

KENTUCKY RETIREMENT SYSTEMS

A component unit of the Commonwealth of Kentucky



COMPREHENSIVE ANNUAL FINANCIAL REPORT

2020

For the Fiscal Year Ended June 30, 2020



County Employees Retirement System (CERS)
Kentucky Employees Retirement System (KERS)
State Police Retirement System (SPRS)

Prepared by the Accounting, Investment and Communications Divisions

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Management's Responsibility for Financial Reporting

Management has prepared the combining financial statements of Kentucky Retirement Systems (KRS) and is responsible for the integrity and fairness of the information presented.

December 3, 2020: Management has prepared the combining financial statements of KRS and is responsible for the integrity and fairness of the information presented. Some amounts included in the combining financial statements may be based upon estimates and judgements. These estimates and judgements were made utilizing the best business practices available. The accounting policies followed in the preparation of these combining financial statements conform to U.S. Generally Accepted Accounting Principles (GAAP). Financial information presented throughout the annual report is consistent with the combining financial statements.

Responsibility: Ultimate responsibility for the combining financial statements and annual report rests with the Board of Trustees (Board). The Executive Director and KRS staff assist the Board in its responsibilities.

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

KRS' external auditors, Dean Dorton, CPA, have conducted an independent audit of the combining financial statements in accordance with U.S. Generally Accepted Government Auditing Standards. This audit is described in their Independent Auditors' Report on pages 16 through 17 in the Financial Section. Management has provided the external auditors with full and unrestricted access to KRS' staff to discuss their audit and related findings as to the integrity of the plan's financial reporting and the adequacy of internal controls for the preparation of combining financial statements.


David L. Eager
Executive Director



Rebecca H. Adkins
Executive Director, Office of Operations



Connie Davis, CIA, CGAP, CRMA
Director of Accounting





KENTUCKY RETIREMENT SYSTEMS

David L. Eager, Executive Director

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December 3, 2020

On behalf of the Board, management, and staff of KRS, it is my honor to present the Comprehensive Annual Financial Report (CAFR) for the Fiscal Year Ended June 30, 2020. This report is provided as a resource for understanding the structure and financial status of KRS.

Here are a few highlights:

COVID-19 Pandemic

Since early April 2020, KRS has had more than 85% of its staff working from home. We made the swift transition almost seamlessly with members experiencing minimal disruption to services, and our various productivity metrics have remained strong throughout the period.

Effective and Transparent Management

The Board and staff are committed to managing all aspects of KRS effectively and with complete transparency. We continuously examine every aspect of our procedures and policies striving for enhancements. All records and information not protected by statutes or confidentiality agreements are available on our website, in our CAFR, or by request. All Board meetings and Committee meetings are live streamed and archived on the official KRS Facebook page.

We publish various newsletters targeted to our members and governmental officials including all legislators, employees of the Legislative Research Commission and most members of the Executive Branch senior staff. We have frequent meetings with members, government officials, member groups and other stakeholders who are interested in getting information about KRS or giving us input.

Continuous Improvement

Again this year our most financially troubled plan, KERS Non-Hazardous, had positive cash flow during Fiscal Year 2020. We received more in contributions than we paid in benefits and expenses. CERS plans will likely move into that position shortly as the phase-in of higher contributions moves into its third year.

Over the past year, several service enhancements were implemented with an emphasis on Self Service. In

February 2020, members were provided the ability to securely apply for their retirement and upload documents online. This allows members the ease of initiating the retirement process and submitting forms from their mobile devices or personal computer.

We prepared for the first Trustee election with an online ballot option for the 2021 CERS election. We anticipate significant savings for board elections prospectively due to recent legislation which reduced the number of CERS Trustee elections from two every four years to one every four years and providing for online voting.

Legislation

The 2019 Special Session of the General Assembly produced House Bill (HB) 1. That bill provided four new options for the 115 Quasi State Agencies to exit the KERS Non-Hazardous plan, should they choose to do so at discount rates ranging from 4.5% to 3.0% through lump sum or installment payments. Two of the four options include continuing active KERS membership for Tier 1 and Tier 2 employees.

The 2020 Regular Session of the General Assembly produced significant KRS-related legislation. Senate Bill (SB) 249 extended the exit date for universities and all quasi-governmental agencies to June 30, 2021. SB 249 also reset the amortization period for paying off the unfunded liabilities for all pension and insurance plans. Based on previous assumptions, all pension plans were expected to be fully funded by Fiscal Year 2043. However, SB 249 extends that period to Fiscal Year 2049 by resetting the amortization period from 24 years to 30 years which reduces the required employer contributions for Fiscal Year 2021 by an estimated \$120 million.

In addition, the General Assembly also passed HB 484 which changes our current administrative structure by creating a new CERS Board with oversight and governance responsibility for the CERS plans. The KERS and SPRS plans will remain under the authority of the KRS Board. The Kentucky Public Pensions Authority (KPPA) is a new board, which will be responsible for the day to day administrative, legal, operational, and investment aspects of all five plans. All employees of the current KRS will now work for the KPPA. To date, we have determined more than 100 action

items, or steps, required to make the transition, and expect to identify more as our work progresses.

From a budget standpoint, the economic uncertainty surrounding COVID-19 prompted the General Assembly to approve a one-year Executive Branch budget bill rather than the usual two-year budget. The employer contribution rates for Fiscal Year 2022 will be set in the 2021 Regular Session.

KRS continues to work on implementing previous legislative changes. During the 2017 Regular Session of the General Assembly, Senate Bill 104 was enacted which allows Tier 2 members to opt into Tier 3. This provision required a favorable Private Letter Ruling from the IRS, which was received this year. Staff is currently working on system changes to support this law change.

Investments

For Fiscal Year 2020, the investment markets had low returns and limited the ability for our funds to earn their actuarial assumed rates of return of 5.25% and 6.25%. KERS Non-Hazardous and SPRS pension plans earned 2.37% and 2.22%, respectively, and fell short of their assumed rate of return of 5.25%. All of the other pension and insurance plans earned between .19 % and .94%. As such, all eight of those plans failed to earn their assumed rate of return of 6.25%.

Actuarial

The actuarial value of the total pension liability and total insurance liability was determined as of June 30, 2020. The KRS funding ratios improved for both the pension and insurance funds at 33.56% and 69.80% respectively, with nine out of ten plans experiencing an increase in their funding ratios. Funding status by plan, actuarial valuation results and the economic assumptions used to measure the total pension and insurance liability can be found in the actuarial section of this report.

Cyber Security

KRS' goal is to be on the forefront of cyber security for similar-sized public funds because our members and employers have entrusted us with sensitive data that must be protected. Two of the most significant cyber threats in 2020 are social engineering and ransomware. To address these and other threats, KRS is continuing its rigorous staff security training, software patching and system upgrades, which are key to a quality cyber security program. Additionally, KRS is expanding its business continuity, disaster recovery and incident response plans. COVID-19 ushered in a new work-at-

home environment for our employees, which increased the cyber risks to our infrastructure. Our technology team acted swiftly to add measures to counteract that risk.

Looking Forward

By far our most important mandate is to work with the Legislature and the Governor's Office to assure that KRS gets the required funding. Our actuaries, GRS Consulting, project that all of our pension and insurance plans will become fully funded in Fiscal Year 2049, provided KRS receives the full Actuarially Determined Contribution (ADC) each year and all actuarial assumptions are met. Those same projections indicate that all benefits will be secure going forward, supported by the positive fiscal impact of the Tier 3 Hybrid Cash Balance Plan. Receiving the full ADC ensures that KRS continues to provide a stabilizing element for all local economies in the Commonwealth, paying at least \$1 million in ongoing pension benefits to each county annually.

There continues to be consideration of legislation that would change the funding method for employers from a uniform percent of pay method to a method that allocates a dollar value based upon each employer's unfunded liability and requires them to pay it off over a period not to exceed 30 years in most cases. Without this change, employers will likely continue to reduce their employee head count through outsourcing and layoffs and thereby reduce their payrolls and, subsequently, their contributions. This results in their liability being absorbed by other employers and forces contribution rates even higher.

Acknowledgments

The preparation of this report has been a collaborative effort of Executive Management and the Accounting, Investments, and Communications Divisions. The contents have been reviewed by the Internal Audit Division. KRS takes responsibility for all of the information contained in the report and confidently presents it as a basis for making management decisions that promote the responsible stewardship of the assets of KRS.



David L. Eager
Executive Director

GOVERNANCE

Our Board of Trustees serves as the KRS governing body. Six trustees are elected by members, ten are appointed by the Governor and the Secretary of the Personnel Cabinet serves ex officio. Three of the ten appointees are selected from lists of candidates provided by the Kentucky Association of Counties (KACo), the Kentucky League of Cities (KLC), and the Kentucky School Boards Association (KSBA).

KYRET.KY.GOV

Visit our website for meeting schedules. Watch meetings live on Facebook.



@KYretirement

ELECTED AS OF DECEMBER 3, 2020



BETTY PENDERGRASS
Elected by CERS
Term ends 3/31/21

JERRY W. POWELL
Elected by CERS
Term ends 3/31/21

DAVID RICH
Elected by CERS
Term ends 10/31/21



CAMPBELL CONNELL
Elected by KERS
Term ends 3/31/22

SHERRY LYNN KREMER
Elected by KERS
Term ends 3/31/22



KEITH PEERCY
VICE CHAIR
Elected by SPRS
Term ends 3/31/23

APPOINTED AS OF DECEMBER 3, 2020



DAVID L. HARRIS
CHAIR
Term ends 6/17/22

W. JOE BROTHERS
Nominated by KSBA
Term ends 7/1/21

J.T. FULKERSON
Nominated by KLC
Term ends 7/1/21

GERINA WHETHERS
Personnel Secretary
Ex Officio

VACANT
Nominated by KACo
Term ends 7/1/21

JOHN CHESHIRE III
Term ends 6/17/23

JOHN E. CHILTON
Term ends 6/17/22

JOSEPH GROSSMAN
Term ends 6/17/22

MATTHEW MONTEIRO
Term ends 6/17/23

KELLY DOWNARD
Term ends 6/17/23

C. PREWITT LANE
Term ends 6/17/23

KENTUCKY PUBLIC PENSIONS AUTHORITY

During the 2020 Legislative Session, House Bill 484 was passed establishing a new governance structure for KRS. Effective April 1, 2021 KRS as an "office" will be known as the Kentucky Public Pensions Authority (KPPA). Current KRS employees will become KPPA employees and continue to provide administrative support, investment management and conduct daily activities for the new CERS, KRS and KPPA boards. KPPA will be led by an Executive Director who will work with the Chief Executive Officers of the CERS and KRS boards to carry out the statutory provisions of the systems.

