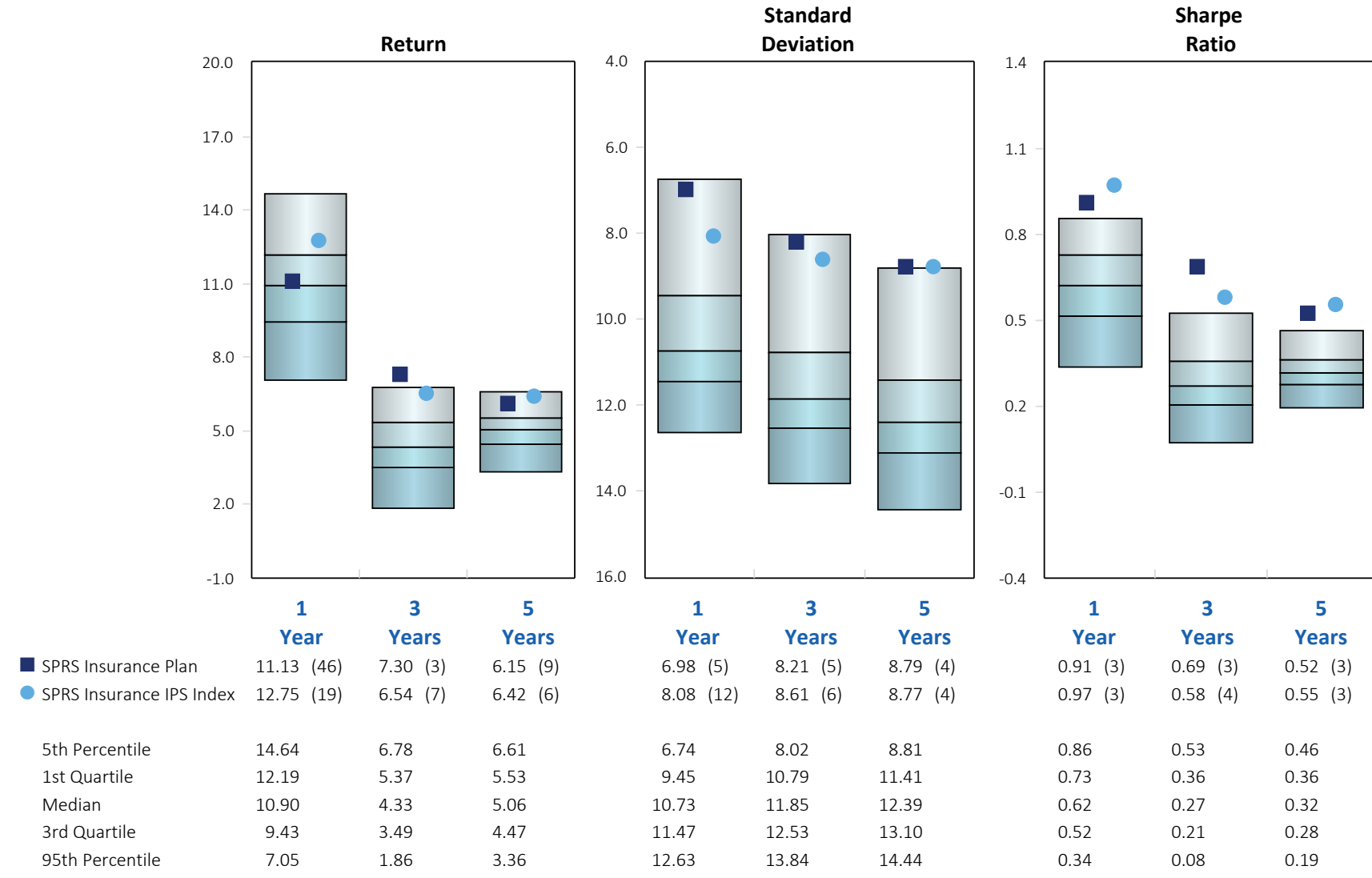


Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

Plan Sponsor Peer Group Analysis - Multi Statistics

SPRS Insurance Plan vs All Public Plans-Total Fund

Periods Ended September 30, 2023

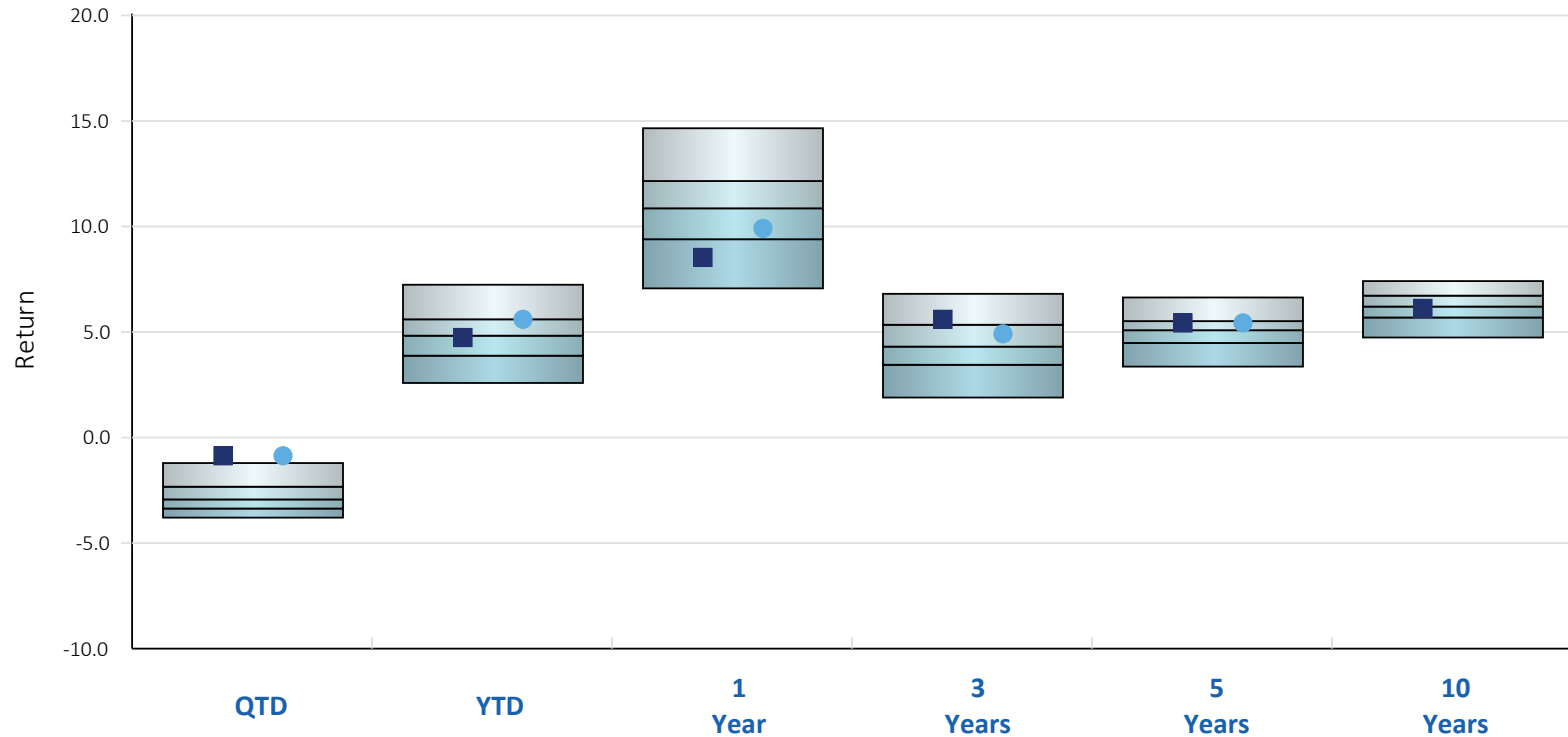


Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

Plan Sponsor Peer Group Analysis

KERS Pension Plan vs All Public Plans-Total Fund

Periods Ended September 30, 2023



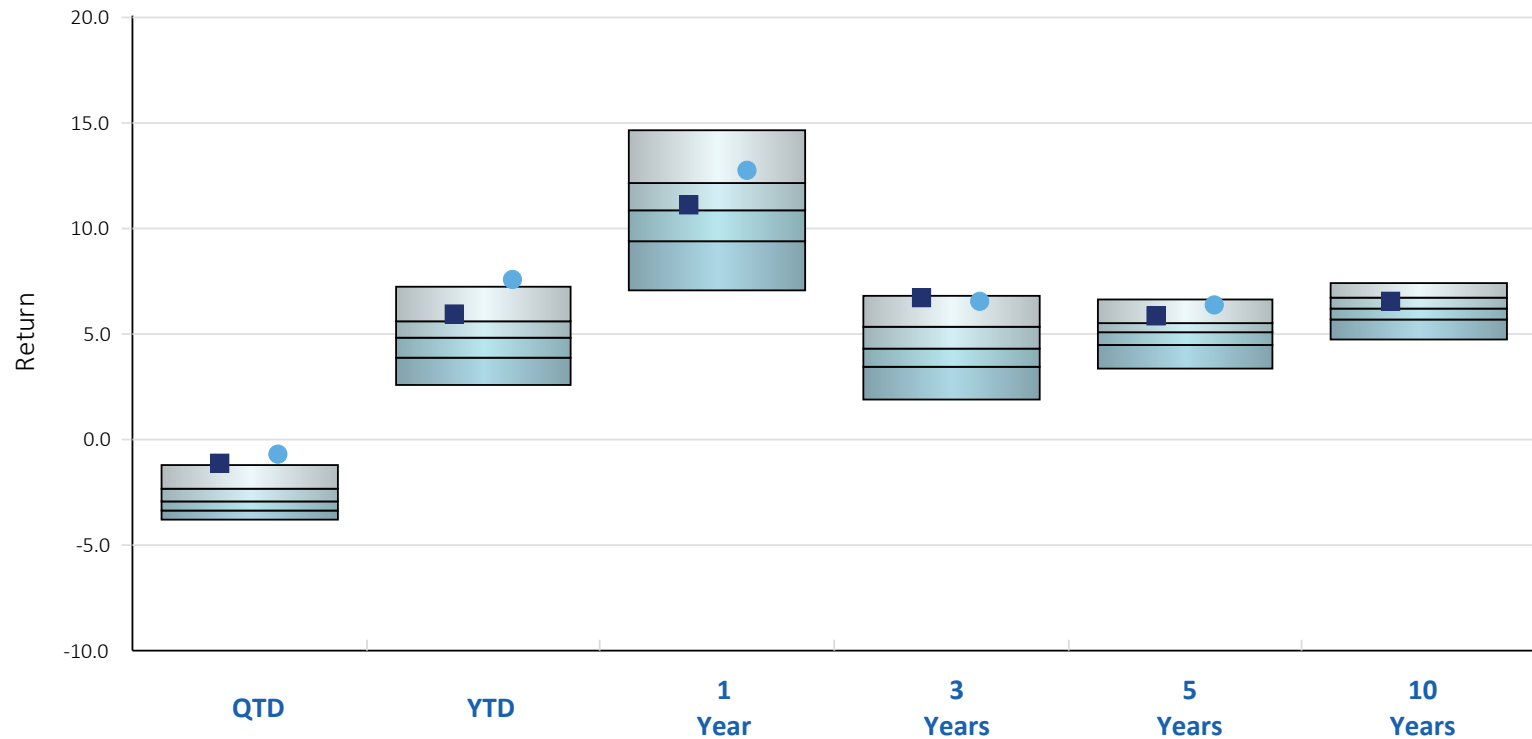
	QTD	YTD	1 Year	3 Years	5 Years	10 Years
■ KERS Pension Plan	-0.90 (5)	4.75 (52)	8.52 (87)	5.57 (22)	5.44 (31)	6.13 (57)
● KERS Pension IPS Index	-0.85 (5)	5.62 (25)	9.95 (66)	4.94 (34)	5.43 (31)	
5th Percentile	-1.20	7.23	14.64	6.78	6.61	7.44
1st Quartile	-2.31	5.60	12.19	5.37	5.53	6.75
Median	-2.93	4.82	10.90	4.33	5.06	6.22
3rd Quartile	-3.36	3.90	9.43	3.49	4.47	5.70
95th Percentile	-3.83	2.56	7.05	1.86	3.36	4.77
Population	541	524	517	497	478	395

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 September 30, 2023



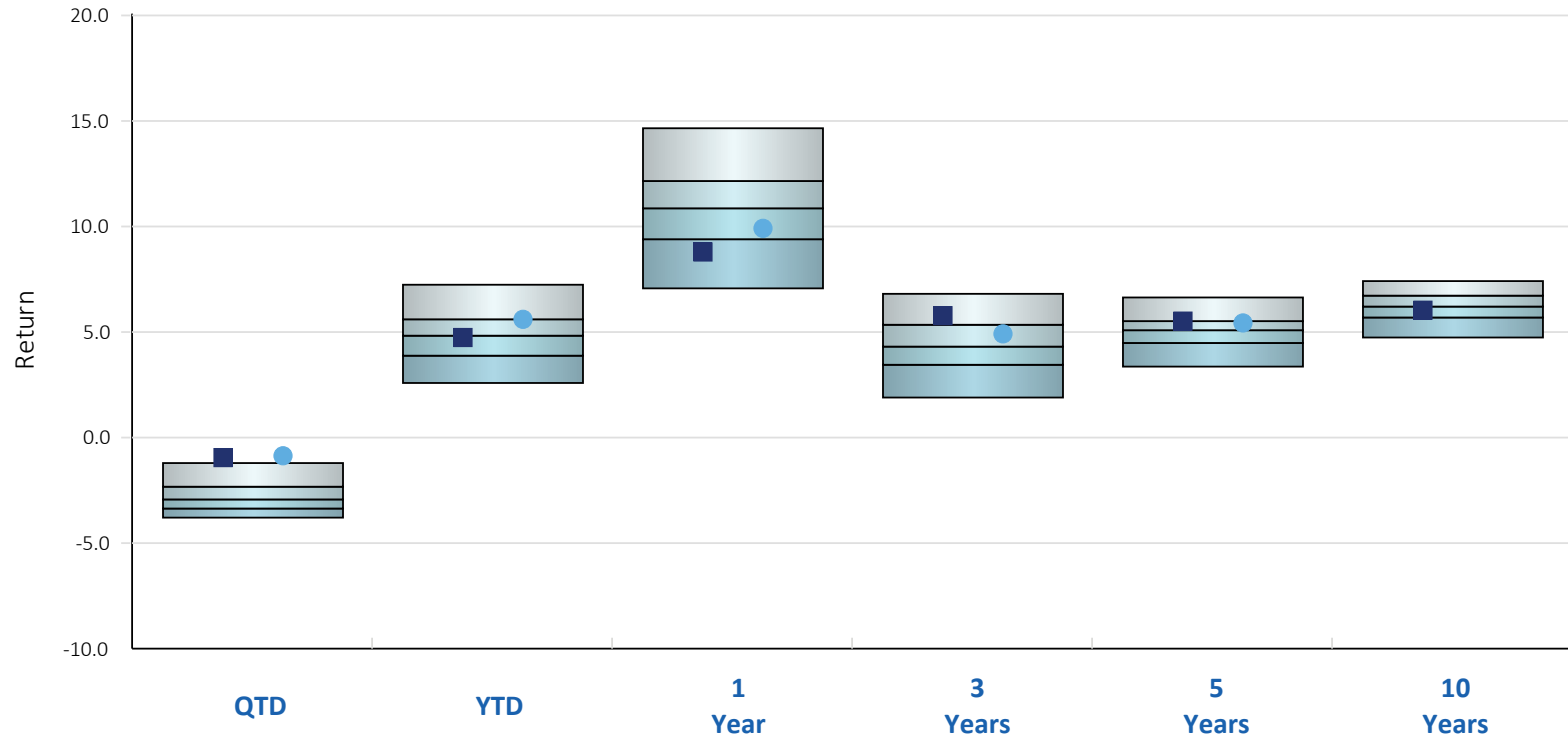
	QTD	YTD	1 Year	3 Years	5 Years	10 Years
■ KERS (H) Pension Plan	-1.14 (5)	5.94 (19)	11.10 (47)	6.70 (6)	5.85 (15)	6.56 (34)
● KERS (H) Pension IPS Index	-0.66 (4)	7.55 (5)	12.75 (19)	6.54 (7)	6.42 (6)	
5th Percentile	-1.20	7.23	14.64	6.78	6.61	7.44
1st Quartile	-2.31	5.60	12.19	5.37	5.53	6.75
Median	-2.93	4.82	10.90	4.33	5.06	6.22
3rd Quartile	-3.36	3.90	9.43	3.49	4.47	5.70
95th Percentile	-3.83	2.56	7.05	1.86	3.36	4.77
Population	541	524	517	497	478	395

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 September 30, 2023



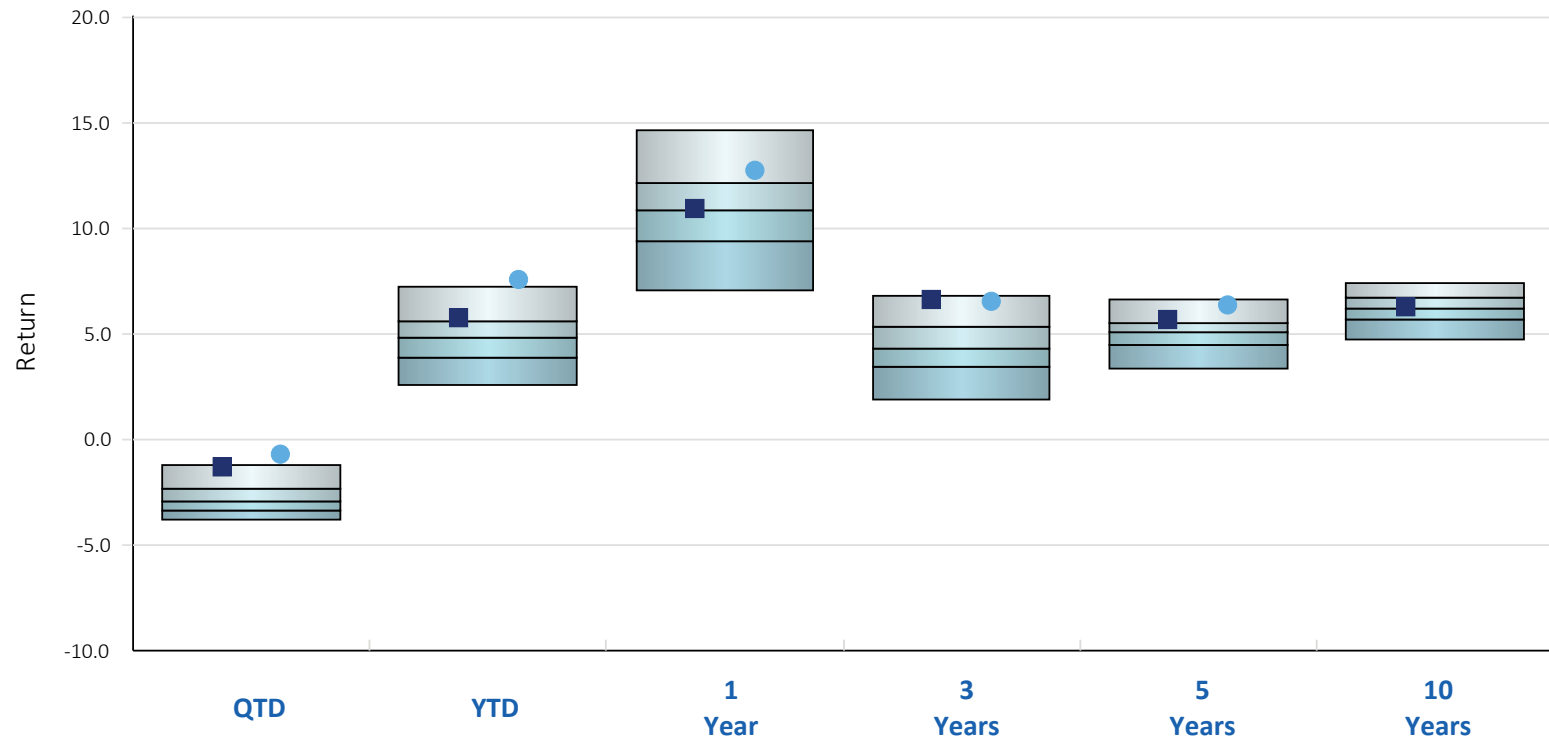
	QTD	YTD	1 Year	3 Years	5 Years	10 Years
■ SPRS Pension Plan	-0.93 (5)	4.77 (52)	8.83 (84)	5.80 (17)	5.53 (26)	6.05 (60)
● SPRS Pension IPS Index	-0.85 (5)	5.62 (25)	9.95 (66)	4.94 (34)	5.43 (31)	
5th Percentile	-1.20	7.23	14.64	6.78	6.61	7.44
1st Quartile	-2.31	5.60	12.19	5.37	5.53	6.75
Median	-2.93	4.82	10.90	4.33	5.06	6.22
3rd Quartile	-3.36	3.90	9.43	3.49	4.47	5.70
95th Percentile	-3.83	2.56	7.05	1.86	3.36	4.77
Population	541	524	517	497	478	395

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 September 30, 2023



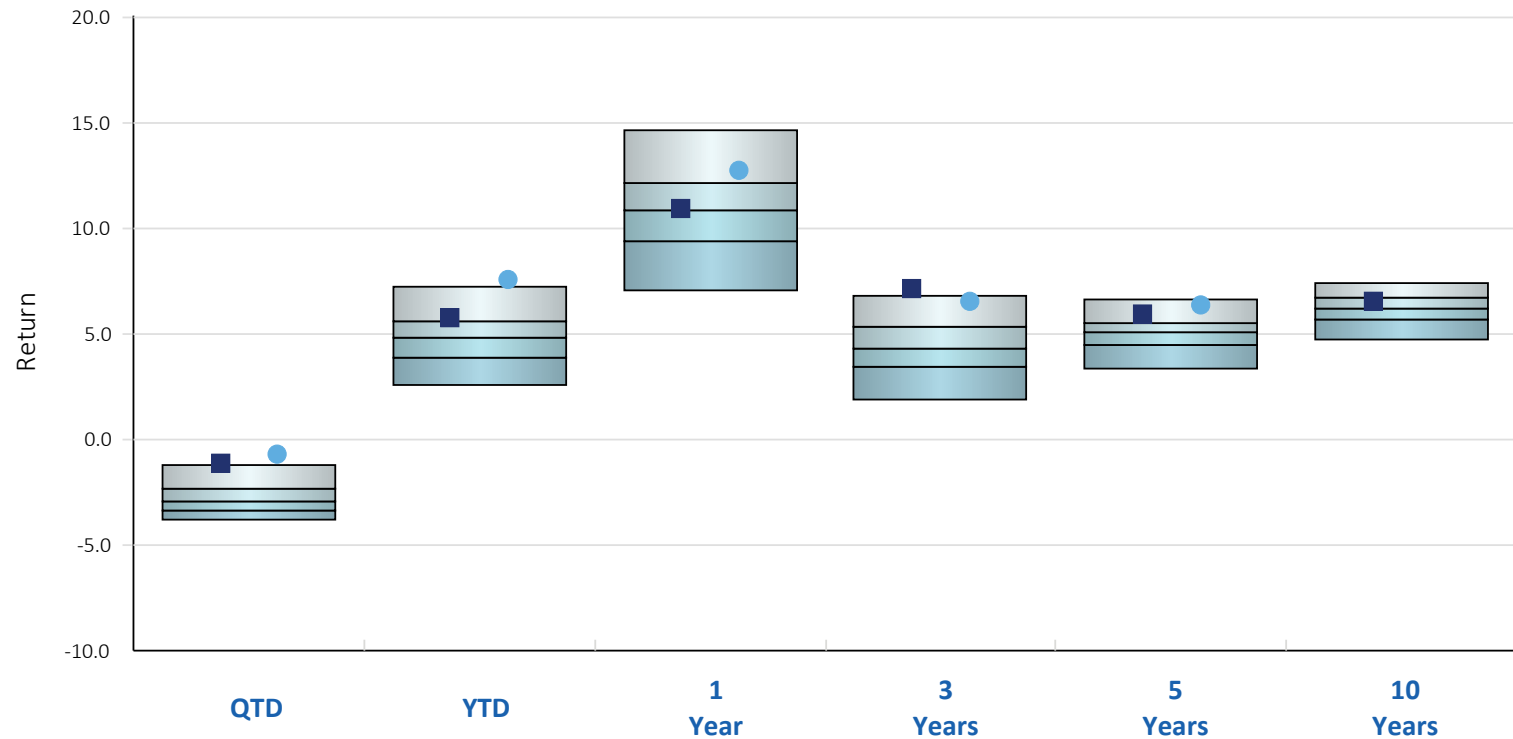
	QTD	YTD	1 Year	3 Years	5 Years	10 Years
■ KERS Insurance Plan	-1.31 (7)	5.79 (22)	10.99 (48)	6.62 (7)	5.73 (19)	6.27 (48)
● KERS Insurance IPS Index	-0.66 (4)	7.55 (5)	12.75 (19)	6.54 (7)	6.42 (6)	
5th Percentile	-1.20	7.23	14.64	6.78	6.61	7.44
1st Quartile	-2.31	5.60	12.19	5.37	5.53	6.75
Median	-2.93	4.82	10.90	4.33	5.06	6.22
3rd Quartile	-3.36	3.90	9.43	3.49	4.47	5.70
95th Percentile	-3.83	2.56	7.05	1.86	3.36	4.77
Population	541	524	517	497	478	395

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 September 30, 2023



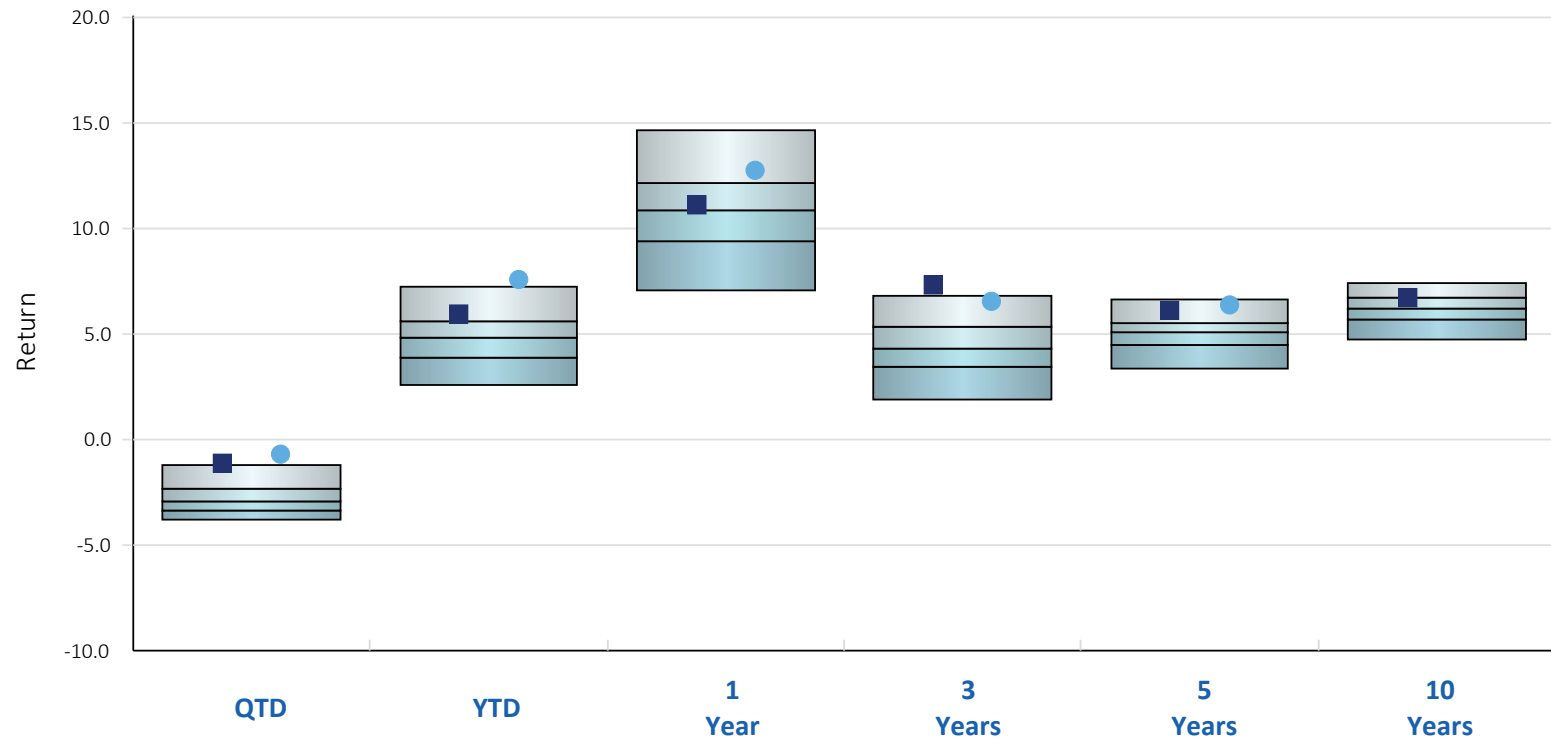
	QTD	YTD	1 Year	3 Years	5 Years	10 Years
■ KERS (H) Insurance Plan	-1.09 (5)	5.80 (22)	10.93 (49)	7.15 (3)	5.95 (12)	6.59 (33)
● KERS (H) Insurance IPS Index	-0.66 (4)	7.55 (5)	12.75 (19)	6.54 (7)	6.42 (6)	
5th Percentile	-1.20	7.23	14.64	6.78	6.61	7.44
1st Quartile	-2.31	5.60	12.19	5.37	5.53	6.75
Median	-2.93	4.82	10.90	4.33	5.06	6.22
3rd Quartile	-3.36	3.90	9.43	3.49	4.47	5.70
95th Percentile	-3.83	2.56	7.05	1.86	3.36	4.77
Population	541	524	517	497	478	395

