Kentucky Retirement Systems Board of Trustees
Quarterly Board Meeting
November 14, 2023, 10:00 a.m. ET
Live Video Conference/Facebook Live
AGENDA

1.	**Call to Order**	**Lynn Hampton**
2.	**Legal Public Statement**	**Office of Legal Services**
3.	**Roll Call/Public Comment**	**Sherry Rankin**
4.	**Approval of Minutes – September 7, 2023 and September 14, 2023***	**Lynn Hampton**
5.	**Review DRAFT 2023 Actuarial Valuation ***	**Danny White, GRS** **Janie Shaw, GRS**
6.	**Joint Retiree Health Plan Committee Report**	**Connie Pettyjohn**
7.	**Statutorily Required Reporting**	**Rebecca Adkins** **Erin Surratt** **Mike Lamb**
8.	**KRS 61.5991 Contract Reporting of Quasi-Governmental Agencies**	**Rebecca Adkins** **D'Juan Surratt**
9.	**December Meeting Date Discussion***	**Lynn Hampton**
10.	**KRS Update**	**John Chilton**
11.	**New Business****	**Lynn Hampton**
12.	**Closed Session****	**Lynn Hampton**
13.	**Adjourn***	**Lynn Hampton**

**Board Action Required*
***Board Action May Be Required*

MINUTES OF MEETING
COUNTY EMPLOYEES RETIREMENT SYSTEM
AND
KENTUCKY RETIREMENT SYSTEMS
BOARDS OF TRUSTEES SPECIAL CALLED MEETING
LEGAL EDUCATION: ANATOMY OF A CIVIL LAWSUIT
SEPTEMBER 7, 2023, AT 10:00 A.M. ET
VIA LIVE VIDEO TELECONFERENCE

At the Special Called meeting of the County Employees Retirement System (CERS) Board of Trustees and the Kentucky Retirement Systems (KRS) Board of Trustees held on September 7, 2023, the following CERS Trustees were present: Betty Pendergrass (Chair), Dr. Patricia Carver, Michael Foster, JT Fulkerson, Dr. Merl Hackbart, William O'Mara, and Jerry Powell. The following KRS Trustees were present: Lynn Hampton (Chair), Ramsey Bova, Mary Eaves, Dr. Crystal Miller, Prewitt Lane, and Mr. Summers V. Staff members present were CERS CEO Ed Owens, III, KRS CEO John Chilton, David Eager, Erin Surratt, Michael Lamb, Michael Board, Leigh Ann Davis, Victoria Hale, Ashely Gabbard, Katie Park, Phillip Cook and Sherry Rankin.

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

Mr. Board read the Legal Public Statement.

Ms. Rankin called Roll for the CERS and KRS Boards of Trustees.

There being no ***Public Comment*** submitted, Mr. Board presented ***The Anatomy of a Civil Lawsuit*** *(Video 00:11:25 to 01:02:15).*

Ms. Pendergrass ***adjourned*** the Special Called Meeting of the CERS Board of Trustees.
Ms. Hampton ***adjourned*** the Special Called Meeting of the KRS Board of Trustees.

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CERTIFICATION

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

____

Recording Secretary

I, the Chair of the Board of Trustees of the Kentucky Retirement Systems, do certify that the Minutes of Meeting held on September 7, 2023, were approved on November 14, 2023.

____

Chair of the Board of Trustees

I have reviewed the Minutes of the September 7, 2023, Board of Trustees Meeting for content, form, and legality.

____

Executive Director
Office of Legal Services

MINUTES OF MEETING
KENTUCKY RETIREMENT SYSTEMS
BOARD OF TRUSTEES MEETING
SEPTEMBER 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 September 14, 2023 the following members were present: Lynn Hampton (Chair), David Adkins, Ramsey Bova, Mary Eaves, Prewitt Lane, Dr. Crystal Miller, Keith Peercy, Pamela Thompson 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, Carrie Bass, Jessica Beaubien, Michael Lamb, Connie Davis, D'Juan Surratt, Steve Willer, Jared Crawford, Kristen Coffey, Ashley Gabbard, Katie Park, Phillip Cook, and Sherry Rankin. Others present included Tracey Garrison and Larry Loew with Humana, and Chris Tessman and David Lindberg with Wilshire Advisors.

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 – June 5, 2023*** *(Video 00:07:12 to 00:07:55).* A motion was made by Mr. Lane and seconded by Ms. Bova to approve the minutes as presented. The motion passed unanimously.

Ms. Hampton introduced agenda item ***KPPA Audit Committee Report*** *(Video 00:07:56 to 00:17:58).* Ms. Kristen Coffey briefly reviewed the KPPA Audit Committee's approval of the items to be regularly presented to various Boards and Committees and Status of Current Internal Audit Projects were presented to the KRS Board of Trustees.

Before moving on to the next agenda item, Ms. Hampton welcomed newly appointed KRS Trustee, Mary Eaves. Ms. Eaves briefly introduced herself to all in attendance.

Ms. Hampton introduced the ***Joint Retiree Health Plan Committee Report*** *(Video 00:17:59 to 00:39:44).* Dr. Miller introduced Ms. Connie Pettyjohn to present the recommendations of the Joint Retiree Health Plan Committee regarding the Non-Medicare and Medicare eligible health plans for retirees of the systems operated by the KPPA. Ms. Pettyjohn stated that the Committee met on September 5, 2023, and September 12, 2023.

Ms. Pettyjohn provided an overview of the recommendations regarding the Non-Medicare Eligible Retirees.

Dr. Miller made a motion to ratify the recommendations from the Joint Retiree Health Plan Committee regarding the Non-Medicare Eligible Retirees from September 5, 2023. Mr. Peercy seconded the motion and the motion passed unanimously.

Next, Ms. Pettyjohn provided an overview of the recommendations regarding the Medicare Eligible Retirees.

Dr. Miller made a motion to ratify the recommendations from the Joint Retiree Health Plan Committee regarding the Medicare Eligible Retirees on September 12, 2023. Mr. Lane seconded the motion and the motion passed unanimously.

Ms. Hampton introduced agenda item ***Administrative Regulations: 105 KAR 1:148 and 105 KAR 1:148E*** *(Video 00:39:45 to 00:45:36).* Ms. Jessica Beaubien stated that 105 KAR 1:148 and 105 KAR 1:148E are new administrative regulations which establish the procedures and requirements for the process of assigning actuarially accrued liability contributions for a Kentucky Employees Retirement System employer that, on or after March 23, 2021, merges with another employer or entity, forms a new or separate employer or entity, or splits or separates operations into multiple employers or entities.

Ms. Beaubien recommended that Section 2 of the presented 105 KAR 1:148E be amended to read: *Section 2. Retroactive Effective Date of Application. This administrative regulation applies to the actuarially accrued liability of any participating employer that, on or after March 23, 2021,* ***pursuant to KRS 61.565(1)(d)(4)****, merges with another employer or entity, forms a new or separate employer or entity, or splits or separates operations into multiple employers or entities.*

Mr. Adkins made a motion to incorporate the suggested language into the document (105 KAR 1:148E) and approve it as amended. Mr. Summers seconded the motion and the motion passed unanimously.

Mr. Summers made a motion to approve Administrative Regulations 105 KAR 1:148 and 105 KAR 1:148E as presented and to authorize KPPA staff to file the regulations with the Office of the Regulations Compiler. Mr. Lane seconded the motion and the motion passed unanimously.

Ms. Hampton introduced agenda item ***Quarterly Financial Reports*** *(Video 00:45:37 to 00:59:14).* Mr. Lamb presented the Quarterly Financial Reports. He briefly reviewed these reports with the KRS Board of Trustees. He reviewed the Combining Statement of Fiduciary Net Position of the Pension Funds as of June 30, 2023. Next, Mr. Lamb briefly reviewed the Combining Statement of Changes in Fiduciary Net Position of the Pension Funds for the twelve-month period ending June 30, 2023, Combining Statement of Fiduciary Net Position of Insurance Funds as of June 30, 2023, and the Combining Statement of Changes in Fiduciary Net Position of Insurance Funds for the twelve-month period ending June 30, 2023, with the KRS Board of Trustees. Mr. Lamb went on to present the KRS Pension and Insurance Funds Contribution Reports for the twelve-month period ending June 30, 2023. Lastly, he succinctly presented the FY 2022-2023 KPPA Administrative Budget and Budget-to-Actual Analysis for the fiscal year ending June 30, 2023. Separation/plan-specific expenses allocated based on the hybrid-percentage were highlighted by Mr. Lamb. Mr. Lamb reviewed the JP Morgan Chase Earnings and Fees and Hard Interest Earned for the fiscal year ending June 30, 2023. Lastly, the KRS Outstanding Invoices by Type and Employer and Penalty Invoices Reports were presented to the KRS Board of Trustees.

Ms. Hampton introduced agenda item ***Cyber Insurance Policy*** *(Video 00:59:15 to 01:02:31).* Mr. Lamb announced that KPPA released a Request for Proposal (RFP) for a Cyber Insurance Policy. Bids were received and evaluated, said Mr. Lamb. He advised that the named insured would be the Kentucky Public Pensions Authority (KPPA), the Kentucky Retirement Systems (KRS), as well as the County Employees Retirement System (CERS).

Mr. Lane made a motion to include Kentucky Retirement Systems (KRS) as an additional named insured in the Cyber Insurance Policy. Ms. Eaves seconded the motion and the motion passed unanimously.

Ms. Hampton introduced agenda item ***FY25-26 Biennial Budget Recommendation*** *(Video 01:02:32 to 01:14:35).* Mr. Lamb presented an informational memo and presentation illustrating the FY25-26 Biennial Budget Recommendation from the FY 2024 Budget Planning Workgroup. He briefly reviewed the drafted FY 2024 Administrative Budget, FY 25/26 Baseline Budget, and FY 25/26 Proposed KBUD Baseline Submission with the KRS Board of Trustees. Mr. Lamb advised that an Additional Budget Request would also be submitted requesting an increase in KPPA's headcount. He provided an overview of this request.

Ms. Hampton introduced agenda item ***Investment Committee Report*** *(Video 01:14:36 to 01:39:41).* Mr. Willer stated that the KRS Investment Committee met on August 8, 2023, and directed the KRS Board of Trustees to their meeting material for all information presented to the Committee. He provided a brief overview of the presented data. No action was taken at the meeting, said Mr. Willer.

Ms. Hampton introduced agenda item ***CEO Report*** *(Video 01:39:42 to 01:44:15).* KRS CEO John Chilton provided an update on various projects and happenings since the last Quarterly KRS Board of Trustees meeting on June 5, 2023.

Ms. Hampton introduced agenda item ***2024 Board and Committee Meeting Calendar*** *(Video 01:44:16 to 01:49:53).* Ms. Hampton presented the drafted 2024 Board and Committee Meeting Calendar. Mr. Adkins made a motion to approve the 2024 Board and Committee Meeting Calendar as recommended. Ms. Eaves seconded the motion.

Ms. Adkins advised that the KRS Board of Trustees, CERS Board of Trustees, and KPPA meetings scheduled for the second week of December 2024 would need to be moved to the prior week to meet the Annual Comprehensive Financial Report (ACFR) requirements and deadlines set by the Commonwealth. Therefore, Mr. Adkins amended his motion. Mr. Adkins made a motion to approve the 2024 Board and Committee Meeting Calendar as recommended and subject to revision to indicate a timely December meeting to meet the requirements as noted. Ms. Eaves seconded the motion as amended and the motion passed unanimously.

Ms. Hampton introduced agenda item ***KPPA Update*** *(Video 01:49:54 to 01:55:30).* Mr. Eager submitted a written KPPA Update. However, he quickly highlighted the KPPA Strategic Plan with Provaliant and the importance of KPPA Staff exposure and connectivity to legislators, other state systems, executive branch offices, etc.

Ms. Hampton introduced agenda item ***New Business*** *(Video 01:55:31 to 02:05:52)* Ms. Hampton announced that she had resigned from the Administrative/Disability Appeals Committees, Committee #1. Ms. Eaves agreed to join Committee #1 in her place, therefore Ms. Hampton appointed Ms. Eaves to the Committee.

Ms. Hampton commended CEO John Chilton for this effort and ongoing service to the KRS Board of Trustees.

Lastly, Ms. Hampton advised that discussions of the rate of return on annuities would occur at a future meeting. There was brief discussion surrounding the topic. Ms. Hampton stated that a Special Called Meeting of the KRS Board of Trustees may be needed to continue the discussion.

Ms. Hampton introduced agenda item ***Closed Session*** *(Video 02:05:53 to 02:07:09)* and requested a motion to enter closed session to discuss pending litigation pursuant to KRS 61.810(c). A motion was made by Mr. Adkins and seconded by Mr. Summers. The motion passed unanimously.

Mr. Board 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 - 00:00:35 to 00:00:47)*

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 September 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

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Chair of the Board of Trustees

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

____
Executive Director
Office of Legal Services

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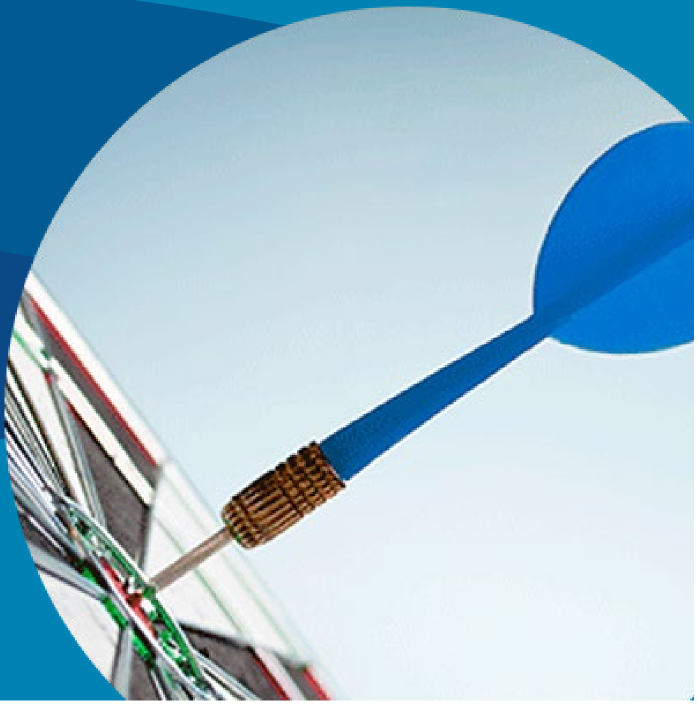
Kentucky Retirement Systems

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

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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)

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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)

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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

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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	1.86%	1.45%	0.00%	0.00%	3.68%	2.31%
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	5M	2M				
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.