KPPA BOARD

CERS BOARD

COUNTY EMPLOYEES RETIREMENT SYSTEM

- 3 trustees elected by members
- 6 trustees appointed by the Governor selected from lists of candidates provided by KACo, KLC and KSBA

- CERS Board Chair
- KRS Board Chair
- CERS Investment Committee Chair
- CERS Trustee, Elected by Members*
- CERS Trustee, Governor Appointee*
- KRS Investment Committee Chair
- KRS Trustee, Elected by Members**
- KRS Trustee, Governor Appointee**

*Selected by the CERS Board Chair
**Selected by the KRS Board Chair

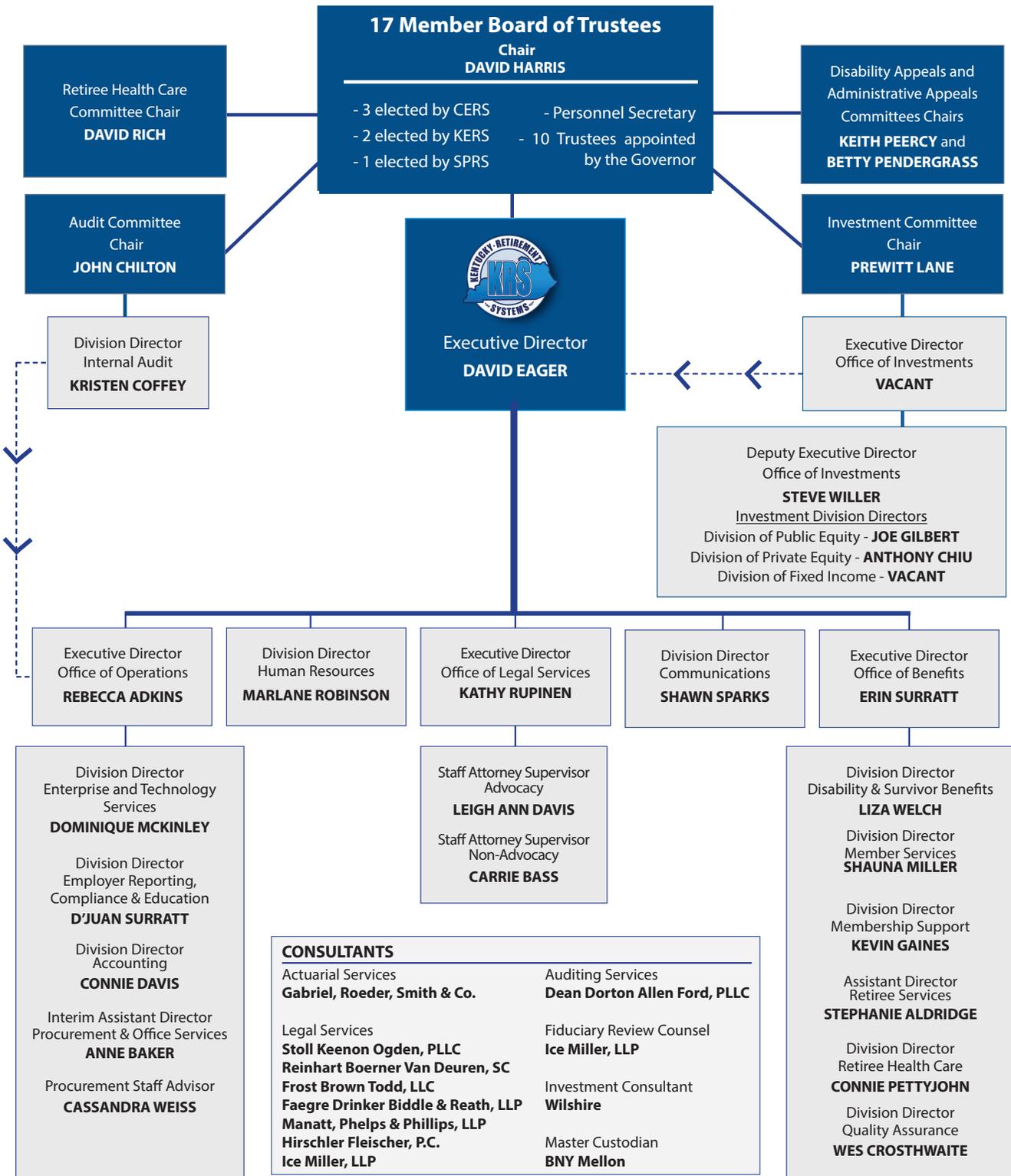
KRS BOARD

KENTUCKY EMPLOYEES RETIREMENT SYSTEM & STATE POLICE RETIREMENT SYSTEM

- 3 trustees elected by members
- 6 trustees appointed by the Governor

KENTUCKY RETIREMENT SYSTEMS AGENCY STRUCTURE

as of December 3, 2020



Refer to the Investments Section for additional information regarding Investment Advisors and Schedules of Fees and Expenses.

Certificate of Achievement

The Government Finance Officers Association (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Kentucky Retirement Systems (KRS) for its Comprehensive Annual Financial Report (CAFR) for the fiscal year ended June 30, 2019. The Certificate of Achievement is a prestigious national award recognizing excellence in the preparation of state and local government financial reports and is valid for a period of one year. This was the 21st award earned by KRS. In order to be awarded a Certificate of Achievement, a government unit must publish an easily readable and efficiently organized document. The report must satisfy both generally accepted accounting principles and applicable legal requirements. We believe our 2020 CAFR will continue to meet the Certificate of Achievement Program's requirements, and we will be submitting it to the GFOA for their consideration.



Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Kentucky Retirement Systems

For its Comprehensive Annual
Financial Report
For the Fiscal Year Ended

June 30, 2019

Christopher P. Morill

Executive Director/CEO

2020 Total Fiscal Year KRS Pension Benefits Paid by County

County	Payees*	Total	County	Payees*	Total	County	Payees*	Total
Adair	489	\$8,189,678	Grant	603	\$11,473,025	McLean	310	\$4,533,338
Allen	403	5,464,411	Graves	892	13,851,245	Meade	455	6,523,980
Anderson	1,401	34,951,581	Grayson	763	11,744,174	Menifee	206	2,951,915
Ballard	239	3,357,055	Green	304	4,356,302	Mercer	772	14,048,532
Barren	1,068	16,558,475	Greenup	661	9,039,603	Metcalfe	303	3,879,555
Bath	393	5,896,769	Hancock	220	2,873,426	Monroe	261	2,941,638
Bell	661	10,687,746	Hardin	2,215	36,505,157	Montgomery	656	10,686,697
Boone	1,832	37,692,644	Harlan	638	9,628,785	Morgan	621	10,742,983
Bourbon	551	9,198,963	Harrison	453	6,979,484	Muhlenberg	800	10,279,648
Boyd	1,063	17,356,820	Hart	336	5,062,458	Nelson	1,058	18,466,011
Boyle	893	15,359,711	Henderson	1,064	17,830,095	Nicholas	207	2,856,758
Bracken	229	3,012,682	Henry	911	20,235,961	Ohio	636	6,807,191
Breathitt	510	7,872,081	Hickman	92	1,654,089	Oldham	1,347	28,364,338
Breckinridge	478	6,822,737	Hopkins	1,269	19,356,950	Owen	530	12,179,872
Bullitt	1,535	28,492,707	Jackson	338	4,510,629	Owsley	214	3,199,640
Butler	319	4,365,675	Jefferson	16,438	358,247,177	Pendleton	354	5,866,231
Caldwell	529	7,870,900	Jessamine	1,104	18,911,290	Perry	778	11,242,764
Calloway	1,077	15,319,568	Johnson	620	9,462,589	Pike	1,267	18,705,012
Campbell	1,530	28,834,286	Kenton	2,319	48,177,371	Powell	343	4,649,527
Carlisle	122	1,712,343	Knott	451	7,048,344	Pulaski	2,237	37,922,837
Carroll	318	5,125,189	Knox	608	9,501,098	Robertson	65	1,078,616
Carter	781	10,408,718	LaRue	360	5,551,977	Rockcastle	400	5,487,107
Casey	359	4,607,025	Laurel	1,254	20,793,279	Rowan	862	14,857,931
Christian	1,551	27,145,965	Lawrence	334	4,053,937	Russell	558	8,275,937
Clark	838	14,347,648	Lee	232	3,306,520	Scott	1,263	26,768,422
Clay	583	8,620,846	Leslie	268	4,067,092	Shelby	1,655	41,483,106
Clinton	254	3,439,091	Letcher	608	8,342,719	Simpson	284	3,491,665
Crittenden	218	2,849,836	Lewis	327	4,267,942	Spencer	498	11,032,296
Cumberland	184	2,834,103	Lincoln	679	8,635,787	Taylor	645	9,382,740
Daviess	2,645	47,318,563	Livingston	264	4,437,679	Todd	254	3,479,777
Edmonson	233	3,342,669	Logan	617	8,790,307	Trigg	516	8,343,995
Elliott	179	2,656,436	Lyon	352	6,955,321	Trimble	274	4,294,204
Estill	408	5,743,254	Madison	2,385	40,256,296	Union	364	4,177,682
Fayette	5,475	119,368,493	Magoffin	360	5,024,880	Warren	2,823	49,670,729
Fleming	466	7,956,960	Marion	548	7,628,231	Washington	334	5,256,408
Floyd	892	13,616,713	Marshall	924	13,632,181	Wayne	548	7,573,357
Franklin	6,370	197,068,347	Martin	280	3,108,248	Webster	357	4,714,436
Fulton	180	2,266,700	Mason	414	6,691,167	Whitley	1,086	15,493,629
Gallatin	122	2,022,389	McCracken	1,599	29,204,659	Wolfe	335	5,452,682
Garrard	419	\$6,196,393	McCreary	402	\$4,137,326	Woodford	1,041	\$26,037,584

Pension Benefits paid to retirees and beneficiaries of Kentucky Retirement Systems have a wide ranging impact on the state's economic health. In fiscal year 2020, KRS paid over \$2 billion to its recipients. The majority, 93.40%, of these payments are issued to Kentucky residents. Each county in the Commonwealth receives at least \$1 million annually from KRS, providing a stabilizing element for all local economies.

Total Retirement Payments For the Period ending June 30, 2020 (in Whole \$)			
	Payees*	%	Payments
Retirement Eligible/Actuarial Refund	449		\$5,868,992
Kentucky	109,820	93.40%	2,044,487,743
Out of State	8,593	6.60%	143,826,422
Grand Total	118,862	100.00%	\$2,194,183,157

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

Active Refunds Report as of June 30, 2020

		Active Termination Refunds		Active Death Refunds		Totals	
		Number of Refunds	Amount of Refunds	Number of Refunds	Amount of Refunds	Number of Refunds	Amount of Refunds
System	Tier						
CERS Non- Hazardous	1	370	\$4,780,510	150	\$239,192	520	\$5,019,702
	2	619	4,562,618	36	79,267	655	4,641,885
	3	1,228	3,710,211	52	118,577	1,280	3,828,788
	Total	2,217	13,053,339	238	437,036	2,455	13,490,375
CERS Hazardous	1	32	1,191,313	1	322	33	1,191,635
	2	54	1,249,638	1	22,219	55	1,271,857
	3	96	883,376	1	15,045	97	898,421
	Total	182	3,324,327	3	37,586	185	3,361,913
KERS Non- Hazardous	1	272	4,640,758	68	121,862	340	4,762,619
	2	305	3,091,895	13	64,131	318	3,156,026
	3	616	2,549,638	12	39,361	628	2,589,000
	Total	1,193	10,282,291	93	225,354	1,286	10,507,645
KERS Hazardous	1	24	476,247	3	17,612	27	493,859
	2	67	1,081,174	3	3,916	70	1,085,090
	3	183	1,043,242	3	6,537	186	1,049,779
	Total	274	2,600,663	9	28,065	283	2,628,728
SPRS	1	2	21,611	-	-	2	21,611
	2	3	48,323	-	-	3	48,323
	3	1	17,634	-	-	1	17,634
	Total	6	87,568	-	-	6	87,568
TOTALS		3,872	\$29,348,188	343	\$728,041	4,215	\$30,076,229