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 September 30, 2023



■ SPRS Insurance Plan	-1.13 (5)	5.94 (19)	11.13 (46)	7.30 (3)	6.15 (9)	6.77 (25)
● SPRS Insurance IPS Index	-0.66 (4)	7.55 (5)	12.75 (19)	6.54 (7)	6.42 (6)	
5th Percentile	-1.20	7.23	14.64	6.78	6.61	7.44
1st Quartile	-2.31	5.60	12.19	5.37	5.53	6.75
Median	-2.93	4.82	10.90	4.33	5.06	6.22
3rd Quartile	-3.36	3.90	9.43	3.49	4.47	5.70
95th Percentile	-3.83	2.56	7.05	1.86	3.36	4.77
Population	541	524	517	497	478	395

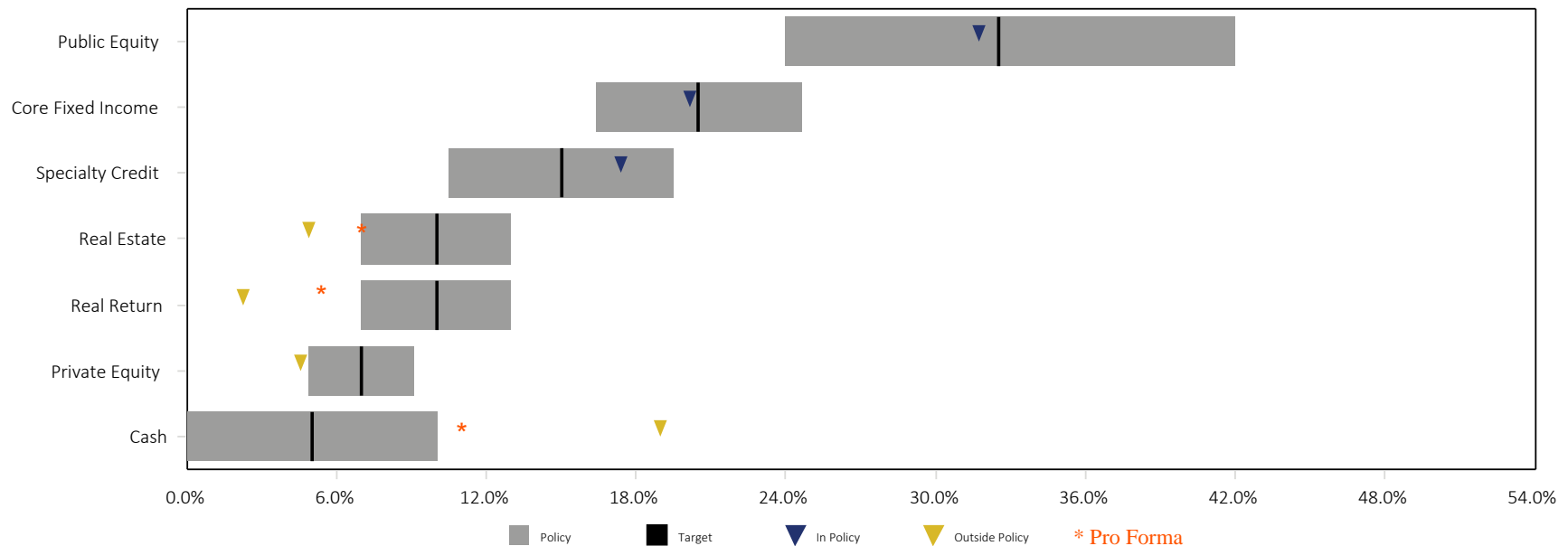
Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

Asset Allocation Compliance

KERS Pension Plan

Periods Ended As of September 30, 2023

Executive Summary



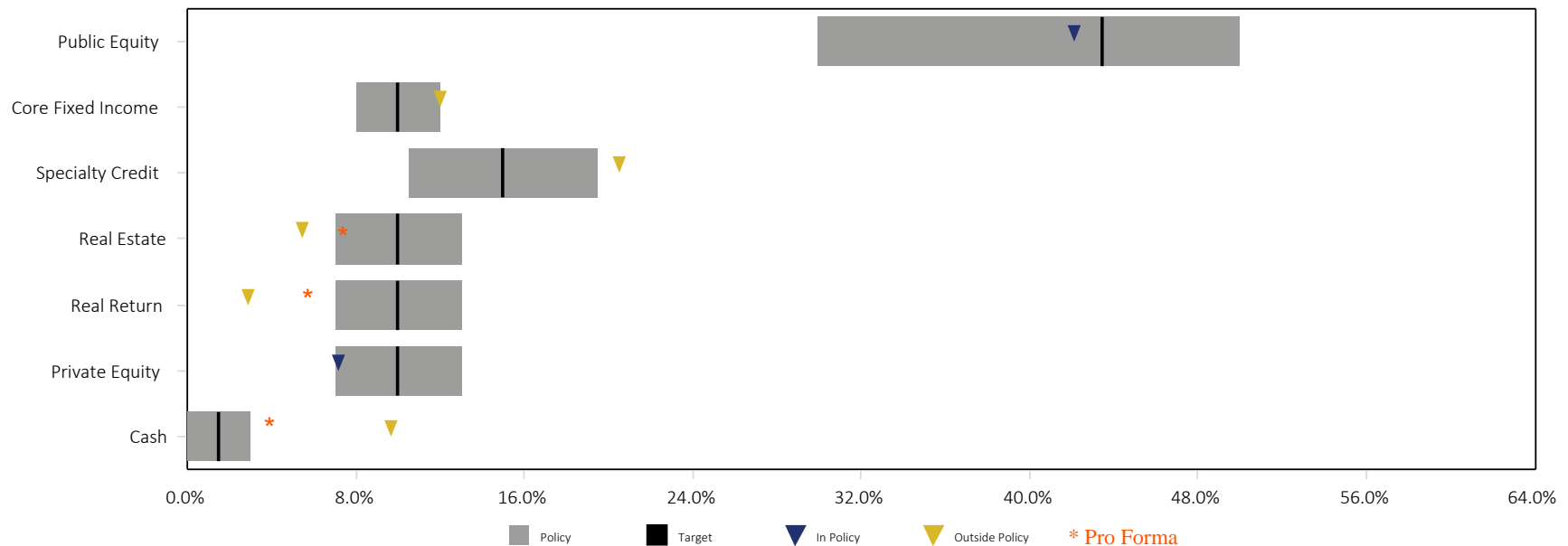
	Asset Allocation \$	Asset Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)	Target Rebalance \$
Public Equity	1,135,505,661	31.76	24.00	42.00	32.50	26,404,101
Core Fixed Income	721,087,945	20.17	16.40	24.60	20.50	11,808,983
Specialty Credit	621,295,226	17.38	10.50	19.50	15.00	-85,029,182
Real Estate	174,756,445	4.89	7.00	13.00	10.00	182,754,252
Real Return	81,112,565	2.27	7.00	13.00	10.00	276,398,131
Private Equity	162,474,767	4.54	4.90	9.10	7.00	87,782,721
Cash	678,874,355	18.99	0.00	10.00	5.00	-500,119,006
Total Fund	3,575,106,963	100.00			100.00	

Asset Allocation Compliance

KERS (H) Pension Plan

Periods Ended As of September 30, 2023

Executive Summary



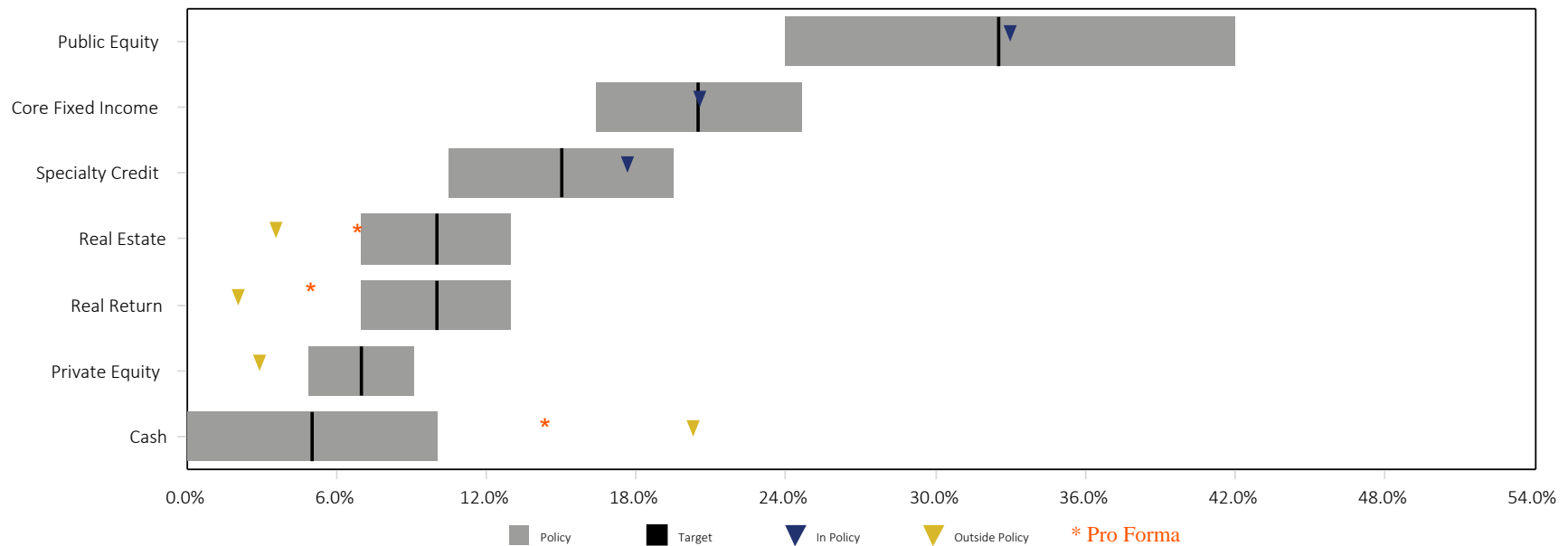
	Asset Allocation \$	Asset Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)	Target Rebalance \$
Public Equity	377,657,164	42.14	30.00	50.00	43.50	12,175,974
Core Fixed Income	107,917,600	12.04	8.00	12.00	10.00	-18,300,787
Specialty Credit	184,119,483	20.55	10.50	19.50	15.00	-49,694,263
Real Estate	49,237,037	5.49	7.00	13.00	10.00	40,379,776
Real Return	26,033,972	2.91	7.00	13.00	10.00	63,582,842
Private Equity	64,322,408	7.18	7.00	13.00	10.00	25,294,406
Cash	86,880,470	9.69	0.00	3.00	1.50	-73,437,948
Total Fund	896,168,133	100.00			100.00	

Asset Allocation Compliance

SPRS Pension Plan

Periods Ended As of September 30, 2023

Executive Summary



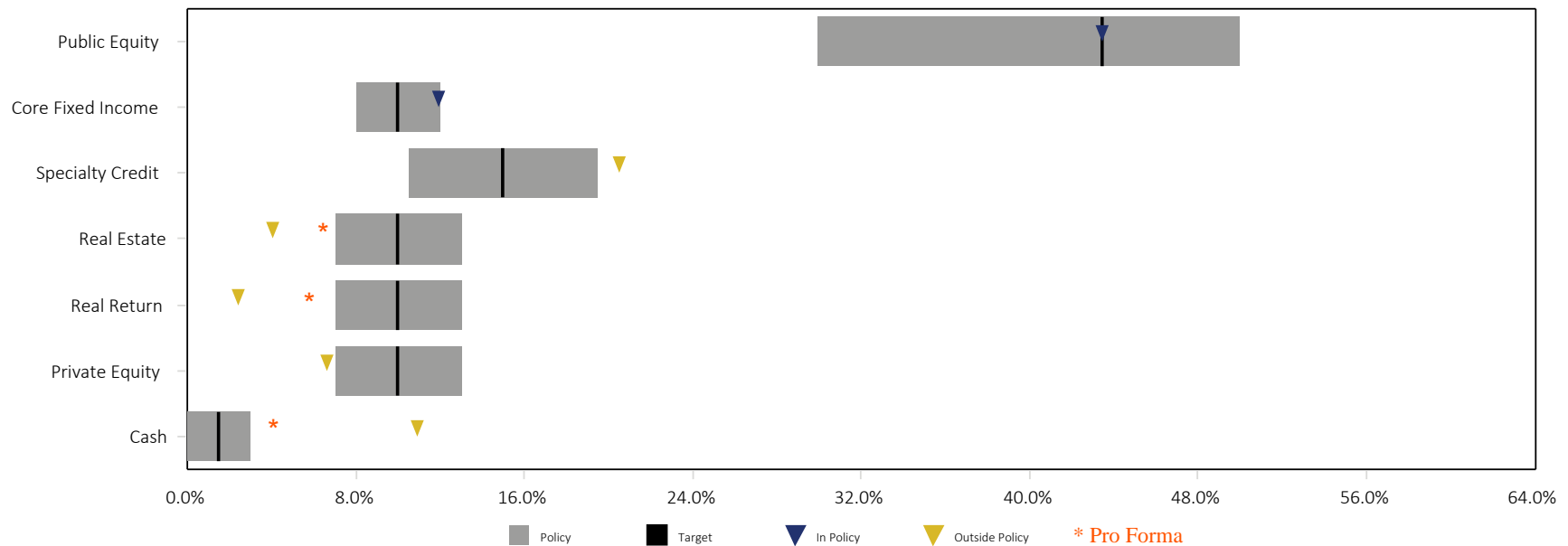
	Asset Allocation \$	Asset Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)	Target Rebalance \$
Public Equity	193,219,960	32.97	24.00	42.00	32.50	-2,763,212
Core Fixed Income	120,543,348	20.57	16.40	24.60	20.50	-409,092
Specialty Credit	103,543,618	17.67	10.50	19.50	15.00	-15,640,504
Real Estate	20,925,025	3.57	7.00	13.00	10.00	37,677,051
Real Return	11,965,644	2.04	7.00	13.00	10.00	46,636,432
Private Equity	16,978,442	2.90	4.90	9.10	7.00	24,043,012
Cash	118,844,725	20.28	0.00	10.00	5.00	-89,543,687
Total Fund	586,020,761	100.00			100.00	

Asset Allocation Compliance

KERS Insurance Plan

Periods Ended As of September 30, 2023

Executive Summary



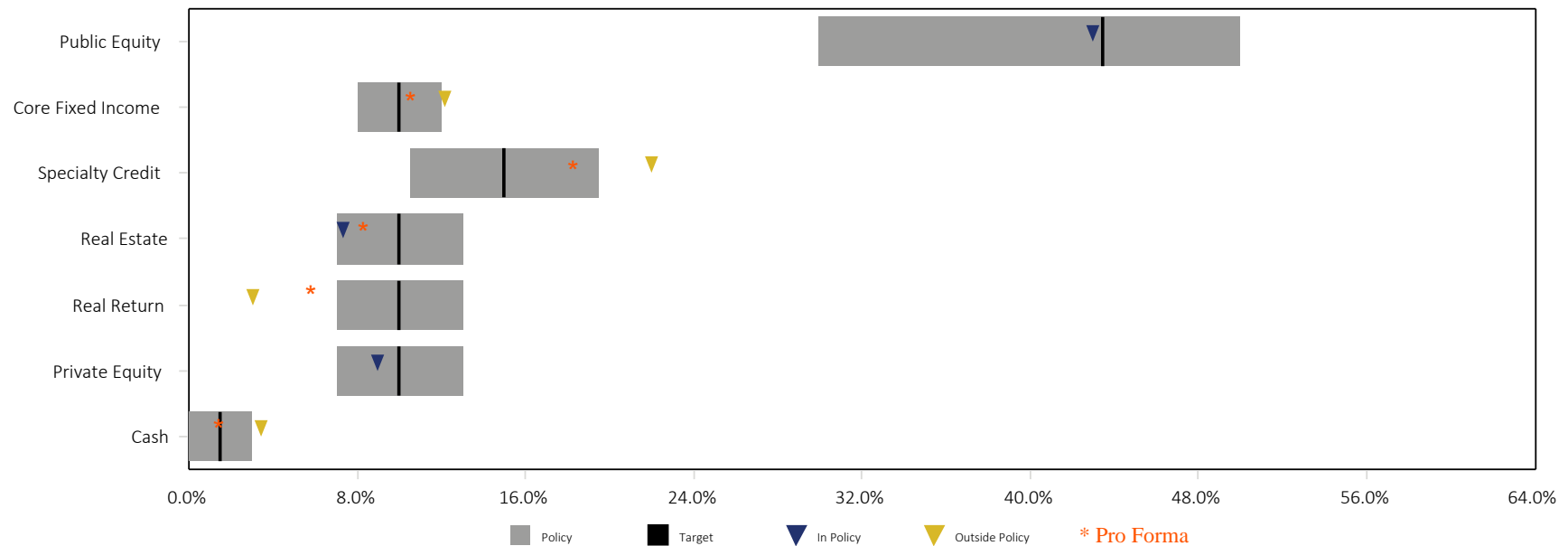
	Asset Allocation \$	Asset Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)	Target Rebalance \$
Public Equity	633,053,607	43.48	30.00	50.00	43.50	358,006
Core Fixed Income	173,614,915	11.92	8.00	12.00	10.00	-28,003,050
Specialty Credit	299,391,682	20.56	10.50	19.50	15.00	-80,973,884
Real Estate	59,516,000	4.09	7.00	13.00	10.00	86,095,865
Real Return	35,117,298	2.41	7.00	13.00	10.00	110,494,567
Private Equity	96,225,147	6.61	7.00	13.00	10.00	49,386,719
Cash	159,200,002	10.93	0.00	3.00	1.50	-137,358,222
Total Fund	1,456,118,651	100.00			100.00	

Asset Allocation Compliance

KERS (H) Insurance Plan

Periods Ended As of September 30, 2023

Executive Summary



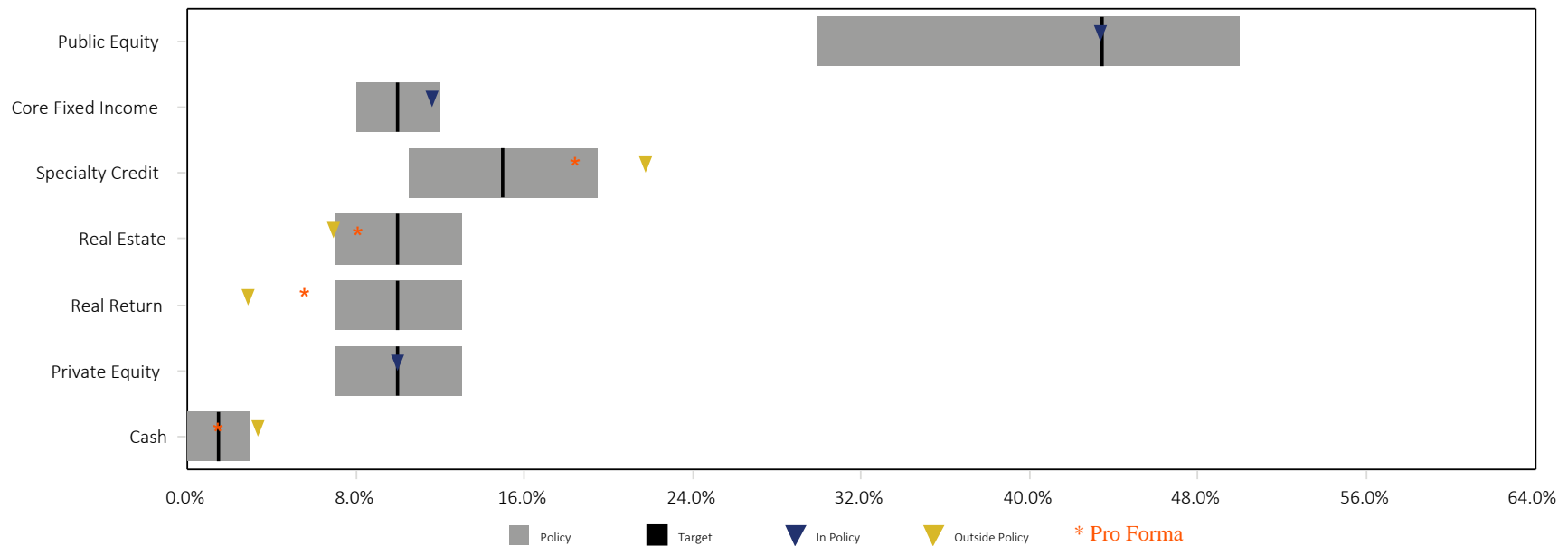
	Asset Allocation \$	Asset Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)	Target Rebalance \$
Public Equity	260,768,186	43.03	30.00	50.00	43.50	2,837,612
Core Fixed Income	73,622,068	12.15	8.00	12.00	10.00	-13,023,034
Specialty Credit	133,294,666	22.00	10.50	19.50	15.00	-42,396,115
Real Estate	44,315,797	7.31	7.00	13.00	10.00	16,283,237
Real Return	18,511,327	3.05	7.00	13.00	10.00	42,087,707
Private Equity	54,520,594	9.00	7.00	13.00	10.00	6,078,440
Cash	20,957,703	3.46	0.00	3.00	1.50	-11,867,848
Total Fund	605,990,340	100.00			100.00	

Asset Allocation Compliance

SPRS Insurance Plan

Periods Ended As of September 30, 2023

Executive Summary



	Asset Allocation \$	Asset Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)	Target Rebalance \$
Public Equity	105,226,561	43.36	30.00	50.00	43.50	339,278
Core Fixed Income	28,224,745	11.63	8.00	12.00	10.00	-3,956,736
Specialty Credit	52,914,504	21.80	10.50	19.50	15.00	-16,512,491
Real Estate	16,917,638	6.97	7.00	13.00	10.00	7,350,371
Real Return	7,000,613	2.88	7.00	13.00	10.00	17,267,396
Private Equity	24,265,755	10.00	7.00	13.00	10.00	2,254
Cash	8,130,273	3.35	0.00	3.00	1.50	-4,490,071
Total Fund	242,680,090	100.00			100.00	

Asset Allocation & Performance

Total Fund

Periods Ended September 30, 2023

	Market Value \$	Performance (%) net of fees										
		QTD	YTD	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date
KERS Pension Plan	3,575,106,963	-0.90	4.75	-0.90	8.52	5.57	5.44	6.13	6.42	7.40	8.61	4/1/1984
KERS Pension IPS Index		-0.85	5.62	-0.85	9.95	4.94	5.43					
Value Added		-0.05	-0.87	-0.05	-1.43	0.63	0.01					
Assumed Rate 5.25%		1.29	3.91	1.29	5.25	5.25	5.25					
Value Added		-2.19	0.84	-2.19	3.27	0.32	0.19					
KERS Insurance Plan	1,456,118,651	-1.31	5.79	-1.31	10.99	6.62	5.73	6.27	6.51	6.55	7.17	4/1/1987
KERS Insurance IPS Index		-0.66	7.55	-0.66	12.75	6.54	6.42					
Value Added		-0.65	-1.76	-0.65	-1.76	0.08	-0.69					
Assumed Rate 6.50%		1.59	4.84	1.59	6.50	6.50	6.50					
Value Added		-2.90	0.95	-2.90	4.49	0.12	-0.77					
KERS (H) Pension Plan	896,168,133	-1.14	5.94	-1.14	11.10	6.70	5.85	6.56	6.64	7.55	8.73	4/1/1984
KERS (H) Pension IPS Index		-0.66	7.55	-0.66	12.75	6.54	6.42					
Value Added		-0.48	-1.61	-0.48	-1.65	0.16	-0.57					
Assumed Rate 6.25%		1.53	4.65	1.53	6.25	6.25	6.25					
Value Added		-2.67	1.29	-2.67	4.85	0.45	-0.40					
KERS (H) Insurance Plan	605,990,340	-1.09	5.80	-1.09	10.93	7.15	5.95	6.59	6.68	6.67	7.27	4/1/1987
KERS (H) Insurance IPS Index		-0.66	7.55	-0.66	12.75	6.54	6.42					
Value Added		-0.43	-1.75	-0.43	-1.82	0.61	-0.47					
Assumed Rate 6.50%		1.59	4.84	1.59	6.50	6.50	6.50					
Value Added		-2.68	0.96	-2.68	4.43	0.65	-0.55					

Asset Allocation & Performance

Total Fund

Periods Ended September 30, 2023

	Market Value \$	Performance (%) net of fees										
		QTD	YTD	FYTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date
SPRS Pension Plan	586,020,761	-0.93	4.77	-0.93	8.83	5.80	5.53	6.05	6.39	7.38	8.60	4/1/1984
SPRS Pension IPS Index		-0.85	5.62	-0.85	9.95	4.94	5.43					
Value Added		-0.08	-0.85	-0.08	-1.12	0.86	0.10					
Assumed Rate 5.25%		1.29	3.91	1.29	5.25	5.25	5.25					
Value Added		-2.22	0.86	-2.22	3.58	0.55	0.28					
SPRS Insurance Plan	242,680,090	-1.13	5.94	-1.13	11.13	7.30	6.15	6.77	6.77	6.72	7.31	4/1/1987
SPRS Insurance IPS Index		-0.66	7.55	-0.66	12.75	6.54	6.42					
Value Added		-0.47	-1.61	-0.47	-1.62	0.76	-0.27					
Assumed Rate 6.50%		1.59	4.84	1.59	6.50	6.50	6.50					
Value Added		-2.72	1.10	-2.72	4.63	0.80	-0.35					

Asset Allocation & Performance

Pension Plan Accounts

Periods Ended September 30, 2023

	Performance (%) net of fees								
	1 Month	QTD	YTD	FYTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
Public Equity	-4.39	-4.04	8.95	-4.04	20.43			-4.18	12/1/2021
Public Equity Policy Index	-4.14	-3.40	10.06	-3.40	20.80			-3.63	
Value Added	-0.25	-0.64	-1.11	-0.64	-0.37			-0.55	
US Equity Composite	-4.78	-3.50	11.10	-3.50	19.46	9.68	8.80	11.13	4/1/1984
Russell 3000 Index	-4.76	-3.25	12.39	-3.25	20.46	9.38	9.14	11.05	
Value Added	-0.02	-0.25	-1.29	-0.25	-1.00	0.30	-0.34	0.08	
S&P 500 Index	-4.71	-3.21	13.15	-3.21	21.70	10.14	10.18	8.24	7/1/2001
S&P 500 Index	-4.77	-3.27	13.07	-3.27	21.62	10.15	9.92	7.87	
Value Added	0.06	0.06	0.08	0.06	0.08	-0.01	0.26	0.37	
Scientific Beta	-3.81	-3.14	2.70	-3.14	14.04	8.27	6.64	9.03	7/1/2016
S&P 500 Index	-4.77	-3.27	13.07	-3.27	21.62	10.15	9.92	12.38	
Value Added	0.96	0.13	-10.37	0.13	-7.58	-1.88	-3.28	-3.35	
River Road FAV	-3.51	-1.65	3.39	-1.65	15.63	5.27	3.53	8.03	7/1/2016
Russell 3000 Value Index	-3.94	-3.15	1.67	-3.15	14.05	11.19	5.98	8.08	
Value Added	0.43	1.50	1.72	1.50	1.58	-5.92	-2.45	-0.05	
Westfield Capital	-5.18	-2.27	25.56	-2.27	26.78	7.79	12.48	13.23	7/1/2011
Russell 3000 Growth Index	-5.50	-3.34	23.77	-3.34	26.63	7.54	11.70	13.93	
Value Added	0.32	1.07	1.79	1.07	0.15	0.25	0.78	-0.70	
Internal US Mid Cap	-5.09	-3.83	5.26	-3.83	16.88	12.50	6.67	8.94	8/1/2014
S&P MidCap 400 Index	-5.26	-4.20	4.27	-4.20	15.51	12.05	6.06	8.50	
Value Added	0.17	0.37	0.99	0.37	1.37	0.45	0.61	0.44	
NTGI Structured	-5.01	-3.41	3.88	-3.41	13.49	11.46	4.86	9.42	10/1/1999
Russell 2000 Index	-5.89	-5.13	2.54	-5.13	8.93	7.16	2.40	7.56	
Value Added	0.88	1.72	1.34	1.72	4.56	4.30	2.46	1.86	

Asset Allocation & Performance

Pension Plan Accounts

Periods Ended September 30, 2023

	Performance (%) net of fees								
	1 Month	QTD	YTD	FYTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
Next Century Growth	-9.51	-16.67	1.63	-16.67	-2.96	8.55		19.80	11/1/2019
Russell Microcap Growth Index	-7.57	-11.95	-5.65	-11.95	-3.10	-4.65		1.90	
Value Added	-1.94	-4.72	7.28	-4.72	0.14	13.20		17.90	
Non-US Equity Composite	-3.78	-4.86	5.86	-4.86	21.85	3.17	3.00	3.32	7/1/2000
MSCI ACWI ex US IMI (10/17)	-3.24	-3.49	5.30	-3.49	20.19	3.77	2.57	3.31	
Value Added	-0.54	-1.37	0.56	-1.37	1.66	-0.60	0.43	0.01	
BlackRock World Ex US	-3.34	-4.06	7.36	-4.06	24.90	6.67	3.86	6.05	7/1/2009
MSCI World ex US (11/19)	-3.37	-4.10	6.73	-4.10	24.00	6.07	3.43	5.75	
Value Added	0.03	0.04	0.63	0.04	0.90	0.60	0.43	0.30	
American Century	-5.98	-10.79	-1.24	-10.79	12.46	-3.20	3.64	4.38	7/1/2014
MSCI ACWI ex US IMI (10/17)	-3.24	-3.49	5.30	-3.49	20.19	3.77	2.57	2.66	
Value Added	-2.74	-7.30	-6.54	-7.30	-7.73	-6.97	1.07	1.72	
Franklin Templeton	-7.91	-10.75	-0.81	-10.75	11.20	-7.35	-0.99	2.86	7/1/2014
MSCI ACWI ex US IMI (10/17)	-3.24	-3.49	5.30	-3.49	20.19	3.77	2.57	2.66	
Value Added	-4.67	-7.26	-6.11	-7.26	-8.99	-11.12	-3.56	0.20	
Lazard Asset Mgmt	-3.31	-4.57	8.10	-4.57	23.19	4.56	3.14	3.52	7/1/2014
MSCI ACWI ex US IMI (10/17)	-3.24	-3.49	5.30	-3.49	20.19	3.77	2.57	2.66	
Value Added	-0.07	-1.08	2.80	-1.08	3.00	0.79	0.57	0.86	
LSV Asset Mgmt	-0.89	0.62	11.28	0.62	33.20	9.98	3.60	3.40	7/1/2014
MSCI ACWI ex US IMI (10/17)	-3.24	-3.49	5.30	-3.49	20.19	3.77	2.57	2.66	
Value Added	2.35	4.11	5.98	4.11	13.01	6.21	1.03	0.74	
Axiom	-5.49	-3.80	2.64	-3.80	12.16			-16.52	12/1/2021
MSCI AC World ex USA Small Cap (Net)	-3.76	-1.70	5.03	-1.70	19.01			-6.96	
Value Added	-1.73	-2.10	-2.39	-2.10	-6.85			-9.56	