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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	30	25	0	0	2	2
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**
Impact of 2022 Valuation	(5)	(83)	**(88)**
Amortization Cost – 2022 Val	**$ 901**	**$ 5**	**$ 906**
$240M in Appropriations	(20)	0	(20)
Investment Experience	(1)	0	(1)
Demographic Experience	35	7	42
Experience Study	(60)	(10)	(70)
Total Change	$(46)	$(3)	$(49)
Amortization Cost – 2023 Val (FY 2025)	**$ 855**	**$ 2**	**$ 857**

Based on June 30, 2021 Valuation

Informational purposes only

Salary increases for active members higher than expected

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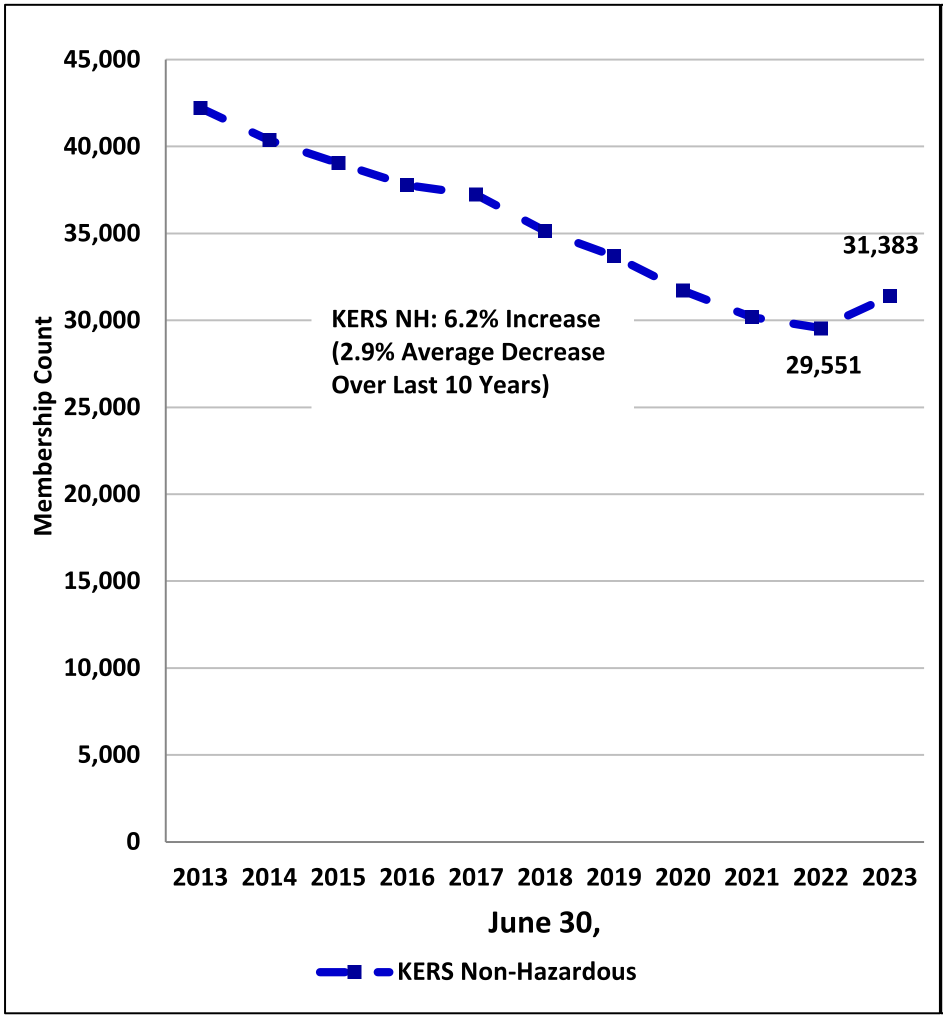
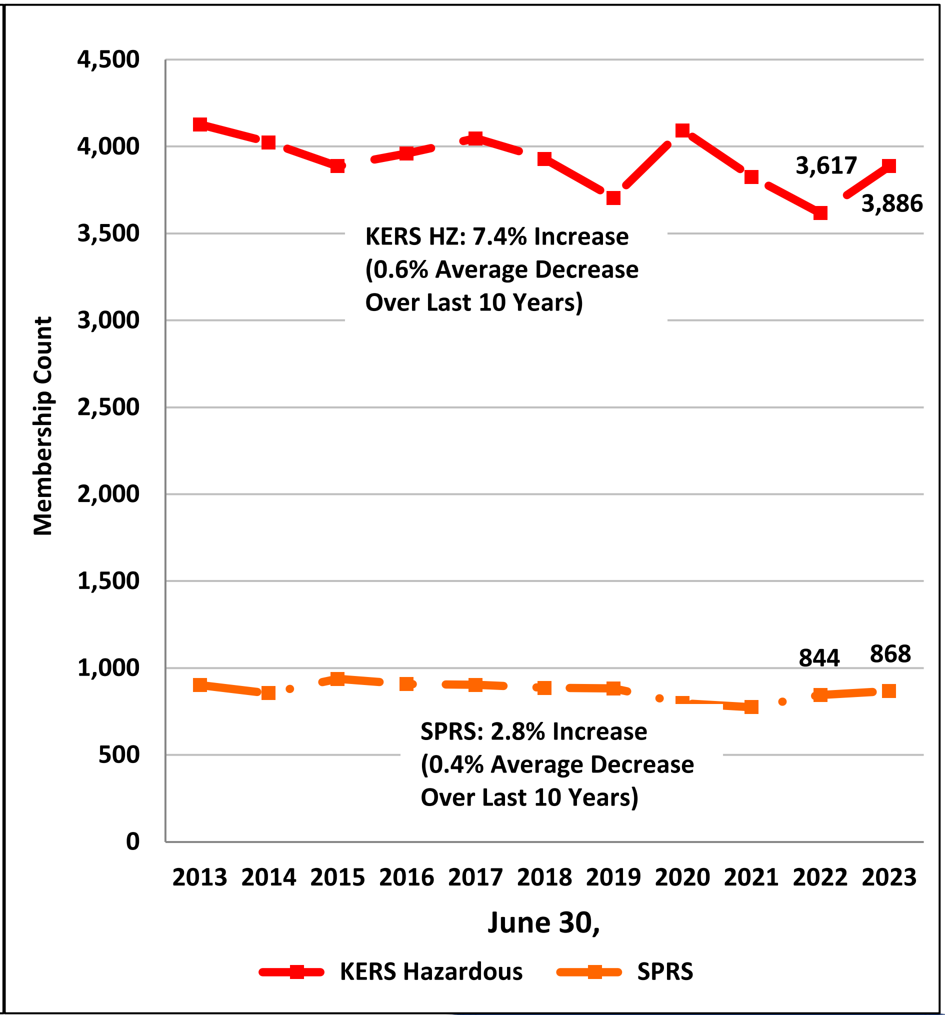
Unfunded Actuarial Accrued Liability – Actuarial Value of Asset Basis ($ in Billions)

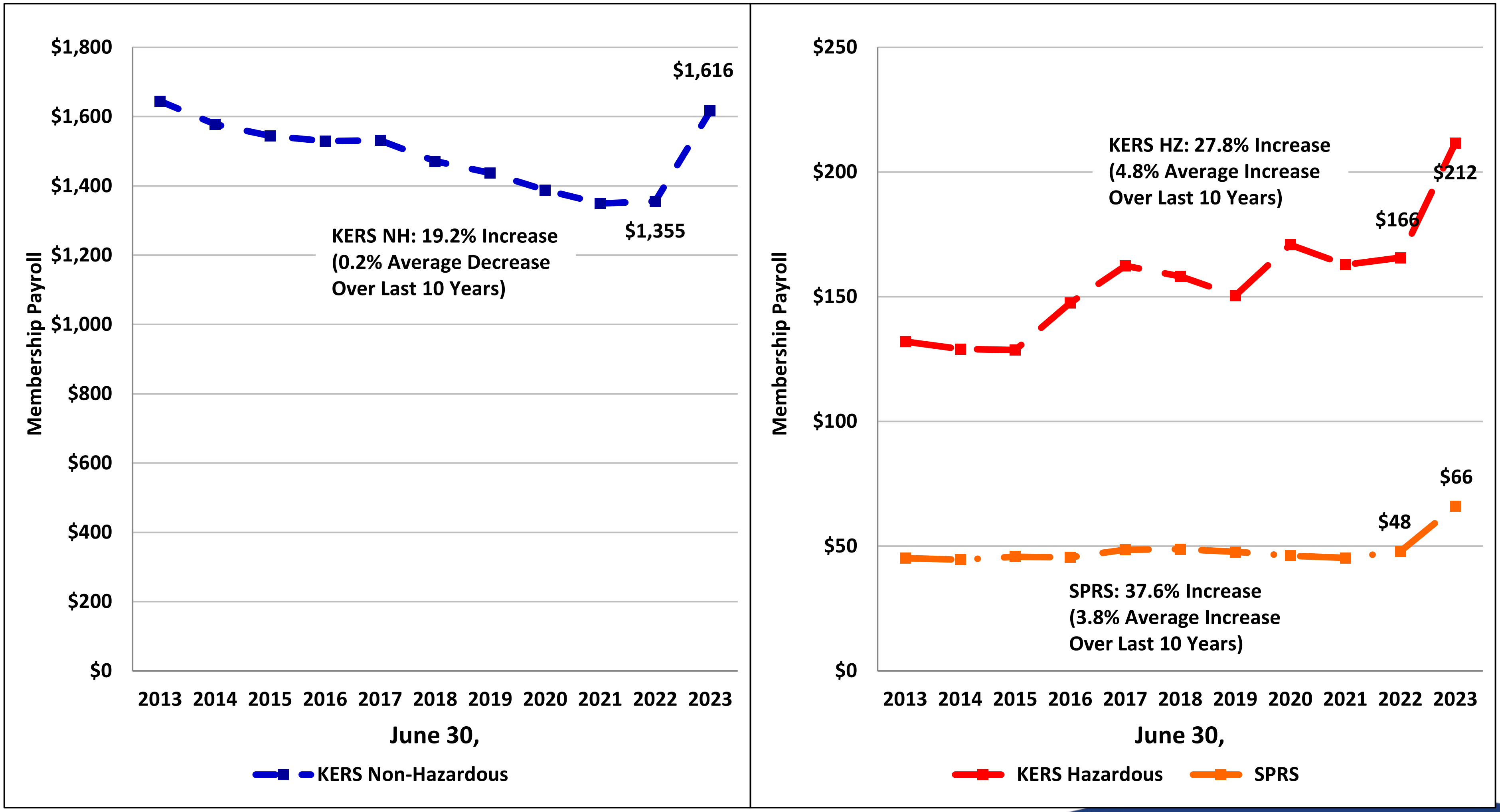
	KERS Non-Hazardous		KERS Hazardous		SPRS	
	2022 Val	2023 Val	2022 Val	2023 Val	2022 Val	2023 Val
(1)	(2)	(3)	(4)	(5)	(4)	(5)
Pension Fund	$13.51	$12.75	$0.48	$0.47	$0.51	$0.50
Insurance Fund	0.37	0.34	(0.25)	(0.26)	(0.00)	(0.00)
Total Unfunded Actuarial Accrued Liability	**$13.88**	**$13.10**	**$0.23**	**$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)



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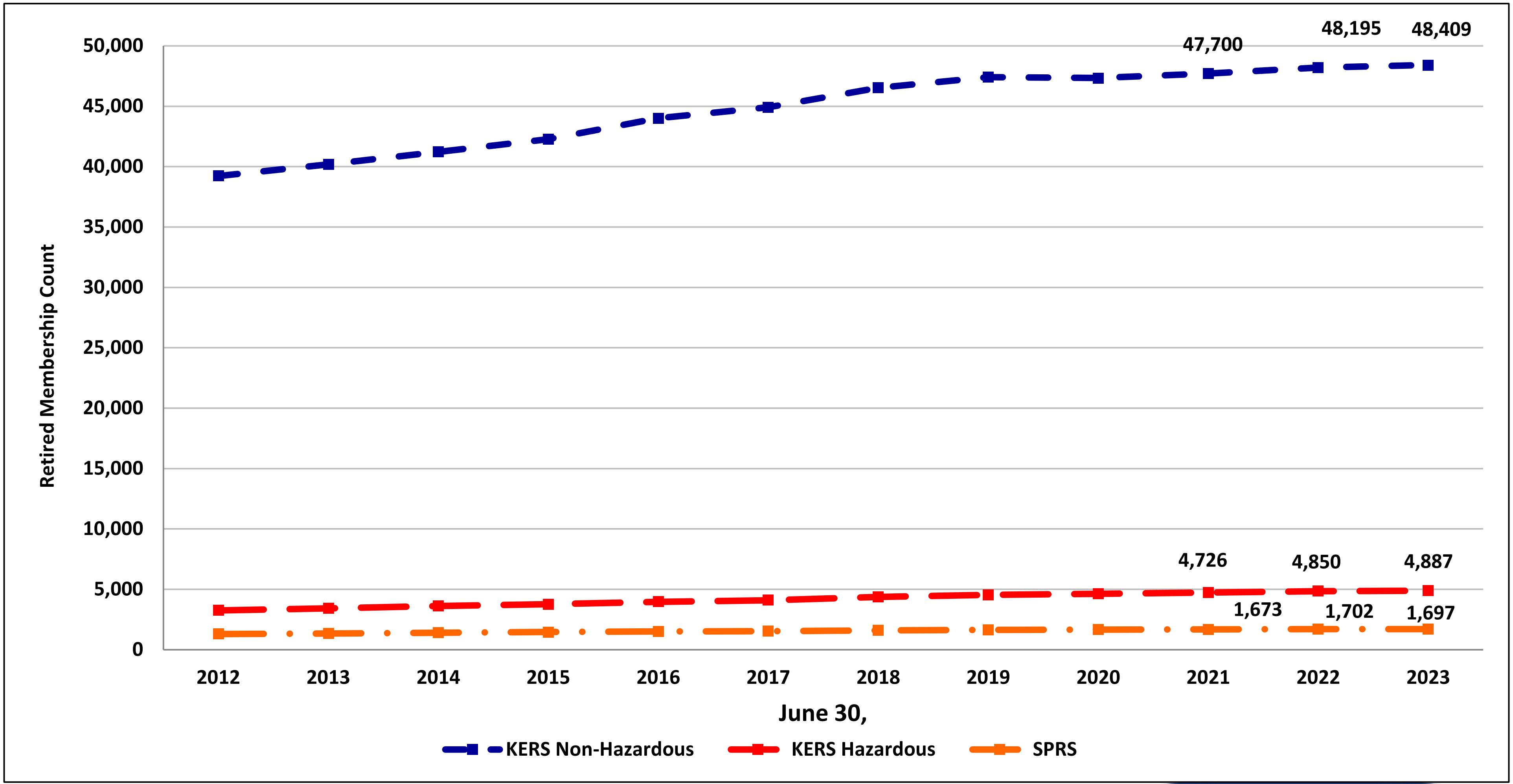
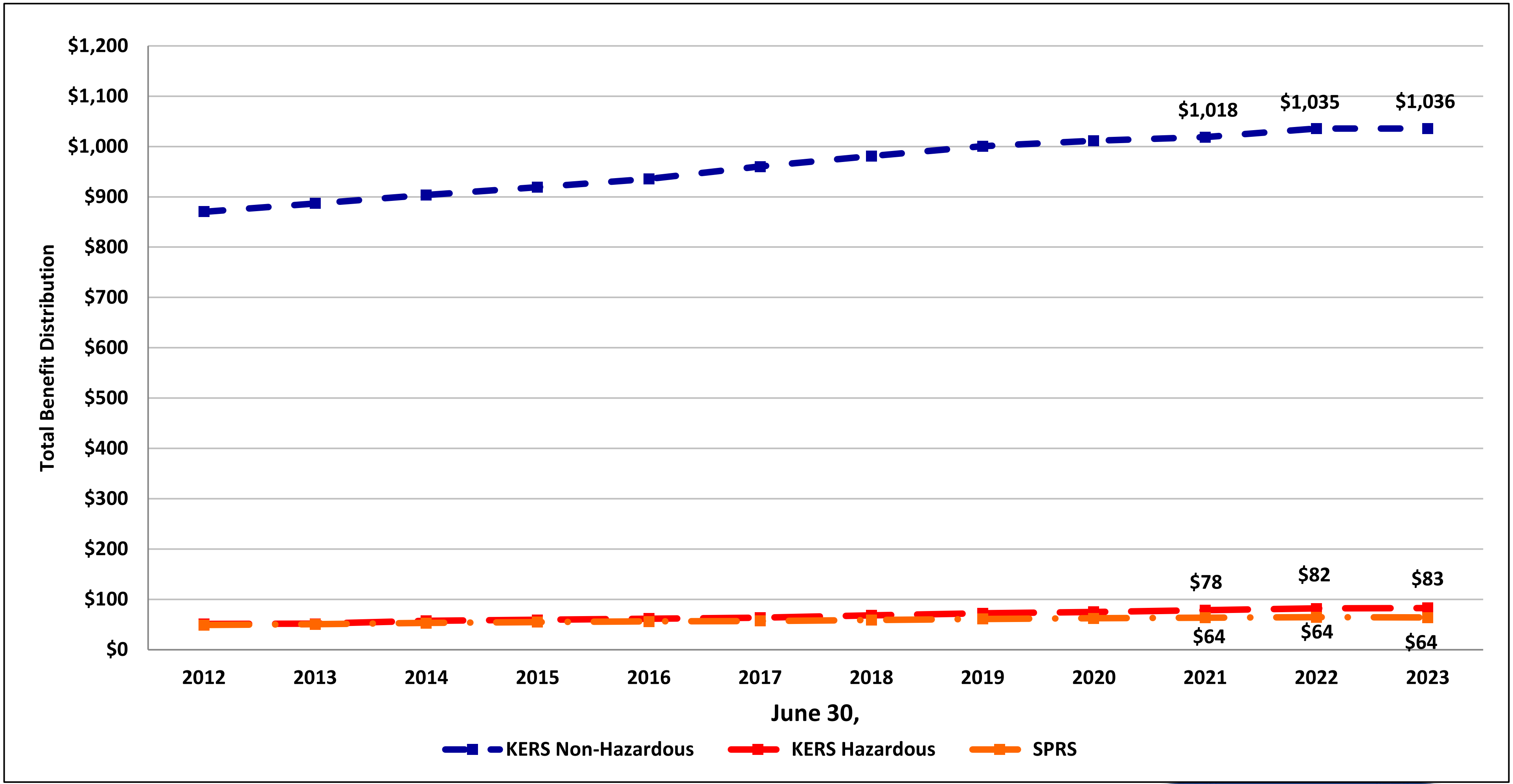
Retired Membership Count