Benefit Tiers

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

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

Membership as of June 30, 2020						
Item	CERS Non- Hazardous	CERS Hazardous	KERS Non- Hazardous	KERS Hazardous	SPRS	KRS Total 2020
Members	235,008	20,705	123,365	13,192	2,670	394,940
Active Membership	83,458	9,350	31,190	4,112	798	128,908
Tier 1	31,516	3,969	15,274	1,262	403	52,424
Tier 2	13,946	1,908	5,554	727	195	22,330
Tier 3	37,996	3,473	10,362	2,123	200	54,154
Average Annual Salary	\$31,574	\$60,363	\$43,774	\$41,726	\$57,826	-
Average Age	47.8	38.4	45.7	39.8	37.5	-
Retired Membership	60,877	8,431	43,592	3,242	1,523	117,665
Tier 1	60,195	8,412	43,386	3,205	1,522	116,720
Tier 2	669	16	196	36	1	918
Tier 3	13	3	10	1	-	27
Average Annual Benefit	\$11,915	\$28,437	\$21,440	\$15,737	\$39,766	-
Average Age	70.7	62.1	69.6	65.0	63.0	-
Inactive Members	90,673	2,924	48,583	5,838	349	148,367
Tier 1	50,669	1,448	31,761	1,823	179	85,880
Tier 2	17,488	571	8,733	1,280	63	28,135
Tier 3	22,516	905	8,089	2,735	107	34,352

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

CERS Non-Hazardous - Fiduciary Net Position* (\$ in Thousands)								
Fund	2013	2014	2015	2016	2017	2018	2019	2020
Pension	\$5,795,568	\$6,528,146	\$6,440,800	\$6,141,396	\$6,739,142	\$7,086,322	\$7,242,975	\$7,110,889
Insurance	1,618,960	1,878,711	1,920,946	1,908,550	2,160,553	2,346,767	2,486,458	2,498,051
Total	\$7,414,528	\$8,406,857	\$8,361,746	\$8,049,946	\$8,899,695	\$9,433,089	\$9,729,433	\$9,608,940

CERS Hazardous - Fiduciary Net Position* (\$ in Thousands)								
Fund	2013	2014	2015	2016	2017	2018	2019	2020
Pension	\$1,833,571	\$2,087,002	\$2,078,202	\$2,010,177	\$2,227,679	\$2,361,047	\$2,429,613	\$2,395,688
Insurance	891,320	1,030,303	1,056,480	1,056,097	1,179,313	1,268,272	1,324,809	1,305,132
Total	\$2,724,891	\$3,117,305	\$3,134,682	\$3,066,274	\$3,406,992	\$3,629,319	\$3,754,422	\$3,700,820

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

KERS Non-Hazardous - Fiduciary Net Position* (\$ in Thousands)								
Fund	2013	2014	2015	2016	2017	2018	2019	2020
Pension	\$2,760,753	\$2,578,290	\$2,327,782	\$1,980,292	\$2,092,781	\$2,048,890	\$2,286,625	\$2,362,231
Insurance	496,040	646,905	665,639	668,318	781,406	846,762	942,136	1,006,498
Total	\$3,256,793	\$3,225,195	\$2,993,421	\$2,648,610	\$2,874,187	\$2,895,652	\$3,228,761	\$3,368,729

KERS Hazardous - Fiduciary Net Position* (\$ in Thousands)								
Fund	2013	2014	2015	2016	2017	2018	2019	2020
Pension	\$514,592	\$561,484	\$552,468	\$527,880	\$605,921	\$651,173	\$687,877	\$697,366
Insurance	372,883	433,525	439,113	437,397	484,442	513,384	527,108	514,740
Total	\$887,475	\$995,009	\$991,581	\$965,277	\$1,090,363	\$1,164,557	\$1,214,985	\$1,212,106

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

SPRS - Fiduciary Net Position* (\$ in Thousands)								
Fund	2013	2014	2015	2016	2017	2018	2019	2020
Pension	\$248,698	\$260,974	\$247,229	\$218,013	\$256,383	\$268,425	\$287,242	\$295,044
Insurance	142,691	164,958	164,714	160,949	178,191	189,994	200,128	200,245
Total	\$391,389	\$425,932	\$411,943	\$378,962	\$434,574	\$458,419	\$487,370	\$495,289

KRS Total Fiduciary Net Position

Fiduciary Net Position (\$ in Thousands)								
Fund	2013	2014	2015	2016	2017	2018	2019	2020
Pension	\$11,153,182	\$12,015,897	\$11,646,481	\$10,877,758	\$11,921,906	\$12,415,856	\$12,934,332	\$12,861,218
Insurance	3,521,894	4,154,401	4,246,892	4,231,311	4,783,905	5,165,179	5,480,639	5,524,666
Total	\$14,675,076	\$16,170,298	\$15,893,373	\$15,109,069	\$16,705,811	\$17,581,035	\$18,414,971	\$18,385,884

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

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REPORT OF INDEPENDENT AUDITORS

Board of Directors
Kentucky Retirement Systems
Frankfort, Kentucky

Report on the Combining Financial Statements

We have audited the accompanying combining financial statements of the Pension Funds and Insurance Fund of the Kentucky Retirement Systems, a component unit of the Commonwealth of Kentucky, as of and for the year ended June 30, 2020, and the related notes to the combining financial statements, which comprise the Kentucky Retirement Systems' basic combining financial statements as listed in the table of contents (collectively, the financial statements).

Management's Responsibility for the Financial Statements

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

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective combining fiduciary net position of the Pension Funds and Insurance Fund of the Kentucky Retirement Systems, a component unit of the Commonwealth of Kentucky, as of June 30, 2020, and the respective combining changes in fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Report on Summarized Comparative Information

We have previously audited the Kentucky Retirement Systems 2019 financial statements of the Pension Funds and Insurance Fund, and we expressed an unmodified audit opinion on those audited financial statements in our report dated December 5, 2019. In our opinion, the summarized comparative information presented herein as of and for the year ended June 30, 2019, is consistent, in all material respects, with the audited financial statements from which it has been derived.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis (on pages 18 to 24) and the Schedules of Employer Net Pension Liability, Changes in Employers' Total Pension Liability, Employer Contributions Pension, Employers' Net OPEB Liability, Changes in Employers' Net OPEB Liability, Employers' OPEB Contributions, and Money-Weighted Rates of Return (on pages 79 to 101) be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economical or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the Pension Funds and Insurance Fund of the Kentucky Retirement Systems' basic financial statements. The Additional Supporting Schedules (on pages 103 to 104), Introduction, Investments, Actuarial and Statistical Sections are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The Additional Supporting Schedules are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements, or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the Additional Supporting Schedules are fairly stated, in all material respects, in relation to the basic financial statements as a whole.

The Introduction, Investments, Actuarial and Statistical Sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on it.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated December 3, 2020 on our consideration of the Kentucky Retirement Systems' internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Kentucky Retirement Systems' internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Kentucky Retirement Systems' internal control over financial reporting and compliance.

Dean Dotson Allen Ford, PLLC

Lexington, Kentucky
December 3, 2020

Management's Discussion & Analysis (Unaudited)

Pension Funds

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

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

Total Pension Fiduciary Net Position was \$12.9 billion at the beginning of the fiscal year and decreased by 0.57% to \$12.8 billion as of June 30, 2020. The \$0.1 billion decrease is primarily attributable to unrealized losses creating a decline in the market value of investments. The Pension Funds received \$1.1 million in General Fund appropriations in fiscal year 2020 compared to \$76.9 million in fiscal year 2019. In addition, the KERS Pension Fund was notified by the Commonwealth of a budget surplus of which \$60.1 million would be distributed to KRS in fiscal year 2020, but the funds were accrued in fiscal year 2019. There were no budget surplus distributions for FY 2021, thus the reduction in accounts receivable for FY 2020.

CONTRIBUTIONS

Total contributions reported for fiscal year 2020 were \$2,064.4 million compared to \$2,037.4 million in fiscal year 2019. The major contributor to the increase resulted from increases in Employer Contributions for CERS Non-Hazardous, CERS Hazardous, and KERS Hazardous and General Fund appropriations of \$1.1 million for the SPRS plan.

The member health insurance, 401(h) contributions, totaled \$0.0 for fiscal year 2020 compared to \$21.3 million in the prior fiscal year. The decrease was due to Health Insurance Contributions being deposited to the Insurance Fund for 2020, in accordance with HB 80 passed by the legislature in the 2019 regular session.

INVESTMENTS

The investment portfolio for the Pension Funds reported a net return of 1.15% for fiscal year 2020 compared to 5.83% return for fiscal year 2019. The performance of the portfolio was adversely impacted by the COVID-19 pandemic for fiscal year 2020.

The net depreciation in the fair value of investments for fiscal year 2020 was \$98.1 million compared to net appreciation of \$484.7 million for the previous fiscal year.

Interest, dividends, and net securities lending income for fiscal year 2020 was \$290.7 million compared to \$288.4 million in fiscal year 2019. All investment returns are reported net of fees, including carried interest. Investment expenses totaled \$53.1 million for fiscal year 2020 compared to \$79.1 million in the prior fiscal year. The decline in fees is a combination of less than favorable market conditions and a decline in assets in certain portfolios due to redemptions. KRS also had several redemptions/distributions in the private equity and absolute return portfolio resulting in \$169.0 million fewer assets in those portfolios.

DEDUCTIONS

Pension benefits paid to retirees and beneficiaries for fiscal year 2020 totaled \$2,205.9 million compared to \$2,144.1 million in fiscal year 2019, a 2.88% increase. The increase was due to a 2.42% increase in the number of retirees to 131,574. Refunded contributions paid to former members upon termination of employment for fiscal year 2020 totaled \$33.5 million compared to \$32.4 million in fiscal year 2019, a 3.34% increase, as more members elected a refund at employment termination.

KRS' fiscal year 2020 Pension administrative expense totaled \$37.7 million compared to \$36.4 million in the prior year. The increase was mainly due to salary and fringe benefit increases for KERS employees.

Management's Discussion & Analysis (Unaudited)

Insurance Fund

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

The combined fiduciary net position of the Insurance Fund increased by \$44.0 million during fiscal year 2020. Total combined net position for the fiscal year was \$5,524.7 million. Total contributions and net investment income of \$428.2 million offset deductions of \$384.2 million which resulted in the net position increase.

CONTRIBUTIONS

Employer contributions of \$369.6 million were received in fiscal year 2020 compared to \$387.3 million in fiscal year 2019. Total contributions decreased 4.57% primarily due to the decrease in covered payroll for KERS Non-Hazardous, and SPRS as well as the decrease in the insurance contribution rate for CERS Non-Hazardous and CERS Hazardous.

The reimbursement of retired/re-employed health insurance for fiscal year 2020 totaled \$11.5 million compared to \$10.5 million in the prior fiscal year. The increase is due to an increase in retired/re-employed members for whom employers are paying health insurance reimbursements.

INVESTMENTS

Interest, dividends, and net securities lending income for fiscal year 2020 was \$126.5 million compared to \$129.8 million in fiscal year 2019. The primary driver of this decrease was due to unfavorable market conditions which resulted in a decrease in income and dividends.

The investment portfolio reported a net return of 0.48% for the fiscal year, which was lower than fiscal year 2019 net return of 5.67%. The investment return was below the 6.25% assumed rate of return. The performance of the portfolio was adversely impacted by the COVID-19 pandemic for fiscal year 2020.

The net depreciation in the fair value of investments for fiscal year 2020 was \$81.9 million compared to net appreciation of \$196.0 million for the previous fiscal year. This \$277.9 million decrease in fiscal year 2020 was due to lower market returns compared to fiscal year 2019.

Investment expenses totaled \$21.3 million for fiscal year 2020 compared to \$37.5 million in the prior fiscal year. The decline in fees is a combination of less than favorable market conditions and a decline in certain portfolios due to redemptions. KRS also had several redemptions/distributions in the private equity and absolute return portfolio resulting in \$86.9 million fewer assets in those portfolios.

DEDUCTIONS

Total insurance premiums, plus self-funded reimbursements were \$381.8 million for fiscal year 2020. Although fiscal year 2020 insurance premiums were comparable to fiscal year 2019 rates, the number of covered lives increased by approximately 5% year-over-year.

Insurance administrative expenses for retirees under age 65, increased from \$2.37 million in fiscal year 2019 to \$2.41 million in fiscal year 2020.