Asset Allocation & Performance

Pension Plan Accounts

Periods Ended September 30, 2023

	Performance (%) net of fees								Inception Date
	1 Month	QTD	YTD	FYTD	1 Year	3 Years	5 Years	Since Inception	
JP Morgan Emerging Markets	-3.69	-6.33	-2.25	-6.33	9.63	-5.56		-0.69	11/1/2019
MSCI Emerging Markets IMI Index	-2.50	-1.99	3.73	-1.99	13.69	0.11		1.61	
Value Added	-1.19	-4.34	-5.98	-4.34	-4.06	-5.67		-2.30	
Pzena Emerging Markets	-1.81	1.70	16.59	1.70	31.98	14.56		7.61	11/1/2019
MSCI Emerging Markets (Net)	-2.62	-2.93	1.82	-2.93	11.70	-1.73		0.17	
Value Added	0.81	4.63	14.77	4.63	20.28	16.29		7.44	
Private Equity Composite	2.40	2.71	7.55	2.71	3.07	17.98	13.34	11.82	7/1/2002
Russell 3000 +3% 1 Quarter Lag	7.09	9.19	27.30	9.19	22.52	17.30	14.73	12.01	
Value Added	-4.69	-6.48	-19.75	-6.48	-19.45	0.68	-1.39	-0.19	
Core Fixed Composite	-2.02	-1.14	0.68	-1.14	2.13	-1.15	1.87	1.87	10/1/2018
Blmbg. U.S. Aggregate Index	-2.54	-3.23	-1.21	-3.23	0.64	-5.21	0.10	0.10	
Value Added	0.52	2.09	1.89	2.09	1.49	4.06	1.77	1.77	
Loomis Sayles Intmd	-2.46	-2.00	-0.09	-2.00	1.73	-3.47		0.33	2/1/2019
Blmbg. U.S. Intermediate Aggregate Index	-1.76	-1.89	-0.30	-1.89	1.42	-3.66		-0.11	
Value Added	-0.70	-0.11	0.21	-0.11	0.31	0.19		0.44	
Lord Abbett	-0.09	0.58	2.35	0.58	3.66	0.30	1.68	1.68	10/1/2018
ICE BofA 1-3 Year U.S. Corporate Index	-0.07	0.91	2.50	0.91	3.93	-0.31	1.71	1.71	
Value Added	-0.02	-0.33	-0.15	-0.33	-0.27	0.61	-0.03	-0.03	
NISA	-2.54	-2.24	0.02	-2.24	2.03	-4.58	0.69	2.68	2/1/2009
Blmbg. U.S. Aggregate Index	-2.54	-3.23	-1.21	-3.23	0.64	-5.21	0.10	2.34	
Value Added	0.00	0.99	1.23	0.99	1.39	0.63	0.59	0.34	

Asset Allocation & Performance

Pension Plan Accounts

Periods Ended September 30, 2023

	Performance (%) net of fees								Inception Date
	1 Month	QTD	YTD	FYTD	1 Year	3 Years	5 Years	Since Inception	
High Yield / Specialty Credit Composite	1.08	2.65	7.53	2.65	9.66	7.16	5.90	5.90	10/1/2018
Policy Index	-0.12	1.94	7.99	1.94	11.66	3.94	3.74	3.74	
Value Added	1.20	0.71	-0.46	0.71	-2.00	3.22	2.16	2.16	
Adams St SPC II A	3.81	3.81	10.81	3.81	13.77	16.83		15.02	6/1/2020
Adams St SPC II B	2.99	2.99	7.79	2.99	9.73	11.01		9.85	6/1/2020
Arrowmark	0.89	3.48	11.69	3.48	15.81	13.32	10.26	10.12	6/1/2018
Morningstar LSTA US Leveraged Loan	0.94	3.43	10.13	3.43	13.02	6.07	4.46	4.55	
Value Added	-0.05	0.05	1.56	0.05	2.79	7.25	5.80	5.57	
Blue Torch	2.74	2.74	10.26	2.74	13.99	11.15		10.53	8/1/2020
BSP Coinvestment	2.73	2.73	8.38	2.73	8.99	7.47		7.08	10/1/2019
Morningstar LSTA US Leveraged Loan	0.94	3.43	10.13	3.43	13.02	6.07		4.80	
Value Added	1.79	-0.70	-1.75	-0.70	-4.03	1.40		2.28	
BSP Private Credit	2.60	2.60	7.14	2.60	9.06	10.72	7.00	6.16	2/1/2018
Morningstar LSTA US Leveraged Loan	0.94	3.43	10.13	3.43	13.02	6.07	4.46	4.47	
Value Added	1.66	-0.83	-2.99	-0.83	-3.96	4.65	2.54	1.69	
Capital Springs	21.87	21.87	46.70	21.87	48.77	21.33		18.25	2/1/2020
Morningstar LSTA US Leveraged Loan	0.94	3.43	10.13	3.43	13.02	6.07		4.59	
Value Added	20.93	18.44	36.57	18.44	35.75	15.26		13.66	
Cerberus Capital Mgmt	0.82	1.85	5.94	1.85	8.52	12.35	10.69	9.56	9/1/2014
Morningstar LSTA US Leveraged Loan	0.94	3.43	10.13	3.43	13.02	6.07	4.46	4.23	
Value Added	-0.12	-1.58	-4.19	-1.58	-4.50	6.28	6.23	5.33	
Columbia	-1.12	0.44	5.94	0.44	10.41	1.88	3.51	5.42	11/1/2011
Blmbg. U.S. Corp: High Yield Index	-1.18	0.46	5.86	0.46	10.28	1.76	2.96	5.19	
Value Added	0.06	-0.02	0.08	-0.02	0.13	0.12	0.55	0.23	

Asset Allocation & Performance

Pension Plan Accounts

Periods Ended September 30, 2023

	Performance (%) net of fees								Inception Date
	1 Month	QTD	YTD	FYTD	1 Year	3 Years	5 Years	Since Inception	
Manulife Asset Mgmt	-1.44	-1.05	3.51	-1.05	7.69	0.58	3.32	3.54	12/1/2011
Policy Index	-2.38	-2.88	-0.62	-2.88	1.61	-4.68	0.34	0.72	
Value Added	0.94	1.83	4.13	1.83	6.08	5.26	2.98	2.82	
Marathon Bluegrass	0.45	1.95	2.97	1.95	0.93	5.80	4.16	5.49	1/1/2016
Blmbg. U.S. Corp: High Yield Index	-1.18	0.46	5.86	0.46	10.28	1.76	2.96	5.32	
Value Added	1.63	1.49	-2.89	1.49	-9.35	4.04	1.20	0.17	
Shenkman Capital	0.35	2.14	7.79	2.14	11.13	4.88	3.94	4.47	10/1/2010
Morningstar LSTA US Leveraged Loan	0.94	3.43	10.13	3.43	13.02	6.07	4.46	4.67	
Value Added	-0.59	-1.29	-2.34	-1.29	-1.89	-1.19	-0.52	-0.20	
Waterfall	1.41	6.74	8.02	6.74	6.99	9.26	5.13	9.37	2/1/2010
Policy Index	-0.35	1.37	6.41	1.37	8.99	2.35	2.90	4.39	
Value Added	1.76	5.37	1.61	5.37	-2.00	6.91	2.23	4.98	
White Oak Yield Spectrum	1.53	1.53	4.12	1.53	5.45	5.98	5.67	5.36	3/1/2018
Morningstar LSTA US Leveraged Loan	0.94	3.43	10.13	3.43	13.02	6.07	4.46	4.50	
Value Added	0.59	-1.90	-6.01	-1.90	-7.57	-0.09	1.21	0.86	
H/2 Credit Partner	0.00	0.00	0.00	0.00	0.00	7.37	0.93	3.96	7/1/2011
Cash Composite	0.39	1.12	3.08	1.12	3.96	1.60	1.73	3.32	1/1/1988
FTSE 3 Month T-Bill	0.45	1.38	3.80	1.38	4.71	1.78	1.74	2.94	
Value Added	-0.06	-0.26	-0.72	-0.26	-0.75	-0.18	-0.01	0.38	

Asset Allocation & Performance

Pension Plan Accounts

Periods Ended September 30, 2023

	Performance (%) net of fees								
	1 Month	QTD	YTD	FYTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
Real Estate Composite	-1.28	-2.63	-8.80	-2.63	-7.72	10.27	8.93	6.45	7/1/1984
NCREIF ODCE NOF 1 Quarter Lag	-2.88	-2.88	-11.01	-2.88	-10.73	7.04	5.56		
Value Added	1.60	0.25	2.21	0.25	3.01	3.23	3.37		
Baring	-21.16	-21.57	-42.26	-21.57	-37.45	-9.05		3.04	1/1/2019
Barings Euro RE II	-8.01	-8.49	-32.05	-8.49	-29.08			-22.67	12/1/2020
Divcowest IV	-0.07	-0.07	-3.91	-0.07	-4.71	15.48	10.06	16.53	3/1/2014
Fundamental Partners III	0.68	0.68	4.84	0.68	3.72	16.89	15.74	13.24	5/1/2017
Greenfield Acq VI	-1.12	-1.12	-25.21	-1.12	-27.23	-34.06	-39.37	-18.19	12/1/2012
Greenfield Acq VII	2.87	2.87	-8.68	2.87	-1.08	17.89	14.74	13.66	7/1/2014
Harrison Street	0.00	0.25	-0.78	0.25	1.34	6.81	6.25	7.82	5/1/2012
Lubert Adler VII	-7.15	-7.15	-16.14	-7.15	-15.69	-3.80	-3.13	-2.38	7/1/2014
Lubert Adler VII B	3.74	3.74	13.48	3.74	15.83	28.04	20.40	15.81	7/1/2017
Mesa West Core Lend	0.14	0.14	-4.80	0.14	-3.01	2.69	4.10	5.57	5/1/2013
Mesa West IV	-7.45	-7.45	-18.57	-7.45	-18.00	-2.69	1.20	1.92	3/1/2017
Patron Capital	-8.84	-9.35	-6.96	-9.35	-7.71	4.34	4.21	2.74	8/1/2016
Prologis Targeted US	0.00	-4.24	-10.23	-4.24	-10.18	20.83	16.50	16.19	10/1/2014
Rubenstein PF II	-9.46	-9.46	-44.04	-9.46	-46.94	-21.10	-12.47	0.24	7/1/2013
Stockbridge Sm/Mkts	-1.08	-1.08	-10.82	-1.08	-10.25	8.81	7.57	8.29	5/1/2014
Walton St RE VI	1.02	1.02	8.60	1.02	11.54	11.83	4.51	-10.50	5/1/2009
Walton St RE VII	-4.68	-4.68	-11.51	-4.68	-13.42	0.50	-3.93	4.20	7/1/2013

Asset Allocation & Performance

Pension Plan Accounts

Periods Ended September 30, 2023

	Performance (%) net of fees								
	1 Month	QTD	YTD	FYTD	1 Year	3 Years	5 Years	Since Inception	Inception Date
Real Return Composite	1.40	4.73	9.67	4.73	15.04	13.61	7.28	5.13	7/1/2011
US CPI + 3%	0.64	1.95	5.14	1.95	6.80	8.92	7.17	5.67	
Value Added	0.76	2.78	4.53	2.78	8.24	4.69	0.11	-0.54	
Tortoise Capital	1.13	8.71	17.19	8.71	29.57	40.82	7.36	9.99	8/1/2009
Alerian MLP Index	3.24	9.90	20.56	9.90	32.74	43.10	6.81	7.58	
Value Added	-2.11	-1.19	-3.37	-1.19	-3.17	-2.28	0.55	2.41	
Amerra AGRI Fund II	5.47	5.47	5.15	5.47	9.01	10.60	10.16	6.65	12/1/2012
Amerra AGRI Holdings	2.77	2.77	-4.15	2.77	-6.38	-4.25	-2.28	-2.03	8/1/2015
BTG Pactual	9.37	9.37	13.32	9.37	21.57	17.01	8.19	-0.43	12/1/2014
IFM Infrastructure	-0.19	-0.19	4.71	-0.19	6.34	6.30		4.74	7/1/2019
Magnetar MTP EOF II	-1.10	-1.10	16.52	-1.10	20.12	77.22	44.60	26.54	8/1/2015
Oberland Capital	3.29	3.29	10.21	3.29	12.13	12.22	17.54	13.44	8/1/2018
Taurus Mine Finance	1.37	1.37	9.50	1.37	18.61	26.08	16.01	15.37	4/1/2015
TPF II	-1.40	-1.40	-6.43	-1.40	-7.62	3.18	4.52	-0.94	10/1/2008
Blackstone Strat Opp	-0.46	-0.55	-6.09	-0.55	-8.90	-1.94	-5.04	-3.16	8/1/2017
Luxor Capital	-0.70	-2.44	-2.63	-2.44	0.73	6.16	-1.93	-0.30	4/1/2014
Myriad Opportunities	0.00	0.00	-0.28	0.00	-7.04	-22.51	-15.83	-9.07	5/1/2016
Pine River	0.49	0.15	-7.24	0.15	-8.34	-4.68	4.23	1.59	5/1/2014
PRISMA Capital	0.44	1.26	2.97	1.26	3.17	0.28	0.48	2.46	9/1/2011
SRS Partners US	0.00	0.00	0.00	0.00	0.00	5.86	7.33	7.28	8/1/2017
Tricadia Select	0.00	0.00	0.00	0.00	0.00	0.00	-0.21	-4.12	9/1/2017

Kentucky Retirement Systems

Compliance Report









Quarter Ending: September 30, 2023



KRS
Kentucky Retirement Systems



SPRS
State Police Retirement System

Compliance Guideline Review Period Ended September 30, 2023	Compliance Status	<div>Legend</div> <div>  In Compliance  To be determined  Not In Compliance </div>
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.		
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.	 ¹	
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.		
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.		

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.



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



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



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



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



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.



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.



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.



Derivatives Applications not Permitted: Derivatives may not be used for any activity for which the primary purpose is speculation or cause the portfolio to be leveraged beyond a 100% invested position.



All instruments in the Liquidity allocation shall have a maturity at the time of purchase that does not exceed 397 days.



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1. *Interpretation that this restrictions only applies to external manager and not assets managed by KPPA Investment Staff.*

Kentucky Retirement Systems

Capital Calls and Distributions

Quarter Ending: September 30, 2023

KRS Board Meeting - Quarterly Investment Performance Report

Kentucky Public Pensions Authority

Capital Calls and Distributions

For the period July 1, 2023 thru September 30, 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	26,456,500	0	873,061	25,583,439	9,441,066	7,867,571	0	259,629	7,607,942	3,936,882	3,280,742	0	108,264	3,172,478
Adams Street SPC II B1	175,000,000	31,747,734	25,848,509	0	689,399	25,159,110	9,441,067	7,686,769	0	205,012	7,481,757	3,936,882	3,205,347	0	85,489	3,119,858
AMERRA Agri Fund II, LP	40,100,000	0	0	0	0	0	2,477,739	1,504,770	0	12,960	1,491,810	1,253,605	761,334	0	6,557	754,777
AMERRA-KRS Agri Holding Company, LP	65,000,000	0	0	0	0	0	4,016,284	2,319,548	0	129,044	2,190,504	2,032,029	1,173,570	0	65,290	1,108,280
Arcano KRS Fund I, L.P.	36,000,000	13,050,524	6,093,679	0	0	6,093,679	1,650,419	770,630	0	0	770,630	859,011	401,098	0	0	401,098
Arcos Sports Partners Fund II	85,000,000	19,500,000	2,357,303	2,498,143	0	4,855,446	500,000	60,444	64,055	0	124,499	5,000,000	604,437	640,549	0	1,244,986
Ares Special Situations Fund IV, L.P.	26,192,000	0	0	0	0	0	1,622,790	1,179,800	0	17,995	1,161,804	511,579	371,928	0	5,673	366,255
Barings Euro Real Estate II	157,489,063	29,418,959	5,679,683	0	0	5,511,792	8,047,693	1,553,704	0	0	1,507,776	3,401,764	656,751	0	0	637,338
Barings Real Estate European Value Add I SCSp	111,168,750	20,766,324	2,862,680	316,362	0	3,094,525	5,680,725	783,099	86,542	0	846,522	2,401,245	331,017	36,581	0	357,825
Bay Hills Capital I, L.P.	67,500,000	24,469,733	1,886,885	0	0	1,886,885	3,094,535	238,623	0	0	238,623	1,610,645	124,198	0	0	124,198
Bay Hills Capital III, L.P.	51,250,000	0	0	0	0	0	3,175,320	3,271,495	0	0	3,271,495	1,001,010	1,031,329	0	0	1,031,329
Bay Hills Emerging Partners II LP	45,000,000	16,313,156	35,590,163	0	0	35,590,163	2,063,023	4,500,866	0	0	4,500,866	1,073,764	2,342,613	0	0	2,342,613
Bay Hills Emerging Partners II-B LP	45,000,000	16,313,156	23,742,611	0	0	23,742,611	2,063,023	3,002,580	0	0	3,002,580	1,073,764	1,562,785	0	0	1,562,785
BDCM Opportunity Fund IV, L.P.	35,580,000	0	0	0	0	0	2,204,447	4,042,334	0	275,689	3,766,645	694,947	1,274,337	0	86,910	1,187,427
Blackstone Capital Partners V, L.P.	47,174,735	17,101,529	16,747	0	0	16,747	2,162,724	2,118	0	0	2,118	1,125,656	1,102	0	0	1,102
Blackstone Capital Partners VI, L.P.	60,000,000	0	0	0	0	0	3,299,994	1,167,282	0	76,038	1,091,244	0	0	0	0	0
Blue Torch Credit Opportunities Fund II LP	140,000,000	25,356,966	26,400,663	0	2,523,081	23,877,581	7,618,631	7,932,215	0	758,073	7,174,142	3,143,324	3,272,704	0	312,769	2,959,935
BSP Co-Invest Vehicle K LP	0	0	5,727,768	0	104,031	5,623,737	0	2,057,301	0	37,366	2,019,935	0	531,721	0	9,657	522,064
BSP Private Credit Fund	100,000,000	14,833,350	13,722,358	0	314,424	13,407,934	5,327,845	4,928,798	0	112,935	4,815,863	1,377,012	1,273,876	0	29,189	1,244,687
BTG Pactual Brazil Timberland Fund I	34,500,000	0	0	0	0	0	2,058,030	1,695,158	0	0	1,695,158	952,485	784,542	0	0	784,542
Camelot Opportunities Fund, L.P.	23,400,000	8,482,841	2,444,576	0	0	2,444,576	1,072,772	309,150	0	0	309,150	558,357	160,907	0	0	160,907
Cerberus KRS Levered Loan Opportunities Fund, L.P.	140,000,000	20,766,690	27,574,922	0	0	27,588,272	7,458,982	9,904,364	0	0	10,052,831	1,927,816	2,559,839	0	0	2,598,211
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	1,115,472	0	0	1,115,472	1,237,814	141,067	0	0	141,067	644,258	73,423	0	0	73,423
Crestview Partners II, L.P.	67,500,000	24,469,733	12,549,570	93,200	666,717	11,976,053	3,094,535	1,587,066	11,786	84,316	1,514,537	1,610,645	826,037	6,135	43,885	788,287
Crestview Partners III, L.P.	39,000,000	0	0	0	0	0	2,416,341	2,085,810	0	0	2,085,810	761,744	657,545	0	0	657,545
CS Adjacent Investment Partners Parallel LP	140,000,000	20,766,690	13,197,822	1,237,378	4,021,687	10,413,513	7,458,982	4,740,396	444,441	1,444,510	3,740,327	1,927,816	1,225,182	114,868	373,342	966,709
CVC European Equity Partners VI, L.P.	23,208,615	0	0	0	0	0	1,437,947	1,353,959	4,800	9,568	1,309,190	453,309	426,832	1,513	3,016	412,718
DAG Ventures II, L.P.	27,000,000	9,787,893	827,091	0	0	827,091	1,237,814	104,597	0	0	104,597	644,258	54,441	0	0	54,441
DAG Ventures III, L.P.	27,000,000	9,787,893	116,619	0	0	116,619	1,237,814	14,748	0	0	14,748	644,258	7,676	0	0	7,676
DAG Ventures IV, L.P.	90,000,000	32,626,311	7,556,803	0	0	7,556,803	4,126,046	955,662	0	0	955,662	2,147,527	497,403	0	0	497,403
DAG Ventures V, L.P.	8,000,000	0	0	0	0	0	439,999	2,196	0	1,416	781	0	0	0	0	0
DCM VI, L.P.	13,500,000	4,893,947	1,303,029	0	233,473	1,069,556	618,907	164,786	0	29,526	135,260	322,129	85,768	0	15,368	70,400
DivcoWest Fund IV	20,800,000	0	0	0	0	0	1,244,069	60,167	0	0	60,167	447,430	21,639	0	0	21,639
Fundamental Partners III LP	70,000,000	13,076,001	11,520,164	0	131,682	11,388,483	3,577,001	3,151,395	0	36,022	3,115,373	1,512,000	1,332,096	0	15,227	1,316,870
Green Equity Investors V, L.P.	90,000,000	32,626,311	479,962	0	0	479,962	4,126,046	60,698	0	0	60,698	2,147,527	31,592	0	0	31,592
Green Equity Investors VI, L.P.	32,000,000	0	0	0	0	0	1,759,997	2,040,177	67,188	2,023	2,105,343	0	0	0	0	0
Green Equity Investors VII LP	25,000,000	0	0	0	0	0	1,525,000	1,915,587	125,826	242,138	1,799,276	0	0	0	0	0
Greenfield Acquisition Partners VII, L.P.	27,800,000	0	0	0	0	0	1,662,744	123,210	0	9,391	113,819	598,005	44,313	0	3,377	40,935
H.I.G. BioVentures II, L.P.	13,500,000	0	0	0	0	0	742,499	501,626	0	136,538	365,088	0	0	0	0	0
H.I.G. Capital Partner V, L.P.	13,100,000	0	0	0	0	0	811,643	632,774	0	130,319	502,455	255,868	199,480	0	41,083	158,398
H.I.G. Ventures II, L.P.	18,000,000	6,525,262	981,640	0	0	981,640	825,209	124,142	0	0	124,142	429,505	64,613	0	0	64,613
H&F Spock I LP	3,250,153	1,178,228	3,796,072	0	0	3,796,072	149,003	480,066	0	0	480,066	77,553	249,865	0	0	249,865
Harvest Partners VI, L.P.	28,400,000	0	0	0	0	0	1,607,440	297,035	0	0	297,035	241,400	44,608	0	0	44,608
Harvest Partners VII LP	20,000,000	0	0	0	0	0	1,220,000	1,719,613	0	0	1,719,613	0	0	0	0	0
Horsley Bridge International Fund V, L.P.	45,000,000	16,313,156	33,317,128	0	1,214,400	32,102,728	2,063,023	4,213,410	0	153,578	4,059,832	1,073,764	2,192,998	0	79,934	2,113,064
IFM US Infrastructure Debt Fund	70,000,000	11,678,693	11,678,739	819,501	819,501	11,678,739	3,596,947	3,596,961	252,400	252,400	3,596,961	1,394,272	1,394,277	97,837	97,837	1,394,277
Institutional Venture Partners XII, L.P.	27,000,000	9,787,893	1,854	0	0	1,854	1,237,814	234	0	0	234	644,258	122	0	0	122
Kayne Anderson Energy Fund VII LP	50,000,000	0	0	0	0	0	3,050,000	1,654,101	9,996	25,282	1,638,816	0	0	0	0	0
KCP IV Co-Invest	12,556,775	0	0	0	0	0	777,986	151,913	0	0	147,423	245,258	47,890	0	0	46,475
Keyhaven Capital Partners Fund III, L.P.	26,714,582	9,684,425	3,382,770	0	0	3,282,775	1,224,729	427,798	0	0	415,152	637,448	222,660	0	0	216,079
Keyhaven Capital Partners IV LP	12,556,775	0	0	0	0	0	777,986	751,709	0	0	729,489	245,258	236,975	0	0	229,970
Levine Leichtman Capital Partners V, L.P.	46,000,000	1	0	0	0	0	2,850,043	1,035,944	5,256	2,197	1,039,003	898,468	326,578	1,657	693	327,543
Levine Leichtman Capital Partners VI LP	37,500,000	0	0	0	0	0	2,287,504	3,163,119	66,580	13,264	3,216,435	0	0	0	0	0
Lubert Adler VII	34,750,000	0	0	0	0	0	2,078,050	1,051,110	0	74,087	977,023	747,124	377,907	0	26,637	351,270
Lubert-Adler Real Estate Fund VII-B LP	36,750,000	6,864,900	1,981,308	0	0	1,981,308	1,877,925	541,996	0	0	541,996	793,800	229,102	0	0	229,102
Magentar MTP Energy Opportunities Fund II LLC	37,500,000	0	0	0	0	0	2,242,500	8,199	0	0	8,199	806,249	2,948	0	0	2,948
Maritime Partners LP	175,000,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MartinPatterson Global Opportunities Partners II	45,000,000	16,313,156	248,147	0	81,421	166,726	2,063,023	31,382	0	10,297	21,085	1,073,764	16,334	0	5,359	10,974
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	5,436,173	110,684	110,684	5,436,173	3,248,749	3,226,299	65,689	65,689	3,226,299	960,250	953,614	19,416	19,416	953,614

KRS Board Meeting - Quarterly Investment Performance Report

Kentucky Public Pensions Authority

Capital Calls and Distributions

For the period July 1, 2023 thru September 30, 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
Mesa West Real Estate Income Fund IV LP	36,000,000	13,050,524	5,399,959	0	0	5,399,959	1,650,419	682,899	0	0	682,899	859,011	355,436	0	0	355,436
MiddleGround Partners I LP	50,000,000	0	0	0	0	0	2,925,000	5,129,558	310,894	133,343	5,279,629	0	0	0	0	0
MiddleGround Partners II LP	50,000,000	9,584,069	9,599,757	1,077,939	109,320	10,611,653	2,755,477	2,759,988	309,914	31,430	3,050,914	1,102,634	1,104,439	124,015	12,577	1,220,857
MiddleGround Partners II-X LP	25,000,000	4,792,034	4,766,903	806,634	43,783	5,540,515	1,377,739	1,370,513	231,912	12,588	1,592,931	551,317	548,426	92,802	5,037	637,429
Mill Road Capital I, L.P.	27,000,000	9,787,893	632,462	0	0	632,462	1,237,814	79,984	0	0	79,984	644,258	41,630	0	0	41,630
New Mountain Partners III, L.P.	32,337,197	11,722,705	587,375	0	0	587,375	1,482,498	74,282	0	0	74,282	771,611	38,662	0	0	38,662
New Mountain Partners IV, L.P.	32,800,000	0	0	0	0	0	2,032,204	697,300	0	0	697,300	640,647	219,822	0	0	219,822
New State Capital Partners Fund III LP	17,500,000	3,354,424	665,828	104,712	0	770,540	964,417	191,430	30,105	0	221,535	385,922	76,603	12,047	0	88,650
Oak Hill Capital Partners II, L.P.	67,500,000	24,469,733	56,386	0	0	56,386	3,094,535	7,131	0	0	7,131	1,610,645	3,711	0	0	3,711
Oberland Capital Healthcare LP	3,450,000	0	0	0	0	0	201,825	356,706	0	0	356,706	0	0	0	0	0
Patron Capital V LP	38,115,000	7,119,882	3,196,743	32,606	79,953	3,054,966	1,947,677	874,484	8,920	21,871	835,700	823,284	369,645	3,770	9,245	353,251
Riverside Capital Appreciation Fund VI, L.P.	35,500,000	0	0	0	0	0	2,009,300	639,769	0	0	639,769	301,749	96,078	0	0	96,078
Rubenstein Properties Fund II	20,800,000	0	0	0	0	0	1,244,066	468,732	164,265	0	632,997	447,429	168,580	59,078	0	227,658
Strategic Value Special Situations Fund IV LP	43,300,000	0	0	0	0	0	2,533,050	3,117,102	0	1,953	3,115,149	0	0	0	0	0
Strategic Value Special Situations Fund V LP	70,000,000	13,417,696	7,785,642	-10,063	0	7,775,578	3,857,668	2,238,419	-2,893	0	2,235,526	1,543,688	895,728	-1,158	0	894,570
Taurus Mining Finance Fund LLC	45,100,000	0	0	0	0	0	2,794,280	229,805	0	16,369	213,436	880,891	72,446	0	5,160	67,285
Tenaska Power Fund II, L.P.	27,000,000	8,824,749	25,405	0	0	25,405	1,363,534	3,925	0	0	3,925	625,175	1,800	0	0	1,800
Triton Fund IV, L.P.	26,637,009	1	0	0	0	0	1,650,361	832,617	0	0	808,004	520,272	262,480	0	0	254,721
VantagePoint Venture Partners 2006, L.P.	27,000,000	9,787,893	2,086,366	0	0	2,086,366	1,237,814	263,850	0	0	263,850	644,258	137,329	0	0	137,329
VantagePoint Venture Partners IV, L.P.	36,000,000	13,050,524	23,085	0	0	23,085	1,650,419	2,919	0	0	2,919	859,011	1,519	0	0	1,519
Vista Equity Partners III, L.P.	45,000,000	16,313,156	707,267	0	0	707,267	2,063,023	89,444	0	0	89,444	1,073,764	46,554	0	0	46,554
Vista Equity Partners IV, L.P.	27,000,000	0	0	0	0	0	1,484,997	1,081,232	5,464	0	1,086,696	0	0	0	0	0
Vista Equity Partners VI LP	25,000,000	0	0	0	0	0	1,525,000	2,048,434	0	359,465	1,688,969	0	0	0	0	0
Walton Street Real Estate Fund VI, LP	36,000,000	10,001,992	4,402,240	0	0	4,402,240	2,186,190	962,221	0	0	962,221	725,004	319,100	0	0	319,100
Walton Street Real Estate Fund VII, LP	38,120,000	0	0	0	0	0	2,279,995	486,390	2,496	38,170	450,716	820,000	174,930	898	13,728	162,100
Warburg, Pincus Private Equity IX, L.P.	50,000,000	18,125,728	20,338	0	0	20,338	2,292,248	2,572	0	0	2,572	1,193,071	1,339	0	0	1,339
Warburg, Pincus Private Equity X, L.P.	38,750,000	14,047,440	256,809	0	0	256,809	1,776,492	32,477	0	0	32,477	924,630	16,904	0	0	16,904
Wayzata Opportunities Fund III, L.P.	35,500,000	0	0	0	0	0	2,009,300	258,603	0	23,293	235,310	301,749	38,836	0	3,498	35,338
White Oak Yield Spectrum Parallel Fund LP	100,000,000	14,833,350	20,215,944	1,765,098	1,295,481	20,685,561	5,327,845	7,261,165	633,988	465,311	7,429,842	1,377,012	1,876,689	163,858	120,262	1,920,285