Pension Benefit Distributions ($ in Millions)



Funding Results – KERS ($ in millions)

	Non-Hazardous System				Hazardous System			
	Pension		Insurance		Pension		Insurance	
Item	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	(5.00)%	(5.00)%	(0.49)%	(0.54)%	(8.00)%	(8.00)%	(0.70)%	(0.75)%
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	N/A	N/A	N/A	N/A	21.52%	16.03%	(13.39)%	(11.29)%
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	$3,065	$3,552	$1,410	$1,533	$832	$891	$598	$620
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 2022	Pension 2023	Insurance 2022	Insurance 2023
(1)	(2)	(3)	(4)	(5)
Total Normal Cost Rate	26.92%	26.97%	7.03%	5.39%
Member Rate	(8.00)%	(8.00)%	(0.52)%	(0.57)%
Employer Normal Cost Rate	18.92%	18.97%	6.51%	4.82%
Administrative Expenses	0.57%	0.44%	0.15%	0.11%
Amortization Cost	65.90%	46.38%	(2.98)%	(2.62)%
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	$560	$590	$234	$245
Unfunded AAL	**$507**	**$502**	**$(1)**	**$(1)**
Funded Ratio	**52.5%**	**54.0%**	**100.6%**	**100.5%**

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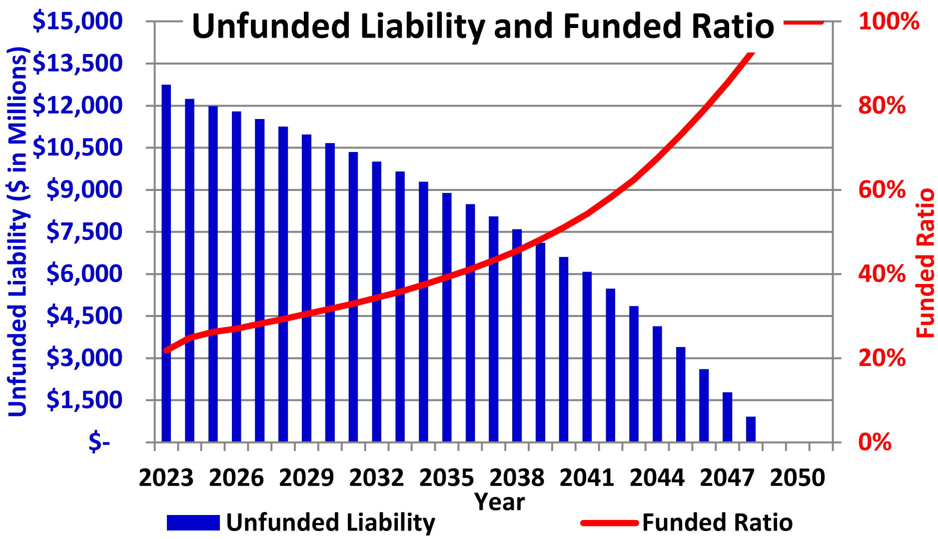
PROJECTION INFORMATION PENSION AND INSURANCE