Using This Financial Report

Because of the long-term nature of a defined benefit pension plan and post-employment healthcare benefit plan, the combining financial statements alone cannot provide sufficient information to properly reflect the Plans' ongoing plan perspective. This financial report consists of two combining financial statements and two required schedules of historical trend information. All plans within KRS are included in the aforementioned combining financial statements. The Combining Statement of Fiduciary Net Position for the Pension Funds on page 25 and the Combining Statement of Fiduciary Net Position for the Insurance Fund on page 27 provide a snapshot of the financial position of each of the three systems as of fiscal year 2020. The Combining Statement of Changes in Fiduciary Net Position for the Pension Funds on page 26, and the Combining Statement of Changes in Fiduciary Net Position for the Insurance Fund on page 27, summarize the additions and deductions that occurred for each of the three systems during fiscal year 2020.

Management's Discussion & Analysis (Unaudited)

The economic assumptions for the Pension and Insurance Funds for fiscal year 2020 are on page 59, the Schedules of Changes in Employers' Total Pension Liability on pages 81-85, the Schedules of the Employer Net Pension Liability on pages 79-80; the Schedule of Changes in Employers' Total Other Post-Employment Benefits (OPEB) Liability are on pages 91-95; and, the Schedule of the Employers' Net OPEB Liabilities are on page 89-90. These schedules include current and historical trend information about the actuarially funded status of each plan from a long-term, ongoing plan perspective and the progress made in accumulating sufficient assets to pay benefits and insurance premiums when due. The Schedules of the Employers' Contributions – Pensions are on pages 87-89, and the Schedules of the Employers' Contributions – OPEB are on pages 97 -99 . These schedules present current and historical trend information about the annual required contributions and the contributions made in relation to the requirement. These schedules provide information that contributes to understanding the changes over time in the funded status of the plans.

Kentucky Retirement Systems Combined

KRS' combined fiduciary net position decreased \$29.1 million in fiscal year 2020, compared to the fiduciary net position for the previous fiscal year. The decrease in fiduciary net position for the fiscal year 2020 is primarily attributable to lower contributions, health insurance contributions, employer cessation contributions, and negative investment performance. The analysis focuses on the net position table and changes in fiduciary net position table for KRS' Pension and Insurance Funds.

Management's Discussion & Analysis (Unaudited)

Fund Activities

The net position of the Pension Funds decreased by \$73.1 million to \$12,861.2 million in fiscal year 2020 compared to \$12,934.3 million in fiscal year 2019. All of these assets are restricted in use to provide monthly retirement allowances to members who contributed to the Pension Funds as employees and on behalf of their beneficiaries. The net position of the Insurance Fund increased by \$44.0 million to \$5,524.7 million in fiscal year 2020 compared to \$5,480.6 million in fiscal year 2019. All of these assets are restricted in use to provide hospital and medical insurance benefits to members of the Pension Funds who receive a monthly retirement allowance.

Financial data presented in this report is abbreviated “in thousands” or “in millions.”

Fiduciary Net Position

As of June 30 (\$ in Thousands)

	Pension Funds			Insurance Fund			Total		
	2020	2019	2018	2020	2019	2018	2020	2019	2018
Cash & Invest.	\$13,150,428	\$13,133,900	\$12,859,431	\$5,687,583	\$5,622,703	\$5,367,071	\$18,838,011	\$18,756,603	\$18,226,502
Receivables	295,988	468,221	349,172	87,102	142,538	148,883	383,090	610,759	498,055
Equip/Int Assets, net of dep/amort.	1,619	2,677	4,437	-	-	-	1,619	2,677	4,437
Total Assets	13,448,035	13,604,798	13,213,040	5,774,685	5,765,241	5,515,954	19,222,720	19,370,039	18,728,994
Total Liabilities	(586,817)	(670,466)	(797,184)	(250,019)	(284,602)	(350,775)	(836,836)	(955,068)	(1,147,959)
Fiduciary Net Position	\$12,861,218	\$12,934,332	\$12,415,856	\$5,524,666	\$5,480,639	\$5,165,179	\$18,385,884	\$18,414,971	\$17,581,035

Pension Fund Activities

Member contributions increased by \$19.7 million. This is primarily due to an increase in covered payroll in KERS Hazardous, CERS Non-Hazardous and CERS Hazardous. Retirement contributions are calculated by applying a percentage factor to salary and are remitted by each employer on behalf of the member. Non-Hazardous Tier 1 members pay pension contributions of 5.00% of creditable compensation and Hazardous Tier 1 members contribute 8.00% of creditable compensation. Whereas Non-Hazardous Tier 2 and 3 members pay pension contributions of 6.00% of creditable compensation and Hazardous Tier 2 and 3 members contribute 9% of creditable compensation.

Employer contributions increased by \$115.5 million as a result of the increase in the contribution rates for CERS Non-Hazardous, CERS Hazardous as well as the increase in covered payroll for KERS Hazardous, CERS Non-Hazardous and CERS Hazardous.

Total Pension Funds deductions increased by \$64.1 million. The 2.90% increase was primarily driven by the normal increase in retirements across all plans.

Net investment income decreased by \$554.5 million. This is illustrated in the Investment Income Pension table on the next page. The Pension Funds experienced a decrease in income when compared to fiscal year 2019, due to less favorable market conditions. KRS overall returned 1.15% for the fiscal year. This outperformed the benchmark of 0.50% and under performed the actuarial assumed rate of return of 6.25% used by CERS and KERS Hazardous, and 5.25% used by KERS Non-Hazardous and SPRS.

Management's Discussion & Analysis (Unaudited)

Changes in Fiduciary Net Position									
For the fiscal year ending June 30, (\$ in Thousands)									
	Pension Funds			Insurance Fund			Total		
	2020	2019	2018	2020	2019	2018	2020	2019	2018
Additions:									
Member Cont.	\$353,360	\$333,664	\$349,844	\$-	\$-	\$-	\$353,360	\$333,664	\$349,844
Employer Cont.	1,709,544	1,594,008	1,169,690	369,573	387,259	321,888	2,079,117	1,981,267	1,491,578
Heath Ins. Cont.	11	21,332	19,849	23,142	-	-	23,153	21,332	19,849
Humana Gain Share	-	-	-	-	7,516	-	-	7,516	7,516
Pension Spiking Cont.	369	677	8,078	-	-	-	369	677	8,078
Northern Trust Settlement	-	102	827	-	21	173	-	123	1,000
General Fund Appro.	1,086	76,944	87,574	-	-	-	1,086	76,944	87,574
Employer Cessation Cont.	20	10,643	17	25	1,391	-	45	12,034	17
Premiums Rec'd	-	-	-	730	715	497	730	715	497
Retired Re-emp Ins.	-	-	-	11,482	10,498	9,837	11,482	10,498	9,837
Medicare Subsidy	-	-	-	7	9	16	7	9	16
Invest. Inc. (net)	139,534	694,013	988,463	23,263	288,294	426,842	162,797	982,307	1,415,305
Total Additions	2,203,924	2,731,383	2,624,342	428,222	695,703	759,253	2,632,146	3,427,086	3,383,595
Deductions:									
Benefit payments	2,205,859	2,144,053	2,062,482	-	-	-	2,205,859	2,144,053	2,062,482
Refunds	33,511	32,429	34,948	-	-	-	33,511	32,429	34,948
Admin. Exp.	37,668	36,425	32,957	2,406	2,372	2,063	40,074	38,797	35,020
Healthcare Costs	-	-	-	381,789	377,871	375,918	381,789	377,871	375,918
Total Deductions	2,277,038	2,212,907	2,130,387	384,195	380,243	377,981	2,661,233	2,593,150	2,508,368
Increase (Decrease) in Fiduciary Net Position	(73,114)	518,476	493,955	44,027	315,460	381,272	(29,087)	833,936	875,227
Beginning of Period	12,934,332	12,415,856	11,921,901	5,480,639	5,165,179	4,783,907	18,414,971	17,581,035	16,705,808
End of Period	\$12,861,218	\$12,934,332	\$12,415,856	\$5,524,666	\$5,480,639	\$5,165,179	\$18,385,884	\$18,414,971	\$17,581,035

Management's Discussion & Analysis (Unaudited)

Investment Income - Pension As of June 30 (\$ in Thousands)

Investment Income - Pension	2020	2019	2018
Increase (decrease) in fair value of investments	\$(687,701)	\$274,265	\$(142,280)
Investment income net of investment expense	237,613	209,294	182,299
Gain on sale of investments	589,622	210,454	948,444
Net Investment Income	\$139,534	\$694,013	\$988,463

Insurance Fund Activities

Employer contributions paid into the Insurance Fund decreased by \$17.7 million in fiscal year 2020 over the prior fiscal year. The decrease in employer contributions is directly related to a decrease in covered payroll for KERS Non-Hazardous and SPRS as well as a decrease in the insurance transfer rate for CERS Non-Hazardous and CERS Hazardous employer contributions.

Net investment income decreased \$265.0 million in fiscal year 2020 compared to fiscal year 2019. KRS overall returned 0.48% for the fiscal year. This outperformed the benchmark of 0.13% and underperformed the actuarial assumed rate of return of 6.25% used by all of the Insurance Fund Plan.

Investment Income - Insurance As of June 30 (\$ in Thousands)

Investment Income - Insurance	2020	2019	2018
Increase (decrease) in fair value of investments	\$(308,571)	\$112,566	\$25,516
Investment income net of investment expense	105,181	92,338	60,688
Gain on sale of investments	226,653	83,390	340,638
Net Investment Income	\$23,263	\$288,294	\$426,842

Management's Discussion & Analysis (Unaudited)

Historical Trends

Accounting standards require that the Combining Statement of Fiduciary Net Position state asset value at fair value and include only benefits and refunds due plan members and beneficiaries; accrued investment income (loss); and administrative expenses as of the reporting date. Information regarding the actuarial funding status of the Pension and Insurance Funds is provided in the Schedules of Net Pension Liability (NPL) on page 79 and Net OPEB Liability on pages 89-68. The asset values stated in the Schedules of Changes in Employers' TPL on pages 81-85 and Total OPEB Liability on pages 91-95 are the actuarial value of assets. The actuarial value of assets recognizes a portion of the difference between the fair value of assets and the expected fair value of assets based on the investment return assumption. The amount recognized each year is 20% of the difference between fair value and expected fair value. The actuarial accrued liability is calculated using the entry age normal cost funding method. This actuarial accrued liability is the measure of the cost of benefits that have been earned to date by KRS' members, but not yet paid. The difference in value between the actuarial accrued liability and the actuarial value of assets is defined as the unfunded actuarial accrued liability.

The unfunded actuarial accrued liability from the June 30, 2020, actuarial valuation in the Pension Plans decreased by \$24.1 million for a total unfunded amount of \$25,730.6 million in fiscal year 2020, compared to an unfunded amount of \$25,754.7 million in fiscal year 2019. The overall funding decrease is the result of maintaining a sound funding policy and paying the actuarially determined contribution rate for the KERS and SPRS plans. However, both CERS plans experienced a slight increase as a result of the phase in provisions from House Bill 362 passed during the 2018 legislative session.

The Insurance Plan's unfunded actuarial accrued liability from the June 30, 2020, actuarial valuation for fiscal year 2020, was \$2,536.4 million compared to \$3,186.4 million for fiscal year 2019. This is an decrease in the unfunded actuarial accrued liability of \$650.0 million. The decrease is due to the accrued liability being lower than expected due to the 2021 healthcare premium experience.

Annual required actuarially determined contributions of the employers and actual contributions made by employers and other contributing entities in relation to the required contributions, are provided in the Schedules of Employer Contributions - Pension on pages 87-89, and in the Schedules of Contributions - OPEB on pages 97 -99 . The difference in the annual required contributions and actual contributions made by employers and other contributing entities in the KERS and SPRS funds is attributable to the fact that the employer contribution rate set by the Kentucky General Assembly was less than the rate recommended by the KRS actuary in prior years and adopted by the Board.