KRS Board Meeting - Quarterly Investment Performance Report

Kentucky Public Pensions Authority

Capital Calls and Distributions

For the period July 1, 2023 thru September 30, 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	10,991,860	0	362,730	10,629,130	7,095,858	5,913,227	0	195,136	5,718,092	2,740,996	2,284,168	0	75,377	2,208,791
Adams Street SPC II B1	75,000,000	13,190,205	10,739,258	0	286,424	10,452,834	7,095,858	5,777,336	0	154,086	5,623,250	2,740,996	2,231,676	0	59,520	2,172,156
AMERRA Agri Fund II, LP	16,200,000	2,153,555	1,305,658	0	11,245	1,294,413	1,746,327	1,058,764	0	9,119	1,049,645	656,373	397,946	0	3,427	394,519
AMERRA-KRS Agri Holding Company, LP	35,000,000	4,652,745	2,687,127	0	149,494	2,537,633	3,772,929	2,179,002	0	121,225	2,057,777	1,418,089	818,997	0	45,564	773,434
Arcano KRS Fund I, L.P.	4,000,000	903,884	422,051	0	0	422,051	430,530	201,028	0	0	201,028	191,459	89,398	0	0	89,398
Arctos Sports Partners Fund II	40,000,000	11,500,000	1,390,204	1,473,264	0	2,863,469	500,000	60,444	64,055	0	124,499	500,000	60,444	64,055	0	124,499
Ares Special Situations Fund IV, L.P.	13,808,000	0	0	0	0	0	1,038,363	754,910	0	11,514	743,396	646,214	469,810	0	7,166	462,644
Barings Euro Real Estate II	67,495,313	9,584,336	1,850,371	0	0	1,795,674	7,168,000	1,383,868	0	0	1,342,961	2,740,312	529,050	0	0	513,411
Barings Real Estate European Value Add I SCSp	47,643,750	6,765,413	932,626	103,067	0	1,008,159	5,059,765	697,499	77,082	0	753,989	1,934,338	266,652	29,468	0	288,248
Bay Hills Capital I, L.P.	7,500,000	1,694,783	130,687	0	0	130,687	807,244	62,247	0	0	62,247	358,986	27,682	0	0	27,682
Bay Hills Capital III, L.P.	48,750,000	0	0	0	0	0	3,666,009	3,397,046	0	0	3,397,046	2,281,498	2,114,112	0	0	2,114,112
Bay Hills Emerging Partners II LP	5,000,000	1,129,855	2,464,988	0	0	2,464,988	538,163	1,174,102	0	0	1,174,102	239,324	522,130	0	0	522,130
Bay Hills Emerging Partners II-B LP	5,000,000	910,000	1,324,439	0	0	1,324,439	555,000	807,762	0	0	807,762	215,000	312,917	0	0	312,917
BDCM Opportunity Fund IV, L.P.	24,420,000	0	0	0	0	0	1,836,387	3,367,416	0	229,659	3,137,756	1,142,854	2,095,673	0	142,926	1,952,747
Blackstone Capital Partners V, L.P.	12,414,403	2,805,296	2,684	0	0	2,684	1,336,194	1,278	0	0	1,278	594,214	568	0	0	568
Blackstone Capital Partners VI, L.P.	40,000,000	0	0	0	0	0	3,360,001	1,188,508	0	77,421	1,111,087	1,599,998	565,956	0	36,867	529,088
Blue Torch Credit Opportunities Fund II LP	60,000,000	10,726,688	11,168,201	0	1,067,332	10,100,868	5,638,524	5,870,607	0	561,047	5,309,560	2,184,246	2,274,150	0	217,338	2,056,812
BSP Co-Invest Vehicle K LP	0	0	3,009,521	0	51,480	2,958,041	0	1,817,279	0	31,086	1,786,193	0	654,264	0	11,192	643,072
BSP Private Credit Fund	50,000,000	8,493,880	7,857,703	0	180,045	7,677,657	5,128,971	4,744,820	0	108,719	4,636,100	1,846,552	1,708,248	0	39,142	1,669,107
BTG Pactual Brazil Timberland Fund I	15,500,000	2,391,768	1,970,051	0	0	1,970,051	1,621,536	1,335,626	0	0	1,335,626	615,184	506,715	0	0	506,715
Camelot Opportunities Fund, L.P.	2,600,000	587,525	169,311	0	0	169,311	279,845	80,645	0	0	80,645	124,449	35,863	0	0	35,863
Cerberus KRS Levered Loan Opportunities Fund, L.P.	60,000,000	10,192,656	13,534,256	0	0	13,737,135	6,154,765	8,172,567	0	0	8,295,074	2,215,862	2,942,319	0	0	2,986,425
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	77,258	0	0	77,258	322,898	36,799	0	0	36,799	143,595	16,365	0	0	16,365
Crestview Partners II, L.P.	7,500,000	1,694,783	869,183	6,455	46,177	829,461	807,244	414,002	3,075	21,995	395,082	358,986	184,109	1,367	9,781	175,695
Crestview Partners III, L.P.	21,000,000	0	0	0	0	0	1,579,203	1,363,184	0	0	1,363,184	982,799	848,362	0	0	848,362
CS Adjacent Investment Partners Parallel LP	60,000,000	10,192,656	6,477,723	607,327	1,973,915	5,111,135	6,154,765	3,911,528	366,730	1,191,935	3,086,324	2,215,862	1,408,244	132,032	429,125	1,111,150
CVC European Equity Partners VI, L.P.	12,811,087	0	0	0	0	0	963,396	868,344	3,079	6,137	839,632	599,558	540,404	1,916	3,819	522,535
DAG Ventures II, L.P.	3,000,000	677,913	57,283	0	0	57,283	322,898	27,284	0	0	27,284	143,595	12,134	0	0	12,134
DAG Ventures III, L.P.	3,000,000	677,913	8,074	0	0	8,074	322,898	3,846	0	0	3,846	143,595	1,710	0	0	1,710
DAG Ventures IV, L.P.	10,000,000	2,259,711	523,387	0	0	523,387	1,076,326	249,295	0	0	249,295	478,649	110,863	0	0	110,863
DAG Ventures V, L.P.	7,000,000	0	0	0	0	0	588,000	2,934	0	1,892	1,042	280,000	1,397	0	901	496
DCM VI, L.P.	1,500,000	338,957	90,249	0	16,170	74,078	161,449	42,986	0	7,702	35,284	71,797	19,116	0	3,425	15,691
DivcoWest Fund IV	9,200,000	1,303,635	63,048	0	0	63,048	977,043	47,253	0	0	47,253	368,004	17,798	0	0	17,798
Fundamental Partners III LP	30,000,000	4,260,001	3,753,129	0	42,900	3,710,229	3,185,999	2,806,916	0	32,084	2,774,832	1,218,001	1,073,079	0	12,266	1,060,813
Green Equity Investors V, L.P.	10,000,000	2,259,711	33,242	0	0	33,242	1,076,326	15,834	0	0	15,834	478,649	7,041	0	0	7,041
Green Equity Investors VI, L.P.	28,000,000	0	0	0	0	0	2,352,000	2,726,425	89,788	2,703	2,813,510	1,119,999	1,298,296	42,756	1,287	1,339,765
Green Equity Investors VII LP	25,000,000	4,550,000	5,715,359	375,416	722,445	5,368,330	2,775,000	3,485,741	228,963	440,612	3,274,092	1,075,001	1,350,333	88,697	170,688	1,268,343
Greenfield Acquisition Partners VII, L.P.	12,200,000	1,729,339	128,145	0	9,767	118,378	1,296,093	96,041	0	7,320	88,721	487,855	36,150	0	2,755	33,395
H.I.G. BioVentures II, L.P.	11,500,000	0	0	0	0	0	966,000	652,621	0	177,638	474,984	459,999	310,772	0	84,589	226,182
H.I.G. Capital Partner V, L.P.	6,900,000	0	0	0	0	0	518,881	404,531	0	83,313	321,218	322,920	251,755	0	51,849	199,907
H.I.G. Ventures II, L.P.	2,000,000	451,942	67,988	0	0	67,988	215,265	32,384	0	0	32,384	95,730	14,401	0	0	14,401
H&F Spock I LP	1,794,672	405,544	887,346	0	0	887,346	193,165	422,653	0	0	422,653	85,902	187,956	0	0	187,956
Harvest Partners VI, L.P.	11,600,000	0	0	0	0	0	872,320	161,194	0	0	161,194	542,879	100,317	0	0	100,317
Harvest Partners VII LP	20,000,000	3,640,000	5,130,648	0	0	5,130,648	2,220,000	3,129,131	0	0	3,129,131	860,001	1,212,187	0	0	1,212,187
Horsley Bridge International Fund V, L.P.	5,000,000	1,129,855	2,307,557	0	84,110	2,223,447	538,163	1,099,116	0	40,062	1,059,053	239,324	488,783	0	17,816	470,967
IFM US Infrastructure Debt Fund	30,000,000	5,109,247	5,109,268	358,519	358,519	5,109,268	2,874,861	2,874,873	201,731	201,731	2,874,873	968,545	968,549	67,963	67,963	968,549
Institutional Venture Partners XII, L.P.	3,000,000	677,913	128	0	0	128	322,898	61	0	0	61	143,595	27	0	0	27
Kayne Anderson Energy Fund VII LP	50,000,000	9,100,000	4,935,187	29,825	75,431	4,889,581	5,550,000	3,009,922	18,190	46,005	2,982,107	2,150,001	1,166,006	7,047	17,822	1,155,231
KCP IV Co-Invest	8,618,225	0	0	0	0	0	648,091	126,549	0	0	122,808	403,332	78,756	0	0	76,428
Keyhaven Capital Partners Fund III, L.P.	2,964,500	669,891	234,292	0	0	227,366	319,077	111,596	0	0	108,297	141,895	49,627	0	0	48,160
Keyhaven Capital Partners IV LP	8,618,225	0	0	0	0	0	648,091	626,202	0	0	607,691	403,332	389,709	0	0	378,190
Levine Leichtman Capital Partners V, L.P.	24,000,000	0	0	0	0	0	1,804,804	656,017	3,328	1,391	657,954	1,123,199	408,265	2,071	866	409,470
Levine Leichtman Capital Partners VI LP	37,500,000	6,824,999	9,431,767	198,647	39,576	9,590,839	4,162,518	5,752,368	121,153	24,137	5,849,384	1,612,494	2,228,377	46,933	9,350	2,265,959
Lubert Adler VII	15,250,000	2,160,925	1,093,029	0	77,042	1,015,987	1,619,550	819,193	0	57,741	761,453	610,001	308,548	0	21,748	286,800
Lubert-Adler Real Estate Fund VII-B LP	15,750,000	2,236,500	645,486	0	0	645,486	1,672,649	482,751	0	0	482,751	639,451	184,555	0	0	184,555
Magentar MTP Energy Opportunities Fund II LLC	12,500,000	1,699,157	6,212	0	0	6,212	1,338,541	4,894	0	0	4,894	508,953	1,861	0	0	1,861
Maritime Partners LP	75,000,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MartinPatterson Global Opportunities Partners II	5,000,000	1,129,855	17,187	0	5,639	11,547	538,163	8,186	0	2,686	5,500	239,324	3,640	0	1,195	2,446
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

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Capital Calls and Distributions

For the period July 1, 2023 thru September 30, 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
Mesa West Core Lending Fund, LP	29,600,000	3,759,201	5,523,242	112,461	112,461	5,523,242	3,223,440	4,736,071	96,433	96,433	4,736,071	1,207,680	1,774,395	36,129	36,129	1,774,395
Mesa West Real Estate Income Fund IV LP	14,000,000	1,988,001	822,582	0	0	822,582	1,486,800	615,198	0	0	615,198	568,400	235,189	0	0	235,189
MiddleGround Partners I LP	25,000,000	17,500,000	30,689,671	1,860,048	797,779	31,587,528	1,250,000	2,192,120	132,861	56,984	2,256,253	500,000	876,848	53,144	22,794	902,501
MiddleGround Partners II LP	25,000,000	4,796,517	4,804,369	539,474	54,711	5,310,790	2,260,759	2,264,459	254,272	25,787	2,503,153	885,701	887,151	99,617	10,103	980,664
MiddleGround Partners II-X LP	12,500,000	2,398,258	2,385,680	403,694	21,912	2,772,848	1,130,379	1,124,451	190,274	10,328	1,306,936	442,851	440,528	74,544	4,046	512,021
Mill Road Capital I, L.P.	3,000,000	677,913	43,804	0	0	43,804	322,898	20,864	0	0	20,864	143,595	9,279	0	0	9,279
New Mountain Partners III, L.P.	7,186,045	1,623,838	81,363	0	0	81,363	773,453	38,754	0	0	38,754	343,959	17,234	0	0	17,234
New Mountain Partners IV, L.P.	17,200,000	0	0	0	0	0	1,293,443	443,812	0	0	443,812	804,959	276,201	0	0	276,201
New State Capital Partners Fund III LP	7,500,000	1,438,955	285,622	44,920	0	330,542	678,228	134,623	21,172	0	155,796	265,710	52,742	8,295	0	61,036
Oak Hill Capital Partners II, L.P.	7,500,000	1,694,783	3,905	0	0	3,905	807,244	1,860	0	0	1,860	358,986	827	0	0	827
Oberland Capital Healthcare LP	15,500,000	5,951,995	1,051,959	0	0	1,051,959	1,681,752	297,234	0	0	297,234	393,703	69,583	0	0	69,583
Patron Capital V LP	14,822,500	2,104,795	945,045	9,639	23,636	903,132	1,574,149	706,787	7,209	17,677	675,440	601,794	270,203	2,756	6,758	258,220
Riverside Capital Appreciation Fund VI, L.P.	18,712,500	0	0	0	0	0	1,396,123	444,527	0	0	444,527	862,056	274,479	0	0	274,479
Rubenstein Properties Fund II	9,200,000	1,303,637	491,177	172,131	0	663,308	977,044	368,125	129,008	0	497,133	368,003	138,654	48,591	0	187,245
Secondary Opportunities Fund III, L.P.	75,000,000	10,548,299	2,316,807	0	124,332	2,192,431	8,756,849	1,923,337	0	103,216	1,820,084	1,960,724	430,649	0	23,111	407,530
Strategic Value Special Situations Fund IV LP	21,700,000	8,332,800	10,254,103	0	6,425	10,247,678	2,354,450	2,897,317	0	1,815	2,895,502	551,180	678,266	0	425	677,841
Strategic Value Special Situations Fund V LP	30,000,000	5,755,820	3,339,823	-4,317	0	3,335,506	2,712,910	1,574,170	-2,035	0	1,572,136	1,062,842	616,715	-797	0	615,918
Taurus Mining Finance Fund LLC	19,900,000	0	0	0	0	0	1,496,479	123,072	0	8,766	114,306	931,319	76,993	0	5,456	71,137
Tenaska Power Fund II, L.P.	3,000,000	588,919	1,696	0	0	1,696	316,438	911	0	0	911	137,845	397	0	0	397
Triton Fund IV, L.P.	13,704,460	0	0	0	0	0	1,030,578	532,698	0	0	516,952	641,368	331,519	0	0	321,719
VantagePoint Venture Partners 2006, L.P.	3,000,000	677,913	144,503	0	0	144,503	322,898	68,828	0	0	68,828	143,595	30,608	0	0	30,608
VantagePoint Venture Partners IV, L.P.	4,000,000	903,884	1,599	0	0	1,599	430,530	762	0	0	762	191,459	339	0	0	339
Vista Equity Partners III, L.P.	5,000,000	1,129,855	48,987	0	0	48,987	538,163	23,333	0	0	23,333	239,324	10,376	0	0	10,376
Vista Equity Partners IV, L.P.	23,000,000	0	0	0	0	0	1,932,000	1,406,697	7,109	0	1,413,806	919,999	669,855	3,385	0	673,240
Vista Equity Partners VI LP	25,000,000	4,550,000	6,111,722	0	1,072,504	5,039,218	2,775,000	3,727,479	0	654,109	3,073,370	1,075,001	1,443,979	0	253,394	1,190,585
Walton Street Real Estate Fund VII, LP	4,000,000	754,575	332,116	0	0	332,116	431,496	189,917	0	0	189,917	184,453	81,184	0	0	81,184
Walton Street Real Estate Fund VII, LP	16,755,000	2,375,001	506,658	2,600	39,761	469,497	1,780,001	379,727	1,948	29,800	351,875	669,998	142,930	733	11,217	132,447
Warburg, Pincus Private Equity IX, L.P.	10,000,000	2,259,711	2,536	0	0	2,536	1,076,326	1,208	0	0	1,208	478,649	537	0	0	537
Warburg, Pincus Private Equity X, L.P.	7,500,000	1,694,783	30,970	0	0	30,970	807,244	14,751	0	0	14,751	358,986	6,560	0	0	6,560
Wayzata Opportunities Fund III, L.P.	18,712,500	0	0	0	0	0	1,396,123	179,685	0	16,185	163,501	862,056	110,949	0	9,993	100,956
White Oak Yield Spectrum Parallel Fund LP	50,000,000	8,493,880	10,896,111	951,277	698,183	11,149,205	5,128,971	6,579,542	574,422	421,593	6,732,371	1,846,552	2,368,792	206,806	151,783	2,423,814

Kentucky Public Pensions Authority

KERS, KERS-Hazardous, & SPRS Unit Holdings

Quarter Ending: September 30, 2023

KRS Board Meeting - Quarterly Investment Performance Report

Kentucky Public Pensions Authority												
Pension: KERS, KERS-H, & SPRS Unit Holdings												
Quarter Ended September 30, 2023												
UNIT OF PARTICIPATION	KERS				KERS-H				SPRS			
	Shares/Par	Base Cost	Base Market Value	Base Market Unrealized G/L	Shares/Par	Base Cost	Base Market Value	Base Market Unrealized G/L	Shares/Par	Base Cost	Base Market Value	Base Market Unrealized G/L
Grand Total	23,114,058.021	3,129,580,349.10	3,572,388,730.60	442,808,381.50	5,173,645.027	775,936,386.87	894,996,556.18	119,060,169.31	3,873,348.636	533,936,386.73	585,483,799.13	51,547,412.40
KRS ABSOLUTE RETURN UNIT	149,434.330	5,255,410.03	18,577,300.53	13,321,890.50	38,988.293	4,385,705.92	4,846,926.65	461,220.73	16,176.680	1,191,322.42	2,011,044.22	819,721.80
KRS ADAMS STREET A1 UNIT	161,169.061	23,818,600.02	25,583,438.60	1,764,838.58	47,928.073	7,083,118.39	7,607,942.28	524,823.89	19,985.790	2,953,628.56	3,172,477.57	218,849.01
KRS ADAMS STREET B1 UNIT	185,167.735	24,060,512.57	25,159,109.56	1,098,596.99	55,064.748	7,155,059.03	7,481,757.16	326,698.13	22,961.748	2,983,627.67	3,119,858.51	136,230.84
KRS AMERRA AGRI UNIT	-	-	-	-	25,880.495	2,457,609.71	2,190,504.03	-267,105.68	13,094.175	1,243,421.27	1,108,280.31	-135,140.96
KRS AMERRA UNIT	-	-	-	-	7,288.741	1,030,255.69	1,491,809.70	461,554.01	3,687.718	521,257.21	754,776.92	233,519.71
KRS ARCTOS SPORTS II UNIT	28,714.247	3,133,226.03	4,855,445.62	1,722,219.59	736.263	80,339.26	124,498.65	44,159.39	7,362.627	803,391.30	1,244,985.98	441,594.68
KRS ARROWMARK UNIT	405,599.625	54,361,913.84	89,897,732.81	35,535,818.97	125,747.662	16,865,638.20	27,870,907.72	11,005,269.52	50,099.456	6,714,499.59	11,104,121.48	4,389,621.89
KRS BLACKROCK UNIT	670,348.376	49,266,466.09	109,520,725.99	60,254,259.90	237,248.064	25,961,184.84	38,761,308.51	12,800,123.67	92,898.536	9,487,831.21	15,177,653.10	5,689,821.89
KRS BLUE TORCH UNIT	142,036.104	23,006,081.87	23,877,581.50	871,499.63	42,675.479	6,912,296.64	7,174,142.34	261,845.70	17,607.214	2,851,900.88	2,959,935.36	108,034.48
KRS BNYM CUSTODY FEE UNIT	-132,461.301	-132,461.30	-132,461.30	0.00	-33,306.718	-33,306.72	-33,306.72	0.00	-21,682.090	-21,682.09	-21,682.09	0.00
KRS BTG UNIT	-	-	-	-	17,210.185	1,138,226.28	1,695,157.51	556,931.23	7,965.109	526,785.90	784,542.08	257,756.18
KRS CASH UNIT	6,769,992.540	680,611,656.76	679,033,812.78	-1,577,843.98	866,600.353	86,758,987.85	86,920,471.24	161,483.39	1,185,147.546	118,917,870.90	118,870,922.25	-46,948.65
KRS DIVCOWEST IV UNIT	-	-	-	-	114.410	0.00	60,166.95	60,166.95	41.147	0.00	21,638.75	21,638.75
KRS DOMESTIC EQUITY UNIT	661,419.778	146,054,864.83	169,661,502.25	23,606,637.42	232,672.036	49,636,268.92	59,682,955.47	10,046,686.55	130,350.711	29,029,855.07	33,436,401.79	4,406,546.72
KRS GLOBAL FIXED UNIT	272,034.256	41,547,021.54	36,189,831.60	-5,357,189.94	133,270.602	19,114,320.09	17,729,534.19	-1,384,785.90	55,808.650	8,049,726.80	7,424,453.36	-625,273.44
KRS GREENFIELD UNIT	-	-	-	-	265.191	108,716.04	2,525.28	-106,190.76	95.376	39,099.18	908.22	-38,190.96
KRS GREENFIELD VII UNIT	-	-	-	-	378.106	105,084.85	113,819.38	8,734.53	135.987	37,793.87	40,935.49	3,141.62
KRS HARRISON UNIT	229,149.436	44,153,648.85	52,123,984.94	7,970,336.09	56,783.798	10,923,883.71	12,916,452.62	1,992,568.91	27,092.529	5,213,165.72	6,162,662.23	949,496.51
KRS IFM INFRASTR DEBT UNIT	78,848.461	12,176,311.73	11,678,739.54	-497,572.19	24,284.713	3,750,209.44	3,596,960.99	-153,248.45	9,413.397	1,453,682.11	1,394,277.20	-59,404.91
KRS INTERNAL EQUITY UNIT	1,687,667.803	328,987,000.80	528,587,415.25	199,600,414.45	537,662.167	122,130,318.12	168,398,931.73	46,268,613.61	265,859.423	62,163,933.53	83,268,724.43	21,104,790.90
KRS INTERNATIONAL EQUITY UNIT	1,992,278.315	307,796,794.93	327,003,286.58	19,206,491.65	673,546.883	110,397,351.84	110,552,849.34	155,497.50	373,125.235	58,200,733.61	61,243,038.80	3,042,305.19
KRS L-A VII UNIT	-	-	-	-	12,174.863	1,201,250.59	977,022.82	-224,227.77	4,377.246	431,887.24	351,270.42	-80,616.82
KRS LIQUID CORE FIXED UNIT	5,831,281.559	748,456,355.06	721,126,711.04	-27,329,644.02	872,706.190	111,716,635.63	107,923,402.11	-3,793,233.52	974,807.867	122,947,257.61	120,549,828.36	-2,397,429.25
KRS LIQUID CREDIT FIXED UNIT	10,020.517	0.76	0.76	0.00	3,470.982	0.26	0.26	0.00	1,638.453	0.12	0.12	0.00
KRS LIQUID HY FI UNIT	873,117.069	146,743,773.72	138,572,447.57	-8,171,326.15	191,129.914	33,130,408.13	30,334,236.87	-2,796,171.26	183,122.141	30,049,810.53	29,063,322.87	-986,487.66
KRS MAGNETAR MTP UNIT	56.770	48,972.80	35,061.35	-13,891.45	10.120	8,729.21	6,253.71	-2,475.50	5.023	4,333.10	3,103.99	-1,229.11
KRS MESA WEST CORE UNIT	30,939.768	5,913,947.12	5,436,173.39	-477,773.73	18,362.356	3,509,851.75	3,226,299.28	-283,552.47	5,427.457	1,037,425.88	953,614.05	-83,811.83
KRS MESA WEST IV UNIT	34,892.283	3,670,865.82	2,782,542.75	-888,323.07	9,544.948	1,004,181.94	761,177.65	-243,004.29	4,034.654	424,468.13	321,750.15	-102,717.98
KRS MULTI SECTOR CREDIT FI	787,166.869	92,155,007.38	130,415,606.72	38,260,599.34	132,990.502	15,825,854.97	22,033,494.66	6,207,639.69	71,068.687	8,378,326.26	11,774,461.43	3,396,135.17
KRS OBERLAND UNIT	-	-	-	-	4,426.833	285,704.29	356,706.48	71,002.19	-	-	-	-
KRS PE 2010 UNIT	441,750.265	116,054,304.73	137,521,645.18	21,467,340.45	55,865.406	14,663,227.05	17,391,506.36	2,728,279.31	29,076.849	7,632,066.76	9,051,938.23	1,419,871.47
KRS PE 2011 UNIT	-	-	-	-	13,874.188	2,975,975.79	4,649,141.16	1,673,165.37	-	-	-	-
KRS PE 2012 A UNIT	-	-	-	-	540.071	219,369.75	297,035.39	77,665.64	81.106	32,945.44	44,607.75	11,662.31
KRS PE 2012 B UNIT	-	-	-	-	5,002.269	686,769.27	875,079.52	188,310.25	751.221	103,135.06	131,415.99	28,280.93
KRS PE 2013 UNIT	0.007	2.49	2.62	0.13	19,871.015	4,080,690.98	7,442,674.18	3,361,983.20	6,264.275	1,284,498.28	2,346,279.63	1,061,781.35
KRS PE 2014 UNIT	-	-	-	-	19,116.234	1,496,113.84	3,247,614.61	1,751,500.77	6,026.335	471,646.23	1,023,800.69	552,154.46
KRS PE 2015 UNIT	-	-	-	-	13,715.506	1,675,487.42	4,643,555.59	2,968,068.17	4,323.785	528,194.48	1,463,871.33	935,676.85
KRS PE 2016 UNIT	-	-	-	-	27,006.005	2,184,988.31	6,787,130.49	4,602,142.18	-	-	-	-
KRS PE 2017 UNIT	-	-	-	-	17,444.346	1,990,795.60	3,088,271.17	1,097,475.57	-	-	-	-
KRS PE 2018 UNIT	-	-	-	-	18,077.296	3,087,147.80	3,115,148.76	28,000.96	-	-	-	-
KRS PE 2019 UNIT	-	-	-	-	21,727.024	2,288,936.07	5,279,628.68	2,990,692.61	-	-	-	-
KRS PE 2021 UNIT	192,554.551	20,005,175.94	24,698,285.80	4,693,109.86	55,360.592	5,751,608.11	7,100,905.78	1,349,297.67	22,153.147	2,301,568.77	2,841,505.19	539,936.42
KRS PERIMETER PARK UNIT	18,137.810	2,353,726.79	1,775,463.17	-578,263.62	14,865.299	1,929,056.02	1,455,125.56	-473,930.46	3,523.666	457,262.99	344,922.52	-112,340.47
KRS POST-2015 REAL ESTATE UNIT	193,300.256	19,090,912.64	25,031,074.12	5,940,161.48	52,878.184	5,222,407.78	6,847,366.74	1,624,958.96	22,351.636	2,207,514.72	2,894,385.50	686,870.78
KRS PRIVATE CREDIT FI UNIT	372,635.270	73,368,235.52	78,119,017.28	4,750,781.76	133,843.182	26,475,934.93	28,058,798.21	1,582,863.28	34,592.529	6,821,403.61	7,251,955.43	430,551.82
KRS PROLOGIS UNIT	246,066.872	29,934,802.50	57,290,640.54	27,355,838.04	67,312.722	8,188,801.80	15,672,117.62	7,483,315.82	28,453.125	3,461,408.87	6,624,612.83	3,163,203.96
KRS REAL RETURN UNIT	231,379.198	29,621,223.34	45,877,616.33	16,256,392.99	57,954.821	7,750,480.84	11,491,219.03	3,740,738.19	23,142.242	3,076,847.46	4,588,618.63	1,511,771.17
KRS RUBENSTEIN PF II UNIT	-	-	-	-	6,189.255	1,071,589.27	632,996.93	-438,592.34	2,225.969	385,399.14	227,657.70	-157,741.44
KRS SHENKMAN UNIT	152,584.558	25,803,471.39	25,315,470.95	-488,000.44	126,236.393	21,135,314.67	20,944,018.07	-191,296.60	58,707.711	9,697,610.82	9,740,260.56	42,649.74
KRS STOCKBRIDGE UNIT	123,246.396	23,647,248.28	26,195,995.83	2,548,747.55	24,535.920	4,707,699.52	5,215,104.69	507,405.17	11,887.258	2,280,804.68	2,526,634.22	245,829.54
KRS TAURUS UNIT	-	-	-	-	635.881	10,747.09	213,436.77	202,689.68	200.460	3,387.98	67,285.44	63,897.46
KRS TPF II UNIT	255.889	2,899,215.49	25,404.82	-2,873,810.67	39.538	447,962.68	3,925.36	-444,037.32	18.128	205,391.05	1,799.76	-203,591.29
KRS WALTON VI UNIT	22,864.485	4,124,428.54	4,402,239.73	277,811.19	4,997.614	901,498.25	962,221.32	60,723.07	1,657.353	298,962.45	319,100.35	20,137.90
KRS WALTON VII UNIT	-	-	-	-	2,962.294	843,674.05	450,715.36	-392,958.69	1,065.388	303,429.10	162,099.62	-141,329.48
KRS WATERFALL UNIT	250,408.863	41,591,630.20	46,149,864.40	4,558,234.20	77,737.720	13,506,225.11	14,326,909.97	820,684.86	95,137.961	16,747,555.26	17,533,740.41	786,185.15