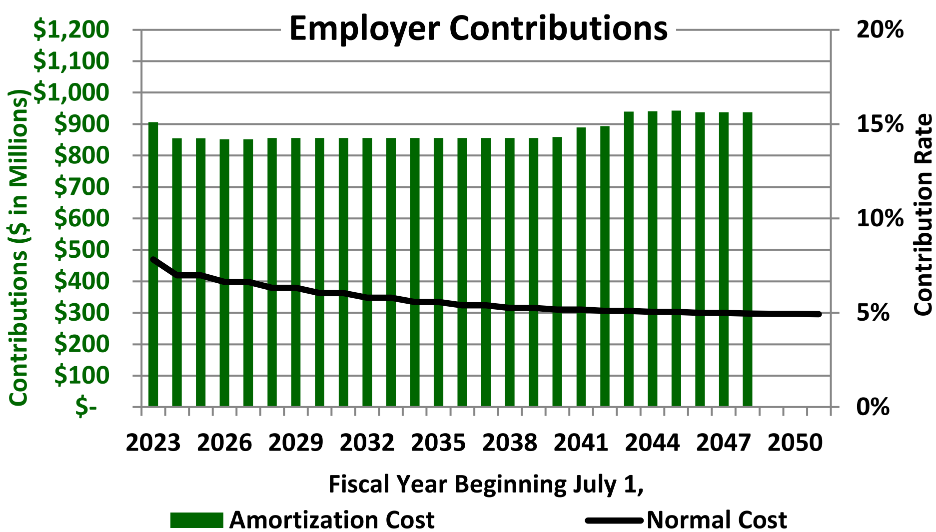
Projection Assumptions

- 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

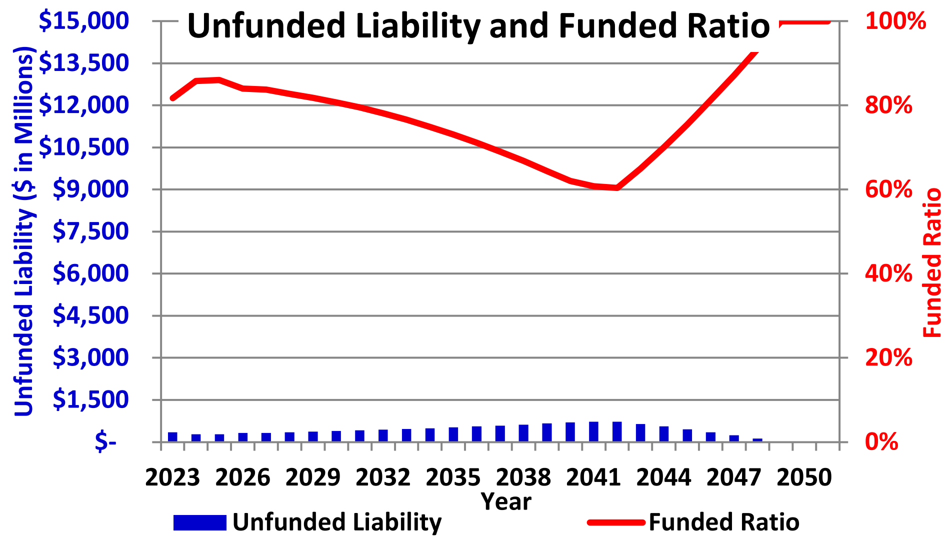
KERS Non-Hazardous Projection

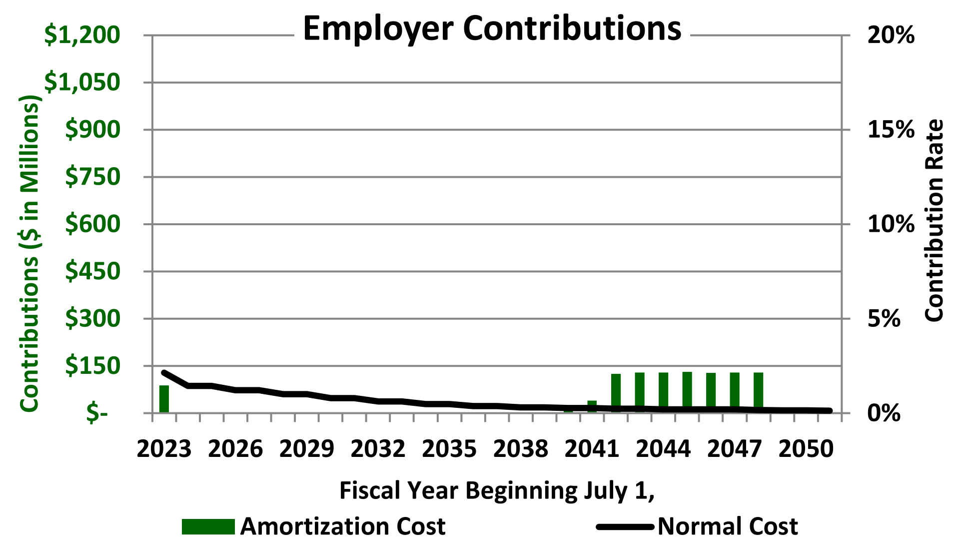
Pension





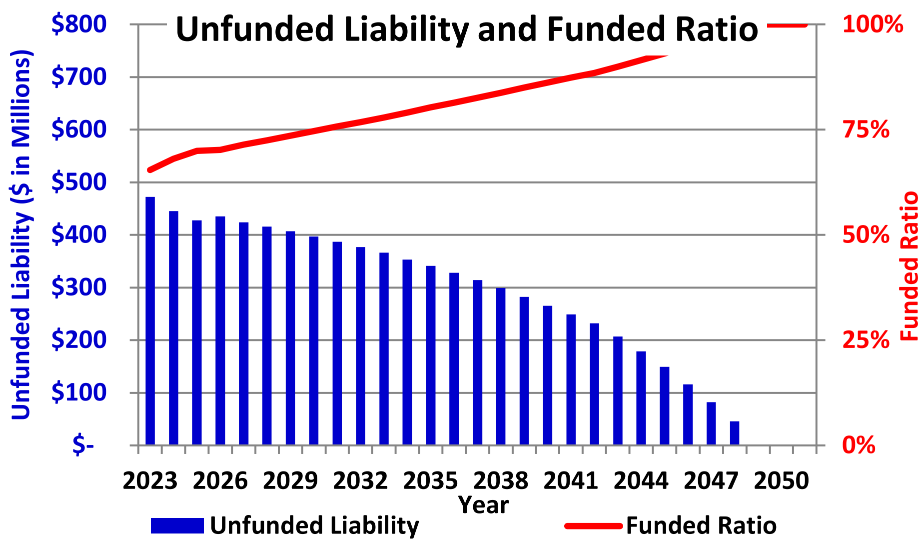
Insurance

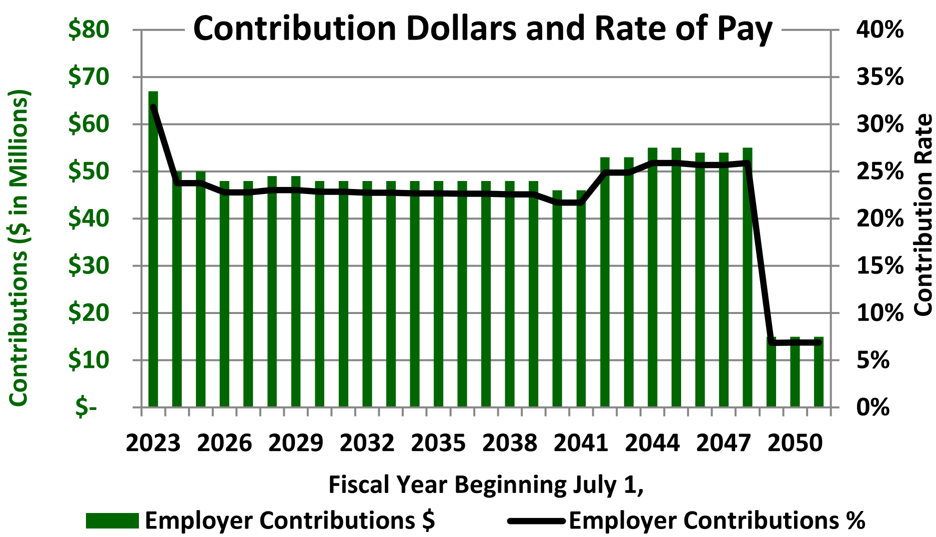




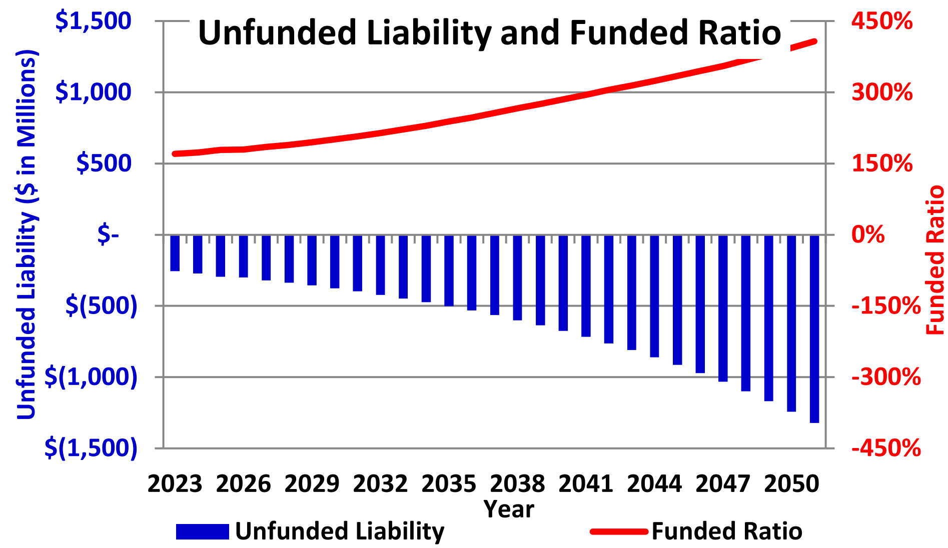
KERS Hazardous Projection

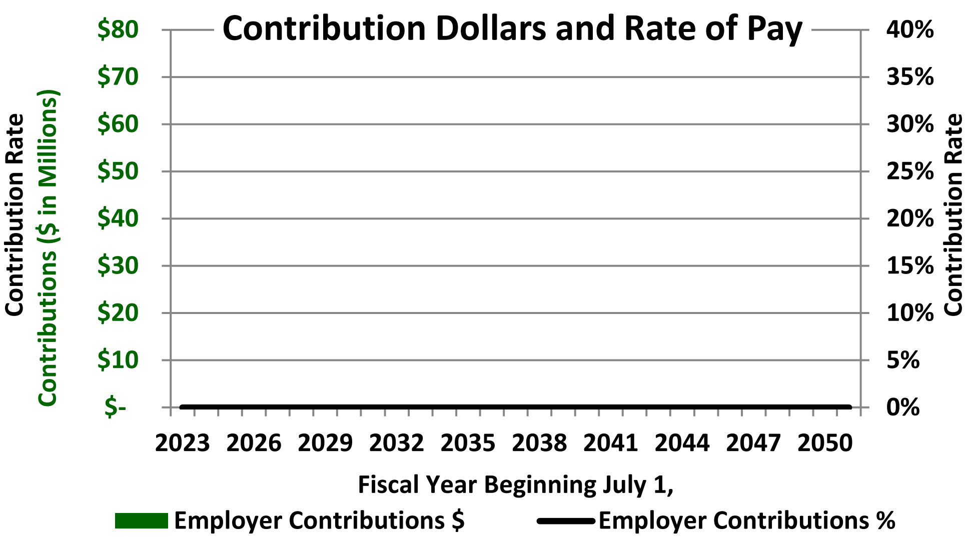
Pension





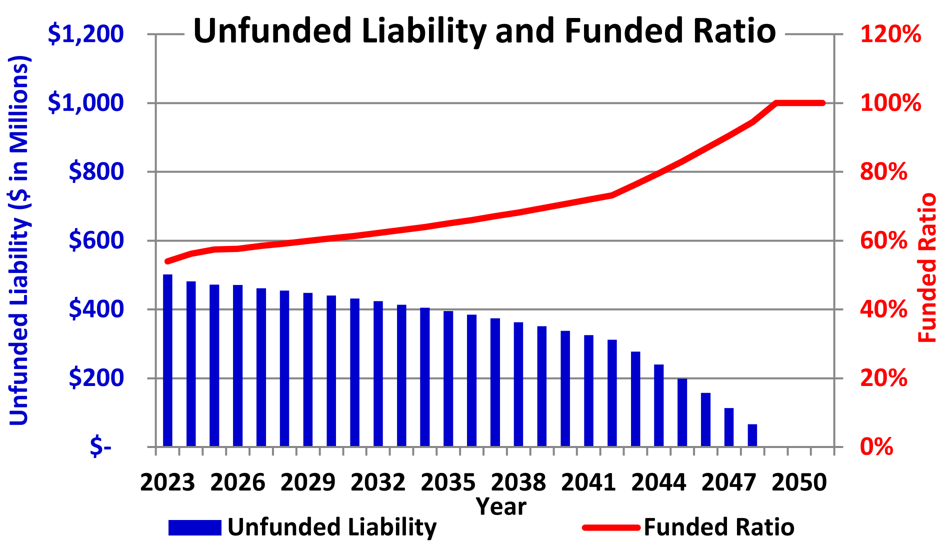
Insurance

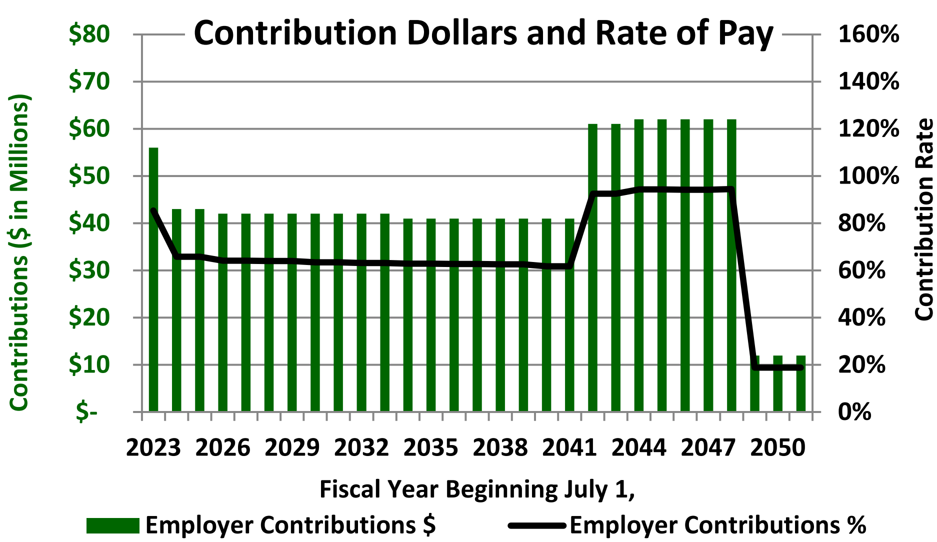




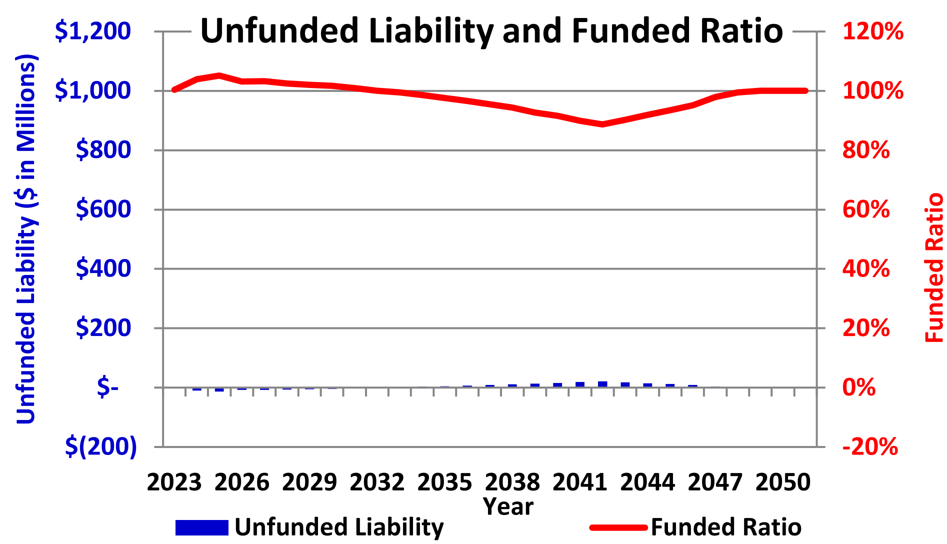
SPRS Projection

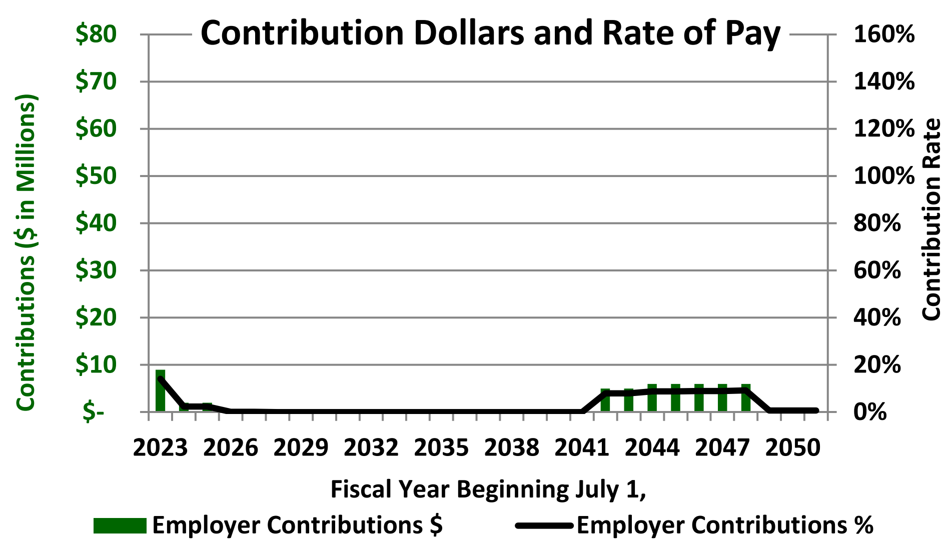
Pension





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

GRS

P: 469.524.0000 | www.grsconsulting.com

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 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.

5605 North MacArthur Boulevard | Suite 870 | Irving, Texas 75038-2631

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.

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
October 23, 2023
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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

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

Janie Shaw

Janie Shaw, ASA, EA, MAAA
Consultant

Krysti Kiesel

Krysti Kiesel, ASA, MAAA
Senior Analyst and Actuary

GRS

DRAFT

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SECTION 1

EXECUTIVE SUMMARY

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 payroll[1]:						
Retirement	6.99%	7.74%	23.74%	30.12%		
Insurance	1.45%	1.86%	0.00%	0.00%		
Total	8.44%	9.60%	23.74%	30.12%	N/A	N/A
Amortization Cost to be allocated amongst employers	$856,565	$905,893	N/A	N/A	N/A	N/A
Assets:						
Retirement						
• Actuarial value (AVAR)	$3,552,430	$3,065,263	$891,460	$832,436	$4,443,890	$3,897,699
• Market value (MVAR)	$3,539,902	$3,013,845	$893,533	$810,978	$4,433,435	$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)	$1,532,886	$1,409,553	$619,519	$597,701	$2,152,405	$2,007,254
• Market value (MVAI)	$1,532,743	$1,364,419	$625,356	$588,162	$2,158,099	$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	$12,751,848	$13,511,368	$471,576	$484,389	$13,223,424	$13,995,757
• Funded ratio on AVAR	21.8%	18.5%	65.4%	63.2%	25.2%	21.8%
• Unfunded accrued liability on MVAR	$12,764,376	$13,562,786	$469,503	$505,847	$13,233,879	$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	$344,223	$372,833	($256,007)	($250,657)	$88,216	$122,176
• Funded ratio on AVAI	81.7%	79.1%	170.4%	172.2%	96.1%	94.3%
• Unfunded accrued liability on MVAI	$344,366	$417,967	($261,844)	($241,118)	$82,522	$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.

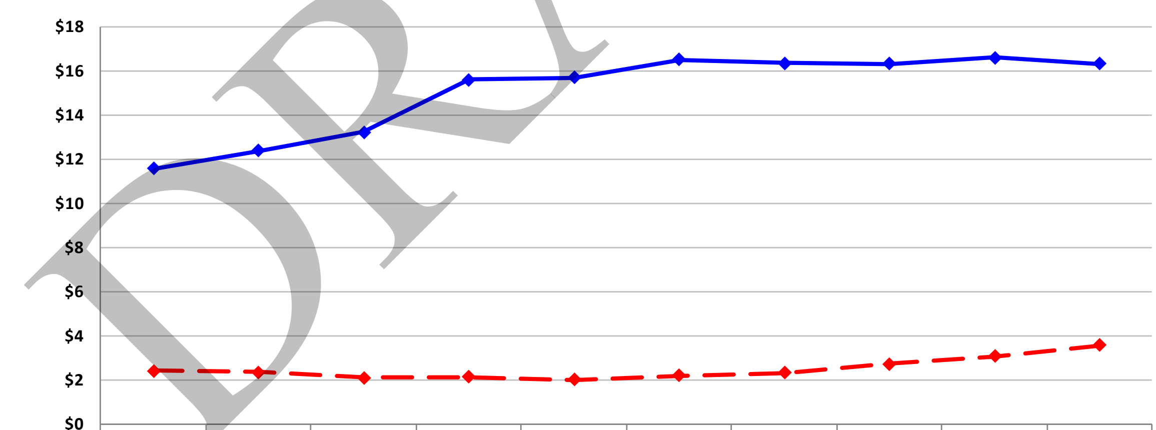
Executive Summary (Continued)

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.



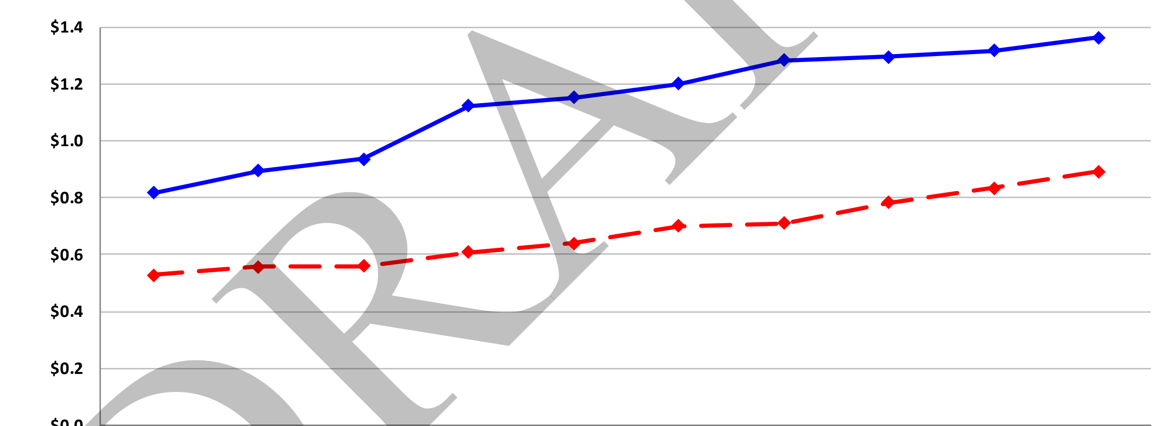
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AAL	11.6	12.4	13.2	15.6	15.7	16.5	16.3	16.3	16.6	16.3
AVA	2.4	2.4	2.1	2.1	2.0	2.2	2.3	2.7	3.1	3.6

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.