Combining Statement of Fiduciary Net Position - Pension Funds

As of June 30, 2020 with Comparative Totals as of June 30, 2019 (\$ in Thousands)

ASSETS	CERS	CERS	KERS	KERS	SPRS	KRS Total	KRS Total
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		2020	2019
CASH AND SHORT-TERM INVESTMENTS							
Cash Deposits	\$231	\$59	\$211	\$52	\$55	\$608	\$1,740
Short-term Investments	468,218	166,539	226,555	50,865	23,090	935,267	623,854
Total Cash and Short-term Investments	468,449	166,598	226,766	50,917	23,145	935,875	625,594
RECEIVABLES							
Accounts Receivable	68,395	19,199	47,510	3,666	8,567	147,337	197,424
Accounts Receivable - Investments	81,310	26,740	28,854	8,036	3,711	148,651	270,797
Total Receivables	149,705	45,939	76,364	11,702	12,278	295,988	468,221
INVESTMENTS, AT FAIR VALUE							
Core Fixed Income	1,222,626	420,018	547,394	127,472	70,180	2,387,690	2,315,962
Public Equities	2,722,500	918,210	771,379	268,568	99,431	4,780,088	4,817,428
Private Equities	597,906	201,345	180,312	54,981	17,340	1,051,884	1,180,776
Specialty Credit	1,124,021	373,349	347,365	109,739	43,749	1,998,223	1,968,701
Derivatives	4,270	1,449	1,180	409	158	7,466	(912)
Absolute Return	99,838	31,625	32,083	8,371	3,473	175,390	218,571
Real Return	405,486	137,258	95,793	36,579	14,653	689,769	1,078,889
Opportunistic	179,781	59,433	52,570	16,298	6,493	314,575	117,663
Real Estate	325,908	104,278	99,664	30,659	12,804	573,313	471,449
Total Investments, at Fair Value	6,682,336	2,246,965	2,127,740	653,076	268,281	11,978,398	12,168,527
Securities Lending Collateral Invested	130,998	44,231	42,773	12,851	5,302	236,155	339,779
CAPITAL/INTANGIBLE ASSETS							
Capital Assets	1,701	153	929	91	11	2,885	2,885
Intangible Assets	9,961	827	5,920	494	100	17,302	17,302
Accumulated Depreciation	(1,666)	(150)	(910)	(89)	(11)	(2,826)	(2,747)
Accumulated Amortization	(9,082)	(772)	(5,327)	(452)	(109)	(15,742)	(14,763)
Total Capital Assets	914	58	612	44	(9)	1,619	2,677
Total Assets	7,432,402	2,503,791	2,474,255	728,590	308,997	13,448,035	13,604,798
LIABILITIES							
Accounts Payable	7,334	1,042	3,632	340	254	12,602	13,243
Investment Accounts Payable	183,181	62,830	65,619	18,033	8,397	338,060	317,444
Securities Lending Collateral	130,998	44,231	42,773	12,851	5,302	236,155	339,779
Total Liabilities	321,513	108,103	112,024	31,224	13,953	586,817	670,466
Total Fiduciary Net Position Restricted for Pension Benefits	\$7,110,889	\$2,395,688	\$2,362,231	\$697,366	\$295,044	\$12,861,218	\$12,934,332

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

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

Combining Statement of Changes In Fiduciary Net Position - Pension Funds

For the fiscal year ending June 30, 2020, with Comparative Totals as of June 30, 2019 (\$ in Thousands)

	CERS		KERS		SPRS	KRS Total	
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		2020	2019
ADDITIONS							
Member Contributions	\$168,994	\$63,236	\$96,594	\$19,769	\$4,767	\$353,360	\$333,664
Employer Contributions	475,311	168,201	948,578	59,096	58,358	1,709,544	1,594,008
General Fund Appropriations	-	-	-	-	1,086	1,086	76,944
Pension Spiking Contributions	105	242	(6)	19	9	369	677
Northern Trust Settlement	-	-	-	-	-	-	102
Health Insurance Contributions (HB1)	5	1	1	4	-	11	21,332
Employer Cessation Contributions	-	-	20	-	-	20	10,643
Total Contributions	644,415	231,680	1,045,187	78,888	64,220	2,064,390	2,037,370
INVESTMENT INCOME							
From Investing Activities							
Net Appreciation (Depreciation) in FV of Investments	(77,193)	(30,359)	14,969	(6,541)	1,045	(98,079)	484,717
Interest/Dividends	162,986	55,097	47,805	16,062	6,571	288,521	286,295
Total Investing Activities Income	85,793	24,738	62,774	9,521	7,616	190,442	771,012
Less: Investment Expense	29,426	9,258	8,184	2,728	1,144	50,740	52,506
Less: Performance Fees	943	(89)	1,244	108	160	2,366	26,563
Net Income from Investing Activities	55,424	15,569	53,346	6,685	6,312	137,336	691,943
From Securities Lending Activities							
Securities Lending Income	3,185	1,071	891	304	126	5,577	10,190
Less: Securities Lending Borrower Rebates	1,741	585	488	166	72	3,052	7,756
Less: Securities Lending Agent Fees	186	63	53	18	7	327	364
Net Income from Securities Lending	1,258	423	350	120	47	2,198	2,070
Net Investment Income	56,682	15,992	53,696	6,805	6,359	139,534	694,013
Total Additions	701,097	247,672	1,098,883	85,693	70,579	2,203,924	2,731,383
DEDUCTIONS							
Benefit Payments	795,960	275,802	999,813	71,861	62,423	2,205,859	2,144,053
Refunds	14,918	3,814	11,523	3,168	88	33,511	32,429
Administrative Expenses	22,304	1,981	11,941	1,176	266	37,668	36,425
Total Deductions	833,182	281,597	1,023,277	76,205	62,777	2,277,038	2,212,907
Net Increase (Decrease) in Fiduciary Net Position Restricted for Pension Benefits	(132,085)	(33,925)	75,606	9,488	7,802	(73,114)	518,476
Total Fiduciary Net Position Restricted for Pension Benefits							
Beginning of Period	7,242,974	2,429,613	2,286,625	687,878	287,242	12,934,332	12,415,856
End of Period	\$7,110,889	\$2,395,688	\$2,362,231	\$697,366	\$295,044	\$12,861,218	\$12,934,332

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

Combining Statement of Fiduciary Net Position - Insurance Fund

As of June 30, 2020, with Comparative Totals as of June 30, 2019 (\$ In Thousands)

ASSETS	CERS	CERS	KERS	KERS	SPRS	KRS Total	KRS Total
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		2020	2019
CASH AND SHORT-TERM INVESTMENTS							
Cash Deposits	\$79	\$18	\$81	\$19	\$9	\$206	\$348
Short-term Investments	147,287	72,138	62,643	27,241	11,135	320,444	293,315
Total Cash and Short-term Investments	147,366	72,156	62,724	27,260	11,144	320,650	293,663
RECEIVABLES							
Accounts Receivable	16,383	4,988	16,364	843	1,208	39,786	37,620
Investment Accounts Receivable	21,221	11,149	8,904	4,366	1,676	47,316	104,918
Total Receivables	37,604	16,137	25,268	5,209	2,884	87,102	142,538
INVESTMENTS, AT FAIR VALUE							
Core Fixed Income	440,742	234,174	182,408	89,908	36,273	983,505	853,577
Public Equities	937,802	480,717	430,591	198,753	75,830	2,123,693	2,135,606
Specialty Credit	397,175	205,865	159,324	81,695	29,026	873,085	808,132
Private Equities	243,617	136,615	50,110	46,030	20,863	497,235	567,531
Derivatives	992	513	370	207	70	2,152	(368)
Absolute Return	32,189	18,034	11,339	7,529	2,824	71,915	89,591
Real Return	137,421	71,895	47,557	28,781	10,115	295,769	457,897
Opportunistic	72,592	39,547	25,954	16,134	5,958	160,185	59,915
Real Estate	110,334	60,466	34,586	25,435	9,716	240,537	197,044
Total Investments, at Fair Value	2,372,864	1,247,826	942,239	494,472	190,675	5,248,076	5,168,925
Securities Lending Collateral Invested	53,822	28,290	21,249	11,170	4,326	118,857	160,115
Total Assets	2,611,656	1,364,409	1,051,480	538,111	209,029	5,774,685	5,765,241
LIABILITIES							
Accounts Payable	204	62	96	7	9	378	831
Investment Accounts Payable	59,579	30,925	23,637	12,194	4,449	130,784	123,656
Securities Lending Collateral	53,822	28,290	21,249	11,170	4,326	118,857	160,115
Total Liabilities	113,605	59,277	44,982	23,371	8,784	250,019	284,602
Total Fiduciary Net Position Restricted for OPEB	\$2,498,051	\$1,305,132	\$1,006,498	\$514,740	\$200,245	\$5,524,666	\$5,480,639

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

Combining Statement of Changes In Fiduciary Net Position - Insurance Fund

For the fiscal year ending June 30, 2020, with Comparative Totals as of June 30, 2019 (\$ In Thousands)

	CERS	CERS	KERS	KERS	SPRS	KRS Total	KRS Total
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		2020	2019
ADDITIONS							
Employer Contributions	\$124,740	\$56,739	\$170,479	\$4,482	\$13,133	\$369,573	\$387,259
Medicare Drug Reimbursement	4	-	2	1	-	7	9
Insurance Premiums	596	(32)	183	(5)	(12)	730	715
Humana Gain Share Payment	-	-	-	-	-	-	7,516
Retired Re-employed Healthcare	4,528	1,158	4,502	1,294	-	11,482	10,498
Health Insurance Contributions (HB1)	12,959	2,760	6,127	1,100	196	23,142	-
Northern Trust Settlement	-	-	-	-	-	-	21
Employer Cessation Contributions	-	-	25	-	-	25	1,391
Total Contributions	142,827	60,625	181,318	6,872	13,317	404,959	407,409
INVESTMENT INCOME							
From Investing Activities							
Net Appreciation (Depreciation) in FV of Investments	(39,027)	(22,761)	(8,322)	(9,246)	(2,562)	(81,918)	195,957
Interest/Dividends	56,865	29,621	22,803	11,843	4,435	125,567	128,954
Total Investing Activities Income	17,838	6,860	14,481	2,597	1,873	43,649	324,910
Less: Investment Expense	8,717	4,531	3,871	1,940	732	19,791	24,340
Less: Performance Fees	863	301	152	104	64	1,484	13,171
Net Income from Investing Activities	8,258	2,028	10,458	553	1,077	22,374	287,400
From Securities Lending Activities							
Securities Lending Income	1,055	554	438	225	84	2,356	3,913
Less: Securities Lending Borrower Rebates	594	312	246	127	48	1,327	2,862
Less: Securities Lending Agent Fees	63	33	26	13	5	140	157
Net Income from Securities Lending	398	209	166	85	31	889	894
Net Investment Income	8,656	2,237	10,624	638	1,108	23,263	288,294
Total Additions	151,483	62,862	191,942	7,510	14,425	428,222	695,703
DEDUCTIONS							
Healthcare Premiums Subsidies	135,094	81,849	125,006	19,630	14,215	375,794	371,638
Administrative Expenses	903	462	847	123	71	2,406	2,372
Self-Funded Healthcare Costs	3,887	228	1,724	125	22	5,986	6,224
Excise Tax Insurance	6	-	3	-	-	9	9
Total Deductions	139,890	82,539	127,580	19,878	14,308	384,195	380,243
Net Increase (Decrease) in Fiduciary Net Position Restricted for OPEB	11,593	(19,677)	64,362	(12,368)	117	44,027	315,460
Total Fiduciary Net Position Restricted for OPEB							
Beginning of Period	2,486,458	1,324,809	942,136	527,108	200,128	5,480,639	5,165,179
End of Period	\$2,498,051	\$1,305,132	\$1,006,498	\$514,740	\$200,245	\$5,524,666	\$5,480,639
<i>See accompanying notes which are an integral part of these combining financial statements.</i>							

NOTE A. Summary of Significant Accounting Policies

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

Organization

Under the provisions of Kentucky Revised Statute Section 61.645, the KRS Board administers KERS, CERS, and SPRS in accordance with the provisions of Kentucky Revised Statute Sections 16.555, 61.570, and 78.630. KRS' assets are segregated by plan, where each system's assets are used only for the payment of benefits to the members of that plan and a pro rata share of administrative costs.