KRS Board Meeting - Quarterly Investment Performance Report

Kentucky Public Pensions Authority												
Insurance: KERS INS, KERS-H INS, & SPRS INS Unit Holdings												
Quarter End September 30, 2023												
UNIT OF PARTICIPATION	KERS INS				KERS-H INS				SPRS INS			
	Shares/Par	Base Cost	Base Market Value	Base Market Unrealized G/L	Shares/Par	Base Cost	Base Market Value	Base Market Unrealized G/L	Shares/Par	Base Cost	Base Market Value	Base Market Value
Grand Total	10,604,060.234	1,277,312,876.39	1,454,400,692.33	177,087,815.94	4,850,286.103	495,594,972.49	604,808,608.57	109,213,636.08	1,789,403.203	199,294,385.80	242,217,884.91	42,923,499.11
KRS ARROWMARK UNIT	198,111.345	26,853,263.17	44,381,558.86	17,528,295.69	123,155.934	16,693,501.97	27,589,799.73	10,896,297.76	45,477.526	6,164,388.94	10,188,025.81	4,023,636.87
KRS INS PE 2014 UNIT	-	-	-	-	12,389.084	972,974.80	2,106,579.46	1,133,604.66	7,710.209	605,519.69	1,311,006.36	705,486.67
KRS INS ABSOLUTE RETURN UNIT	53,318.856	6,781,379.72	6,632,740.81	-148,638.91	35,404.828	3,725,082.06	4,404,277.69	679,195.63	13,277.000	1,369,370.03	1,651,627.71	282,257.68
KRS INS ADAMS STREET A1 UNIT	66,960.778	9,895,895.05	10,629,130.52	733,235.47	36,022.501	5,323,637.28	5,718,091.64	394,454.36	13,914.812	2,056,420.28	2,208,790.84	152,370.56
KRS INS ADAMS STREET B1 UNIT	76,920.836	9,996,401.75	10,452,833.94	456,432.19	41,380.656	5,377,705.86	5,623,250.45	245,544.59	15,984.569	2,077,306.31	2,172,155.87	94,849.56
KRS INS AMERRA AGRI UNIT	29,978.992	2,847,064.39	2,537,632.13	-309,432.26	24,310.096	2,308,697.97	2,057,777.01	-250,920.96	9,137.170	867,745.27	773,434.15	-94,311.12
KRS INS AMERRA UNIT	6,297.930	893,933.34	1,294,413.87	400,480.53	5,107.016	724,894.41	1,049,645.25	324,750.84	1,919.518	272,458.08	394,518.63	122,060.55
KRS INS ARCTOS SPORTS II UNIT	16,934.044	1,847,800.35	2,863,468.55	1,015,668.20	736.263	80,339.30	124,498.67	44,159.37	736.263	80,339.30	124,498.67	44,159.37
KRS INS BLACKROCK UNIT	713,625.894	30,237,244.42	46,406,892.79	16,169,648.37	408,777.073	15,661,964.50	26,582,659.01	10,920,694.51	139,307.933	4,638,291.79	9,059,156.02	4,420,864.23
KRS INS BLUE TORCH UNIT	60,085.147	9,732,199.34	10,100,868.40	368,669.06	31,583.986	5,115,767.78	5,309,559.88	193,792.10	12,234.971	1,981,740.27	2,056,811.68	75,071.41
KRS INS BNYM CUSTODY FEE UNIT	-73,244.626	-73,244.63	-73,244.63	0.00	-30,890.966	-30,890.97	-30,890.97	0.00	-12,341.819	-12,341.82	-12,341.82	0.00
KRS INS BTG UNIT	20,001.053	1,322,804.77	1,970,050.60	647,245.83	13,560.021	896,817.60	1,335,626.05	438,808.45	5,144.451	340,237.96	506,714.76	166,476.80
KRS INS DB PRIVATE EQ UNIT	1,504,248.566	157,221,787.18	159,288,272.73	2,066,485.55	198,265.368	22,155,009.80	20,994,766.91	-1,160,242.89	76,918.737	8,149,208.63	8,145,098.51	-4,110.12
KRS INS DIVCOWEST IV UNIT	7,828.394	3,041,735.94	2,192,431.32	-849,304.62	6,498.874	2,525,148.17	1,820,084.03	-705,064.14	1,455.146	565,401.13	407,530.29	-157,870.84
KRS INS DIVCOWEST IV UNIT	119.209	0.00	63,048.28	63,048.28	89.344	0.00	47,253.02	47,253.02	33.651	0.00	17,797.63	17,797.63
KRS INS DOMESTIC EQUITY UNIT	411,599.638	91,521,767.31	105,696,085.30	14,174,317.99	170,058.670	35,729,814.74	43,669,950.19	7,940,135.45	68,838.907	14,165,051.06	17,677,379.46	3,512,328.40
KRS INS GLOBAL FIXED UNIT	171,849.203	24,058,006.77	22,412,992.88	-1,645,013.89	7,402.918	1,407,625.92	965,506.65	-442,119.27	38,953.336	5,490,336.97	5,080,389.24	-409,947.73
KRS INS GREENFIELD UNIT	277.542	113,247.52	2,630.44	-110,617.08	208.010	84,874.21	1,971.44	-82,902.77	78.297	31,947.22	742.07	-31,205.15
KRS INS GREENFIELD VII UNIT	393.233	158,436.77	118,378.34	-40,058.43	294.716	118,743.64	88,720.91	-30,022.73	110.933	44,695.77	33,395.12	-11,300.65
KRS INS HARRISON UNIT	77,338.977	14,803,784.59	17,204,123.26	2,400,338.67	56,020.957	10,706,062.67	12,461,911.02	1,755,848.35	21,455.354	4,100,922.65	4,772,762.31	671,839.66
KRS INS IFM INFRAST DEBT UNIT	34,930.160	5,326,947.89	5,109,267.83	-217,680.06	19,654.433	2,997,357.55	2,874,872.67	-122,484.88	6,621.606	1,009,813.13	968,548.63	-41,264.50
KRS INS INTERNAL EQUITY UNIT	871,757.848	208,364,240.99	273,630,628.52	65,266,387.53	360,144.659	72,388,798.15	113,043,558.63	40,654,760.48	146,650.828	31,709,196.95	46,031,312.86	14,322,115.91
KRS INS INTL EQ UNIT	1,276,819.413	204,948,047.27	207,063,354.26	2,585,306.99	476,693.993	73,451,471.48	77,306,043.55	3,854,570.07	199,819.694	30,833,057.51	32,405,002.36	1,571,944.85
KRS INS L-A-VII UNIT	12,657.390	1,249,157.14	1,015,987.11	-233,170.03	9,486.342	936,206.71	761,452.50	-174,754.21	3,573.015	352,620.78	286,799.82	-65,820.96
KRS INS LIQUID CORE FIXED UNIT	1,420,037.825	180,468,304.02	173,624,341.28	-6,843,962.74	602,172.465	76,156,040.89	73,626,065.26	-2,529,975.63	230,856.929	29,225,332.33	28,226,277.87	-999,054.46
KRS INS LIQUID CREDIT FIXED UN	1,738,367.727	1.31	1.74	0.43	1,337,212.672	0.92	1.34	0.42	401,179.551	0.07	0.40	0.33
KRS INS LIQUID HY FI UNIT	334,914.346	55,302,628.60	51,724,441.54	-3,578,187.06	105,977.981	18,301,241.30	16,367,324.80	-1,933,916.50	41,235.016	7,215,701.33	6,368,369.11	-847,332.22
KRS INS MAGNETAR MTP	9.979	8,670.98	6,212.19	-2,458.79	7.861	6,831.38	4,893.68	-1,937.70	2.989	2,597.93	1,860.73	-737.20
KRS INS MESA WEST CORE UNIT	32,110.702	6,055,107.41	5,523,242.14	-531,865.27	27,534.291	5,192,354.11	4,736,070.75	-456,283.36	10,315.876	1,945,382.72	1,774,395.37	-170,987.35
KRS INS MESA WEST IV UNIT	10,669.816	1,079,271.48	822,581.49	-256,689.99	7,979.816	807,173.76	615,197.95	-191,975.81	3,050.668	308,579.73	235,188.97	-73,390.76
KRS INS MULTI SECTOR CREDIT FI	212,837.305	25,066,433.20	34,693,849.68	9,627,416.48	127,352.658	14,945,479.58	20,759,302.39	5,813,822.81	43,970.794	5,146,829.82	7,167,522.24	2,020,692.42
KRS INS OBERLAND UNIT	12,641.059	842,573.76	1,051,958.67	209,384.91	3,571.765	238,070.09	297,233.73	59,163.64	836.161	55,731.67	69,583.32	13,851.65
KRS INS PE 2010 UNIT	34,031.787	9,113,882.46	10,389,843.65	1,275,961.19	16,209.725	4,343,715.55	4,948,800.03	605,084.48	7,208.557	1,931,128.09	2,200,759.55	269,631.46
KRS INS PE 2011 UNIT	-	-	-	-	16,961.119	3,513,283.36	5,814,415.68	2,301,132.32	8,076.713	1,673,147.89	2,768,765.83	1,095,617.94
KRS INS PE 2014 A UNIT	-	-	-	-	292.129	107,141.40	161,194.21	54,052.81	181.803	66,679.79	100,317.29	33,637.50
KRS INS PE 2012 B UNIT	-	-	-	-	3,459.511	471,570.02	608,027.29	136,457.27	2,136.122	291,151.82	375,434.70	84,282.88
KRS INS PE 2013 UNIT	-	-	-	-	16,265.054	3,480,512.54	6,015,935.47	2,535,422.93	10,122.367	2,166,063.13	3,743,947.40	1,577,884.27
KRS INS PE 2015 UNIT	-	-	-	-	11,498.859	1,416,535.19	3,868,256.54	2,451,721.35	7,156.185	881,562.81	2,407,365.76	1,525,802.95
KRS INS PE 2016 UNIT	80,578.388	7,399,503.72	20,250,125.52	12,850,621.80	49,143.966	4,512,884.63	12,350,352.31	7,837,467.68	19,037.764	1,748,237.63	4,784,373.58	3,036,135.95
KRS INS PE 2017 UNIT	52,331.140	7,183,355.50	9,214,168.06	2,030,812.56	31,916.389	4,381,076.83	5,619,655.37	1,238,578.54	12,363.908	1,697,160.35	2,176,966.26	479,805.91
KRS INS PE 2018 UNIT	57,798.227	6,233,263.37	10,247,678.53	4,014,415.16	16,331.006	1,761,220.28	2,895,502.31	1,134,282.03	3,823.109	412,303.89	677,840.72	265,536.83
KRS INS PE 2019 UNIT	129,990.810	13,371,604.95	31,587,527.91	18,215,922.96	9,285.061	955,113.40	2,256,252.76	1,301,139.36	3,714.025	382,045.84	902,501.25	520,455.41
KRS INS PE 2021 UNIT	91,254.682	9,555,403.16	11,749,685.39	2,194,282.23	43,011.385	4,503,782.53	5,538,019.87	1,034,237.34	16,850.642	1,764,453.78	2,169,639.27	405,185.49
KRS INS POST-2015 REAL ESTATE	62,492.878	6,128,160.00	8,062,679.32	1,934,519.32	46,737.610	4,580,081.56	6,029,972.92	1,449,891.36	17,867.695	1,750,213.23	2,305,246.61	555,033.38
KRS INS PRIVATE CREDIT FI UNIT	197,391.653	38,548,340.75	40,633,174.41	2,084,833.66	119,193.591	23,268,055.05	24,536,062.69	1,268,007.64	42,912.534	8,373,399.12	8,833,567.44	460,168.32
KRS INS PROLOGIS UNIT	46,483.481	9,183,347.92	17,214,370.32	8,031,022.40	34,764.411	8,668,108.12	12,874,411.12	6,006,303.00	13,290.350	2,625,661.97	4,921,856.14	2,296,194.17
KRS INS REAL RETURN UNIT	68,498.165	8,992,881.12	13,626,108.10	4,633,226.98	31,321.742	4,319,600.59	6,230,728.11	1,911,127.52	12,226.169	1,651,836.46	2,432,110.41	780,273.95
KRS INS RUBENSTEIN PF II UNIT	6,525.019	1,122,901.34	663,307.81	-459,593.53	4,890.340	841,585.78	497,132.76	-344,453.02	1,841.942	316,983.50	187,244.59	-129,738.91
KRS INS SHENKMAN UNIT	287,631.371	47,885,665.33	47,412,724.32	-472,941.01	69,055.736	11,538,037.62	11,583,044.08	-154,993.54	24,041.905	4,014,003.24	3,963,031.61	-50,971.63
KRS INS STOCKBRIDGE UNIT	38,327.097	7,474,341.37	8,111,254.91	636,913.54	27,034.753	5,272,170.08	5,721,429.23	449,259.15	10,358.286	2,020,016.52	2,192,148.76	172,132.24
KRS INS TAURUS UNIT	-	-	-	-	339.879	24,589.78	114,306.13	89,716.35	211.520	15,302.62	17,137.17	55,834.55
KRS INS TPF II UNIT	17.081	37,894.35	1,719.84	-36,174.51	9.178	20,359.13	924.11	-19,435.02	3.998	8,867.99	402.55	-8,465.44
KRS INS WALTON VI UNIT	1,735.306	311,155.30	332,115.71	20,960.41	992.318	177,930.86	189,917.17	11,986.31	424.189	76,060.69	81,184.43	5,123.74
KRS INS WALTON VII UNIT	3,085.731	877,553.49	469,496.34	-408,057.15	2,312.675	657,706.14	351,875.28	-305,830.86	870.498	247,561.11	132,446.94	-115,114.17
KRS INS WATERFALL UNIT	145,488.837	24,398,730.46	25,994,537.35	1,595,806.89	81,095.381	13,581,114.42	14,489,337.84	908,223.42	26,222.831	4,386,660.83	4,685,241.66	298,580.83

Kentucky Public Pensions Authority

Security Litigation Report

Quarter Ending: September 30, 2023

Claims Filed during the Quarter (pg 3):

14

Proceeds Received during the Quarter (pg 4):

\$95,674.83

Kentucky Retirement Systems	
Quarterly Securities Litigation Report	
Quarter Ended 09/30/23	
Total Claims Filed	
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	49
Fiscal Year 2024	14
Total Filed	1,688
Proceeds Received	
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	\$259,261
Fiscal Year 2024	\$95,675
Total Proceeds	\$60,568,622

KRS Board Meeting - Quarterly Investment Performance 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
ARCONIC INC., Securities Litigation	FILED	8/21/2023	11/4/2013	6/27/2017	956589	KRS SYSTEMATIC
ARCONIC INC., Securities Litigation	FILED	8/22/2023	11/4/2013	6/27/2017	KR3F1005002	SASCO CAPITAL
ARCONIC INC., Securities Litigation	FILED	8/22/2023	11/4/2013	6/27/2017	KR2F1005002	SASCO CAPITAL
ARCONIC INC., Securities Litigation	FILED	8/21/2023	11/4/2013	6/27/2017	956766	KRS INS SYSTEMATIC
ARCONIC INC., Securities Litigation	FILED	8/21/2023	11/4/2013	6/27/2017	KR2F3006002	LOOMIS
ARCONIC INC., Securities Litigation	FILED	8/21/2023	11/4/2013	6/27/2017	956599	KRS S P 500 INDEX
ARCONIC INC., Securities Litigation	FILED	8/21/2023	11/4/2013	6/27/2017	KR3F1002002	NTGI STRUCTURED
ARCONIC INC., Securities Litigation	FILED	8/21/2023	11/4/2013	6/27/2017	KR2F1002002	NTGI STRUCTURED
ARCONIC INC., Securities Litigation	FILED	8/21/2023	11/4/2013	6/27/2017	KR2F1009002	INVESCO
ARCONIC INC., Securities Litigation	FILED	8/21/2023	11/4/2013	6/27/2017	KR3F3006002	LOOMIS
ARCONIC INC., Securities Litigation	FILED	8/22/2023	11/4/2013	6/27/2017	956772	KRS INS KRS INTERNAL EQUITY
ARCONIC INC., Securities Litigation	FILED	8/22/2023	11/4/2013	6/27/2017	956774	KRS INS S P 500 INDEX
ARCONIC INC., Securities Litigation	FILED	8/21/2023	11/4/2013	6/27/2017	956596	KRS KRS INTERNAL EQUITY
BUMBLE INC., Securities Litigation	FILED	9/20/2023	9/7/2021	1/24/2022	956588	KRS NTGI STRUCTURED
BUMBLE INC., Securities Litigation	FILED	9/20/2023	9/7/2021	1/24/2022	956765	KRS INS NTGI STRUCTURED
CARDINAL HEALTH, INC., Securities Litigation	FILED	7/24/2023	3/2/2015	5/2/2018	KR2F1006002	WESTFIELD CAPITAL
CARDINAL HEALTH, INC., Securities Litigation	FILED	7/24/2023	3/2/2015	5/2/2018	909181	KRS INS RIVER ROAD FAV
CARDINAL HEALTH, INC., Securities Litigation	FILED	7/24/2023	3/2/2015	5/2/2018	956597	KRS RIVER ROAD FAV
CARDINAL HEALTH, INC., Securities Litigation	FILED	7/24/2023	3/2/2015	5/2/2018	956599	KRS S P 500 INDEX
CARDINAL HEALTH, INC., Securities Litigation	FILED	7/24/2023	3/2/2015	5/2/2018	KR2F1009002	INVESCO
CARDINAL HEALTH, INC., Securities Litigation	FILED	7/24/2023	3/2/2015	5/2/2018	KR3F1008002	WESTWOOD MGMT
CARDINAL HEALTH, INC., Securities Litigation	FILED	7/24/2023	3/2/2015	5/2/2018	956596	KRS KRS INTERNAL EQUITY
CARDINAL HEALTH, INC., Securities Litigation	FILED	7/24/2023	3/2/2015	5/2/2018	KR2F1008002	WESTWOOD MGMT
CARDINAL HEALTH, INC., Securities Litigation	FILED	7/24/2023	3/2/2015	5/2/2018	956769	KRS INS RIVER ROAD
CARDINAL HEALTH, INC., Securities Litigation	FILED	7/24/2023	3/2/2015	5/2/2018	KR3F1006002	WESTFIELD CAPITAL
CARDINAL HEALTH, INC., Securities Litigation	FILED	7/24/2023	3/2/2015	5/2/2018	956592	KRS RIVER ROAD
CARDINAL HEALTH, INC., Securities Litigation	FILED	7/24/2023	3/2/2015	5/2/2018	956774	KRS INS S P 500 INDEX
CARDINAL HEALTH, INC., Securities Litigation	FILED	7/24/2023	3/2/2015	5/2/2018	956772	KRS INS KRS INTERNAL EQUITY
CBL & ASSOCIATES PROPERTIES, INC., Securities Litigation	FILED	9/20/2023	7/29/2014	3/26/2019	956765	KRS INS NTGI STRUCTURED
CBL & ASSOCIATES PROPERTIES, INC., Securities Litigation	FILED	9/20/2023	7/29/2014	3/26/2019	KR2F1003002	SYSTEMATIC
CBL & ASSOCIATES PROPERTIES, INC., Securities Litigation	FILED	9/20/2023	7/29/2014	3/26/2019	956816	KRS INS NUVEEN REAL ASSET
CBL & ASSOCIATES PROPERTIES, INC., Securities Litigation	FILED	9/20/2023	7/29/2014	3/26/2019	KR3F1003002	SYSTEMATIC
CBL & ASSOCIATES PROPERTIES, INC., Securities Litigation	FILED	9/20/2023	7/29/2014	3/26/2019	956642	KRS NUVEEN REAL ASSET
CBL & ASSOCIATES PROPERTIES, INC., Securities Litigation	FILED	9/20/2023	7/29/2014	3/26/2019	956588	KRS NTGI STRUCTURED
D-MARKET Electronic Services & Trading, Securities Litigation	FILED	9/25/2023	5/28/2021	11/23/2021	412207	KRS JP MORGAN EMERGING MARKETS
D-MARKET Electronic Services & Trading, Securities Litigation	FILED	9/25/2023	5/28/2021	11/23/2021	412211	KRS INS JP MORGAN EMERGING MARKETS
EXELON CORPORATION Securities Litigation	FILED	9/26/2023	2/8/2019	10/31/2019	956599	KRS S P 500 INDEX
EXELON CORPORATION Securities Litigation	FILED	9/26/2023	2/8/2019	10/31/2019	956774	KRS INS S P 500 INDEX
EXELON CORPORATION Securities Litigation	FILED	9/26/2023	2/8/2019	10/31/2019	956596	KRS KRS INTERNAL EQUITY
EXELON CORPORATION Securities Litigation	FILED	9/26/2023	2/8/2019	10/31/2019	956772	KRS INS KRS INTERNAL EQUITY
FIFTH THIRD BANCORP, Securities Litigation	FILED	9/1/2023	5/21/2018	5/22/2019	956596	KRS KRS INTERNAL EQUITY
FIFTH THIRD BANCORP, Securities Litigation	FILED	9/1/2023	5/21/2018	5/22/2019	956765	KRS INS NTGI STRUCTURED
FIFTH THIRD BANCORP, Securities Litigation	FILED	9/1/2023	5/21/2018	5/22/2019	904032	KRS PUTNAM
FIFTH THIRD BANCORP, Securities Litigation	FILED	9/1/2023	5/21/2018	5/22/2019	956599	KRS S P 500 INDEX
FIFTH THIRD BANCORP, Securities Litigation	FILED	9/1/2023	5/21/2018	5/22/2019	956588	KRS NTGI STRUCTURED
FIFTH THIRD BANCORP, Securities Litigation	FILED	9/1/2023	5/21/2018	5/22/2019	956629	KRS MANULIFE ASSET MGMT
FIFTH THIRD BANCORP, Securities Litigation	FILED	9/1/2023	5/21/2018	5/22/2019	956805	KRS INS MANULIFE ASSET MGMT
FIFTH THIRD BANCORP, Securities Litigation	FILED	9/1/2023	5/21/2018	5/22/2019	956772	KRS INS KRS INTERNAL EQUITY
FIFTH THIRD BANCORP, Securities Litigation	FILED	9/1/2023	5/21/2018	5/22/2019	904033	KRS INS PUTNAM
FIFTH THIRD BANCORP, Securities Litigation	FILED	9/1/2023	5/21/2018	5/22/2019	956774	KRS INS S P 500 INDEX
FIFTH THIRD BANCORP, Securities Litigation	FILED	9/1/2023	5/21/2018	5/22/2019	140455	KRS INS ABEL NOSER TRANSITION
FIFTH THIRD BANCORP, Securities Litigation	FILED	9/1/2023	5/21/2018	5/22/2019	140454	KRS ABEL NOSER TRANSITION
INTERFACE, INC., Securities Litigation	FILED	9/11/2023	5/12/2016	9/28/2020	KR3F1011002	KRS INTERNAL EQUITY
INTERFACE, INC., Securities Litigation	FILED	9/11/2023	5/12/2016	9/28/2020	956588	KRS NTGI STRUCTURED
INTERFACE, INC., Securities Litigation	FILED	9/11/2023	5/12/2016	9/28/2020	KR2F1011002	KRS INTERNAL EQUITY
INTERFACE, INC., Securities Litigation	FILED	9/11/2023	5/12/2016	9/28/2020	956765	KRS INS NTGI STRUCTURED
KRAFT HEINZ COMPANY, Fair Fund	FILED	9/21/2023	2/26/2016	2/21/2019	956596	KRS KRS INTERNAL EQUITY
KRAFT HEINZ COMPANY, Fair Fund	FILED	9/21/2023	2/26/2016	2/21/2019	956599	KRS S P 500 INDEX
KRAFT HEINZ COMPANY, Fair Fund	FILED	9/21/2023	2/26/2016	2/21/2019	956592	KRS RIVER ROAD
KRAFT HEINZ COMPANY, Fair Fund	FILED	9/21/2023	2/26/2016	2/21/2019	956772	KRS INS KRS INTERNAL EQUITY
KRAFT HEINZ COMPANY, Fair Fund	FILED	9/21/2023	2/26/2016	2/21/2019	956597	KRS RIVER ROAD FAV
KRAFT HEINZ COMPANY, Fair Fund	FILED	9/21/2023	2/26/2016	2/21/2019	909181	KRS INS RIVER ROAD FAV
KRAFT HEINZ COMPANY, Fair Fund	FILED	9/21/2023	2/26/2016	2/21/2019	956769	KRS INS RIVER ROAD
MAXAR TECHNOLOGIES INC., Securities Litigation	FILED	9/25/2023	2/24/2017	9/27/2023	956588	KRS NTGI STRUCTURED
MAXAR TECHNOLOGIES INC., Securities Litigation	FILED	9/25/2023	2/24/2017	9/27/2023	956765	KRS INS NTGI STRUCTURED
MOHAWK INDUSTRIES, INC Securities Litigation	FILED	7/17/2023	4/28/2017	7/25/2019	956774	KRS INS S P 500 INDEX
MOHAWK INDUSTRIES, INC Securities Litigation	FILED	7/17/2023	4/28/2017	7/25/2019	956599	KRS S P 500 INDEX
MOHAWK INDUSTRIES, INC Securities Litigation	FILED	7/17/2023	4/28/2017	7/25/2019	956596	KRS KRS INTERNAL EQUITY
MOHAWK INDUSTRIES, INC Securities Litigation	FILED	7/17/2023	4/28/2017	7/25/2019	956772	KRS INS KRS INTERNAL EQUITY
SHATTUCK LABS, INC., et al., Securities Litigation	FILED	9/28/2023	9/18/2020	11/8/2021	956588	KRS NTGI STRUCTURED
SHATTUCK LABS, INC., et al., Securities Litigation	FILED	9/28/2023	9/18/2020	11/8/2021	956765	KRS INS NTGI STRUCTURED
TACTILE SYSTEMS TECHNOLOGY, INC, Securities Litigation	FILED	8/21/2023	5/7/2018	6/8/2020	412224	KRS NEXT CENTURY GROWTH
TACTILE SYSTEMS TECHNOLOGY, INC, Securities Litigation	FILED	8/21/2023	5/7/2018	6/8/2020	956588	KRS NTGI STRUCTURED
TACTILE SYSTEMS TECHNOLOGY, INC, Securities Litigation	FILED	8/21/2023	5/7/2018	6/8/2020	412227	KRS INS NEXT CENTURY GROWTH
TACTILE SYSTEMS TECHNOLOGY, INC, Securities Litigation	FILED	8/21/2023	5/7/2018	6/8/2020	956765	KRS INS NTGI STRUCTURED
WELLS FARGO & COMPANY, Securities Litigation (18CV03948WHO)	FILED	8/25/2023	11/3/2016	8/3/2017	956596	KRS KRS INTERNAL EQUITY
WELLS FARGO & COMPANY, Securities Litigation (18CV03948WHO)	FILED	8/25/2023	11/3/2016	8/3/2017	956599	KRS S P 500 INDEX
WELLS FARGO & COMPANY, Securities Litigation (18CV03948WHO)	FILED	8/25/2023	11/3/2016	8/3/2017	956772	KRS INS KRS INTERNAL EQUITY
WELLS FARGO & COMPANY, Securities Litigation (18CV03948WHO)	FILED	8/25/2023	11/3/2016	8/3/2017	909181	KRS INS RIVER ROAD FAV
WELLS FARGO & COMPANY, Securities Litigation (18CV03948WHO)	FILED	8/25/2023	11/3/2016	8/3/2017	956774	KRS INS S P 500 INDEX
WELLS FARGO & COMPANY, Securities Litigation (18CV03948WHO)	FILED	8/25/2023	11/3/2016	8/3/2017	956597	KRS RIVER ROAD FAV