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AAL	0.8	0.9	0.9	1.1	1.2	1.2	1.3	1.3	1.3	1.4
AVA	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.9

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.

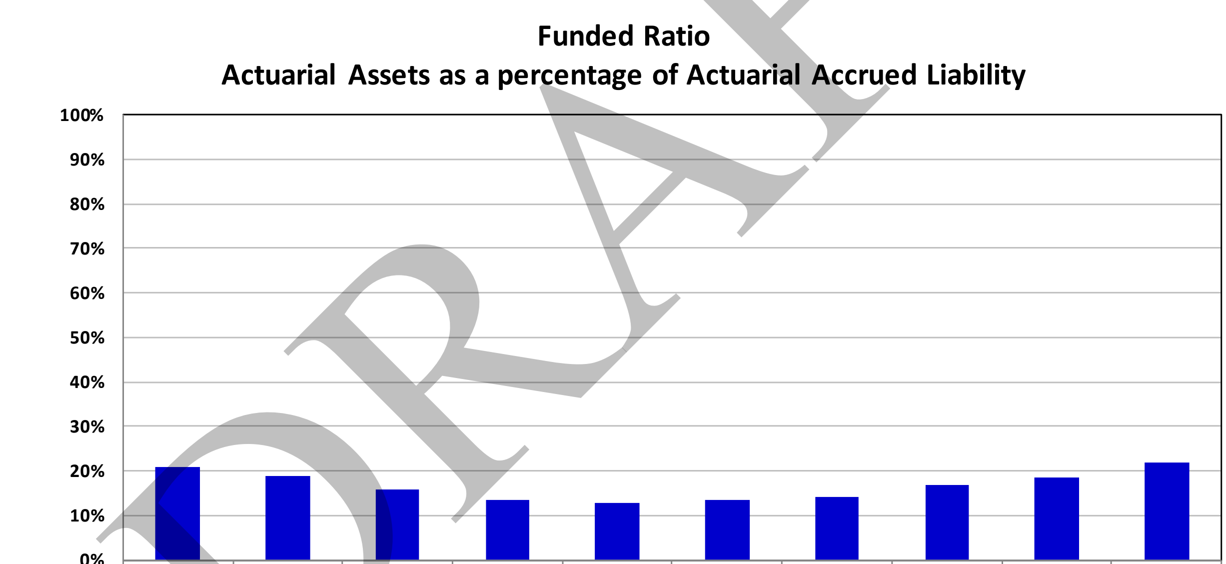
All of the actuarial and financial tables referenced by the other sections of this Report appear in Section 3. Section 4 provides additional details related to the calculation of the amortization of the unfunded actuarial accrued liability. Section 5 provides member data and statistical information. 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.

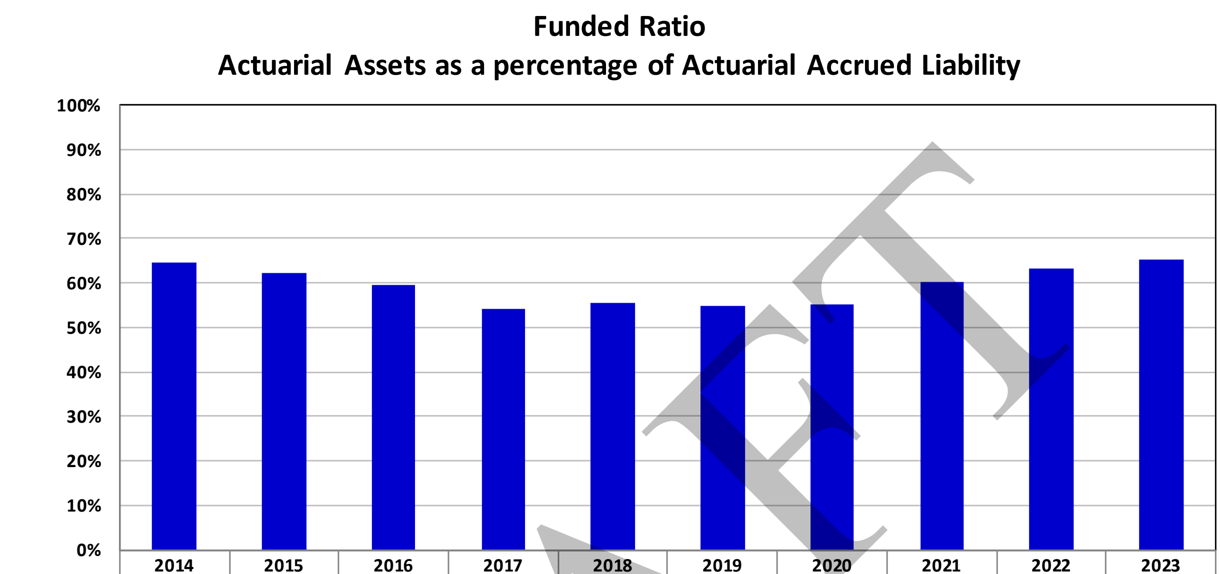
Non-Hazardous Retirement Fund



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Funded Ratio	21.0%	19.0%	16.0%	13.6%	12.9%	13.4%	14.2%	16.8%	18.5%	21.8%

Funding Progress (Continued)

Hazardous Retirement Fund



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Funded Ratio	64.6%	62.2%	59.7%	54.1%	55.5%	54.8%	55.3%	60.4%	63.2%	65.4%

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	(1,359,544)	(90,266)
4. Interest accrual	678,191	28,313
5. Expected UAAL (Sum of Items 1 - 4)	$ 13,002,676	$ 449,932
6. Actual UAAL as of June 30,2023	$ 12,751,848	$ 471,576
7. Total gain (loss) for the year (Item 5 - Item 6)	$ 250,828	$ (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	(446,155)	(46,572)
10. Plan Change	(2,073)	—
11. Assumption change	691,134	24,197
12. Total	$ 250,828	$ (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		(137,457)		(3,074)
4. Interest accrual		19,995		(15,548)
5. Expected UAAL (Sum of Items 1 - 4)		287,004		(262,440)
6. Actual UAAL as of June 30,2023	$	344,223		(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

RETIREMENT BENEFITS

ACTUARIAL TABLES

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	$ 3,552,430	$ 891,460
7.	Unfunded actuarial accrued liability (UAAL) (Item 5d - Item 6)	$ 12,751,848	$ 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	0.51%	0.61%
e. Total	11.13%	15.00%
2. Less: member contribution rate	-5.00%	-8.00%
3. Total employer normal cost rate	6.13%	7.00%
4. Administrative expenses	0.86%	0.71%
5. Net employer normal cost rate	6.99%	7.71%
6. UAAL amortization contribution rate	N/A	16.03%
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	$ 854,591	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)	$ 3,552,430	$ 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	12,751,848	13,511,368
	iii. Total future employer contributions	$ 13,440,106	$ 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)

		June 30, 2023		June 30, 2022
		(1)		(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 (1) Non-Hazardous	Year Ending June 30, 2023 (2) Hazardous
1. Value of assets at beginning of year	$ 3,013,845	$ 810,978
2. Revenue for the year		
a. Contributions		
i. Member contributions	$ 84,563	$ 17,459
ii. Employer contributions	1,034,966	72,778
iii. Other contributions (less 401h)	240,016	29
iv. Total	$ 1,359,544	$ 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	$ 1,575,424	$ 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.)	$ 526,056	$ 82,556
5. Value of assets at end of year (Item 1. + Item 4.)	$ 3,539,902	$ 893,533
6. Net external cash flow		
a. Dollar amount	$ 310,176	$ 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 rounding

[1] 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	$	1,359,544
	b. Benefit payments		(1,035,551)
	c. Administrative expenses		(13,817)
	d. Subtotal	$	310,176
4.	Market value of assets at end of year	$	3,539,902
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	$	166,369
8.	Excess return for phased recognition	$	49,511

9. Phased-in recognition, 20% of excess return on assets for prior years:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
a.	2023	$	49,511	$	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.)	$	3,552,430
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	$	6,076
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:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
a.	2023	$	25,604	$	5,121
b.	2022		(105,331)		(21,066)
c.	2021		129,924		25,985
d.	2020		(35,903)		(7,181)
e.	2019		(3,933)		(787)
f.	Total			$	2,072

10.	Actuarial value of assets as of June 30, 2023 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	$	891,460
11.	Ratio of actuarial value to market value		99.8%
12.	Estimated annual return on actuarial value of assets		6.3%

* 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	3,552,430	16,304,278	12,751,848	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	4,443,890	17,667,314	13,223,424	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	Hazardous
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)

	Actuarial Accrued Liability				Portion of Aggregate Accrued Liabilities Covered by Assets		
June 30,	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed)	Valuation Assets	Active	Retired	ER Financed
(1)	(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	3,552,430	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	$ 1,532,886	$ 619,519
7.	Unfunded actuarial accrued liability (UAAL) (Item 5d - Item 6)	$ 344,223	$ (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	-0.54%	-0.75%
3.	Total employer normal cost rate	1.40%	2.02%
4.	Administrative expenses	0.05%	0.06%
5.	Net employer normal cost rate	1.45%	2.08%
6.	UAAL amortization contribution rate	N/A	-11.29%
7.	Total calculated employer contribution payable as a percentage of covered payroll Max (0%, item 5. + item6.)	1.45%	0.00%
8.	Total amortization cost to be allocated amongst employers	$ 1,974	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)	$ 1,532,886	$ 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	344,223	372,833
iii. Total future employer contributions	$ 465,771	$ 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)

		June 30, 2023 (1)	June 30, 2022 (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	$ 8,356	$ 1,584
ii. Employer contributions	123,216	37
iii. Other contributions (less 401h)	5,885	1,452
iv. Total	$ 137,457	$ 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	$ 269,887	$ 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.)	$ 168,324	$ 37,194
5. Value of assets at end of year (Item 1. + Item 4.)	$ 1,532,743	$ 625,356
6. Net external cash flow		
a. Dollar amount	$ 35,894	$ (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 assets

[2] 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	$	137,457
	b. Benefit payments		(100,792)
	c. Administrative expenses		(771)
	d. Subtotal	$	35,894
4.	Market value of assets at end of year	$	1,532,743
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:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
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.)	$	1,532,886
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:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
a.	2023	$	17,530	$	3,506
b.	2022		(66,985)		(13,397)
c.	2021		96,144		19,229
d.	2020		(32,268)		(6,454)
e.	2019		(3,651)		(730)
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	1,532,886	1,877,109	344,223	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	2,152,405	2,240,621	88,216	96.1%	1,827,470	4.8%

Solvency Test
Insurance Benefits
(Dollar amounts expressed in thousands)

	Actuarial Accrued Liability				Portion of Aggregate Accrued Liabilities Covered by Assets		
June 30,	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed)	Valuation Assets	Active	Retired	ER Financed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(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	1,532,886	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

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	$ 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)	(29,637)	18
June 30, 2022	172,536	(64,626)	(5,319)	19
June 30, 2023	(293,148)	(293,148)	(46,109)	20
Total		$ 12,751,848	$ 854,591	

Projected Payroll for FYE 2025	N/A
Amortization Payments as a Percentage of Payroll	N/A

Hazardous Members Retirement

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	$ 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	39,210	39,210	(3,982)	20
Total		$ 344,223	$ 1,974	

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

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

	Active Members		Covered Payroll[1]		Average Annual Pay	
June 30,	Number	Percent Increase /(Decrease)	Amount in Thousands	Percent Increase /(Decrease)	Amount	Percent Increase /(Decrease)
(1)	(2)	(3)	(4)	(5)	(6)	(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

	Years of Credited Service												
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	Total
Attained Age	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.	Count & Avg. Comp.
Under 20	32	1	0	0	0	0	0	0	0	0	0	0	33
	$23,180	$22,522	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$23,160
20-24	586	330	100	22	8	0	0	0	0	0	0	0	1,046
	$28,946	$39,306	$42,649	$42,483	$43,081	$0	$0	$0	$0	$0	$0	$0	$33,917
25-29	727	590	323	265	187	262	1	0	0	0	0	0	2,355
	$31,784	$39,746	$44,495	$44,754	$46,577	$48,149	$56,620	$0	$0	$0	$0	$0	$39,988
30-34	541	483	226	245	217	1,030	206	1	0	0	0	0	2,949
	$33,589	$40,975	$47,385	$46,894	$45,971	$51,523	$53,856	$47,311	$0	$0	$0	$0	$45,557
35-39	492	347	172	176	187	954	884	239	6	0	0	0	3,457
	$35,162	$41,514	$46,258	$49,584	$48,527	$53,649	$56,418	$57,033	$53,682	$0	$0	$0	$49,890
40-44	441	356	165	198	183	797	849	1,039	411	41	0	0	4,480
	$35,454	$42,226	$46,378	$48,109	$51,526	$54,181	$56,592	$59,940	$60,232	$60,428	$0	$0	$53,128
45-49	366	295	133	144	142	666	657	883	1,081	301	3	0	4,671
	$36,449	$42,019	$43,675	$48,830	$49,736	$53,462	$57,094	$60,623	$63,364	$63,932	$87,750	$0	$55,724
50-54	300	249	132	139	164	605	617	701	926	574	103	9	4,519
	$35,094	$41,787	$48,594	$48,498	$49,256	$50,495	$55,335	$59,589	$61,410	$67,685	$68,826	$75,471	$55,790
55-59	197	209	91	110	107	531	490	635	622	421	126	40	3,579
	$34,573	$41,135	$44,501	$47,378	$50,153	$49,865	$52,305	$55,584	$59,001	$65,252	$72,633	$78,255	$54,174
60-64	128	122	53	84	88	375	429	547	503	282	75	51	2,737
	$36,792	$42,359	$46,911	$53,143	$47,842	$49,091	$53,010	$53,664	$55,818	$62,735	$68,615	$73,269	$53,413
65 & Over	61	61	33	36	32	235	289	327	234	143	47	59	1,557
	$44,847	$46,375	$47,713	$65,196	$65,889	$50,646	$55,091	$55,813	$58,049	$63,319	$73,254	$74,363	$56,607
Total	3,871	3,043	1,428	1,419	1,315	5,455	4,422	4,372	3,783	1,762	354	159	31,383
	$33,594	$41,100	$45,720	$48,154	$48,943	$51,877	$55,409	$58,133	$60,480	$65,147	$70,885	$75,054	$51,489