Under the provisions of Kentucky Revised Statute Section 61.701, the KRS Board administers the KRS Insurance Fund. The statutes provide for a single insurance fund to provide group hospital and medical benefits to retirees drawing a benefit from the three pension funds administered by KRS: (1) KERS; (2) CERS; and, (3) SPRS. The assets of the Insurance Fund are also segregated by plan. The following notes apply to the various funds administered by KRS.

Basis of Accounting

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

Method Used to Value Investments

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

Estimates

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

Equipment

Equipment is valued at historical cost and depreciation is computed utilizing the straight-line method over the estimated useful lives of the assets ranging from three to ten years. Improvements, which increase the useful life of the equipment, are capitalized. Maintenance and repairs are charged as an expense when incurred. The capitalization threshold used in fiscal years 2020 and 2019 was \$3,000 (see Equipment Note J for further information).

Intangible Assets

Intangible assets, currently computer software, are valued at historical cost and amortization is computed utilizing the straight-line method over the estimated useful lives of the assets which is ten years. The capitalization threshold used in fiscal years 2020 and 2019 was \$3,000 (see Intangible Assets Note K for further information).

Contributions Receivable

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

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

Payment of Benefits

Benefits are recorded when paid.

Expense Allocation

KRS administrative expenses are allocated in proportion to the number of total members participating in each plan and direct investment manager expenses are allocated in proportion to the percentage of investment assets held by each plan.

Component Unit

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

KERS was created by the Kentucky General Assembly pursuant to the provisions of Kentucky Revised Statute 61.515. CERS was created by the Kentucky General Assembly pursuant to the provisions of Kentucky Revised Statute 78.520. SPRS was created by the Kentucky General Assembly pursuant to the provisions of Kentucky Revised Statute 16.510. The KRS Insurance Fund was created by the Kentucky General Assembly pursuant to the provisions of Kentucky Revised Statute 61.701. KRS' administrative budget is subject to approval by the Kentucky General Assembly. Employer contribution rates for KERS and SPRS are also subject to legislative approval. Employer contribution rates for CERS are determined by the Board of KRS without further legislative review. The methods used to determine the employer rates for KRS are specified in Kentucky Revised Statute 61.565. Employee contribution rates are set by statute and may be changed only by the Kentucky General Assembly.

Recent Accounting Pronouncements

In June 2017, the Governmental Accounting Standards Board (GASB) issued *Statement Number 87 Leases*. The objective of this Statement is to address government lessee's recognition of lease liabilities, intangible assets, and report amortization expense for using the leased asset, interest expense on the lease liability, and note disclosures about the lease. Another objective of this Statement is to address government lessor's recognition of a lease receivable, deferred inflow, and report lease revenue, interest income, and note disclosures about the lease. Due to COVID-19, *Statement Number 87 Leases* was updated to extend the requirement of this standard to take effect for financial statements starting with the fiscal year that ends June 30, 2022. KRS is evaluating the impact of this Statement to the financial report.

GASB *Statement Number 84 Fiduciary Activities* established the criteria for identifying fiduciary activities of all state and local governments. The Statement also clarified whether and how business type activities should report their fiduciary activities. This Statement became effective for the fiscal year beginning July 1, 2019. KRS meets the criteria as a fiduciary activity. KRS reports the plan's assets, deferred outflows of resources, liabilities, deferred inflows of resources, and fiduciary net position in accordance with Statement Number 67 and Statement Number 74, as applicable.

Prior Year Adjustment

During FY20, it was discovered that KRS' custodian bank had misreported fees for one of the real estate managers. The misreporting was as result of a change in reporting by the manager. Until FY19, the manager reported a quarterly incentive fee that only included the incentive fee for the quarter. In FY19, the manager changed their report and began reporting the cumulative total of incentive fees. The bank nor KRS caught the change and ultimately the overstatement until late FY20. There were also a few manager fees and miscellaneous fees that had not been captured. The overstatement was corrected for the current year and as well as FY19 through a restatement. The restatement resulted in an increase of \$375 thousand for the pension fund and \$149 thousand for the insurance fund in manager fees. Offset with, a reduction of \$7.6 million for the pension fund and \$3.0 million for the insurance fund in incentive fees.

Note B. Plan Descriptions & Contribution Information

CERS Membership Combined

As of June 30

Members	2020			2019		
	Non-Haz	Hazardous	Total	Non-Haz	Hazardous	Total
Retirees and Beneficiaries Receiving Benefits	60,877	8,431	69,308	58,933	8,000	66,933
Inactive Memberships	90,673	2,924	93,597	85,300	2,702	88,002
Active Plan Members	83,458	9,350	92,808	84,632	9,402	94,034
Total	235,008	20,705	255,713	228,865	20,104	248,969
Number of Participating Employers			1,132			1,140

KERS Membership Combined

As of June 30

Members	2020			2019		
	Non-Haz	Hazardous	Total	Non-Haz	Hazardous	Total
Retirees and Beneficiaries Receiving Benefits	43,592	3,242	46,834	42,874	3,146	46,020
Inactive Memberships	48,583	5,838	54,421	46,721	5,094	51,815
Active Plan Members	31,190	4,112	35,302	33,432	3,779	37,211
Total	123,365	13,192	136,557	123,027	12,019	135,046
Number of Participating Employers			335			343

SPRS Membership

As of June 30

Members	2020	2019
Retirees and Beneficiaries Receiving Benefits	1,523	1,484
Inactive Memberships	349	313
Active Plan Members	798	899
Total	2,670	2,696
Number of Participating Employers	1	1

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

Retiree Medical Insurance Coverage As of June 30, 2020

System	Single	Couple/ Family	Parent	Medicare Without Prescription	Medicare With Prescription
CERS Non-Hazardous	8,751	519	210	2,183	27,786
CERS Hazardous	1,731	2,816	425	116	3,911
KERS Non-Hazardous	7,942	666	433	1,089	22,271
KERS Hazardous	677	491	112	82	1,662
SPRS	226	459	85	16	998
Totals	19,327	4,951	1,265	3,486	56,628

Retiree Medical Insurance Coverage As of June 30, 2019

System	Single	Couple/ Family	Parent	Medicare Without Prescription	Medicare With Prescription
CERS Non-Hazardous	8,912	530	214	2,278	26,848
CERS Hazardous	1,746	2,648	430	121	3,658
KERS Non-Hazardous	8,304	700	441	1,141	21,713
KERS Hazardous	699	493	103	83	1,584
SPRS	224	454	77	16	975
Totals	19,885	4,825	1,265	3,639	54,778

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

Pension Plan Descriptions

KRS provides retirement, disability, and death benefits to system members. Retirement benefits may be extended to beneficiaries of members under certain circumstances.

CERS - County Employees Retirement System

This system consists of two plans: Non-Hazardous and Hazardous. Each plan is a cost-sharing, multiple-employer defined benefit pension plan that covers all regular full-time members employed in positions of each participating county, city, and school board, and any additional eligible local agencies electing to participate in CERS.

KERS - Kentucky Employees Retirement System

This system consists of two plans-Non-Hazardous and Hazardous. Each plan is a cost-sharing, multiple-employer defined benefit pension plan that covers all regular full-time members employed in positions of any state department, board, or agency directed by Executive Order to participate in KERS.

SPRS - State Police Retirement System

This system is a single-employer defined benefit pension plan that covers all full-time state troopers employed in positions by the Kentucky State Police.

Cost of Living Adjustment (COLA)

Prior to July 1, 2009, COLAs were provided annually equal to the percentage increase in the annual average of the consumer price index (CPI) for all urban consumers for the most recent calendar year, not to exceed 5% in any plan year. After July 1, 2009, the COLAs were limited to 1.50%. No COLA has been granted since July 1, 2011.

Contributions

The Commonwealth is required to contribute at an actuarially determined rate for KERS and SPRS pensions. Participating employers are required to contribute at an actuarially determined rate for CERS pensions. Per Kentucky Revised Statute Sections KERS 61.565(3), CERS 78.545(33), and SPRS 16.645(18), normal contribution and past service contribution rates shall be determined by the Board on the basis of the last annual valuation preceding July 1 of a new biennium. The Board may amend contribution rates as of the first day of July of the second year of a biennium, if it is determined on the basis of a subsequent actuarial valuation that amended contribution rates are necessary to satisfy requirements determined in accordance with actuarial bases adopted by the Board. However, formal commitment to provide the contributions by the employer is made through the biennial budget for KERS and SPRS.

For the fiscal years ended June 30, 2020 and 2019, participating employers contributed a percentage of each employee's creditable compensation. The actuarially determined rates set by the Board for the fiscal year is a percentage of each employee's creditable compensation. Administrative costs of KRS are financed through employer contributions and investment earnings. See the chart on the following page for the fiscal year employer contribution rates, including the actuarially recommended rates.

TIER 1:

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

TIER 2:

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

TIER 3:

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

Contribution Rate Breakdown by System												
As of June 30												
System	Pension				Insurance				Combined Total			
	Employer Contribution Rates		Actuarially Recommended Rates		Employer Contribution Rates		Actuarially Recommended Rates		Employer Contribution Rates		Actuarially Recommended Rates	
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
CERS Non-Hazardous**	19.30%	16.22%	22.52%	21.84%	4.76%	5.26%	4.76%	6.21%	24.06%	21.48%	27.28%	28.05%
CERS Hazardous**	30.06%	24.87%	36.98%	35.69%	9.52%	10.47%	9.52%	12.17%	39.58%	35.34%	46.50%	47.86%
KERS Non-Hazardous *	41.06%	41.06%	71.03%	71.03%	8.41%	8.41%	12.40%	12.40%	49.47%	49.47%	83.43%	83.43%
KERS Non-Hazardous	71.03%	71.03%	71.03%	71.03%	12.40%	12.40%	12.40%	12.40%	83.43%	83.43%	83.43%	83.43%
KERS Hazardous	34.39%	34.39%	34.39%	34.39%	2.46%	2.46%	2.46%	2.46%	36.85%	36.85%	36.85%	36.85%
SPRS	119.05%	119.05%	119.05%	119.05%	27.23%	27.23%	27.23%	27.23%	146.28%	146.28%	146.28%	146.28%

* House Bill 265 passed during the 2018 legislative session reduced the employer contribution rate for fiscal year 2019 (same as fiscal year 2018 rate) for Regional Mental Health/Mental Retardation Boards, Local and District Health Departments, State Universities, Community Colleges and any agency eligible to voluntarily cease participating in the KERS. The July 2019 Special Session HB 1 continued the reduced KERS Non-Hazardous employer contribution rate for fiscal year 2020 (same as fiscal year 2019) for the agencies listed. The legislated reduced rates have been continued for fiscal year 2021 by the passage of House Bill 352 in the 2020 regular session.

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

Tier 3 Plan

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

Upside Sharing Interest

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

The chart below shows the interest calculated on the members’ balances as of June 30, 2019, and credited to each member’s account on June 30, 2020.