Transaction Detail
Reported By Transaction Category

Report ID: IACS0008

Base Currency: USD

Status: PRELIMINARY

KR2G00000000 - TOTAL FUND

6/30/2023 - 9/30/2023

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				
CLASS ACTIONS							
CASH & CASH EQUIVALENTS							
U.S. DOLLAR							
CD	0.000	04-cv-9866 (LTS)(HBP)Pfizer, I	6/30/2023	0.000000	90.23	90.23	90.23
	NA9123459	nc. (2004) Distribution 4TH DI		0.000000	90.23	90.23	90.23
		20230630S000470 / 000000008745	6/30/2023			Gain/Loss Local Amounts: 90.23 Long	
		KR2F19020002 : S&P 500 INDEX				Gain/Loss Base Amounts: 90.23 Long	
CD	0.000	24274NAVIENT CORPORATION Secur	7/5/2023	0.000000	5,343.07	5,343.07	5,343.07
	NA9123459	ities Litigation Distribution		0.000000	5,343.07	5,343.07	5,343.07
		20230705S000020 / 000000000009	7/5/2023			Gain/Loss Local Amounts: 5,343.07 Long	
		KR2F30060002 : LOOMIS				Gain/Loss Base Amounts: 5,343.07 Long	
CD	0.000	24274NAVIENT CORPORATION Secur	7/5/2023	0.000000	2,349.64	2,349.64	2,349.64
	NA9123459	ities Litigation Distribution		0.000000	2,349.64	2,349.64	2,349.64
		20230705S000110 / 000000000009	7/5/2023			Gain/Loss Local Amounts: 2,349.64 Long	
		KR2F19020002 : S&P 500 INDEX				Gain/Loss Base Amounts: 2,349.64 Long	
CD	0.000	24274NAVIENT CORPORATION Secur	7/5/2023	0.000000	190.56	190.56	190.56
	NA9123459	ities Litigation Distribution		0.000000	190.56	190.56	190.56
		20230705S000120 / 000000000009	7/5/2023			Gain/Loss Local Amounts: 190.56 Long	
		KR2F30070002 : COLUMBIA				Gain/Loss Base Amounts: 190.56 Long	
CD	0.000	18385DEPOMED, INC., Securities	7/18/2023	0.000000	43.41	43.41	43.41
	NA9123459	Litigation (17CV04830) Distri		0.000000	43.41	43.41	43.41
		20230718S000380 / 000000000010	7/18/2023			Gain/Loss Local Amounts: 43.41 Long	
		KR2F10020002 : NTGI STRUCTURED				Gain/Loss Base Amounts: 43.41 Long	
CD	0.000	24219INTRUSION INC., Security	7/18/2023	0.000000	37.61	37.61	37.61
	NA9123459	Litigation Distribution 1ST DI		0.000000	37.61	37.61	37.61
		20230718S000410 / 000000000000	7/18/2023			Gain/Loss Local Amounts: 37.61 Long	
		KR2F10020002 : NTGI STRUCTURED				Gain/Loss Base Amounts: 37.61 Long	



Transaction Detail
Reported By Transaction Category

Report ID: IACS0008

Base Currency: USD

Status: PRELIMINARY

KR2G00000000 - TOTAL FUND

6/30/2023 - 9/30/2023

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	17866SYNCHRONOSS TECHNOLOGIES, INC, Securities Litigation (1	7/19/2023	0.000000	152.01	152.01	152.01
	NA9123459	20230719S041230 / 000000000000	7/19/2023	0.000000	152.01	152.01	152.01
		KR2F10020002 : NTGI STRUCTURED				Gain/Loss Local Amounts: 152.01 Long	
						Gain/Loss Base Amounts: 152.01 Long	
CD	0.000	14-CV-09662 (JSR)PETROBRAS - P	7/21/2023	0.000000	8,568.01	8,568.01	8,568.01
	NA9123459	ETROLEO BRASILEIRO S.A (2014)	7/21/2023	0.000000	8,568.01	8,568.01	8,568.01
		20230721S000050 / 000000000009	7/21/2023			Gain/Loss Local Amounts: 8,568.01 Long	
		KR2F90010002 : CASH ACCOUNT KR2				Gain/Loss Base Amounts: 8,568.01 Long	
CD	0.000	18145HD SUPPLY HOLDINGS, INC.	7/25/2023	0.000000	131.13	131.13	131.13
	NA9123459	Distribution 2ND DISTRIBUTION	7/25/2023	0.000000	131.13	131.13	131.13
		20230725S000020 / 000000000008	7/25/2023			Gain/Loss Local Amounts: 131.13 Long	
		KR2F10060002 : WESTFIELD CAPITAL				Gain/Loss Base Amounts: 131.13 Long	
CD	0.000	15861VALEANT PHARMACEUTICALS I	7/25/2023	0.000000	17,796.03	17,796.03	17,796.03
	NA9123459	INTERNATIONAL, INC., Securities	7/25/2023	0.000000	17,796.03	17,796.03	17,796.03
		20230725S000140 / 000000000003	7/25/2023			Gain/Loss Local Amounts: 17,796.03 Long	
		KR2F30070002 : COLUMBIA				Gain/Loss Base Amounts: 17,796.03 Long	
CD	0.000	19486TEVA PHARMACEUTICAL INDUS	8/18/2023	0.000000	479.48	479.48	479.48
	NA9123459	TRIES LIMITED Securities Litig	8/18/2023	0.000000	479.48	479.48	479.48
		20230818S000880 / 000000000006	8/18/2023			Gain/Loss Local Amounts: 479.48 Long	
		KR2F30080002 : NISA				Gain/Loss Base Amounts: 479.48 Long	
CD	0.000	25093SCANA CORPORATION Securit	8/25/2023	0.000000	5,481.85	5,481.85	5,481.85
	NA9123459	ies Litigation Distribution 1S	8/25/2023	0.000000	5,481.85	5,481.85	5,481.85
		20230825S000170 / 000000000000	8/25/2023			Gain/Loss Local Amounts: 5,481.85 Long	
		KR2F19020002 : S&P 500 INDEX				Gain/Loss Base Amounts: 5,481.85 Long	
CD	0.000	22102EVOLENT HEALTH, INC., Sec	8/25/2023	0.000000	2,005.26	2,005.26	2,005.26
	NA9123459	urities Litigation Distributio	8/25/2023	0.000000	2,005.26	2,005.26	2,005.26
		20230825S000420 / 0000000006055	8/25/2023			Gain/Loss Local Amounts: 2,005.26 Long	
		KR2F10020002 : NTGI STRUCTURED				Gain/Loss Base Amounts: 2,005.26 Long	



Transaction Detail
Reported By Transaction Category

Report ID: IACS0008

Base Currency: USD

Status: PRELIMINARY

KR2G00000000 - TOTAL FUND

6/30/2023 - 9/30/2023

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	APPLIED MICRO CIRCUITS CORPS	8/25/2023	0.000000	45.67	45.67	45.67
	NA9123459	SEC LIT PROCEEDS		0.000000	45.67	45.67	45.67
		20230831A000010	8/25/2023				
		KR2F90010002 : CASH ACCOUNT KR2					Gain/Loss Local Amounts: 45.67 Long Gain/Loss Base Amounts: 45.67 Long
CD	0.000	VALEANT PHARMACEUTICALS INTL	8/25/2023	0.000000	21,578.44	21,578.44	21,578.44
	NA9123459	INC (2015) SEC LIT PROCEEDS		0.000000	21,578.44	21,578.44	21,578.44
		20230831A000020	8/25/2023				
		KR2F90010002 : CASH ACCOUNT KR2					Gain/Loss Local Amounts: 21,578.44 Long Gain/Loss Base Amounts: 21,578.44 Long
CD	0.000	FUQI INTERNATIONAL INC SEC LIT	8/25/2023	0.000000	216.96	216.96	216.96
	NA9123459	PROCEEDS		0.000000	216.96	216.96	216.96
		20230831A000030	8/25/2023				
		KR2F90010002 : CASH ACCOUNT KR2					Gain/Loss Local Amounts: 216.96 Long Gain/Loss Base Amounts: 216.96 Long
CD	0.000	21392HEALTHCARE SERVICES GROUP	9/1/2023	0.000000	58.81	58.81	58.81
	NA9123459	, INC., Securities Litigation		0.000000	58.81	58.81	58.81
		20230901S000790 / 000000000000	9/1/2023				
		KR2F10020002 : NTGI STRUCTURED					Gain/Loss Local Amounts: 58.81 Long Gain/Loss Base Amounts: 58.81 Long
CD	0.000	1-18-cv-01428-MKB-VMSHENRY SCH	9/7/2023	0.000000	131.03	131.03	131.03
	NA9123459	EIN, INC. Distribution 2ND DIS		0.000000	131.03	131.03	131.03
		20230907S000200 / 000000000000	9/7/2023				
		KR2F10110002 : KRS INTERNAL EQUITY					Gain/Loss Local Amounts: 131.03 Long Gain/Loss Base Amounts: 131.03 Long
CD	0.000	HARBORVIEW MORTGAGE LOAN	8/25/2023	0.000000	1,157.23	1,157.23	1,157.23
	NA9123459	TRUSTSEC LIT PROCEEDS		0.000000	1,157.23	1,157.23	1,157.23
		20230915A000020	8/25/2023				
		KR2F90010002 : CASH ACCOUNT KR2					Gain/Loss Local Amounts: 1,157.23 Long Gain/Loss Base Amounts: 1,157.23 Long
CD	0.000	HARBORVIEW MORTGAGE LOAN	8/25/2023	0.000000	833.97	833.97	833.97
	NA9123459	TRUSTSEC LIT PROCEEDS		0.000000	833.97	833.97	833.97
		20230915A000030	8/25/2023				
		KR2F90010002 : CASH ACCOUNT KR2					Gain/Loss Local Amounts: 833.97 Long Gain/Loss Base Amounts: 833.97 Long
TOTAL U.S. DOLLAR CASH & CASH EQUIVALENTS:					66,690.40	66,690.40	66,690.40
					66,690.40	66,690.40	66,690.40



Transaction Detail
Reported By Transaction Category

Report ID: IACS0008

Base Currency: USD

KR2G00000000 - TOTAL FUND

6/30/2023 - 9/30/2023

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				
TOTAL CASH & CASH EQUIVALENTS CLASS ACTIONS:					66,690.40	66,690.40	66,690.40
EQUITY							
CANADIAN DOLLAR							
CD	0.000	ORD INST: BSDTUS33GBL THE BANK	8/2/2023	0.000000	1,703.81	1,703.81	1,703.81
	NCB63VJ03	OF NEW YORK MELLON 02149,MA,U		0.000000	1,276.79	1,276.79	1,274.69
		20230828A000010	8/2/2023			Gain/Loss Local Amounts: 1,703.81 Long	
		KR2F20010002 : KRS NONUS ACWI-EX US				Gain/Loss Base Amounts: 1,276.79 Long	
U.S. DOLLAR							
CD	0.000	PFIZER, INC (2004)	7/6/2023	0.000000	28.07	28.07	28.07
	717081103	PFIZER INC		0.000000	28.07	28.07	28.07
		20230712A000070	7/6/2023			Gain/Loss Local Amounts: 28.07 Long	
		KR2F90010002 : CASH ACCOUNT KR2				Gain/Loss Base Amounts: 28.07 Long	
TOTAL EQUITY CLASS ACTIONS:					1,304.86	1,304.86	1,302.76
TOTAL CLASS ACTIONS:					67,995.26	67,995.26	67,993.16
TOTAL TRANSACTIONS BASE:					67,995.26	67,995.26	67,993.16



Transaction Detail
Reported By Transaction Category

Report ID: IACS0008

Base Currency: USD

Status: PRELIMINARY

KR3G00000000 - TOTAL FUND

6/30/2023 - 9/30/2023

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				
CLASS ACTIONS							
CASH & CASH EQUIVALENTS							
U.S. DOLLAR							
CD	0.000	04-cv-9866 (LTS)(HBP)Pfizer, I	6/30/2023	0.000000	30.01	30.01	30.01
	NA9123459	nc. (2004) Distribution 4TH DI		0.000000	30.01	30.01	30.01
		20230630S000460 / 000000008745	6/30/2023			Gain/Loss Local Amounts: 30.01 Long	
		KR3F19020002 : S&P 500 INDEX				Gain/Loss Base Amounts: 30.01 Long	
CD	0.000	24274NAVIENT CORPORATION Secur	7/5/2023	0.000000	1,806.65	1,806.65	1,806.65
	NA9123459	ities Litigation Distribution		0.000000	1,806.65	1,806.65	1,806.65
		20230705S000020 / 000000000009	7/5/2023			Gain/Loss Local Amounts: 1,806.65 Long	
		KR3F30060002 : LOOMIS				Gain/Loss Base Amounts: 1,806.65 Long	
CD	0.000	24274NAVIENT CORPORATION Secur	7/5/2023	0.000000	2,301.85	2,301.85	2,301.85
	NA9123459	ities Litigation Distribution		0.000000	2,301.85	2,301.85	2,301.85
		20230705S000110 / 000000000009	7/5/2023			Gain/Loss Local Amounts: 2,301.85 Long	
		KR3F19020002 : S&P 500 INDEX				Gain/Loss Base Amounts: 2,301.85 Long	
CD	0.000	2-17-CV-3711-TJSEndo Internati	7/12/2023	0.000000	840.14	840.14	840.14
	NA9123459	onal plc (2017) (E.D. Pa.) Dis		0.000000	840.14	840.14	840.14
		20230712S000010 / 000000000000	7/12/2023			Gain/Loss Local Amounts: 840.14 Long	
		KR3F90010002 : CASH ACCOUNT KR3				Gain/Loss Base Amounts: 840.14 Long	
CD	0.000	2-17-CV-3711-TJSEndo Internati	7/14/2023	0.000000	439.94	439.94	439.94
	NA9123459	onal plc (2017) (E.D. Pa.) Dis		0.000000	439.94	439.94	439.94
		20230717S000040 / 000000000000	7/14/2023			Gain/Loss Local Amounts: 439.94 Long	
		KR3F90010002 : CASH ACCOUNT KR3				Gain/Loss Base Amounts: 439.94 Long	
CD	0.000	25914DEUTSCHE BANK AKTIENGESEL	7/19/2023	0.000000	3,218.96	3,218.96	3,218.96
	NA9123459	LSCHAFT, Securities Litigation		0.000000	3,218.96	3,218.96	3,218.96
		20230719S000010 / 000000006051	7/19/2023			Gain/Loss Local Amounts: 3,218.96 Long	
		KR3F20070002 : LSV ASSET MGMT				Gain/Loss Base Amounts: 3,218.96 Long	



Transaction Detail
Reported By Transaction Category

Report ID: IACS0008

Base Currency: USD

Status: PRELIMINARY

KR3G00000000 - TOTAL FUND

6/30/2023 - 9/30/2023

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	20479MICROCHIP TECHNOLOGY INC.	7/24/2023	0.000000	2,641.97	2,641.97	2,641.97
	NA9123459	, Securities Litigation Distri		0.000000	2,641.97	2,641.97	2,641.97
		20230724S000040 / 000000006040	7/24/2023				
		KR3F90010002 : CASH ACCOUNT KR3					
						Gain/Loss Local Amounts: 2,641.97 Long	
						Gain/Loss Base Amounts: 2,641.97 Long	
CD	0.000	18145HD SUPPLY HOLDINGS, INC.	7/25/2023	0.000000	55.50	55.50	55.50
	NA9123459	Distribution 2ND DISTRIBUTION		0.000000	55.50	55.50	55.50
		20230725S000020 / 000000000008	7/25/2023				
		KR3F10060002 : WESTFIELD CAPITAL					
						Gain/Loss Local Amounts: 55.50 Long	
						Gain/Loss Base Amounts: 55.50 Long	
CD	0.000	15861VALEANT PHARMACEUTICALS I	7/25/2023	0.000000	4,763.88	4,763.88	4,763.88
	NA9123459	INTERNATIONAL, INC., Securities		0.000000	4,763.88	4,763.88	4,763.88
		20230725S000140 / 000000000003	7/25/2023				
		KR3F30070002 : COLUMBIA					
						Gain/Loss Local Amounts: 4,763.88 Long	
						Gain/Loss Base Amounts: 4,763.88 Long	
CD	0.000	23064LIBERTY OILFIELD SERVICES	8/15/2023	0.000000	29.76	29.76	29.76
	NA9123459	INC Securities Litigation Dis		0.000000	29.76	29.76	29.76
		20230815S000370 / 000000000000	8/15/2023				
		KR3F10020002 : NTGI STRUCTURED					
						Gain/Loss Local Amounts: 29.76 Long	
						Gain/Loss Base Amounts: 29.76 Long	
CD	0.000	19486TEVA PHARMACEUTICAL INDUS	8/18/2023	0.000000	162.31	162.31	162.31
	NA9123459	TRIES LIMITED Securities Litig		0.000000	162.31	162.31	162.31
		20230818S000470 / 000000000006	8/18/2023				
		KR3F30080002 : NISA					
						Gain/Loss Local Amounts: 162.31 Long	
						Gain/Loss Base Amounts: 162.31 Long	
CD	0.000	25093SCANA CORPORATION Securit	8/25/2023	0.000000	2,431.71	2,431.71	2,431.71
	NA9123459	ies Litigation Distribution 1S		0.000000	2,431.71	2,431.71	2,431.71
		20230825S000170 / 000000000000	8/25/2023				
		KR3F19020002 : S&P 500 INDEX					
						Gain/Loss Local Amounts: 2,431.71 Long	
						Gain/Loss Base Amounts: 2,431.71 Long	
CD	0.000	VALEANT PHARMACEUTICALS INTL	8/25/2023	0.000000	8,621.97	8,621.97	8,621.97
	NA9123459	INC (2015) SEC LIT PROCEEDS		0.000000	8,621.97	8,621.97	8,621.97
		20230831A000010	8/25/2023				
		KR3F90010002 : CASH ACCOUNT KR3					
						Gain/Loss Local Amounts: 8,621.97 Long	
						Gain/Loss Base Amounts: 8,621.97 Long	



Transaction Detail
Reported By Transaction Category

Report ID: IACS0008

Base Currency: USD

KR3G00000000 - TOTAL FUND

6/30/2023 - 9/30/2023

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	VALEANT PHARMACEUTICALS INTL	8/25/2023	0.000000	67.91	67.91	67.91
	NA9123459	INC (2015) SEC LIT PROCEEDS		0.000000	67.91	67.91	67.91
		20230831A000020	8/25/2023				
		KR3F90010002 : CASH ACCOUNT KR3					
						Gain/Loss Local Amounts: 67.91 Long	
						Gain/Loss Base Amounts: 67.91 Long	
CD	0.000	1-18-cv-01428-MKB-VMSHENRY SCH	9/7/2023	0.000000	267.01	267.01	267.01
	NA9123459	EIN, INC. Distribution 2ND DIS		0.000000	267.01	267.01	267.01
		20230907S000200 / 000000000000	9/7/2023				
		KR3F10110002 : KRS INTERNAL EQUITY					
						Gain/Loss Local Amounts: 267.01 Long	
						Gain/Loss Base Amounts: 267.01 Long	
TOTAL U.S. DOLLAR CASH & CASH EQUIVALENTS:				<u>27,679.57</u>	<u>27,679.57</u>	<u>27,679.57</u>	<u>27,679.57</u>
				<u>27,679.57</u>	<u>27,679.57</u>	<u>27,679.57</u>	<u>27,679.57</u>
TOTAL CASH & CASH EQUIVALENTS CLASS ACTIONS:				<u>27,679.57</u>	<u>27,679.57</u>	<u>27,679.57</u>	<u>27,679.57</u>
TOTAL CLASS ACTIONS:				<u>27,679.57</u>	<u>27,679.57</u>	<u>27,679.57</u>	<u>27,679.57</u>
TOTAL TRANSACTIONS BASE:				<u>27,679.57</u>	<u>27,679.57</u>	<u>27,679.57</u>	<u>27,679.57</u>

Kentucky Public Pensions Authority

Internal Asset Holdings Report & Internal Asset Transaction Report

Quarter Ending: September 30, 2023

Reports can be found:

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

Kentucky Public Pensions Authority

Commissions Report

Quarter Ending: September 30, 2023

Reports can be found:

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

Kentucky Retirement Systems

Investment Budget Update

Quarter Ending: September 30, 2023

KRS Board Meeting - Quarterly Investment Performance Report

KENTUCKY PUBLIC PENSIONS AUTHORITY Investment Budget For the three month period ending September 30, 2023									
Account Name	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	Trust Budget FY 2024	Q1 2024	Remaining	Percentage Spent
CONSULTING SERVICES									
Wilshire Associates	\$ 1,021,799	\$ 1,238,170	\$ 1,225,671	\$ 1,021,175	\$ 838,172	\$ 1,200,000	\$ 274,600	\$ 925,400	23%
Albourne	-	-	-	-	306,750	275,000	67,500	207,500	25%
MercerInsight	-	-	-	-	153,548	165,000	40,000	125,000	24%
SUBTOTAL	1,021,799	1,238,170	1,225,671	1,021,175	1,298,471	1,640,000	382,100	1,257,900	23%
LEGAL & AUDITING SERVICES									
Faegre Drinker			96,039	202,502	16,428	100,000	3,380	96,620	3%
Intelligent Management Solutions (IMS)	620,001	202,140	155,700	69,884	81,880	350,000	-	350,000	0%
McClain/Goldberg			891	-	-	100,000	-	100,000	0%
Reinhart	317,909	671,269	663,689	619,509	109,508	2,500,000	12,347	2,487,653	0%
Stoll-Keenon-Ogden	10,314	135,353	254,211	463,560	750,438	750,000	26,960	723,040	4%
Haystack			-	-	120,175	100,000	55,008	44,992	55%
Umberg Zipser			289,100	498,058	606,701	850,000	255,459	594,541	30%
Swansburg & Smith	-	-	-	-	5,288	50,000	-	50,000	0%
Eddins Domine	-	-	-	-	40,305	50,000	-	50,000	0%
Taft	-	-	-	-	142,720	50,000	478	49,522	1%
Miscellaneous					-	50,000	-	50,000	0%
SUBTOTAL	948,225	1,008,762	1,459,630	1,853,513	1,873,441	4,950,000	353,632	4,596,368	7%
CONTRACTURAL SERVICES									
Bloomberg	68,722	71,810	98,163	102,243	104,153	150,000	27,533	122,467	18%
BNYM Custodial Fees	2,056,390	2,088,475	2,379,838	2,565,169	2,333,981	2,600,000	590,273	2,009,727	23%
eVestment (Solovis RMS)			-	30,000	33,800	35,000	-	35,000	0%
Solovis (Reporting & Analytics)			-	245,000	266,017	275,000	306,319	(31,319)	111%
FactSet	222,476	162,295	109,662	140,098	146,411	150,000	31,657	118,343	21%
Russell Index Subscription	1,075	1,250	1,000	1,000	750	1,500	500	1,000	33%
S&P Global		94,500	26,250	68,250	27,563	75,000	-	75,000	0%
TradeWeb			-	6,000	7,700	7,500	2,100	5,400	28%
State Street/Elkins McSherry	10,000	5,000	15,000	10,000	10,000	10,000	-	10,000	0%
ISS	32,050	32,050	28,288	35,813	39,875	60,000	15,719	44,281	26%
MSCI	1,000	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	9,450	(1,950)	126%
Jayant Ghevaria and CO		10,050	-	52,085	-	55,000	-	55,000	0%
India Renewal Fee (SEBI)			-	3,000		3,000	2,950	50	98%
With Intelligence	-	-	-	-	9,520	9,520	-	9,520	0%
Miscellaneous & New Services	-	-	-	-	-	250,000	19,500	230,500	8%
SUBTOTAL	2,391,713	2,474,036	2,681,251	3,267,008	2,980,769	3,690,020	1,007,001	2,683,019	27%

KENTUCKY PUBLIC PENSIONS AUTHORITY Investment Budget For the three month period ending September 30, 2023									
Account Name	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	Trust Budget FY 2024	Q1 2024	Remaining	Percentage Spent
INACTIVE CONTRACTURAL SERVICES									
Dean Dorton	9,719		-	-	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		-	-		-	-	-	
SUBTOTAL	291,718	119,290	1,233,757	-	250	-		-	
TOTAL	\$ 4,653,455	\$ 4,840,258	\$ 6,600,309	\$ 6,141,696	\$ 6,152,931	\$ 10,280,020	1,742,733	\$ 8,537,287	17%

KRS Board Meeting - Quarterly Investment Performance Report

INVESTMENT BUDGET	
CONSULTING SERVICES	
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
LEGAL & AUDITING SERVICES	
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)
CONTRACTURAL SERVICES	
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, Performance 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
Oxford Economics	Global macroeconomics and markets research
With Intelligence	Portfolio Management Research provider

KENTUCKY PUBLIC PENSIONS AUTHORITY Investment Fees and Expenses For the three month period ending September 30, 2023 Pension								
	2024		2023		2022		2021	
	FYTD Fees	Market Value	FYTD Fees	Market Value	FYTD Fees	Market Value	FYTD Fees	Market Value
Core Fixed Income	538,998	2,131,936,660	879,295	2,084,448,991	964,078	2,367,680,815	2,648,483	2,380,760,174
<i>Investment Advisory Fees</i>	525,105		552,736		618,246		2,579,704	
<i>Carried Interest</i>	-		313,985		327,140		-	
<i>Miscellaneous Fees and Expenses</i>	13,893		12,575		18,692		68,779	
Public Equity	3,672,514	7,378,700,486	3,142,570	6,065,660,923	3,636,256	6,871,426,987	12,690,120	6,952,113,563
<i>Investment Advisory Fees</i>	3,567,463		3,040,804		3,523,547		12,466,655	
<i>Miscellaneous Fees and Expenses</i>	105,051		101,766		112,709		223,465	
Specialty Credit Fixed Income	22,856,573	3,275,957,851	12,036,439	3,083,985,656	13,440,821	3,152,469,147	44,112,571	3,048,523,710
<i>Investment Advisory Fees</i>	4,074,866		4,746,299		3,964,000		15,415,716	
<i>Carried Interest</i>	9,400,428		1,673,157		7,358,655		24,234,258	
<i>Miscellaneous Fees and Expenses</i>	9,381,280		5,616,983		2,118,166		4,462,596	
Real Estate	849,546	946,221,229	4,455,872	969,436,952	7,779,711	677,700,443	9,191,005	610,213,834
<i>Investment Advisory Fees</i>	1,924,845		1,579,279		1,114,665		4,772,617	
<i>Carried Interest</i>	(2,524,451)		2,231,775		6,615,761		2,414,707	
<i>Miscellaneous Fees and Expenses</i>	1,449,153		644,817		49,285		2,003,680	
Real Return	1,385,926	507,885,793	998,699	426,178,862	1,718,873	1,010,028,940	8,313,392	1,033,884,979
<i>Investment Advisory Fees</i>	1,044,249		488,379		1,085,377		4,663,221	
<i>Carried Interest</i>	167,367		285,096		380,418		3,021,470	
<i>Miscellaneous Fees and Expenses</i>	174,310		225,224		253,079		628,701	
Private Equity	7,960,728	1,178,285,116	(274,776)	1,209,741,651	24,096,611	1,305,498,399	58,785,850	1,236,163,938
<i>Investment Advisory Fees</i>	1,360,253		1,804,660		1,673,732		8,081,476	
<i>Carried Interest</i>	5,008,292		(2,822,439)		20,395,224		48,458,818	
<i>Miscellaneous Fees and Expenses</i>	1,592,184		743,004		2,027,655		2,245,555	
Administrative Expense/Cash	1,036,738	1,175,409,476	666,582	799,782,744	858,178	572,193,644	4,248,561	526,326,268
Total Investment Mgmt Fees	38,301,024	16,594,396,612	21,904,681	14,639,235,779	52,494,529	15,956,998,375	139,989,981	15,787,986,466

KENTUCKY PUBLIC PENSIONS AUTHORITY Investment Fees and Expenses For the three month period ending September 30, 2023 Insurance								
	2024		2023		2022		2021	
	FYTD Fees	Market Value	FYTD Fees	Market Value	FYTD Fees	Market Value	FYTD Fees	Market Value
Core Fixed Income	184,881	754,337,920	324,043	767,219,317	354,733	862,879,050	1,050,510	865,995,148
<i>Investment Advisory Fees</i>	180,211		208,100		230,338		995,622	
<i>Performance</i>	-		112,040		117,337		28,448	
<i>Miscellaneous Fees and Expenses</i>	4,670		3,903		7,058		26,440	
Public Equity	1,705,220	3,360,758,473	1,436,037	2,807,242,353	1,625,181	3,080,276,960	5,708,928	3,116,599,040
<i>Investment Advisory Fees</i>	1,657,228		1,389,622		1,574,855		5,612,577	
<i>Miscellaneous Fees and Expenses</i>	47,991		46,415		50,326		96,351	
Specialty Credit Fixed Income	10,206,292	1,472,221,495	5,558,434	1,371,584,870	5,969,311	1,429,342,653	19,174,439	1,383,567,012
<i>Investment Advisory Fees</i>	1,741,424		2,178,608		1,781,734		6,978,722	
<i>Carried Interest</i>	4,295,204		964,003		3,271,465		10,392,111	
<i>Miscellaneous Fees and Expenses</i>	4,169,664		2,415,823		916,112		1,803,605	
Real Estate	511,795	418,297,047	1,799,878	428,984,339	3,228,037	286,774,553	3,945,135	258,214,840
<i>Investment Advisory Fees</i>	870,090		604,578		482,095		2,048,449	
<i>Carried Interest</i>	(979,568)		919,660		2,722,999		1,043,274	
<i>Miscellaneous Fees and Expenses</i>	621,274		275,640		22,943		853,412	
Real Return	603,897	197,048,651	487,514	166,445,599	740,678	426,269,531	3,278,267	435,909,260
<i>Investment Advisory Fees</i>	466,172		266,024		484,286		2,005,961	
<i>Carried Interest</i>	59,893		116,876		140,229		91,499	
<i>Miscellaneous Fees and Expenses</i>	77,832		104,614		116,163		1,180,807	
Private Equity	4,590,785	600,831,793	(393,210)	598,395,346	16,466,674	616,691,355	35,821,138	585,420,005
<i>Investment Advisory Fees</i>	887,506		1,238,396		1,410,084		5,232,127	
<i>Carried Interest</i>	3,008,749		(1,963,029)		14,392,982		29,557,732	
<i>Miscellaneous Fees and Expenses</i>	694,529		331,423		663,608		1,031,279	
Administrative Expense/Cash	503,596	304,679,290	359,092	272,226,093	453,829	337,944,259	2,183,105	291,596,737
Total Investment Mgmt Fees	\$ 18,306,465	\$ 7,108,174,671	\$ 9,571,788	\$ 6,412,097,917	\$ 28,838,443	\$ 7,040,178,361	\$ 71,161,521	\$ 6,937,302,042