Distribution of Active Members by Age and by Years of Service

Hazardous Members

	Years of Credited Service												
Attained Age	0 Count & Avg. Comp.	1 Count & Avg. Comp.	2 Count & Avg. Comp.	3 Count & Avg. Comp.	4 Count & Avg. Comp.	5-9 Count & Avg. Comp.	10-14 Count & Avg. Comp.	15-19 Count & Avg. Comp.	20-24 Count & Avg. Comp.	25-29 Count & Avg. Comp.	30-34 Count & Avg. Comp.	35 & Over Count & Avg. Comp.	Total Count & Avg. Comp.
Under 20	2	0	0	0	0	0	0	0	0	0	0	0	2
	$51,775	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$51,775
20-24	186	115	24	6	1	1	0	0	0	0	0	0	333
	$38,066	$58,852	$58,297	$55,402	$42,804	$72,440	$0	$0	$0	$0	$0	$0	$47,132
25-29	143	125	100	92	49	55	0	0	0	0	0	0	564
	$40,237	$53,940	$54,682	$57,089	$58,470	$56,120	$0	$0	$0	$0	$0	$0	$51,717
30-34	120	78	49	67	38	226	42	0	0	0	0	0	620
	$41,328	$55,277	$55,168	$51,982	$55,848	$58,551	$59,627	$0	$0	$0	$0	$0	$53,735
35-39	82	52	29	35	28	137	125	43	0	0	0	0	531
	$39,227	$51,949	$52,078	$50,034	$61,497	$57,091	$60,245	$62,561	$0	$0	$0	$0	$54,507
40-44	60	32	20	20	17	94	97	159	16	1	0	0	516
	$39,262	$53,516	$61,526	$55,455	$54,717	$57,814	$57,552	$60,122	$71,921	$55,940	$0	$0	$56,436
45-49	50	32	11	22	16	80	57	104	49	4	0	0	425
	$39,444	$55,804	$50,902	$55,464	$57,532	$55,576	$60,996	$64,751	$65,380	$61,000	$0	$0	$57,796
50-54	33	33	15	17	14	69	65	93	35	16	0	0	390
	$36,616	$47,910	$48,450	$61,456	$62,629	$54,831	$59,789	$63,054	$65,426	$63,105	$0	$0	$57,105
55-59	20	16	13	19	8	72	51	60	21	9	2	1	292
	$34,288	$51,671	$60,489	$56,298	$55,376	$55,986	$57,796	$58,369	$67,036	$62,673	$93,798	$58,815	$56,543
60-64	10	7	5	6	9	29	33	29	20	1	1	0	150
	$37,500	$58,091	$45,979	$62,908	$67,242	$51,553	$56,031	$61,967	$60,096	$60,968	$84,316	$0	$56,550
65 & Over	1	3	0	1	1	16	18	15	5	3	0	0	63
	$45,689	$37,432	$0	$27,088	$67,811	$56,485	$52,699	$56,147	$65,012	$51,552	$0	$0	$54,399
Total	707	493	266	285	181	779	488	503	146	34	3	1	3,886
	$39,259	$54,662	$54,941	$54,971	$58,539	$56,876	$58,864	$61,608	$65,610	$61,450	$90,637	$58,815	$54,452

Distribution of Annuitant Monthly Benefit by Status and Age
Non-Hazardous Retirees and Beneficiaries
(Dollar amounts expressed in thousands)

Current Age	Retirement: Number of Annuitants	Retirement: Total Annual Benefit Amount	Disability: Number of Annuitants	Disability: Total Annual Benefit Amount	Survivors & Beneficiaries: Number of Annuitants	Survivors & Beneficiaries: Total Annual Benefit Amount	Total: Number of Annuitants	Total: 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	Retirement		Disability		Survivors & Beneficiaries		Total	
	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	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 Number (2)	Male Lives Monthly Benefit Amount (3)	Female Lives Number (4)	Female Lives Monthly Benefit Amount (5)	Total Number (6)	Total 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	Male Lives			Female Lives			Total		
	Number		Monthly Benefit Amount	Number		Monthly Benefit Amount	Number		Monthly Benefit Amount
(1)	(2)		(3)	(4)		(5)	(6)		(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	Male Lives Number	Male Lives Monthly Benefit Amount	Female Lives Number	Female Lives Monthly Benefit Amount	Total Number	Total Monthly Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(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	Male Lives		Female Lives		Total	
	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount	Number	Monthly Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(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: Number	Removed from Rolls: Number	Rolls End of the Year: Number	Rolls End of the Year: Annual Benefits	% Increase in Annual Benefit	Average Annual Benefit
(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:

- <u>Ratio of market value of assets to payroll</u>: 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.
- <u>Ratio of actuarial accrued liability to payroll</u>: 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.
- <u>Percentage of Expected Contributions Actually Received</u>: 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]	121%	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

Valuation Accrued Liabilities	LDROM
$16,304,277,475	$16,938,373,374

Hazardous Retirement Fund

Valuation Accrued Liabilities	LDROM
$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: Normal Retirement: Male	Non-Hazardous: Normal Retirement: Female	Non-Hazardous: Early Retirement[1]: Male	Non-Hazardous: Early Retirement[1]: Female	Service	Hazardous: Members participating before 9/1/2008[2]: Age 55-61	Hazardous: Members participating before 9/1/2008[2]: Age 62+	Hazardous: Members participating between 9/1/2008 and 1/1/2014[3]	Hazardous: Members participating after 1/1/2014[3]
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%

[1]All 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.
[2]Applies 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
Medical Only[1]	5%
Essential Plan	8%
Premium Plan	87%

Non-Medicare Plan	Participation Percentage
LivingWell Basic	4%
LivingWell CDHP	35%
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

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	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. 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. Final average compensation is based on the member's highest 5 years of compensation.
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 65th 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	If a member has at least 60 months of service, the monthly benefit is 2.49% times final average compensation times years of service. 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. 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.

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 55th 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.

Monthly Health Plan Premiums – Effective January 1, 2024

Non-Medicare Plan Options					
Plan Option	**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

State Police Retirement System (SPRS)

Actuarial Valuation Report as of June 30, 2023

GRS

P: 469.524.0000 | www.grsconsulting.com

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.

5605 North MacArthur Boulevard | Suite 870 | Irving, Texas 75038-2631

Board of Trustees
October 31, 2023
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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
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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

Janie Shaw, ASA, EA, MAAA
Consultant

Krysti Kiesel, ASA, MAAA
Senior Analyst and Actuary

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SECTION 1

EXECUTIVE SUMMARY

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	2.31%	3.68%
Total	68.10%	89.07%
Contribution Rate for Next Fiscal Year[1]	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	714	667
- Total	3,279	3,213
• Projected payroll of active members	$65,913	$47,885
• Average salary of active members	$75,937	$56,736

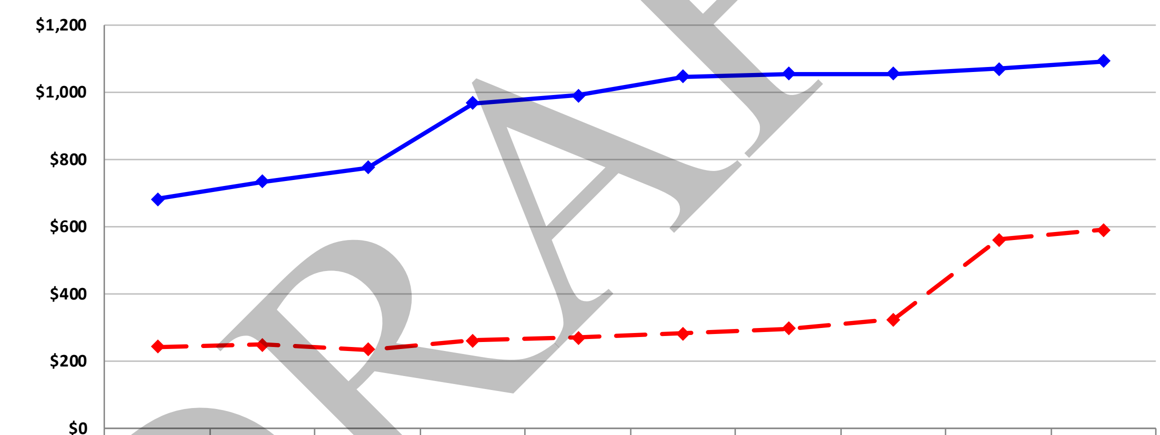
[1] Contribution rates calculated with the June 30, 2023 valuation are effective for fiscal years ending June 30, 2025 and June 30 2026. Contribution rates for fiscal year ending June 30, 2024 calculated with the June 30, 2021 valuation.

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.



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
AAL	681	734	775	967	990	1,045	1,053	1,053	1,067	1,092
AVA	243	248	235	261	268	282	296	323	560	590

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.

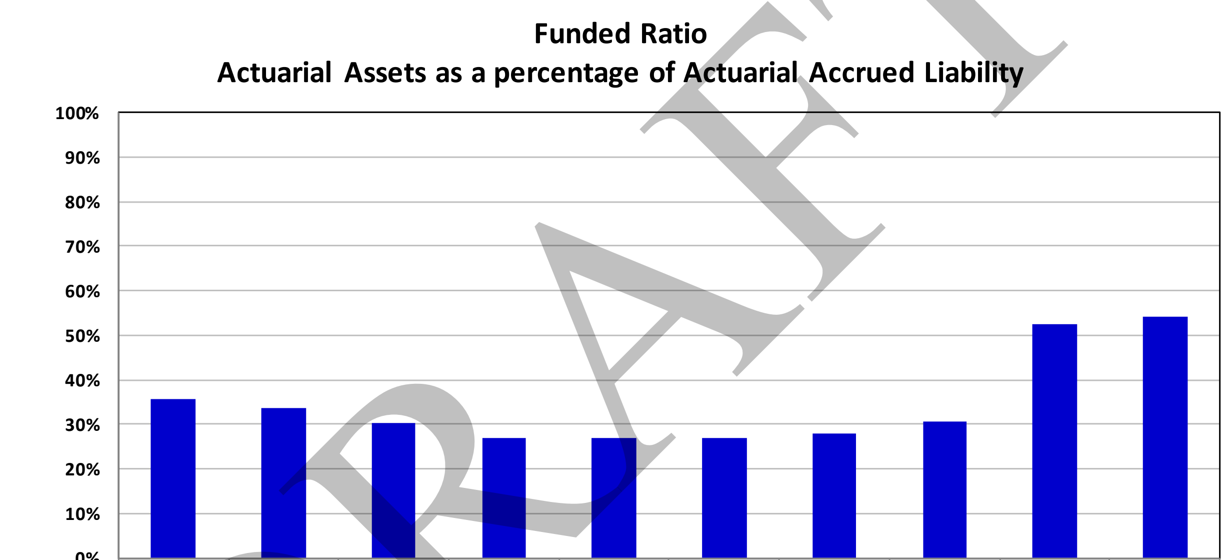
The actuarially determined contribution consist of two components: a normal cost rate and an amortization cost to finance the unfunded actuarial accrued liability. The normal cost rate is the theoretical amount which would be required to pay the members' benefits, based on the current plan provisions, 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.



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Funded Ratio	35.6%	33.8%	30.3%	27.0%	27.1%	27.0%	28.1%	30.7%	52.5%	54.0%

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)

	Retirement	Insurance
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	25,324	(284)
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	31,256	5,637
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

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 (1)	Insurance (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	1.24%	
	e. Total	26.97%	5.39%
2.	Less: member contribution rate	-8.00%	-0.57%
3.	Total employer normal cost rate	18.97%	4.82%
4.	Administrative expenses	0.44%	0.11%
5.	Net employer normal cost rate	19.41%	4.93%
6.	UAAL amortization contribution rate	46.38%	-2.62%
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 (1) Retirement	Year Ending June 30, 2023 (2) 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	$	(893)
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:

	Fiscal Year Ending June 30,		Excess Return		Recognized Amount
a.	2023	$	11,768	$	2,354
b.	2022		(40,859)		(8,172)
c.	2021		46,279		9,256
d.	2020		(8,720)		(1,744)
e.	2019		669		134
f.	Total			$	1,827

10.	Actuarial value of assets as of June 30, 2023 (Item 1. + Item 3.d. + Item 7.+ Item 9.f.)	$	589,848
11.	Ratio of actuarial value to market value		99.7%
12.	Estimated annual return on actuarial value of assets		5.5%

* 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	Recognized Amount
	a.	2023		$ 7,212	$ 1,442
	b.	2022		(26,141)	(5,228)
	c.	2021		37,840	7,568
	d.	2020		(11,419)	(2,284)
	e.	2019		(1,099)	(220)
	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,	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2)	Funded Ratio (2)/(3)	Annual Covered Payroll	UAAL as % of Payroll (4)/(6)
(1)	(2)	(3)	(4)	(5)	(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)

	Actuarial Accrued Liability				Portion of Aggregate Accrued Liabilities Covered by Assets		
June 30,	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Financed)	Valuation Assets	Active	Retired	ER Financed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(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

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	$ 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

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	$ 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

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

	Active Members		Covered Payroll[1]		Average Annual Pay	
June 30,	Number	Percent Increase /(Decrease)	Amount in Thousands	Percent Increase /(Decrease)	Amount	Percent Increase /(Decrease)
(1)	(2)	(3)	(4)	(5)	(6)	(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

	Years of Credited Service												
Attained Age	0 Count & Avg. Comp.	1 Count & Avg. Comp.	2 Count & Avg. Comp.	3 Count & Avg. Comp.	4 Count & Avg. Comp.	5-9 Count & Avg. Comp.	10-14 Count & Avg. Comp.	15-19 Count & Avg. Comp.	20-24 Count & Avg. Comp.	25-29 Count & Avg. Comp.	30-34 Count & Avg. Comp.	35 & Over Count & Avg. Comp.	Total 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	40	9	0	0	0	0	0	0	0	0	0	78
	$33,406	$58,522	$63,251	$0	$0	$0	$0	$0	$0	$0	$0	$0	$49,730
25-29	15	47	24	3	38	20	0	0	0	0	0	0	147
	$34,489	$60,439	$64,280	$64,923	$67,883	$69,129	$0	$0	$0	$0	$0	$0	$61,616
30-34	6	13	4	5	16	77	20	0	0	0	0	0	141
	$35,519	$61,553	$60,390	$62,812	$67,415	$71,909	$75,049	$0	$0	$0	$0	$0	$68,692
35-39	1	6	1	1	5	46	82	10	0	0	0	0	152
	$42,289	$59,109	$61,559	$61,632	$66,607	$73,685	$77,041	$87,184	$0	$0	$0	$0	$75,209
40-44	2	1	0	0	4	14	48	71	18	2	0	0	160
	$47,452	$61,787	$0	$0	$67,638	$73,422	$77,119	$93,231	$99,741	$123,990	$0	$0	$86,372
45-49	0	0	0	1	0	6	19	33	44	5	1	0	109
	$0	$0	$0	$63,250	$0	$71,619	$77,020	$90,889	$99,664	$109,297	$112,923	$0	$91,746
50-54	0	0	0	0	1	3	7	15	17	11	2	0	56
	$0	$0	$0	$0	$68,029	$89,897	$80,222	$87,093	$102,950	$111,002	$153,962	$0	$97,942
55-59	0	0	0	0	0	0	1	6	6	6	2	0	21
	$0	$0	$0	$0	$0	$0	$70,286	$93,760	$104,159	$118,885	$121,053	$0	$105,391
60-64	0	0	0	0	0	0	0	2	1	1	0	0	4
	$0	$0	$0	$0	$0	$0	$0	$76,506	$85,633	$102,579	$0	$0	$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	107	38	10	64	166	177	137	86	25	5	0	868
	$34,649	$59,796	$63,555	$63,371	$67,653	$72,508	$76,922	$91,332	$100,480	$113,255	$132,590	$0	$75,937

Distribution of Annuitant Monthly Benefit by Status and Age
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	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	Male Lives Number	Male Lives Monthly Benefit Amount	Female Lives Number	Female Lives Monthly Benefit Amount	Total Number	Total Monthly Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(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	Male Lives Number	Male Lives Monthly Benefit Amount	Female Lives Number	Female Lives Monthly Benefit Amount	Total Number	Total Monthly Benefit Amount
(1)	(2)	(3)	(4)	(5)	(6)	(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)

	Added to Rolls	Removed from Rolls	Rolls End of the Year		% Increase	Average
Year Ended	Number	Number	Number	Annual Benefits	in Annual Benefit	Annual Benefit
(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:

- <u>Ratio of market value of assets to payroll</u>: 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.
- <u>Ratio of actuarial accrued liability to payroll</u>: 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.
- <u>Percentage of Expected Contributions Actually Received</u>: 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%

[1]All 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
[2]Applies 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%

[1] Includes 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

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	If a member has at least 60 months of service, the monthly benefit is 2.50% times final average compensation times years of service. 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. 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 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: 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.