(A-B) = C x 75% = D then B + D = Interest (\$ in Thousands)						
	A	B	C	D		
System	5-Year Geometric Average Return	Less Guarantee Rate of 4%	Upside Sharing Interest	Upside Sharing Interest X 75% = Upside Gain	Interest Rate Earned (4% + Upside)	Total Interest Credited to Member Accounts
CERS Non-Hazardous	5.29%	4.00%	1.29%	0.97%	4.97%	\$9,203
CERS Hazardous	5.53%	4.00%	1.53%	1.15%	5.15%	\$2,791
KERS Non-Hazardous	4.76%	4.00%	0.76%	0.57%	4.57%	\$4,213
KERS Hazardous	5.42%	4.00%	1.42%	1.07%	5.07%	\$1,323
SPRS	5.13%	4.00%	1.13%	0.85%	4.85%	\$175

Insurance Plan Description

KRS Insurance Fund was established to provide hospital and medical insurance for eligible members receiving benefits from CERS, KERS, and SPRS. The eligible non-Medicare retirees are covered by the Department of Employee Insurance (DEI) plans. The Board contracts with Humana to provide health care benefits to the eligible Medicare retirees through a Medicare Advantage Plan. KRS submits the premium payments to DEI and Humana. The Insurance Fund pays a prescribed contribution for whole or partial payment of required premiums to purchase hospital and medical insurance. For the fiscal year ended June 30, 2020, insurance premiums withheld from benefit payments for KRS' members were \$24.5 million and \$3.0 million for CERS Non-Hazardous and Hazardous, respectively; \$20.9 million and \$1.3 million for KERS Non-Hazardous and Hazardous, respectively; and, \$292,556 for SPRS. For fiscal year 2019, insurance premiums withheld from benefit payments for KRS' members were \$24.3 million and \$2.8 million for CERS Non-Hazardous and Hazardous, respectively; \$21.1 million and \$1.3 million for KERS Non-Hazardous and Hazardous, respectively; and, \$286,479 for SPRS.

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

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

Portion Paid by Insurance Fund As of June 30, 2020	
Years of Service	Paid by Insurance Fund (%)
20+ years	100.00%
15-19 years	75.00%
10-14 years	50.00%
4-9 years	25.00%
Less than 4 years	0.00%

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

Dollar Contribution for Fiscal Year 2020 For Member participation date on or after July 1, 2003	
System	(in Whole \$)
CERS Non-Hazardous	\$13.58
CERS Hazardous	\$20.37
KERS Non-Hazardous	\$13.58
KERS Hazardous	\$20.37
SPRS	\$20.37

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

The provisions of GASB Statement No. 28 Accounting and Financial Reporting for Securities Lending Transactions require that cash received as collateral on securities lending transactions and investments made with that cash be reported as assets on the financial statements. In accordance with GASB No. 28, KRS classifies certain other investments, not related to the securities lending program as short-term. Cash and short-term investments consist of the following:

Cash, Short-Term Investments, & Securities Lending Collateral		
As of June 30 (\$ in Thousands)		
CERS - Pension		
	2020	2019
Cash	\$290	\$873
Short-Term Investments	634,757	355,251
Securities Lending Collateral Invested	175,229	256,006
Total	\$810,276	\$612,130
KERS - Pension		
	2020	2019
Cash	\$263	\$724
Short-Term Investments	277,420	246,534
Securities Lending Collateral Invested	55,624	76,308
Total	\$333,307	\$323,566
SPRS - Pension		
	2020	2019
Cash	\$55	\$143
Short-Term Investments	23,090	22,069
Securities Lending Collateral Invested	5,302	7,465
Total	\$28,447	\$29,677
KRS - Insurance Fund		
	2020	2019
Cash	\$206	\$348
Short-Term Investments	320,444	293,315
Securities Lending Collateral Invested	118,857	160,115
Total	\$439,507	\$453,778

Note D. Investments

Kentucky Revised Statute 61.650 grants the responsibility for the investment of plan assets to the KRS Board. In addition, KRS 61.645 requires six (6) members of the board shall have at least ten (10) years of investment experience. The Board established Investment Committee is specifically charged with the oversight and investment of plan assets. The Investment Committee recognizes their duty to invest the funds in accordance with the “Prudent Person Rule” set forth in Kentucky Revised Statute 61.650 and manage those funds consistent with the long-term nature of KRS. The Investment Committee has adopted an Investment Policy Statement (IPS) that contains guidelines and restrictions for deposits and investments. A copy of the IPS can be found on the KRS website. By statute, all investments are to be registered and held in the name of KRS. The IPS contains the specific guidelines for the investment of Pension and Insurance assets. Additionally, the Investment Committee establishes specific investment guidelines that are summarized below and are included in the Investment Management Agreement (IMA) for each investment management firm.

Growth

Equity Investments

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

Specialty Credit Investments

The Specialty Credit accounts may include, but are not limited to, the following types of securities and investments: non-investment grade U.S. corporate credit including both bonds and bank loans; non-investment grade non-U.S. corporate credit including bonds and bank loans; private debt; municipal bonds; non-U.S. sovereign debt; mortgages, including residential mortgage-backed securities; commercial mortgage backed securities and whole loans; asset-backed securities and emerging market debt (EMD), including both sovereign EMD and corporate EMD; and asset class relevant ETFs.

Private Equity

Subject to the specific approval of the Investment Committee, Private Equity investments may be made to diversify the Private Equity portfolio. The Board may invest in, but not limited to and without limitation: venture capital and Private Equity investments. The Investment Committee believes Private Equity investments have the potential to generate substantial income, but may have a higher degree of risk. It is important to note that KERS and SPRS have not made any new investments in Private Equity since 2010 and 2016, respectively, due to the lack of resources available to invest in long-term investments as a result of the underfunding of the plans. Investments may be made in real estate mortgages on a direct basis or in the form of mortgage pool instruments.

Liquidity

Core Fixed Income

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

Cash Equivalent Securities

The following Short-Term investment vehicles are considered acceptable: publicly traded investment grade corporate bonds; variable rate demand notes; government and agency bonds; mortgages; municipal bonds; Short Term Investment Funds (STIFs); money market funds or instruments (including, but not limited to, certificates of deposit, bank notes, deposit notes, bankers’ acceptances and commercial paper); and repurchase agreements relating to the above instruments. Instruments may be selected from among those having an investment grade rating at the

time of purchase by at least one recognized bond rating service. In cases where the instrument has a split rating, the lower of the two ratings is used.

Repurchase agreements shall be deemed to have a maturity equal to the period remaining until the date on which the repurchase of the underlying securities is scheduled to occur. Variable rate securities shall be deemed to have a maturity equal to the time left until the next interest rate reset occurs, but in no case will any security have a stated final maturity of more than three years.

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

Diversifying

Real Estate/Real Return/Absolute Return/Oppportunistic Investments

Subject to the specific approval of the Investment Committee, investments may be made to create a diversified portfolio of alternative investments. The Board may invest in real estate or alternative investments including, but not limited to and without limitation: real return and absolute return investments. The Investment Committee believes alternative investments have the potential to generate substantial income, but may have a higher degree of risk. Investments may be made in real estate mortgages on a direct basis or in the form of mortgage pool instruments.

Investment Expenses

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

Derivatives

Derivative instruments are financial contracts that have various effective dates and maturity dates and whose values depend on the values of one or more underlying assets, reference rates, or financial indices. Investments may be made in derivative securities or strategies which make use of derivative instruments, only if such investments do not cause the portfolio to be in any way leveraged beyond a 100% invested position. Examples of such derivatives include, but are not limited to the following securities: foreign currency forward contracts; collateralized mortgage obligations; treasury inflation protected securities (TIPS); futures; options; and swaps. Investments in derivative securities are subject to large or unanticipated changes in duration or cash flows and can be interest only, principal only, inverse floater or structured note securities. These are permitted only to the extent that they are authorized in a contract or an alternative investment offering memorandum of agreement.

Investments in securities such as collateralized mortgage obligations and planned amortization class issues are allowed if, in the judgment of the investment manager, they are not expected to be subject to large or unanticipated changes in duration or cash flows. Investment managers may make use of derivative securities for defensive or hedging purposes. Any derivative security shall be sufficiently liquid so that it can be expected to be sold at, or near, its most recently quoted market price.

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

In accordance with GASB *Statement No. 53, Accounting and Financial Reporting for Derivative Instruments*, KRS provides additional disclosure regarding its derivatives. The charts included represent the derivatives by types as of June 30, 2020. The chart shows the change in fair value of each of the derivatives types as well as the current fair value and notional value. The notional value is the reference amount of the underlying asset times its current spot

price. KRS holds investments in options, commitments, futures, and forward foreign exchange contracts. KRS is exposed to counterparty risk with the foreign exchange contracts that are held.

Derivative Instruments

As of June 30, 2020 (\$ in Thousands)

Pension					
Derivatives (by Type)	Net Appreciation (Depreciation) in Fair Value for the Fiscal year Ended June 30, 2020	Classification	Fair Value	Notional Value	
FX Spots and Forwards	\$486	Investment	\$6,433	\$-	
Futures	484	Investment	484	304,676	
Commits and Options	(47)	Investment	387	-	
Swaps	3	Investment	162	-	
Insurance					
Derivatives (by Type)	Net Appreciation (Depreciation) in Fair Value for the Fiscal year Ended June 30, 2020	Classification	Fair Value	Notional Value	
FX Spots and Forwards	\$208	Investment	\$1,799	\$-	
Futures	171	Investment	172	96,491	
Commits and Options	(12)	Investment	150	-	
Swaps	9	Investment	31	-	

Derivative Instruments Subject to Counterparty Credit Risk

As of June 30, 2020

Pension		
Counterparty	Percentage of Net Exposure	S & P Ratings
Derivative Instruments - Pension Fund		
Australia & New Zealand Banking Group Ltd	0.69%	AA-
BNP Paribas SA	0.29%	A+
Bank of America Corp	2.77%	A-
The Bank of New York Mellon Corp	1.89%	A
Brown Brothers Harriman & Co	0.25%	
Canadian Imperial bank of Commerce	13.29%	A+
Citigroup Inc	12.51%	BBB+
Credit Suisse Group AG	1.16%	BBB+
The Goldman Sachs Group Inc	4.60%	BBB+
HSBS Holding PLC	6.28%	A-
JPMorgan Chase & Co	20.77%	A-
Morgan Stanley	8.84%	BBB+
Royal Bank of Canada	8.25%	AA-
Standard Chartered PLC	0.88%	BBB+
State Street Corp	9.73%	A
The Toronto-Dominion Bank	3.15%	AA-
UBS Group AG	4.60%	A-
Westpac Banking Corp	0.05%	AA-
TOTAL	100.00%	

Derivative Instruments Subject to Counterparty Credit Risk As of June 30, 2020

Insurance		
Counterparty	Percentage of Net Exposure	S & P Ratings
Derivative Instruments - Insurance Fund		
Australia & New Zealand Banking Group Ltd	0.77%	AA-
BNP Paribas SA	1.10%	A+
Bank of America Corp	2.95%	A-
The Bank of New York Mellon Corp	1.97%	A
Brown Brothers Harriman & Co	0.36%	
Canadian Imperial bank of Commerce	13.31%	A+
Citigroup Inc	12.60%	BBB+
Credit Suisse Group AG	1.23%	BBB+
The Goldman Sachs Group Inc	4.53%	BBB+
HSBS Holding PLC	4.61%	A-
JPMorgan Chase & Co	20.81%	A-
Morgan Stanley	8.71%	BBB+
Royal Bank of Canada	8.17%	AA-
Standard Chartered PLC	0.88%	BBB+
State Street Corp	9.66%	A
The Toronto-Dominion Bank	3.35%	AA-
UBS Group AG	4.94%	A-
Westpac Banking Corp	0.05%	AA-
TOTAL	100.00%	

Custodial Credit Risk for Deposits

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

Custodial Credit Risk for Deposits As of June 30 (\$ in Thousands)		
	2020	2019
Pension Funds at JPM Chase	\$2,055	\$3,620
Insurance Fund at JPM Chase	210	351
Clearing Account at JPM Chase	4,121	1,420
Excess Benefit Account at JPM Chase	-	11

Custodial Credit Risk for Investments

Custodial credit risk for investments is the risk that, in the event of the failure of the counterparty to a transaction, a government will not be able to recover the value of an investment or collateral securities that are in the possession of an outside party. As of June 30, 2020, the currencies in the chart below were uninsured and unregistered, with securities held by the counterparty or by its trust department or agent but not in KRS' name. These funds are cash held by KRS' Global Managers and consist of various currencies.