Combining Statement of Fiduciary Net Position - Pension Funds

As of September 30, 2023, with Comparative Totals as of September 30, 2022 (\$ in Thousands)
(Unaudited)

	KERS		SPRS	KRS TOTAL		Percentage of	Note
ASSETS	Nonhazardous	Hazardous		FY 2024	FY 2023	Change	
CASH AND SHORT-TERM INVESTMENTS							
Cash Deposits	\$1,431	\$179	\$42	\$1,652	\$317	421.54%	1
Short-term Investments	730,060	99,447	128,079	957,587	748,181	27.99%	2
Total Cash and Short-term Investments	731,491	99,627	128,121	959,239	748,498	28.16%	
RECEIVABLES							
Accounts Receivable	84,222	4,567	2,385	91,174	94,388	(3.40)%	
Accounts Receivable - Investments	44,175	8,599	7,953	60,728	41,367	46.80%	3
Total Receivables	128,397	13,167	10,338	151,902	135,755	11.89%	
INVESTMENTS, AT FAIR VALUE							
Core Fixed Income	715,983	107,154	119,690	942,826	836,465	12.72%	4
Public Equities	1,116,768	371,313	189,741	1,677,822	1,333,634	25.81%	5
Private Equities	162,460	64,321	16,977	243,758	261,912	(6.93)%	
Specialty Credit	613,370	181,474	101,758	896,602	831,529	7.83%	
Derivatives	(62)	(8)	(11)	(81)	(3,578)	(97.74)%	6
Real Return	78,821	25,458	11,734	116,013	93,974	23.45%	7
Real Estate	174,861	49,323	20,945	245,129	236,396	3.69%	
Total Investments, at Fair Value	2,862,201	799,033	460,835	4,122,069	3,590,331	14.81%	
Securities Lending Collateral Invested	80,002	20,054	13,145	113,201	167,370	(32.36)%	8
CAPITAL/INTANGIBLE ASSETS							
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	(5,920)	(494)	(100)	(6,513)	(6,402)	1.74%	
Total Capital Assets	-	-	-	-	111	(100.00)%	
Total Assets	3,802,092	931,880	612,439	5,346,411	4,642,065	15.17%	
LIABILITIES							
Accounts Payable	2,889	740	61	3,690	2,437	51.45%	9
Investment Accounts Payable	61,330	13,094	10,846	85,270	50,307	69.50%	10
Securities Lending Collateral	80,002	20,054	13,145	113,201	167,370	(32.36)%	11
Total Liabilities	144,221	33,889	24,052	202,162	220,114	(8.16)%	
Total Fiduciary Net Position Restricted for Pension Benefits	\$3,657,871	\$897,991	\$588,386	\$5,144,249	\$4,421,951	16.33%	

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 due to pending trades.
- 4) The increase in Core Fixed Income is a result of favorable market conditions during the prior fiscal year as well as additional funding.
- 5) The increase in Public Equities is the result of additional contributions to the public equity asset class.
- 6) The variance in Derivatives is a result of hedging and arbitration of risk within the portfolios.
- 7) The increase in Real Return is a result of favorable market conditions as well as additional funding.
- 8) The variance is a result of the demand of the Securities Lending Program.
- 9) The variance in Accounts Payable is due to an Increase in the payroll and leave liability accrual as well as an increase in outstanding employer credit invoices.
- 10) The variance in Investment Accounts Payable is due to pending trades.
- 11) 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 three month period ending September 30, 2023, with Comparative Totals for the three month period ending September 30, 2022 (\$ in Thousands) (Unaudited)

	KERS		SPRS	KRS Total		Percentage of Change	Note
	Nonhazardous	Hazardous		FY 2024	FY 2023		
ADDITIONS							
Member Contributions	\$23,699	\$5,242	\$1,417	\$30,358	\$25,550	18.82%	1
Employer Pay Credit	\$6,993	\$2,785	\$444	\$10,222	\$7,113	43.71%	2
Employer Contributions	30,833	19,095	15,198	65,126	57,593	13.08%	3
Actuarially Accrued Liability Contributions (AALC)	224,566	-	-	224,566	226,639	(0.91)%	
General Fund Appropriation	60,000	-	-	60,000	60,000	0.00%	
Pension Spiking Contributions	5	-	-	5	3	76.22%	4
Health Insurance Contributions (HB1)	(8)	(4)	(4)	(17)	(3)	533.25%	5
Employer Cessation Contributions	-	-	-	-	-	0.00%	
Total Contributions	346,087	27,118	17,055	390,261	376,896	3.55%	
INVESTMENT INCOME							
From Investing Activities							
Net Appreciation (Depreciation) in FV of Investments	(57,688)	(16,016)	(10,096)	(83,800)	(131,037)	36.05%	6
Interest/Dividends	31,089	7,675	5,218	43,982	31,350	40.29%	7
Total Investing Activities Income	(26,599)	(8,341)	(4,879)	(39,818)	(99,687)		
Less: Investment Expense	4,303	1,376	487	6,166	5,005	23.19%	8
Less: Performance Fees	1,705	653	185	2,543	(15)	(17,268.90)%	9
Net Income from Investing Activities	(32,607)	(10,369)	(5,551)	(48,527)	(104,677)		
From Securities Lending Activities							
Securities Lending Income	900	258	157	1,314	760		
Less: Securities Lending Borrower Rebates	777	224	136	1,137	615		
Less: Securities Lending Agent Fees	18	5	3	27	22		
Net Income from Securities Lending	104	28	18	150	123	22.31%	10
Net Investment Income	(32,503)	(10,341)	(5,533)	(48,377)	(104,554)	53.73%	
Total Additions	313,585	16,777	11,522	341,884	272,342	25.53%	
DEDUCTIONS							
Benefit Payments	256,719	20,038	15,881	292,638	291,250	0.48%	
Refunds	2,905	945	5	3,855	4,358	(11.54)%	11
Administrative Expenses	3,295	371	76	3,742	3,689	1.43%	
Total Deductions	262,919	21,354	15,962	300,234	299,297	0.31%	
Net Increase (Decrease) in Fiduciary Net Position Restricted for Pension Benefits							
Total Fiduciary Net Position Restricted for Pension Benefits							
Beginning of Period	3,607,205	902,568	592,826	5,102,599	4,448,906	14.69%	
End of Period	\$3,657,871	\$897,991	\$588,386	\$5,144,249	\$4,421,951	16.33%	



NOTE - Variance Explanation

Differences due to rounding.

- 1) Member Contributions increased due to an increase in covered payroll.
- 2) The Employer Pay Credit will continue to increase as Tier 3 members increase.
- 3) Employer Contributions increased due to an increase in covered payroll.
- 4) Pension Spiking contributions decreased due to a decrease in KERS Hazardous pension spiking contributions billed to employers.
- 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) The increase in Net Appreciation in Fair Value of Investments is the result of less losses in Public Equity and gains from Private Equity and Specialty Credit.
- 7) The increase in Interest/Divident Income is primarily the result of increased partnership income from Specialty Credit.
- 8) The increase in Investment Expense is primarily the result of increased management fees and partnership expenses for Specialty Credit.
- 9) The increase in performance fees is the result of increased fees from Private Equity and Specialty Credit.
- 10) The variance is a result of the demand of the Securities Lending Program.

Pension Funds Contribution Report

For the three month period ending September 30, 2023, with Comparative Totals for the three month period ending September 30, 2022 (\$ in Millions)

 	Kentucky Employees Retirement System				State Police Retirement System	
	Nonhazardous		Hazardous			
	FY24	FY23	FY24	FY23	FY24	FY23
Member Contributions	\$23.7	\$20.1	\$5.2	\$4.1	\$1.4	\$1.3
Employer Pay Credit	\$7.0	\$4.8	\$2.8	\$2.0	\$0.4	\$0.3
Employer Contributions	30.8	27.8	19.1	15.4	15.2	14.4
Actuarially Accrued Liability Contributions	224.6	226.6	-	-	-	-
Employer Cessation Contributions	-	-	-	-	-	-
General Fund Appropriations	60.0	60.0	-	-	-	-
Net Investment Income	25.2	18.4	5.7	4.8	4.6	3.3
Total Inflows	371.3	357.7	32.8	26.3	21.6	19.3
Benefit Payments/Refund	259.6	259.2	21.0	20.4	15.8	16.0
Administrative Expenses	3.3	3.2	0.4	0.3	0.1	0.1
Total Outflows	262.9	262.4	21.4	20.7	15.9	16.1
NET Contributions	108.4	95.3	11.4	5.6	5.7	3.2
Realized Gain/(Loss)	(18.9)	(3.9)	(0.2)	(0.2)	(2.6)	(1.0)
Unrealized Gain/(Loss)	(38.8)	(86.2)	(15.8)	(25.8)	(7.5)	(13.9)
Change in Net Position	50.7	5.2	(4.6)	(20.4)	(4.4)	(11.7)
Beginning of Period	3,607.2	3,076.7	902.6	819.2	592.8	552.9
End of Period	\$3,657.9	\$3,081.9	\$898.0	\$798.8	\$588.4	\$541.2

Differences due to rounding.

Net Contributions*	\$83.2	\$76.9	\$5.8	\$0.8	\$1.2	\$(0.1)
Cash Flow as % of Assets	2.27%	2.50%	0.64%	0.10%	0.20%	(0.02)%
Net Investment Income	\$25.2	\$18.4	\$5.7	\$4.8	\$4.6	\$3.3
Yield as % of Assets	0.69%	0.60%	0.63%	0.60%	0.78%	0.61%

**Net Contributions are less Net Investment Income.*



Combining Statement of Fiduciary Net Position - Insurance Funds

As of September 30, 2023, with Comparative Totals as of September 30, 2022 (\$ in Thousands)
(Unaudited)

	KERS		SPRS	KRS Total		Percentage of	
	Nonhazardous	Hazardous		FY 2024	FY 2023	Change	Note
ASSETS							
CASH AND SHORT-TERM INVESTMENTS							
Cash Deposits	\$272	\$41	\$11	\$324	\$175	85.34%	1
Short-term Investments	180,217	28,732	11,389	220,338	226,173	(2.58)%	2
Total Cash and Short-term Investments	180,489	28,773	11,400	220,662	226,348	(2.51)%	
RECEIVABLES							
Accounts Receivable	12,852	439	909	14,200	13,673	3.86%	
Investment Accounts Receivable	15,626	5,940	2,415	23,981	13,945	71.96%	3
Total Receivables	28,478	6,379	3,325	38,181	27,618	38.25%	
INVESTMENTS, AT FAIR VALUE							
Core Fixed Income	172,971	73,349	28,120	274,440	250,321	9.64%	
Public Equities	622,015	256,497	103,457	981,968	803,825	22.16%	4
Private Equities	96,224	54,520	24,266	175,010	168,006	4.17%	
Specialty Credit	294,858	132,238	52,297	479,393	439,538	9.07%	
Derivatives	(23)	(19)	(2)	(44)	(1,078)	95.91%	5
Real Return	34,365	18,150	6,861	59,376	49,816	19.19%	6
Real Estate	59,516	44,316	16,918	120,749	110,298	9.48%	
Total Investments, at Fair Value	1,279,926	579,051	231,915	2,090,892	1,820,726	14.84%	
Securities Lending Collateral Invested	23,409	9,824	3,930	37,163	58,869	(36.87)%	7
Total Assets	1,512,301	624,027	250,570	2,386,898	2,133,561	11.87%	
LIABILITIES							
Accounts Payable	161	-	1	162	128	26.15%	8
Investment Accounts Payable	19,651	7,732	3,039	30,422	16,255	87.15%	9
Securities Lending Collateral	23,409	9,824	3,930	37,163	58,869	(36.87)%	10
Total Liabilities	43,220	17,556	6,970	67,747	75,252	(9.97)%	
Total Fiduciary Net Position Restricted for OPEB	\$1,469,081	\$606,471	\$243,600	\$2,319,151	\$2,058,308	12.67%	

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 increase in Public Equities is the result of additional contributions to the public equity asset class.
- 5) The variance in Derivatives is a result of hedging and arbitration of risk within the portfolios.
- 6) The increase in Real Return is a result of favorable market conditions as well as additional funding.
- 7) The variance is a result of the demands of the Securities Lending Program.
- 8) The increase in Accounts Payable is due to an increase in outstanding employer credit invoices for KERS.
- 9) The variance in Investment Accounts Payable is due to pending trades.
- 10) 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 three month period ending September 30, 2023, with Comparative Totals for the three month period ending September 30, 2022 (\$ In Thousands) (Unaudited)



	KERS		SPRS	KRS Total		Percentage of	Note
	Nonhazardous	Hazardous		FY 2024	FY 2023	Change	
ADDITIONS							
Employer Contributions	\$10,062	\$(1)	\$2,528	\$12,590	\$10,812	16.45%	1
Actuarially Accrued Liability Contributions (AALC)	21,911	-	-	21,911	22,114	(0.92)%	
Medicare Drug Reimbursement	1	-	-	1	1	0.00%	
Insurance Premiums	36	(4)	-	32	50	(36.56)%	2
Humana Gain Share Payment	8,440	651	390	9,481	-	100.00%	3
Retired Re-employed Healthcare	1,678	409	-	2,087	1,665	25.37%	4
Health Insurance Contributions (HB1)	2,518	505	101	3,124	2,380	31.27%	5
Employer Cessation Contributions	-	-	-	-	-	0.00%	
Total Contributions	44,647	1,560	3,019	49,226	37,021	32.97%	
INVESTMENT INCOME							
From Investing Activities							
Net Appreciation (Depreciation) in FV of Investments	(29,185)	(9,837)	(4,065)	(43,086)	(62,407)	30.96%	6
Interest/Dividends	12,797	4,971	1,993	19,761	15,464	27.79%	7
Total Investing Activities Income	(16,387)	(4,866)	(2,072)	(23,325)	(46,943)		
Less: Investment Expense	2,116	1,154	448	3,718	2,866	29.69%	8
Less: Performance Fees	905	619	247	1,771	814	117.58%	9
Net Income from Investing Activities	(19,409)	(6,639)	(2,766)	(28,814)	(50,624)		
From Securities Lending Activities							
Securities Lending Income	329	125	54	509	325		
Less: Securities Lending Borrower Rebates	278	105	46	429	258		
Less: Securities Lending Agent Fees	8	3	1	12	10		
Net Income from Securities Lending	44	17	7	68	56	19.70%	10
Net Investment Income	(19,365)	(6,623)	(2,759)	(28,747)	(50,567)	43.15%	
Total Additions	25,282	(5,062)	260	20,479	(13,546)	(251.18)%	
DEDUCTIONS							
Healthcare Premiums Subsidies	21,088	4,724	3,436	29,248	38,844	(24.71)%	11
Administrative Expenses	187	30	18	235	264		
Self-Funded Healthcare Costs	412	35	3	450	476	(5.50)%	
Excise Tax Insurance	3	-	-	3	-	100.00%	12
Total Deductions	21,690	4,789	3,457	29,936	39,584	(24.37)%	
Net Increase (Decrease) in Fiduciary Net Position Restricted for OPEB							
Net Position Restricted for OPEB	3,592	(9,851)	(3,197)	(9,456)	(53,130)		
Total Fiduciary Net Position Restricted for OPEB							
Beginning of Period	1,465,489	616,322	246,797	2,328,608	2,111,438	10.29%	
End of Period	\$1,469,081	\$606,471	\$243,600	\$2,319,152	\$2,058,308	12.67%	

NOTE - Variance Explanation *Differences due to rounding*

- 1) The increase Employer Contributions is due to an increase in covered payroll.
- 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) The increase in Net Appreciation in Fair Value of Investments is the result of less losses in Public Equity and gains from Private Equity and Specialty Credit.
- 7) The increase in Interest/Dividend Income is primarily the result of increased partnership income from Specialty Credit.
- 8) The increase in Investment Expense is primarily the result of increased management fees and partnership expenses for Specialty Credit.

Insurance Fund Contribution Report

For the three month period ending September 30, 2023, with Comparative Totals for the three month period ending September 30, 2022 (\$ in Millions)

 	Kentucky Employees Retirement System				State Police Retirement System	
	Nonhazardous		Hazardous			
	FY24	FY23	FY24	FY23	FY24	FY23
Employer Contributions	\$10.1	\$8.6	\$-	\$-	\$2.5	\$2.2
Actuarially Accrued Liability Contributions	21.9	22.1	-	-	-	-
Employer Cessation Contributions	-	-	-	-	-	-
Insurance Premiums	-	-	-	-	-	-
Humana Gain Share	8.4	-	0.7	-	0.4	-
Retired Reemployed Healthcare	1.7	1.3	0.4	0.3	-	-
Health Insurance Contributions	2.5	1.9	0.5	0.4	0.1	0.1
Net Investment Income	9.8	7.0	3.2	3.4	1.3	1.4
Total Inflows	54.4	41.0	4.8	4.1	4.3	3.7
Healthcare Premiums	21.5	30.4	4.8	5.2	3.4	3.7
Administrative Expenses	0.2	0.2	-	-	-	-
Total Outflows	21.7	30.6	4.8	5.2	3.4	3.7
NET Contributions	32.7	10.4	-	(1.1)	0.9	-
Realized Gain/(Loss)	(2.8)	(2.3)	(0.2)	(0.3)	-	(0.1)
Unrealized Gain/(Loss)	(26.3)	(34.7)	(9.7)	(17.8)	(4.1)	(7.2)
Change in Net Position	3.6	(26.6)	(9.9)	(19.2)	(3.2)	(7.3)
Beginning of Period	1,465.5	1,301.5	616.3	579.9	246.8	230.0
End of Period	\$1,469.1	\$1,274.9	\$606.4	\$560.7	\$243.6	\$222.7

Differences due to rounding.

Net Contributions*	\$22.9	\$3.4	\$(3.2)	\$(4.5)	\$(0.4)	\$(1.4)
Cash Flow as % of Assets	1.56%	0.26%	(0.53)%	(0.80)%	(0.16)%	(0.62)%
Net Investment Income	\$9.8	\$7.0	\$3.2	\$3.4	\$1.3	\$1.4
Yield as % of Assets	0.67%	0.55%	0.53%	0.61%	0.54%	0.62%

**Net Contributions are less Net Investment Income.*



KRS Outstanding Invoices by Type and Employer

Invoice Type	9/30/2023	6/30/2023	Change H/(L)
Actuarially Accrued Liability Contribution	\$3,317,448	\$2,964,818	12%
Employer Free Military and Decompression Service	45,258	77,583	(42)%
Member Pension Spiking Refund	(34,249)	(20,365)	68%
Monthly Reporting Invoice	(224,377)	(240,434)	(7)%
Penalty – Monthly Reporting	44,000	34,000	29%
Reinstatement	9,044	9,044	0%
Other Invoices**	(161,570)	(123,658)	31%
Total	2,995,554	2,824,646	
Health Insurance Reimbursement	471,679	635,035	(26)%
Omitted Employer	173,337	114,547	51%
Employer Pension Spiking*	197,514	198,590	(1)%
Standard Sick Leave	603,811	1,410,993	(57)%
USERRA Protected Military	35,030	35,030	0%
Total	1,481,371	2,394,195	(38)%
Grand Total	\$4,476,925	\$5,218,841	(14)%

*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)	9/30/2023	6/30/2023	Change H/(L)
Kentucky River Community Care Inc.***	\$3,263,188	\$2,900,680	12%
Dept for Highways	234,175	226,846	3%
Dept. for Behavioral Health Dev. Intell. Disabilities	232,757	272,927	(15)%
Seven County Services, Inc.***	139,908	137,786	2%
Unified Prosecutorial System	75,563	58,371	29%
Department for Income Support	72,074	61,299	18%
Department for Public Health	45,470	8,368	443%
Department of Parks	38,006	27,100	40%
Department of Military Affairs	37,524	76,183	(51)%
Office of Audits	30,808	2,188	100%

***Indicates invoices in litigation

	Total Unpaid Balance	Invoice Count
KERS	\$4,337,294	1,105
KERH	145,033	25
SPRS	(5,402)	15
Grand Total:	\$4,476,925	1,145



KENTUCKY PUBLIC PENSIONS AUTHORITY

Penalty Invoices Report

From: 7/1/2023 To: 9/30/2023

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	\$-	\$-	7/5/2023	7/20/2023	CANC	County Attorneys	New Employer Reporting Official
1,000	-	-	7/5/2023	7/20/2023	CANC	County Attorneys	New Employer Reporting Official
1,000	-	-	7/5/2023	7/20/2023	CANC	County Attorneys	New Employer Reporting Official
1,000	-	-	7/5/2023	8/2/2023	CANC	County Attorneys	New Employer Reporting Official
Total	\$4,000	\$-					
\$1,000	\$1,000	\$-	7/27/2023	8/26/2023	CRTD	County Attorneys	
1,000	1,000	-	8/17/2023	9/16/2023	CRTD	County Attorneys	
1,000	1,000	-	8/17/2023	9/16/2023	CRTD	Master Commissioner	
1,000	1,000	-	8/18/2023	9/17/2023	CRTD	County Attorneys	
Total	\$4,000	\$4,000					
\$1,000	\$-	\$-	7/6/2023	6/30/2023	PAID	Non-P1 State Agencies	
1,000	-	-	8/4/2023	8/5/2023	PAID	Non-P1 State Agencies	
1,000	-	-	9/8/2023	8/30/2023	PAID	Universities	
1,000	-	-	8/16/2023	9/3/2023	PAID	Non-P1 State Agencies	
1,000	-	-	8/22/2023	9/15/2023	PAID	Non-P1 State Agencies	
1,000	-	-	8/24/2023	9/21/2023	PAID	Non-P1 State Agencies	
1,000	-	-	9/7/2023	9/23/2023	PAID	Non-P1 State Agencies	
Total	\$7,000	\$-					

Notes:

Invoice Status:

CANC - Cancelled

CRTD - Created

PAID - Paid

KPPA ADMINISTRATIVE BUDGET FY 2023-2024 BUDGET-TO-ACTUAL SUMMARY ANALYSIS FOR THE THREE MONTHS ENDING SEPTEMBER 30, 2023, WITH COMPARATIVE TOTALS FOR THE THREE MONTHS ENDING SEPTEMBER 30, 2022						
CATEGORY	BUDGETED	FY 2024 EXPENSE	REMAINING	PERCENT REMAINING	FY 2023 EXPENSE	PERCENT DIFFERENCE
PERSONNEL	\$34,520,287	\$8,475,220	\$26,045,067	75.45%	\$8,083,783	4.84%
LEGAL CONTRACTS	1,210,000	169,555	1,040,445	85.99%	136,530	24.19%
AUDITING	300,000	-	300,000	100.00%	6,578	(100.00)%
ACTUARIAL SERVICES	500,000	-	500,000	100.00%	79,953	(100.00)%
MEDICAL REVIEWERS	1,800,000	339,790	1,460,210	81.12%	181,080	87.65%
OTHER PERSONNEL	500,000	83,044	416,956	83.39%	22,991	261.20%
PERSONNEL TOTAL	\$38,830,287	\$9,067,609	\$29,762,678	76.65%	\$8,510,915	6.54%
RENTALS - BUILDING & EQUIPMENT	1,166,500	263,349	903,151	77.42%	254,217	3.59%
INFORMATION TECHNOLOGY	4,190,000	624,533	3,565,467	85.09%	517,574	20.67%
OTHER OPERATIONAL	1,371,200	215,067	1,156,133	84.32%	185,286	16.07%
OPERATIONAL TOTAL	\$6,727,700	\$1,102,949	\$5,624,751	83.61%	\$957,077	15.24%
RESERVE	4,882,813	-	4,882,813	100.00%	-	
ADMINISTRATIVE BUDGETED AMOUNT	\$50,440,800	\$10,170,558	\$40,270,242	79.84%	\$9,467,992	7.42%

KPPA ADMINISTRATIVE BUDGET FY 2023-2024						
BUDGET-TO-ACTUAL ANALYSIS						
FOR THE FISCAL THE THREE MONTHS ENDING SEPTEMBER 30, 2023, WITH COMPARATIVE TOTALS FOR THE THREE MONTHS ENDING SEPTEMBER 30, 2022						
Account Name	Budgeted	FY 2024 Expense	Remaining	Percent Remaining	FY 2023 Expense	Percent Difference
PERSONNEL						
Staff						
Salaries/Wages	\$17,900,000	\$4,444,515	\$13,455,485	75.17%	\$4,064,915	9.34%
Wages (Overtime)	285,000	62,121	222,879	78.20%	42,947	44.65%
Emp Paid FICA	1,294,772	322,894	971,878	75.06%	300,677	7.39%
Emp Paid Retirement	12,033,015	2,955,059	9,077,956	75.44%	3,068,863	(3.71)%
Emp Paid Health Ins	2,687,500	635,718	2,051,782	76.35%	563,024	12.91%
Emp Paid Sick Leave	250,000	40,221	209,779	83.91%	28,831	39.51%
Adoption Assistance Benefit	10,000	-	10,000	100.00%	-	0.00%
Workers Compensation	12,000	11,116	884	7.36%	11,116	0.00%
Unemployment	10,000	-	10,000	100.00%	-	0.00%
Emp Paid Life Ins	3,000	744	2,256	75.20%	730	1.92%
Employee Training	25,000	2,830	22,170	88.68%	2,680	5.60%
Tuition Assistance	10,000	-	10,000	100.00%	-	0.00%
Bonds	-	-	-	100.00%	-	0.00%
Staff Subtotal	34,520,287	8,475,220	26,045,069	75.44%	8,083,783	4.84%
LEGAL & AUDITING SERVICES						
Legal Hearing Officers	150,000	48,450	101,550	67.70%	36,941	31.16%
Legal (Stoll, Keenon)	250,000	1,210	248,791	99.52%	16,461	(92.65)%
Frost Brown	300,000	26,868	273,132	91.04%	10,902	146.45%
Reinhart	50,000	-	50,000	100.00%	-	0.00%
Ice Miller	300,000	84,540	215,461	71.82%	21,270	297.46%
Johnson, Bowman, Branco LLC	100,000	8,488	91,513	91.51%	28,683	(70.41)%
Dentons Bingham & Greenebaum	50,000	-	150,000	100.00%	22,274	(100.00)%
Legal Expense	10,000	-	10,000	100.00%	-	0.00%
Auditing	300,000	-	300,000	100.00%	6,578	(100.00)%
Total Legal & Auditing Services	1,510,000	169,555	1,440,446	95.39%	143,108	18.48%
CONSULTING SERVICES						
Medical Reviewers	1,800,000	339,790	1,460,210	81.12%	181,080	87.65%
Escrow for Actuary Fees	-	-	-	0.00%	-	0.00%
Total Consulting Services	1,800,000	339,790	1,460,210	81.12%	181,080	87.65%
CONTRACTUAL SERVICES						
Miscellaneous Contracts	390,000	73,888	316,112	81.05%	9,886	647.40%
Human Resources Consulting	10,000	-	10,000	100.00%	-	0.00%
Actuarial Services	500,000	-	500,000	100.00%	79,953	(100.00)%
Facility Security Charges	100,000	9,156	90,844	90.84%	13,105	(30.13)%
Contractual Subtotal	1,000,000	83,044	916,956	91.70%	102,944	(19.33)%
PERSONNEL SUBTOTAL	\$38,830,287	\$9,067,608	\$29,862,679	76.91%	\$8,482,049	6.90%
OPERATIONAL						
Natural Gas	42,000	1,566	40,434	96.27%	1,446	8.30%
Electric	133,000	31,232	101,768	76.52%	32,045	(2.54)%
Rent-Non State Building	56,000	-	56,000	100.00%	12,661	(100.00)%
Building Rental - PPW	1,000,000	240,493	759,507	75.95%	240,492	0.00%
Copier Rental	105,000	21,708	83,292	79.33%	-	100.00%
Rental Carpool	5,500	1,147	4,353	79.14%	1,065	7.70%
Vehicle/Equip. Maint.	1,000	-	1,000	100.00%	-	0.00%
Postage	420,000	77,249	342,751	81.61%	41,377	86.70%
Freight	200	-	200	100.00%	-	0.00%
Printing (State)	15,000	-	15,000	100.00%	100	(100.00)%
Printing (non-state)	85,000	-	85,000	100.00%	2,977	(100.00)%
Insurance	10,000	5,066	4,934	49.34%	5,572	(9.08)%
Garbage Collection	6,500	1,745	4,755	73.16%	1,810	(3.59)%
Conference Expense	45,000	8,180	36,820	81.82%	2,878	184.23%
Conference Exp. Investment	2,000	-	2,000	0.00%	-	0.00%
Conference Exp. Audit	3,000	-	3,000	100.00%	-	0.00%
MARS Usage	50,000	6,775	43,225	86.45%	6,775	0.00%