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.

At retirement, the member's hypothetical account balance may be converted into an annuity based on an actuarial factor.

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 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 55th 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.

Monthly Health Plan Premiums – Effective January 1, 2024

Non-Medicare Plan Options					
Plan Option	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.

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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 – 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.

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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.

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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
Non-Hazardous Members
(Dollar amounts expressed in thousands)

(1)	Decrease Discount Rate (2)	Valuation Results (3)	Increase Discount Rate (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	3,552,430	3,552,430	3,552,430
Unfunded Actuarial Accrued Liability	14,681,460	12,751,848	11,151,790
Funded Ratio	19.5%	21.8%	24.2%
Normal Cost Rate	10.12%	6.99%	4.86%
Amortization Cost	$ 919,514	$ 854,591	$ 797,022
Insurance			
Actuarial Accrued Liability	$ 2,088,635	$ 1,877,109	$ 1,699,268
Actuarial Value of Assets	1,532,886	1,532,886	1,532,886
Unfunded Actuarial Accrued Liability	555,749	344,223	166,382
Funded Ratio	73.4%	81.7%	90.2%
Normal Cost Rate	2.01%	1.45%	1.02%
Amortization Cost	$ 17,998	$ 1,974	$ 0
Combined			
Actuarial Accrued Liability	$ 20,322,525	$ 18,181,387	$ 16,403,488
Actuarial Value of Assets	5,085,316	5,085,316	5,085,316
Unfunded Actuarial Accrued Liability	15,237,209	13,096,071	11,318,172
Funded Ratio	25.0%	28.0%	31.0%
Normal Cost Rate	12.13%	8.44%	5.88%
Amortization Cost	$ 937,512	$ 856,565	$ 797,022

Sensitivity Analysis - Inflation Rate
Non-Hazardous Members
(Dollar amounts expressed in thousands)

(1)	Decrease Inflation Rate (2)	Valuation Results (3)	Increase Inflation Rate (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	3,552,430	3,552,430	3,552,430
Unfunded Actuarial Accrued Liability	13,169,578	12,751,848	12,352,619
Funded Ratio	21.2%	21.8%	22.3%
Normal Cost Rate	7.43%	6.99%	6.58%
Amortization Cost	$ 888,564	$ 854,591	$ 822,038
Insurance			
Actuarial Accrued Liability	$ 1,898,039	$ 1,877,109	$ 1,857,357
Actuarial Value of Assets	1,532,886	1,532,886	1,532,886
Unfunded Actuarial Accrued Liability	365,153	344,223	324,471
Funded Ratio	80.8%	81.7%	82.5%
Normal Cost Rate	1.51%	1.45%	1.39%
Amortization Cost	$ 4,012	$ 1,974	$ 41
Combined			
Actuarial Accrued Liability	$ 18,620,047	$ 18,181,387	$ 17,762,406
Actuarial Value of Assets	5,085,316	5,085,316	5,085,316
Unfunded Actuarial Accrued Liability	13,534,731	13,096,071	12,677,090
Funded Ratio	27.3%	28.0%	28.6%
Normal Cost Rate	8.94%	8.44%	7.97%
Amortization Cost	$ 892,576	$ 856,565	$ 822,079

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	3,552,430	3,552,430	3,552,430
Unfunded Actuarial Accrued Liability	12,751,848	12,751,848	12,751,848
Funded Ratio	21.8%	21.8%	21.8%
Normal Cost Rate	6.99%	6.99%	6.99%
Amortization Cost	$ 939,034	$ 854,591	$ 774,557
Insurance			
Actuarial Accrued Liability	$ 1,877,109	$ 1,877,109	$ 1,877,109
Actuarial Value of Assets	1,532,886	1,532,886	1,532,886
Unfunded Actuarial Accrued Liability	344,223	344,223	344,223
Funded Ratio	81.7%	81.7%	81.7%
Normal Cost Rate	1.45%	1.45%	1.45%
Amortization Cost	$ 4,975	$ 1,974	$ 0
Combined			
Actuarial Accrued Liability	$ 18,181,387	$ 18,181,387	$ 18,181,387
Actuarial Value of Assets	5,085,316	5,085,316	5,085,316
Unfunded Actuarial Accrued Liability	13,096,071	13,096,071	13,096,071
Funded Ratio	28.0%	28.0%	28.0%
Normal Cost Rate	8.44%	8.44%	8.44%
Amortization Cost	$ 944,009	$ 856,565	$ 774,557

Sensitivity Analysis - Discount Rate
Hazardous Members
(Dollar amounts expressed in thousands)

(1)	Decrease Discount Rate (2)	Valuation Results (3)	Increase Discount Rate (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)

(1)	Decrease Payroll Growth (2)	Valuation Results (3)	Increase Payroll Growth (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%

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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.

5605 North MacArthur Boulevard | Suite 870 | Irving, Texas 75038-2631

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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)

(1)	Decrease Discount Rate (2)	Valuation Results (3)	Increase Discount Rate (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)

(1)	Decrease Inflation Rate (2)	Valuation Results (3)	Increase Inflation Rate (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)

(1)	Decrease Payroll Growth (2)	Valuation Results (3)	Increase Payroll Growth (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%

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.

GRS

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	1,675	350	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:
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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:

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The total active population is assumed to decrease 2% each year for each of the next 30 years.

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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
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Kentucky Public Pensions Authority

TO: Members of the KRS Board of Trustees

FROM: Joint CERS & KRS Retiree Health Plan Committee

DATE: November 14, 2023

SUBJECT: Joint CERS & KRS Retiree Health Plan Committee Report

The Joint CERS & KRS Retiree Health Plan Committee met on Monday, October 23, 2023 and reviewed an informational presentation from Humana regarding 2024 Pharmacy Review, Pharmacogenomics, and Medication Therapy Management (MTM).

2024 Formulary changes:

- Prior authorization changes impact 577 (1.0%) members.
- Negative tier changes impact 779 (1.3%) members.
- Positive tier changes impact 766 (1.2%) members.
- Step therapy changes impact 152 (0.2%) members.

The Committee also reviewed the Pharmacogenomics, what Medicare covers and does not cover, as well as general information on a Humana Medicare Advantage Pilot to evaluate the value of genetic testing to guide therapy decisions. The pilot will evaluate the impact on longer term outcomes such as medication adherence, hospital admissions, readmissions, and cost of care. The results will be evaluated in Q4 of 2023 to determine if outcomes and return on investment support a larger rollout.

Humana's MTM is a federally mandated program created by Medicare. It is designed to optimize medication therapy to promote medication safety, effectiveness, and cost savings, enabling members to achieve their best health. This program is offered to retirees with 3 of 5 Chronic Conditions, those likely to incur annual Part D medication costs of $5,330, and who are taking 8 or more chronic maintenance drugs. A Pharmacist provides comprehensive medication review with the retiree and provides a written summary for the retiree's physician. In 2022, KPPA had 77.2% participation and in 2023 there is 67.9% participation. This is similar to two (2) Peer Groups who perform at 71.4% in 2023 and 69.4% in 2023.

The Division of Retiree Health Care (RHC) has conducted several member outreach engagements for the Non-Medicare Open Enrollment (OE). Emails were delivered to 22,715 individuals. Additionally, RHC staff has answered 2,933 phone calls and responded to 89 emails through October 15, 2023, as well as, seeing scheduled in-person visitors and virtual appointments. Online Enrollments have decreased in 2023 with 1,282 vs. 1,663 in 2022. OE is not mandatory, therefore, members only need to submit an application if they want to change their coverage for 2024. Webinars have continued to be a successful form of communication with members. Webinars have been provided to the individuals on the Kentucky Employee Health Plan (KEHP) plans and will be provided to retirees enrolled in the Humana Medicare plans during the last week of October and November. RHC is attending Retiree meetings at numerous locations throughout the state during October and November in partnership with Humana.

KENTUCKY PUBLIC PENSIONS AUTHORITY
David L. Eager, Executive Director
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Kentucky Public Pensions Authority

To: Kentucky Retirement Systems Board of Trustees

From: Rebecca H Adkins, Deputy Executive Director
Erin Surratt, Executive Director, Office of Benefits
Mike Lamb, CFO
Steve Willer, CIO

Date: November 14, 2023

Subject: Statutorily Required Reporting to LRC

There are a variety of reports that are statutorily required to be submitted to the Legislative Research Committee (LRC) annually. The following reports will be provided on or before Nov 15, 2023.

Report	**Statutory Reference**	**Report Details**
KPPA Staff Report	KRS 61.505 (8)(e)	Report the number of employees of the Authority, employees' salary, and any changes in salary for each employee over the previous year
Admin and Investment Expenses	KRS 61.505 (11)(a)(3)	Report the annual administrative and investment expenses to evaluate the results of establishing a separate CERS board and the KPPA
Valuation Sensitivity Study 30 Year Projections	KRS 78.784 (2) and KRS 61.670 (2)	Copies of the three reports listed are provided to LRC
KPPA, JFRS and TRS combined report	KRS 7A.255 (1)	Report of each member/recipient of any of the state administered retirement systems and the benefit the member/recipient receives from each system
Investment Reporting	KRS 7A.255 (2) and KRS 61.645 (19) (i)	Provide a copy of the Board-approved investment procurement policy. Report system assets and managers for which fees and commissions are being reported

Disability report	KRS 7A.255 (4)	Report the number of individuals and total payments to members who become totally and permanently disabled as a direct result of an act in line of duty as defined in KRS 16.505 or become disabled as a result of a duty-related injury as defined in KRS 61.621
SPRS Tier 3 Sick Leave Buy Out	KRS 61.583 (4) and KRS 61.584	Joint report with SPRS on the costs and effectiveness of the program established by KRS 16.583(2)(b)2. Due every four years beginning with 2023.
System Funding Levels (COLA eligibility)	KRS 78.5518 (2)(b) KRS 61.691(2)(b)	1. Which systems have funding level greater than 100% and can support increase in recipient's retirement allowances over the next budget biennium without reducing the funding level of the system below 100% 2. If no surplus actuarial assets, the level of funds needed to fully prefund an increase for system recipients over the next budget biennium if a 1.5% increase is provided annually over the biennium Due at least 30 days prior to the beginning of the regular session of the GA held in even years.

This memo is for informational purposes only.

KENTUCKY PUBLIC PENSIONS AUTHORITY

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Kentucky Public Pensions Authority

To: Kentucky Retirement Systems Board of Trustees

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

Through: Rebecca H Adkins, Deputy Executive Director

Date: November 14, 2023

Subject: KRS 61.5991 Contract Reporting of Quasi-Governmental Agencies & Employer Audits

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KRS 61.5991 requires certain KERS employers to report data on contracted employees to the Kentucky Public Pensions Authority in order to allow the Authority to report the data to the Legislative Research Commission (LRC) and the Office of the State Budget Director (OSBD). All agencies timely submitted the Form 6756 along with the proper 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 refused to begin submitting contract employees whom KPPA staff deemed to be employees pursuant to KRS 61.675. These employees should have been added to the monthly reports for FY23 as participating members; however, MCCC's stance is they do not consider these persons as employees and therefore have not added these individuals to their monthly report.

KRS 61.5991 also requires KPPA to perform audits each fiscal year to ensure employers who are subject to these reporting 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, meeting of the KRS Board, the Board decided that ERCE staff should annually audit 5% of the 102 agencies who are subject to KRS 61.5991 reporting. It was reported to the KRS Board that the Employer Reporting, Compliance and Education (ERCE) team completed audits on Judi's Place for Kids and Lifeskills, Inc. In addition to these agencies, the ERCE team also completed audits during FY 2023 for Buffalo Trace Childrens Advocacy Center, Comprehend, Inc. Regional Mental Health Mental Retardation Board and and Silverleaf Sexual Trauma Recovery Series, Inc.

Requested Information

To conduct the audit, KPPA requested the following information:

1. Listing of all employees and contractors and their social security numbers for the reporting month of June 30, 2022.
    a. This list should include any full-time, part-time, interim, seasonal, temporary, probationary, and emergency employees, as well as volunteer employees who are paid a per diem, regardless of whether the employees are reported to KRS for retirement purposes.

   b. This list should also include all contract employees, independent contractors, and leased employees, whether they are paid by your agency or by a contracted employment agency.
2. A copy of payroll records for the reporting month of June 2022. The payroll records must contain identifying information such as the member's social security number or the KPPA six-digit member ID.
3. A copy of your agency's most recent Personnel Policy that includes the most current sick leave policy, annual leave policy and probationary policy if offered by your agency.
4. A copy of each contract which has not already been reviewed by KPPA between the employer and any independent contractor/third party, staffing company or other non-participating entity and any other documentation explaining the services provided by each person serving as an independent contractor/third party, staffing company or other non-participating entity. Contracts that otherwise met an exemption under KRS 61.5991 and, accordingly, were not listed on any previously submitted Form 6756s, Annual Employer Certification of Non-Contributing Service Providers, must still be submitted.

Results

Buffalo Trace Childrens Advocacy had four persons listed that was not being reported to KPPA as regular full-time employees per KRS 61.510(21). After review of the contract, KPPA determined these persons were independent contractors and not deemed employees of the agency; however these individuals also did not meet the definition of regular full-time employees per KRS 61.510(21). KPPA also reviewed payroll records to ensure all employees that averaged at least 100 hours per month were reported as regular full-time employees and the required contributions have been received on these individuals. KPPA determined that Buffalo Trace Childrens Advocacy is in reporting compliance according to Kentucky Revised Statutes and Administrative Regulations and found no issues.

Comprehend, Inc. Regional Mental Health Mental Retardation Board had one person listed that was not being reported to KPPA as regular full-time employees. After review of the contract, KPPA determined this individual was an independent contractor and not an employee of Comprehend. In addition, KPPA reviewed payroll records to ensure all the employees that averaged at least 100 hours per month were reported as regular full-time employees per KRS 61.510(21) and the required contributions have been received on these individuals and determined that Comprehend is in reporting compliance according to Kentucky Revised Statutes and Administrative Regulations and found no issues.

Silverleaf Sexual Trauma Recovery Series, Inc had seven persons listed that were not being reported to KPPA as regular full-time employees. After review of the contracts, KPPA determined that three individuals listed were independent contracts and the other four individuals were leased employees, therefore all seven were deemed not to be employees of Silverleaf. Furthermore, KPPA reviewed payroll records to ensure all the employees that averaged at least 100 hours per month were reported as regular full-time employees per KRS 61.510(21) and the required contributions have been received on these individuals and determined that Silverleaf is in reporting compliance according to Kentucky Revised Statutes and Administrative Regulations and found no issues.

Agency Audited	Buffalo Trace Childrens Advocacy Center	Comprehend, Inc Regional MHMRB	Silverleaf Sexual Trauma Recovery Series, Inc
Audit Dates	March 1, 2023 – April 15, 2023	March 1, 2023 – April 30, 2023	April 15, 2023 – June 15, 2023
Num of Employees June 30, 2023	5	135	19
Num of Independent Contractors/Leased Employees	0	1	7
Number of Part-Time (Non-Participating Employees)	4	23	7
Reported Salary	$25,136.68	$397,187.38	$64,365.87
Employer Contributions	$2,506.13	$34,073.35	$5,857.22
Employee Contributions	$1,256.84	$17,087.98	$2,753.79

Fiscal Year 2024 Audits

The ERCE team is currently in the process of auditing Mercer County Health Department and Bourbon County Health Center. Once these audits have been completed, ERCE will audit at least three (3) more agencies during the remainder of the fiscal year but the agencies have yet to be determined.

This memo is for informational purposes only.

AGENCY CODE	AGENCY NAME	AGENCY CLASSIFICATION	(a) # REGULAR FULL TIME EMPLOYEES REPORTED W/ CONTRIBUTIONS	(b) # FULL TIME EMPLOYEES NOT REPORTED UNDER 61.675	(c) # INDEPENDENT CONTRACTORS, LEASED EMPLOYEES, ANY EMP ARRANGEMENT NOT REPORTED W/ CONTRIBUTIONS	(d) TOTAL REG FT EMPLOYEES + FT NON-CONTRIBUTING (a) + (b) + (c)	(e) PERCENTAGE OF FT CONTRIBUTING SERVICE PROVIDERS TO ALL FULL TIME (a) / (d)	NONCOMPLIANT	FALSIFIED DATA
3022	LEXINGTON FAYETTE COUNTY HEALTH DEPARTMENT	Health Departments	181	0	22	203	89.16%		
3023	LAKE CUMBERLAND DISTRICT HEALTH DEPARTMENT	Health Departments	150	0	0	150	100.00%		
3024	WEDCO DISTRICT HEALTH DEPARTMENT	Health Departments	64	0	0	64	100.00%		
3025	NORTHERN KY DISTRICT HEALTH DEPARTMENT	Health Departments	137	0	2	139	98.56%		
3026	BARREN RIVER DISTRICT HEALTH DEPARTMENT	Health Departments	132	0	0	132	100.00%		
3027	GREEN RIVER DISTRICT HEALTH DEPARTMENT	Health Departments	181	0	0	181	100.00%		
3028	LINCOLN TRAIL DISTRICT HEALTH DEPARTMENT	Health Departments	99	1	0	100	99.00%		
3029	PURCHASE DISTRICT HEALTH DEPARTMENT	Health Departments	71	0	0	71	100.00%		
3030	MERCER COUNTY HEALTH DEPARTMENT	Health Departments	14	0	0	14	100.00%		
3031	CUMBERLAND VALLEY DISTRICT HEALTH	Health Departments	107	0	0	107	100.00%		
3033	KENTUCKY RIVER DISTRICT HEALTH DEPARTMENT	Health Departments	121	0	0	121	100.00%		
3034	BOURBON COUNTY HEALTH CENTER	Health Departments	14	0	0	14	100.00%		
3035	CLARK COUNTY HEALTH DEPARTMENT	Health Departments	38	0	1	39	97.44%		
3036	GATEWAY DISTRICT HEALTH DEPARTMENT	Health Departments	67	0	0	67	100.00%		
3037	BOYLE COUNTY HEALTH DEPARTMENT	Health Departments	12	0	3	15	80.00%		
3038	PIKE COUNTY HEALTH DEPARTMENT	Health Departments	43	0	0	43	100.00%		
3039	FLOYD COUNTY HEALTH CENTER	Health Departments	23	0	0	23	100.00%		
3040	MARTIN COUNTY HEALTH DEPARTMENT	Health Departments	9	0	0	9	100.00%		
3042	BUFFALO TRACE HEALTH DEPARTMENT	Health Departments	20	0	3	23	86.96%		
3044	NORTH CENTRAL DISTRICT HEALTH DEPARTMENT	Health Departments	57	0	2	59	96.61%		
3045	PENNYRILE DISTRICT HEALTH DEPARTMENT	Health Departments	37	0	0	37	100.00%		
3047	BREATHITT COUNTY HEALTH DEPARTMENT	Health Departments	38	4	8	50	76.00%		
3048	GREENUP COUNTY HEALTH DEPARTMENT	Health Departments	28	0	0	28	100.00%		
3049	WHITLEY COUNTY HEALTH DEPARTMENT	Health Departments	52	0	3	55	94.55%		
3050	LAUREL COUNTY HEALTH DEPARTMENT	Health Departments	16	0	0	16	100.00%		
3051	KNOX COUNTY HEALTH DEPARTMENT	Health Departments	42	0	4	46	91.30%		
3052	MONROE COUNTY HEALTH DEPARTMENT	Health Departments	12	0	0	12	100.00%		
3053	BULLITT COUNTY HEALTH DEPARTMENT	Health Departments	28	0	0	28	100.00%		
3054	THREE RIVERS DISTRICT HEALTH DEPARTMENT	Health Departments	58	0	0	58	100.00%		
3055	ESTILL COUNTY HEALTH DEPARTMENT	Health Departments	8	0	7	15	53.33%		
3056	OLDHAM COUNTY HEALTH DEPARTMENT	Health Departments	25	0	1	26	96.15%		
3057	LEWIS COUNTY HEALTH DEPARTMENT	Health Departments	15	0	0	15	100.00%		
3058	FLEMING COUNTY HEALTH DEPARTMENT	Health Departments	8	0	0	8	100.00%		
3059	JESSAMINE COUNTY HEALTH DEPARTMENT	Health Departments	38	0	0	38	100.00%		
3060	POWELL COUNTY HEALTH DEPARTMENT	Health Departments	9	0	0	9	100.00%		
3061	ANDERSON COUNTY HEALTH DEPARTMENT	Health Departments	9	0	1	10	90.00%		
3062	MADISON COUNTY HEALTH DEPARTMENT	Health Departments	66	0	0	66	100.00%		
3064	JOHNSON COUNTY HEALTH DEPARTMENT	Health Departments	31	0	28	59	52.54%		
3065	MAGOFFIN COUNTY HEALTH DEPARTMENT	Health Departments	10	0	0	10	100.00%		
3066	ALLEN COUNTY HEALTH DEPT	Health Departments	26	0	0	26	100.00%		
3067	FRANKLIN COUNTY HEALTH DEPARTMENT	Health Departments	47	0	0	47	100.00%		
3068	LINCOLN COUNTY HEALTH DEPARTMENT	Health Departments	15	0	0	15	100.00%		
3069	WOODFORD COUNTY HEALTH DEPARTMENT	Health Departments	20	0	0	20	100.00%		
3072	MUHLENBERG COUNTY HEALTH DEPARTMENT	Health Departments	21	0	0	21	100.00%		
3073	MARSHALL COUNTY HEALTH DEPARTMENT	Health Departments	30	0	0	30	100.00%		
3074	CHRISTIAN COUNTY HEALTH DEPARTMENT	Health Departments	32	0	0	32	100.00%		
3075	HOPKINS COUNTY HEALTH DEPARTMENT	Health Departments	36	0	1	37	97.30%		
3076	TODD COUNTY HEALTH DEPARTMENT	Health Departments	23	0	2	25	92.00%		
3077	BRACKEN COUNTY HEALTH DEPARTMENT	Health Departments	11	0	0	11	100.00%		
3078	MONTGOMERY COUNTY HEALTH DEPARTMENT	Health Departments	38	0	1	39	97.44%		
3079	GARRARD COUNTY HEALTH DEPARTMENT	Health Departments	7	0	0	7	100.00%		
3080	BRECKINRIDGE COUNTY HEALTH BOARD	Health Departments	10	0	0	10	100.00%		
3081	ASHLAND BOYD COUNTY HEALTH DEPARTMENT	Health Departments	26	0	0	26	100.00%		
3082	LAWRENCE COUNTY HEALTH DEPARTMENT	Health Departments	17	0	0	17	100.00%		
3083	GRAVES COUNTY HEALTH CENTER	Health Departments	28	0	0	28	100.00%		
3084	CALLOWAY COUNTY HEALTH DEPARTMENT	Health Departments	25	0	0	25	100.00%		
3085	BELL COUNTY HEALTH DEPARTMENT	Health Departments	20	0	0	20	100.00%		
3086	GRAYSON COUNTY HEALTH DEPARTMENT	Health Departments	15	0	0	15	100.00%		
3087	HARLAN COUNTY HEALTH DEPARTMENT	Health Departments	15	0	0	15	100.00%		
3088	CARTER COUNTY HEALTH DEPARTMENT	Health Departments	13	0	0	13	100.00%		
1435	CHILD WATCH ADVOCACY CENTER	Non-P1 State Agencies	9	0	2	11	81.82%		
1436	RAPE VICTIM SERVICES	Non-P1 State Agencies	32	0	1	33	96.97%		
1437	SANCTUARY INC	Non-P1 State Agencies	31	0	0	31	100.00%		
1438	OWENSBORO AREA SHELTER AND INFORMATION SERVICES	Non-P1 State Agencies	35	0	0	35	100.00%		
1439	BARREN RIVER CHILD ADVOCACY CENTER	Non-P1 State Agencies	19	0	0	19	100.00%		
1451	SILVERLEAF SEXUAL TRAUMA RECOVERY SERVICES INC.	Non-P1 State Agencies	19	0	7	26	73.08%		
1452	SPRINGHAVEN INC	Non-P1 State Agencies	19	0	0	19	100.00%		
1453	SAFE HARBOR	Non-P1 State Agencies	25	0	0	25	100.00%		
1454	DOMESTIC VIOLENCE EMERGENCY SERVICE OF GATEWAY INC.	Non-P1 State Agencies	14	0	0	14	100.00%		
1456	JUDI'S PLACE FOR KIDS, INC.	Non-P1 State Agencies	13	0	0	13	100.00%		
1457	KENTUCKY RIVER CHILD ADVOCACY CENTER	Non-P1 State Agencies	6	0	0	6	100.00%		
1458	BLUEGRASS RAPE CRISIS CENTER INC	Non-P1 State Agencies	16	0	1	17	94.12%		
1481	ZEROV	Non-P1 State Agencies	24	0	0	24	100.00%		
1483	PENNYRILE CHILDREN'S ADVOCACY CENTER	Non-P1 State Agencies	6	0	0	6	100.00%		
1484	BUFFALO TRACE CHILDRENS ADVOCACY CENTER INC	Non-P1 State Agencies	5	0	0	5	100.00%		
1485	CUMBERLAND VALLEY CHILDRENS ADVOCACY CENTER	Non-P1 State Agencies	7	0	0	7	100.00%		
1486	LAKE CUMBERLAND CHILDREN'S ADVOCACY CENTER	Non-P1 State Agencies	10	0	0	10	100.00%		
1487	BARREN RIVER AREA SAFE SPACE INC.	Non-P1 State Agencies	31	0	2	33	93.94%		
1488	WOMEN AWARE	Non-P1 State Agencies	4	0	48	52	7.69%		
1489	BETHANY HOUSE ABUSE SHELTER INC.	Non-P1 State Agencies	17	0	0	17	100.00%		
1490	HOPE HARBOR INC.	Non-P1 State Agencies	20	0	1	21	95.24%		
1491	CHILD ADVOCACY CENTER OF GREEN RIVER DISTRICT	Non-P1 State Agencies	6	0	6	12	50.00%		
1994	KY HIGHER EDUCATION STUDENT LOAN CORPORATION	Non-P1 State Agencies	217	0	1	218	99.54%		
7408	FRANKLIN COUNTY COUNCIL ON AGING	Non-P1 State Agencies	11	0	0	11	100.00%		
8024	SEVEN COUNTY SERVICES INC	Regional Mental Health Units	INACTIVE (PENDING LITIGATION						
8201	KENTUCKY RIVER COMMUNITY CARE INC.	Regional Mental Health Units	INACTIVE (PENDING LITIGATION						
8202	NORTHERN KENTUCKY REGIONAL MENTAL HEALTH MENTAL RETARDATION BOARD	Regional Mental Health Units	3	0	0	3	100.00%		
8204	COMMUNICARE INC	Regional Mental Health Units	229	0	1	230	99.57%		
8205	THE ADANTA GROUP BEHAVIORAL HEALTH SERVICES	Regional Mental Health Units	152	0	99	251	60.56%		
8208	CUMBERLAND RIVER BEHAVIORAL HEALTH, INC.	Regional Mental Health Units	628	0	0	628	100.00%		
8209	WESTERN KENTUCKY REGIONAL MENTAL HEALTH MENTAL RETARDATION	Regional Mental Health Units	211	107	0	318	66.35%		
8210	NEW VISTA OF THE BLUEGRASS, INC	Regional Mental Health Units	671	0	3	674	99.55%		
8213	GREEN RIVER REGIONAL MENTAL HEALTH MENTAL RETARDATION BOARD	Regional Mental Health Units	360	0	4	364	98.90%		
8216	COMPREHEND INC REGIONAL MENTAL HEALTH MENTAL RETARDATION BOARD	Regional Mental Health Units	135	0	1	136	99.26%		
8220	LIFESKILLS INC.	Regional Mental Health Units	510	0	0	510	100.00%		
8221	MOUNTAIN COMPREHENSIVE CARE CENTER	Regional Mental Health Units	90	1684	0	1774	5.07%	X	
1430	EASTERN KENTUCKY UNIVERSITY	Universities	93	0	0	93	100.00%		
1440	MOREHEAD STATE UNIVERSITY	Universities	89	0	0	89	100.00%		
1445	MURRAY STATE UNIVERSITY	Universities	133	0	0	133	100.00%		
1465	WESTERN KENTUCKY UNIVERSITY	Universities	205	0	0	205	100.00%		
3801	KENTUCKY STATE UNIVERSITY	Universities	51	0	0	51	100.00%		
5470	KENTUCKY COMMUNITY AND TECHNICAL COLLGE SYSTEM	Universities	333	0	0	333	100.00%		

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