KPPA ADMINISTRATIVE BUDGET 2023-24 BUDGET-TO-ACTUAL ANALYSIS						
FOR THE THREE MONTHS ENDING SEPTEMBER 30, 2023, WITH COMPARATIVE TOTALS FOR THE THREE MONTHS ENDING SEPTEMBER 30, 2022						
Account Name	Budgeted	FY 2024 Expense	Remaining	Percent Remaining	FY 2023 Expense	Percent Difference
COVID-19 Expenses	-	-	-	#DIV/0!	-	0.00%
Office Supplies	100,000	9,914	90,086	90.09%	21,490	(53.87)%
Furniture & Office Equipment	12,000	-	12,000	100.00%	-	0.00%
Travel (In-State)	15,000	5,250	9,750	65.00%	3,577	46.77%
Travel (In-State) Investment	1,000	-	1,000	100.00%	-	0.00%
Travel (In-State) Audit	500	-	500	100.00%	-	0.00%
Travel (Out of State)	79,000	8,555	70,445	89.17%	11,244	(23.91)%
Travel (Out of State) Investment	135,000	9,286	125,714	93.12%	4,448	108.77%
Travel (Out of State) Audit	1,000	-	1,000	100.00%	-	0.00%
Dues & Subscriptions	69,000	13,582	55,418	80.32%	13,742	(1.16)%
Dues & Subscriptions Invest	15,000	4,470	10,530	70.20%	3,990	12.03%
Dues & Subscriptions Audit	1,000	175	825	82.51%	-	100.00%
Miscellaneous	55,000	15,075	39,925	72.59%	14,670	2.76%
Miscellaneous Investment	-	-	-	0.00%	-	0.00%
Miscellaneous Audit	-	-	-	0.00%	-	0.00%
COT Charges	40,000	3,049	36,951	92.38%	3,609	(15.52)%
Telephone - Wireless	8,500	2,151	6,349	74.70%	1,428	50.63%
Telephone - Other	105,500	19,154	86,346	81.84%	24,517	(21.87)%
Telephone - Video Conference	11,000	2,417	8,583	78.02%	-	100.00%
Computer Equip./Software	4,080,000	614,709	3,465,291	84.93%	507,190	21.20%
Comp. Equip./Software Invest	-	-	-	0.00%	-	0.00%
Comp. Equip./Software Audit	20,000	-	20,000	100.00%	-	0.00%
OPERATIONAL SUBTOTAL	\$6,727,700	\$1,102,949	\$5,624,751	83.61%	\$957,077	15.24%
SUB-TOTAL	\$45,557,987	\$10,170,557	\$35,487,430	77.90%	\$9,439,126	7.75%
Reserve	4,882,813	-	4,882,813	100.00%	-	0.00%
TOTAL	\$50,440,800	\$10,170,557	\$40,370,243	80.03%	\$9,439,126	7.75%
<i>Differences due to rounding</i>						

Plan	Budgeted	FY 2024 Expense	% of Total KPPA FY 2024 Expense
CERS Nonhazardous	\$29,825,645	\$6,013,850	59.13%
CERS Hazardous	2,627,966	529,886	5.21%
KERS Nonhazardous	15,855,561	3,197,013	31.434%
KERS Hazardous	1,774,003	357,698	3.517%
SPRS	357,625	72,109	0.709%
TOTAL	\$50,440,800	\$10,170,557	

JP MORGAN CHASE CREDIT EARNINGS AND FEES FOR THE FISCAL YEAR ENDING JUNE 30, 2024

	Earnings	Fees	Net Earnings
July-23	\$3,297	\$(7,049)	\$(3,751)
August-23	4,612	(7,230)	\$(2,618)
September-23	26,588	(8,157)	\$18,432
Total	\$34,498	\$(22,436)	\$12,063

**JP MORGAN CHASE HARD INTEREST EARNED
FOR THE FISCAL YEAR ENDING JUNE 30, 2024**

FOR THE THREE MONTHS ENDING JUNE 30, 2021				
	Clearing Account	CERS	KERS	Total
July-23	\$36,566	\$6,578	\$5,007	\$48,151
August-23	36,787	9,041	6,066	51,894
September-23	44,123	10,919	7,794	62,836
	-	-	-	-
	-	-	-	-
Total	\$117,477	\$26,539	\$18,866	\$162,882



KENTUCKY RETIREMENT SYSTEMS

John E. Chilton, Chief Executive Officer

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



Memorandum

November 14, 2023

To: The Kentucky Retirement Systems Board of Trustees

From: John E Chilton

There have been discussions about increasing the investment rate for annuity calculations. This memorandum contains background about these issues and my recommendation regarding changes in the rates. Currently, CERS and KRS annuity rates are 5.25%. CERS is proposing 5.875% which is halfway between the KRS assumed investment earnings rate (5.25%) and the CERS assumed investment earnings rate (6.50%)

Background

Tiers 1 and 2 annuities

Monthly retirement payments for Tiers 1 and 2 retirees are determined by statute with reference to their salary during the highest or final years of employment depending on Tier and plan. Thus, there are no actuarial calculations unless the retiree opts for actuarially equivalent survivorship options, life certain options, 10 years certain, and other optional forms of payment.

While Tiers 1 and 2 monthly benefits are calculated based on a formula as defined by statute, Tiers 1 and 2 retirees can elect other benefit options such as an annuity based on the retiree's and the retiree's beneficiary's lives, payments continuing for at least 10 years, etc. In those cases, the monthly benefit is lower, but the lower monthly payments may extend longer than the straight-life annuity option.

While the Tier 1 or 2 straight-life annuity is determined by the retiree's final compensation, benefit factor, and years of service, the other options involve actuarial computations to determine a monthly payment amount that is actuarially equivalent to the straight-life benefit.

Tier 3 annuity option

Tier 3 retirees have a retirement account to which they and their employers have contributed over the years of employment, as well as interest earnings. At retirement, the retiree can

- (1) take a lump-sum distribution of their retirement account balance. Retirees who choose the lump sum can transfer their account to an IRA, or other qualified plan, thereby avoiding immediate taxation, or
- (2) they can opt for an actuarially computed monthly annuity that also includes the same optional forms of payment that are available to Tiers 1 and 2 members.

Under the annuity option, the monthly payments are computed using their account balance at the time of retirement and an annuity factor. The annuity factor has only two components:

- Interest rate assumption
- Mortality assumption

If the member elects an optional form of payment, an actuarial computation takes place to determine the monthly payment amount that is actuarially equivalent to the annuity option.

Service Purchases

The majority of service purchase types are calculated using the “delayed method calculation.” These purchases are generally made to increase service credit in order to receive a higher retirement benefit. One component of the delayed method calculation is an actuarial factor used in calculating the value the additional service has on the member’s retirement benefit. This factor is typically based on the actuarial assumptions (interest and mortality) that are adopted by the Board and used in the annual actuarial valuations. In addition, “Hazardous Conversion” costs also use an actuarial factor to determine the cost to convert non-hazardous service to hazardous service.

Expected investment returns

To provide context, in considering a proper annuity rate, the rates used for computing employer contributions are relevant. KRS’ current investment return rate for computing employer contributions is 5.25% for KRS-Non-Haz and SPRS, and 6.25% for KRS-Haz. In addition, it is noted that GRS has indicated that KRS has a 60% chance of achieving a 5.25% investment return in KRS.

Annuity rates

The Tier 3 annuity interest rate assumption differs from the investment return assumption used in computing employer contribution rates. The investment return assumption is used to determine employer contributions; it is an expectation of future earnings over the long term. Investment earnings reduce the amount employers must contribute. The investment earnings assumption is constantly evaluated to address changes in future earnings expectations.

For KRS and the commercial annuity providers, once determined, the monthly payments never change. KRS and commercial annuity providers need future investment returns to pay the fixed payments. But investment returns always change. While KRS may project future investment returns of more than the current 5.25% assumed rate, actual investment returns in some years (or over the long-term) may be less – thus, the investment risk.

To address the investment risk, KRS and commercial annuity providers are in a similar economic/financial situation. So, KRS should compare the annuity interest rate assumption with the rate used in commercially available annuities.

Commercial annuity rates developed by insurance companies are determined, in part, with reference to long-term treasury rates. At the present time, the US Treasury’s long-term composite rate is 5.28%. The current retiree net interest rate published by Dietrich Direct Quote (which provides pension risk products to retirement plans) happens to be the same rate - 5.28%.

Here are GRS’ comments about annuity rates:

“There is a strong relationship between the interest rate assumption and the factor used to convert the Tier 3 annuity cash balance amount to an annuity at retirement. The lower the interest rate used to determine the factor, the smaller the monthly annuity benefit at retirement. On the other hand, there is a weaker relationship between the interest rate assumption and the actuarial factor used to convert the basic form of payment to optional forms of payment with survivor benefits for Tier 1 and Tier 2 members.

“Commercial annuity rates developed by insurance companies are based on long-term treasury rates. They use sophisticated asset-liability models to minimize their investment risk. Also,

these commercial annuity factors have administrative costs and profits built into the calculations. Retirement systems, on the other hand, do not produce profits and are not attempting to eliminate mortality and investment risks. Rather, retirement systems are managing risk to acceptable levels. This is because a retirement system can collect contributions from the participating employer if losses occur (whereas an insurance company cannot invoice additional premiums to the customers).

“An additional consideration is that commercial annuity providers have administrative costs and profits built into their calculations. Retirement systems, on the other hand, have administrative costs but do not produce profits. But they still must cope with risks associated with mortality and investment risks.

“In the case of KRS retirees, once the monthly annuity payment is determined, the monthly payment never changes, while investment performance always changes. There are investment risks for the system in the future. Thus, retirement systems manage overall risk to acceptable levels. This is because a retirement system can collect contributions from the participating employer if losses occur, {whereas an insurance company cannot invoice additional premiums to the customers}. Thus, an annuity rate that turns out to be too high, can drive up future employer contributions.

“As a final note, there are a few Retirement Systems that do use annuity factors based on more conservative assumptions to better manage these risks. We consider KPPA using a 5.25% interest rate assumption for the annuity factors to favor towards that category of conservative Retirement Systems.

The Tier 3 annuity conversion factor is relatively more sensitive to the interest rate used in the calculation of the factor because this factor is used to convert a member’s account balance to a lifetime annuity at the member’s retirement date. The interest rate is the implicit underlying assumed future investment return on the member’s account balance. However, the interest rate used in the annuity conversion factor does not have to be the same as the interest rate used in the valuation as the Board may want to use a different assumption to reflect certain factors that include equitably, risk, and subsidy. Note, the actuarial valuation for KRS will reflect the conversion factors adopted by the KRS Board, so any difference in the valuation interest rate and the Tier 3 annuity conversion rate (if any) will be incorporated in the calculation of the liability and contribution rates.

“The factors for converting forms of payment in Tier 1, Tier 2, and Tier 3 to include survivor benefits (e.g., the Joint & 50% Survivor and Joint & 100% Survivor) also have an interest rate component, but these factors are less sensitive to the interest rate because it is already comparing the relative value of two annuities (i.e., the basic form and one with a survivor benefit). Rather the purpose of these factors is to reflect the differences in life expectancy between the retiree and the beneficiary and keep the overall value of the benefit provided cost neutral.

“In summary, our two-part recommendation to the KRS and CERS Boards are as follows:

1. Primary: The Boards adopt the same conversion factors for benefit administration of the KRS and CERS systems. These two systems provide identical benefits. Identical demographic members should receive the same benefit (including optional forms of payment) regarding the system they are receiving their benefit.

2. Secondary: While we believe the continued use of a 5.25% interest assumption provides consistency and some risk mitigation, the use of a different interest rate could also be reasonable and appropriate.

GRS is comfortable with KRS using a 5.875% annuity interest rate.”

Other transactions

An interest charge, instead of an actuarial factor, is used in the calculation for the service purchase types of Recontribution of Refunds and Omitted with Interest. These occur when an individual pays money to a system to replace money previously withdrawn or when an Omitted cost isn't purchased in the first 6 months after being calculated. The purpose of an interest charge is to replace the money that the retirement plan would have earned if the individual had not withdrawn the money, or the employee contributions had been in the system.

All service purchase costs can be made by lump sum payment, transfer/rollover from another qualified plan, or via an Installment Purchase of Service Agreement (“IPS”) if the cost(s) is greater than or equal to \$1,000. If an IPS agreement is initiated, an interest charge is added to the cost amount being financed.

Additionally, an interest charge on creditable compensation is assessed for reinstated employees, delinquent Pension Spiking invoices owed by employers, and delinquent contributions from employers.

Currently, the interest rate for all these situations is 7.5%.

Recommendations

The decisions to be made are whether to adjust the current:

- Annuity/delayed service purchase interest rate of 5.25%,
- Interest rate of 7.50%

My recommendations are to:

- adjust the annuity rate to 5.875%. This seems fair in that the rate is better than the individual could obtain in the current market and is not so high as to expose the system to significant investment risk.
- maintain the interest charged on service purchases, etc. at 7.50% because that amount approximates what might have been earned if the money had been in the plans since withdrawal.

These are policy decisions that must be approved by the KRS Board at the next meeting.

Kentucky Public Pensions Authority
Estimated Financial Cost of Alternative Administrative Factor Assumptions
Fiscal Cost Reflects an Update to the Interest Rate and Mortality Assumption
Exhibit 1: Discount Rate for Administrative Factors = 5.25%
(\$ in Thousands)

	KERS Non-Hazardous		KERS Hazardous		SPRS		CERS Non-Hazardous		CERS Hazardous	
	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors
1. Covered Payroll	\$ 1,615,868	\$ 1,615,868	\$ 211,602	\$ 211,602	\$ 65,913	\$ 65,913	\$ 2,956,789	\$ 2,956,789	\$ 691,547	\$ 691,547
Liability and Assets - Pension Only										
2. Actuarial Accrued Liability	\$ 16,304,278	\$ 16,308,384	\$ 1,363,036	\$ 1,363,138	\$ 1,091,795	\$ 1,091,930	\$ 15,296,429	\$ 15,298,647	\$ 5,849,995	\$ 5,850,092
3. Actuarial Value of Assets	3,552,471	3,552,471	891,460	891,460	589,848	589,848	8,585,073	8,585,073	3,008,147	3,008,147
4. Unfunded Liability	\$ 12,751,807	\$ 12,755,913	\$ 471,576	\$ 471,678	\$ 501,947	\$ 502,082	\$ 6,711,356	\$ 6,713,574	\$ 2,841,848	\$ 2,841,945
5. Increase in Unfunded Liability		\$ 4,106		\$ 102		\$ 135		\$ 2,218		\$ 97
6. Funded Ratio	21.8%	21.8%	65.4%	65.4%	54.0%	54.0%	56.1%	56.1%	51.4%	51.4%
Actuarially Determined Employer Contribution¹										
7. Normal Cost Rate	6.99%	7.04%	7.71%	7.72%	19.41%	19.46%	5.29%	5.31%	9.77%	9.77%
8. Amortization Cost	N/A	N/A	16.03%	16.04%	46.38%	46.41%	14.42%	14.43%	26.72%	26.72%
9. Pension Employer Contribution Rate	6.99%	7.04%	23.74%	23.76%	65.79%	65.87%	19.71%	19.74%	36.49%	36.49%
10. Insurance Employer Contribution Rate	1.45%	1.45%	0.00%	0.00%	2.31%	2.31%	0.00%	0.00%	2.12%	2.12%
11. Total Employer Contribution Rate	8.44%	8.49%	23.74%	23.76%	68.10%	68.18%	19.71%	19.74%	38.61%	38.61%
12. Increase in Contribution Rate		0.05%		0.02%		0.08%		0.03%		0.00%
13. Amortization Cost	\$ 856,561	\$ 856,917	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14. Increase in Amortization Cost		\$ 356								
15. Estimated Contributions	\$ 992,940	\$ 994,104	\$ 50,234	\$ 50,277	\$ 44,887	\$ 44,939	\$ 582,783	\$ 583,670	\$ 267,006	\$ 267,006
16. Increase in Contributions		\$ 1,164		\$ 43		\$ 52		\$ 887		\$ -

¹ Note, contribution rates reflect the actuarially determined rates calculated in the June 30, 2023 valuation.

The June 30, 2023 valuation sets the contribution requirements for the KERS and SPRS funds for FYE 2025 and FYE 2026.

The June 30, 2023 valuation sets the contribution requirements for the CERS funds for FYE 2025.

Notes and Comments:

- Except where noted, analysis based on the results of the June 30, 2023 Actuarial Valuation.
- Please see the June 30, 2023 Actuarial Valuation report for a summary of the assumptions, methods, plan provisions and data used for this analysis.
- Projected payroll based on the June 30, 2023 valuation, assuming no increase in covered payroll for the KERS and SPRS funds, and a 2% annual increase in covered payroll for CERS funds.



Kentucky Public Pensions Authority
Estimated Financial Cost of Alternative Administrative Factor Assumptions
Fiscal Cost Reflects an Update to the Interest Rate and Mortality Assumption
Exhibit 2: Discount Rate for Administrative Factors = 5.875%
(\$ in Thousands)

	KERS Non-Hazardous		KERS Hazardous		SPRS		CERS Non-Hazardous		CERS Hazardous	
	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors
1. Covered Payroll	\$ 1,615,868	\$ 1,615,868	\$ 211,602	\$ 211,602	\$ 65,913	\$ 65,913	\$ 2,956,789	\$ 2,956,789	\$ 691,547	\$ 691,547
Liability and Assets - Pension Only										
2. Actuarial Accrued Liability	\$ 16,304,278	\$ 16,319,226	\$ 1,363,036	\$ 1,364,796	\$ 1,091,795	\$ 1,093,252	\$ 15,296,429	\$ 15,307,489	\$ 5,849,995	\$ 5,851,216
3. Actuarial Value of Assets	3,552,471	3,552,471	891,460	891,460	589,848	589,848	8,585,073	8,585,073	3,008,147	3,008,147
4. Unfunded Liability	\$ 12,751,807	\$ 12,766,755	\$ 471,576	\$ 473,336	\$ 501,947	\$ 503,404	\$ 6,711,356	\$ 6,722,416	\$ 2,841,848	\$ 2,843,069
5. Increase in Unfunded Liability		\$ 14,948		\$ 1,760		\$ 1,457		\$ 11,060		\$ 1,221
6. Funded Ratio	21.8%	21.8%	65.4%	65.3%	54.0%	54.0%	56.1%	56.1%	51.4%	51.4%
Actuarially Determined Employer Contribution¹										
7. Normal Cost Rate	6.99%	7.16%	7.71%	7.86%	19.41%	20.00%	5.29%	5.37%	9.77%	9.81%
8. Amortization Cost	N/A	N/A	16.03%	16.12%	46.38%	46.63%	14.42%	14.46%	26.72%	26.74%
9. Pension Employer Contribution Rate	6.99%	7.16%	23.74%	23.98%	65.79%	66.63%	19.71%	19.83%	36.49%	36.55%
10. Insurance Employer Contribution Rate	1.45%	1.45%	0.00%	0.00%	2.31%	2.31%	0.00%	0.00%	2.12%	2.12%
11. Total Employer Contribution Rate	8.44%	8.61%	23.74%	23.98%	68.10%	68.94%	19.71%	19.83%	38.61%	38.67%
12. Increase in Contribution Rate		0.17%		0.24%		0.84%		0.12%		0.06%
13. Amortization Cost	\$ 856,561	\$ 857,856	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14. Increase in Amortization Cost		\$ 1,295								
15. Estimated Contributions	\$ 992,940	\$ 996,982	\$ 50,234	\$ 50,742	\$ 44,887	\$ 45,440	\$ 582,783	\$ 586,331	\$ 267,006	\$ 267,421
16. Increase in Contributions		\$ 4,042		\$ 508		\$ 553		\$ 3,548		\$ 415

¹ Note, contribution rates reflect the actuarially determined rates calculated in the June 30, 2023 valuation.

The June 30, 2023 valuation sets the contribution requirements for the KERS and SPRS funds for FYE 2025 and FYE 2026.

The June 30, 2023 valuation sets the contribution requirements for the CERS funds for FYE 2025.

Notes and Comments:

- Except where noted, analysis based on the results of the June 30, 2023 Actuarial Valuation.
- Please see the June 30, 2023 Actuarial Valuation report for a summary of the assumptions, methods, plan provisions and data used for this analysis.
- Projected payroll based on the June 30, 2023 valuation, assuming no increase in covered payroll for the KERS and SPRS funds, and a 2% annual increase in covered payroll for CERS funds.



Kentucky Public Pensions Authority
Estimated Financial Cost of Alternative Administrative Factor Assumptions
Fiscal Cost Reflects an Update to the Interest Rate and Mortality Assumption
Exhibit 3: Discount Rate for Administrative Factors = 6.50%
(\$ in Thousands)

	KERS Non-Hazardous		KERS Hazardous		SPRS		CERS Non-Hazardous		CERS Hazardous	
	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors	Current Plan June 30, 2023 Valuation	Alternate Administrative Factors
1. Covered Payroll	\$ 1,615,868	\$ 1,615,868	\$ 211,602	\$ 211,602	\$ 65,913	\$ 65,913	\$ 2,956,789	\$ 2,956,789	\$ 691,547	\$ 691,547
Liability and Assets - Pension Only										
2. Actuarial Accrued Liability	\$ 16,304,278	\$ 16,330,514	\$ 1,363,036	\$ 1,368,624	\$ 1,091,795	\$ 1,094,599	\$ 15,296,429	\$ 15,324,338	\$ 5,849,995	\$ 5,860,757
3. Actuarial Value of Assets	3,552,471	3,552,471	891,460	891,460	589,848	589,848	8,585,073	8,585,073	3,008,147	3,008,147
4. Unfunded Liability	\$ 12,751,807	\$ 12,778,043	\$ 471,576	\$ 477,164	\$ 501,947	\$ 504,751	\$ 6,711,356	\$ 6,739,265	\$ 2,841,848	\$ 2,852,610
5. Increase in Unfunded Liability		\$ 26,236		\$ 5,588		\$ 2,804		\$ 27,909		\$ 10,762
6. Funded Ratio	21.8%	21.8%	65.4%	65.1%	54.0%	53.9%	56.1%	56.0%	51.4%	51.3%
Actuarially Determined Employer Contribution¹										
7. Normal Cost Rate	6.99%	7.29%	7.71%	8.18%	19.41%	20.56%	5.29%	5.48%	9.77%	10.08%
8. Amortization Cost	N/A	N/A	16.03%	16.32%	46.38%	46.85%	14.42%	14.52%	26.72%	26.87%
9. Pension Employer Contribution Rate	6.99%	7.29%	23.74%	24.50%	65.79%	67.41%	19.71%	20.00%	36.49%	36.95%
10. Insurance Employer Contribution Rate	1.45%	1.45%	0.00%	0.00%	2.31%	2.31%	0.00%	0.00%	2.12%	2.12%
11. Total Employer Contribution Rate	8.44%	8.74%	23.74%	24.50%	68.10%	69.72%	19.71%	20.00%	38.61%	39.07%
12. Increase in Contribution Rate		0.30%		0.76%		1.62%		0.29%		0.46%
13. Amortization Cost	\$ 856,561	\$ 858,834	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14. Increase in Amortization Cost		\$ 2,273								
15. Estimated Contributions	\$ 992,940	\$ 1,000,061	\$ 50,234	\$ 51,842	\$ 44,887	\$ 45,955	\$ 582,783	\$ 591,358	\$ 267,006	\$ 270,187
16. Increase in Contributions		\$ 7,121		\$ 1,608		\$ 1,068		\$ 8,575		\$ 3,181

¹ Note, contribution rates reflect the actuarially determined rates calculated in the June 30, 2023 valuation.

The June 30, 2023 valuation sets the contribution requirements for the KERS and SPRS funds for FYE 2025 and FYE 2026.

The June 30, 2023 valuation sets the contribution requirements for the CERS funds for FYE 2025.

Notes and Comments:

- Except where noted, analysis based on the results of the June 30, 2023 Actuarial Valuation.
- Please see the June 30, 2023 Actuarial Valuation report for a summary of the assumptions, methods, plan provisions and data used for this analysis.
- Projected payroll based on the June 30, 2023 valuation, assuming no increase in covered payroll for the KERS and SPRS funds, and a 2% annual increase in covered payroll for CERS funds.



**KENTUCKY RETIREMENT SYSTEMS
BOARD OF TRUSTEES**

STATEMENT OF BYLAWS AND COMMITTEE ORGANIZATION

As Amended: ~~June~~ December 5, 2023

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 (11th 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 (11th 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 requirements of the Commonwealth of Kentucky Model Procurement Act (KRS 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 collaborate with the KPPA on Business Continuity and Disaster Recovery to ensure that the Kentucky Retirement Systems' records and operations are adequately protected and that critical business operations will continue efficiently. The Board may rely on policies and procedures developed by the KPPA to address Business Continuity and Disaster Recovery issues. The Board Chair shall act as temporary CEO in the event the CEO is not available to perform duties outlined in these Bylaws.

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.~~ Any trustee who wishes to observe a meeting of a committee of which he or she is not a member should do so by watching via live broadcast.

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. 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 5th day of ~~June~~ December, 2023.

_____	_____
Chair of the Board of Trustees	Date
Kentucky Retirement Systems	

_____	_____
Chief Executive Officer	Date
Kentucky Retirement Systems	



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 Board

From: David Eager, Executive Director

Date: December 5, 2023

Subject: KPPA Update

I. LEGISLATION: Rep. Johnson has agreed to sponsor our Housekeeping Bill. It is essentially a carbon copy of last year's bill.

Sen. Higdon has agreed to sponsors a bill allowing us to lease space for the investment office to be located in Louisville and we are looking for a sponsor for a bill that will permit the creation of the Office of Financial Management.

II. STRATEGIC PLAN UPDATE FROM PROVALIANT: The KPPA strategic planning project is moving forward as planned and the delivery of a strategic plan document by Provaliant Retirement by January 31 is still on track. Since our last monthly update on October 23, the following activities have been conducted. Also included are upcoming activities. As defined previously, the major categories for strategic planning continue to be:

1. KPPA Governance – Confirm, Improve, Monitor
2. KPPA Service Delivery Operations – Create a sustainable “KPPA Operational Excellence” model for administration and investment operations.
3. Modernize, maintain, and sustain high quality customer service delivery.
4. Modernize, maintain, and sustain high quality primary resources and infrastructure.

Components of the following activities are being categorized into the four areas above as additional input and information is identified.

Three more onsite workshops were conducted with KPPA staff by Provaliant consultants. The topics covered were future vision of external customer services delivery via the web, future technology infrastructure needs to support customers and KPPA staff, and future continuous improvement opportunities regarding the process of KPPA board governance and direction to KPPA organization. Workshops, small group, and individual follow-ups will continue in December as needed.

Provaliant also continued to conduct, target, and refine best practice research information to support strategic initiatives being identified through KPPA staff input in workshops, from Provaliant review of a wide variety of KPPA documents, system specifications, KPPA operational

information, and in the strategic planning request for proposal. These best practices are being packaged into a research summary document and will become guiding practices for executing the strategic initiatives once KPPA approves the strategic plan.

Provaliant is in the process of creating a summary presentation of the major strategic initiatives that Provaliant recommends for the KPPA strategic plan. This draft summary will be explained to KPPA executive staff and vetted in December. We will be providing potential dates for this presentation this week. Input from that summary review will guide the draft strategic plan delivery in early January and after more review, discussion, and editing will become the KPPA strategic plan delivered by Provaliant by January 31.

III. BOARD SMART: Board Smart presented their new version of Board Smart 3.0 to the CEOs and a group of staff members. They are attempting to offer a product that Trustees see as being of more value, more relevant, and easier to use. Staff will rely on the decisions the CEOs make regarding the continued use of Board Smart beyond June 30, 2024.

IV. EXECUTIVE DIRECTOR SEARCH: Bill O'Mara and his group finished up on three versions of public communications regarding the search for a new Executive Director:

- 1) The copy for an ad announcing the job opportunity.
- 2) A more detailed description of the position and background on the systems
- 3) A type of brochure with more information including information on Kentucky, etc.

The ads/announcements will start in December with a January 15 cutoff. They hope to have a candidate hired by the end of April.

V. INCIDENT RESPONSE PLANNING ACTIVITIES: KPPA has been working in a variety of areas since early 2020 to facilitate KPPA Security Incident Response Planning and Response Readiness, including developing a Security Incident Response Plan (SIRP). The KPPA Security Incident Reporting and Handling Policy provides for two teams: the KPPA Security Incident Handling Team (technical team), and Security Incident Response Team (Executive will level team with oversight on response strategy, etc.).

Next Steps	
Item	Target
Finish the first version of the KPPA Security Incident Response Plan (SIRP) and its associated appendices	12/31/2023
Submit SIRP for review by InfoTech	2024 Q1
Conduct Formal Tabletop Exercise with Executive Group	2024 Q1
Facilitate an annual review of the SIRP	Ongoing
Conduct periodic technical tabletop exercises	Ongoing

VI. STAFFING: We continue to hover around 250 staff with no unfilled leadership positions except for two portfolio managers in the investment department. We recently received work from home approval for the Division of Retiree Healthcare and the Division of Disability and Survivor Benefits.

VII. KECC: I am pleased to report that KPPA employees pledged and/or contributed over \$24 Thousand (as of November 20, 2023) to the Kentucky Employees Charitable Campaign through payroll deductions, our silent auction and other fund raisers (e.g., Legal's bake sale and a chili cook off in Benefits). Kudos go to a lot of people, but particularly to Lori Casey, Kimberly Leet, and Lori Wells all in HR.

VIII. Conference Attendance: Since the KPPA Board meeting in September, the executive staff attended the following professional conferences:

Erin Surratt – NCPERS Fall Conference – October 2023

Mike Lamb – P2F2 (Public Pension Finance Forum) – October 2023

IX. PPOB: We attended and presented material at the PPOB meetings held on October 24th and November 20th.

X. HOSTING MEETINGS: Since July 1, 2023, and through the end of this week we have hosted 36 Board and Committee meetings and held 8 bi-weekly meetings with the CEOs.