Custodial Credit Risk for Investments As of June 30 (\$ in Thousands)		
	2020	2019
Pension Funds Foreign Currency	\$1,545,920	\$1,430,724
Insurance Fund Foreign Currency	678,433	615,931

Pension Fund Securities

Pension Funds Investment Summary As of June 30 (\$ in Thousands)

Type	2020	2019
Core Fixed Income	\$2,387,690	\$2,315,962
Public Equities	4,780,088	4,817,428
Private Equities	1,051,884	1,180,776
Specialty Credit	1,998,223	1,968,701
Derivatives	7,466	(912)
Absolute Return	175,390	218,571
Real Return	689,769	1,078,889
Opportunistic	314,575	117,663
Real Estate	573,313	471,449
Short-Term Investments	935,267	623,854
Accounts Receivable (Payable), Net	(189,409)	(46,647)
Total	\$12,724,256	\$12,745,734

Note: Differences due to rounding.

Insurance Fund Securities

Insurance Fund Investment Summary

As of June 30 (\$ in Thousands)

Type	2020	2019
Core Fixed Income	\$983,505	\$853,577
Public Equities	2,123,693	2,135,606
Private Equities	497,235	567,531
Specialty Credit	873,085	808,132
Derivatives	2,152	(368)
Absolute Return	71,915	89,591
Real Return	295,769	457,897
Opportunistic	160,185	59,915
Real Estate	240,537	197,044
Short-Term Investments	320,444	293,315
Accounts Receivable (Payable), Net	(83,467)	(18,738)
Total	\$5,485,053	\$5,443,502

Note: Differences due to rounding.

Credit Risk Debt Securities

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

- Bonds, notes, or other obligations issued or guaranteed by the U.S. Government, its agencies or instrumentalities are permissible investments and may be held without restrictions.
- Fixed Income investments, which include both Core Fixed Income and Specialty Credit, will be similar in type to those securities found in the KRS Fixed Income and Specialty Credit benchmarks and the characteristics of the KRS Fixed Income and Specialty Credit portfolios will be similar to the KRS Fixed Income and Specialty Credit benchmarks. The duration of the total Fixed Income and Specialty Credit portfolio shall not deviate from the KRS Fixed Income and Specialty Credit by more than 25%.
- The duration of TIPS portfolio shall not deviate from the KRS Fixed Income Index by more than 10%.
- The amount invested in the debt of a single corporation shall not exceed 5% of the total market value of KRS' assets.
- No public Fixed Income manager shall invest more than 5% of the market value of assets held in any single issue Short-Term instrument with the exception of U.S. Government issued, guaranteed or agency obligations.

As of June 30, 2020, the KRS Pension portfolio had \$936.5 million compared to \$784.5 million in the prior year in debt securities rated below BBB- and does not include unrated (NR) securities. The government agencies in which KRS invested have credit ratings of AA+ or above.

Pension Funds Debt Securities		
As of June 30 (\$ in Thousands)		
Rating	2020	2019
AAA	\$357,788	\$446,486
AA+	8,434	38,581
AA	40,657	44,001
AA-	14,746	66,260
A+	44,240	106,908
A	41,874	95,168
A-	139,867	184,721
BBB+	261,626	221,198
BBB	288,167	278,917
BBB-	336,979	270,311
BB+	173,241	95,863
BB	174,628	137,041
BB-	152,747	149,966
B+	114,527	114,175
B	146,837	151,094
B-	93,963	89,460
CCC+	60,605	33,269
CCC	13,199	10,642
CCC-	1,333	247
CC	2,622	1,834
C	213	858
D	2,624	63
NR	1,000,895	889,886
Total Credit Risk Debt Securities	3,471,812	3,426,949
Government Agencies	45,623	5,404
Government Mortgage-Backed Securities	242,167	347,456
Government Issued Commercial Mortgage Backed	417,533	20,607
Government Collateralized Mortgage Obligations	22,056	6,507
Government Bonds	186,722	477,740
Total	\$4,385,913	\$4,284,663
<i>Note: These ratings are based on Standard & Poor's (S&P) Global Ratings. Where S&P ratings are unavailable, equivalent Fitch and Moody's Ratings are used as proxies.</i>		
<i>Note: Differences due to rounding.</i>		
<i>Note: Government Agencies, Government Mortgage-Backed Securities, Government Issued Commercial Mortgage Backed and Government Bonds are highly rated securities since they are backed by the US Government.</i>		
<i>Note: The NR reported above consist of pooled investment funds, cash, and derivatives, which do not carry a rating.</i>		

As of June 30, 2020, the KRS Insurance portfolio had \$389.9 million compared to \$256.2 million in the prior year in debt securities rated below BBB- and does not include NR securities. The government agencies in which KRS invested have credit ratings of AA+ or above.

Insurance Fund Debt Securities As of June 30 (\$ in Thousands)

Rating	2020	2019
AAA	\$130,546	\$32,110
AA+	5,442	6,637
AA	16,106	8,965
AA-	5,880	18,548
A+	17,892	34,863
A	18,116	30,251
A-	48,271	62,597
BBB+	107,705	75,670
BBB	117,578	94,683
BBB-	136,714	91,633
BB+	71,578	32,884
BB	69,327	36,169
BB-	61,378	48,903
B+	47,947	40,393
B	65,547	54,768
B-	41,749	29,395
CCC+	24,749	10,441
CCC	5,005	2,565
CCC-	501	18
CC	511	592
C	-	28
D	1,622	-
NR	455,627	620,888
Total Credit Risk Debt	1,449,791	1,333,001
Government Agencies	18,074	2,054
Government Mortgage-Backed Securities	93,882	7,916
Government Issued Commercial Mortgage Backed	175,153	131,698
Government Collateralized Mortgage Obligations	12,509	2,517
Government Bonds	107,181	184,523
Total	\$1,856,590	\$1,661,709

Note: These ratings are based on Standard & Poor's (S&P) Global Ratings. Where S&P ratings are unavailable, equivalent Fitch and Moody's Ratings are used as proxies.

Note: Differences due to rounding.

Note: Government Agencies, Government Mortgage-Backed Securities, Government Issued Commercial Mortgage Backed and Government Bonds are highly rated securities since they are backed by the US Government.

Note: The NR reported above consist of pooled investment funds, cash, and derivatives, which do not carry a rating.

Concentration of Credit Risk Debt Securities

Concentration of credit risk is the risk of loss attributed to the magnitude of an entity's exposure in a single issuer. The total debt securities portfolio is managed using the following general guidelines adopted by the KRS Board: bonds, notes, or other obligations issued or guaranteed by the U.S. Government, its agencies, or instrumentalities are permissible investments and may be held without restrictions. Debt obligations of any single U.S. corporation is limited to a maximum of 5% of the total portfolio at market value.

Interest Rate Risk

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

Below are the Pension Fund market values and modified durations for the combined debt securities. The modified duration in fiscal year 2020 was 2.76 compared to 3.40 in fiscal year 2019.

GASB 40 - Interest Rate Risk - Modified Duration for the Pension Funds As of June 30 (\$ in Thousands)

TYPE	2020	Weighted Avg Modified Duration	2019	Weighted Avg Modified Duration
Asset Backed Securities	\$453,003	1.87	\$284,401	1.93
Financial Institutions	522,920	3.62	490,325	3.24
Collateralized Mortgage Obligations	22,056	3.21	19,358	2.47
Commercial Mortgage Backed Securities	417,533	4.04	296,000	4.40
Corporate Bonds - Industrial	1,408,111	3.77	1,204,917	4.19
Corporate Bonds - Utilities	112,013	4.28	116,072	4.28
Agencies	45,623	4.05	80,187	3.89
Government Bonds - Sovereign Debt	19,189	6.98	35,785	5.57
Mortgage Back Securities Pass-through - Not CMO's	242,167	3.13	349,584	4.10
Local Authorities - Municipal Bonds	11,127	6.01	23,829	4.46
Supranational - Multi-National Bonds	5,452	1.14	52,361	2.99
Treasuries	186,722	5.08	551,059	5.60
Unclassified	10,650	6.41		
Other	929,347	0.10	780,785	0.22
Total	\$4,385,913	2.76	\$4,284,663	3.40

NOTE: For fiscal year 2019 Unclassified and Other were combined.

Below are the Insurance Fund market values and modified durations for the combined debt securities. The modified duration in fiscal year 2020 was 2.83 compared to 3.25 in fiscal year 2019.

GASB 40 - Interest Rate Risk - Modified Duration for the Insurance Fund As of June 30 (\$ in Thousands)

TYPE	2020	Weighted Avg Modified Duration	2019	Weighted Avg Modified Duration
Asset Backed Securities	\$180,777	1.86	\$111,108	1.83
Financial Institutions	218,033	3.65	178,014	3.24
Collateralized Mortgage Obligations	12,509	2.88	8,670	2.62
Commercial Mortgage Backed Securities	175,153	4.06	129,999	4.42
Corporate Bonds - Industrial	574,169	3.72	434,898	3.98
Corporate Bonds - Utilities	46,910	4.16	42,339	4.18
Agencies	18,074	4.38	28,962	3.94
Government Bonds - Sovereign Debt	9,581	6.43	13,342	5.73
Mortgage Back Securities Pass-through - Not CMO's	93,882	3.12	132,526	4.11
Local Authorities - Municipal Bonds	4,552	6.15	9,033	4.49
Supranational - Multi-National Bonds	2,318	1.15	18,500	2.98
Treasuries	107,181	5.58	213,739	5.65
Unclassified	4,506	6.17		
Other	408,945	0.07	340,576	5.63
Total	\$1,856,590	2.83	\$1,661,706	3.25

NOTE: For fiscal year 2019 Unclassified and Other were combined.

Foreign Currency Risk

Foreign currency risk is the risk that occurs if exchange rates adversely affect the value of a non-U.S. dollar based investment or deposit within the KRS portfolio. KRS' currency risk exposure, or exchange rate risk, primarily resides with KRS' Non-U.S. equity holdings, but also affects other asset classes. KRS does not have a formal policy to limit foreign currency risk; however, some individual managers are given the latitude to hedge some currency exposures. All foreign currency transactions are classified as Short-Term Investments. All gains and losses associated with these transactions are recorded in the Net Appreciation (Depreciation) in Fair Value of Investments on the combining financial statements.

GASB 40: Foreign Currency Risk for the Pension Funds As of June 30 (\$ in Thousands)

	2020	2019
Australian Dollar	\$36,170	\$50,615
Brazilian Real	28,474	36,207
Canadian Dollar	26,478	71,115
Chilean Peso	-	798
Columbian Peso	-	5,860
Czech Koruna	2,857	1
Danish Krone	52,282	24,456
Egyptian Pound	1,082	1,174
Euro	574,694	468,834
Hong Kong Dollar	138,988	85,806
Hungarian Forint	6,252	-
Indian Rupee	40,705	13,751
Indonesian Rupiah	19,558	28,497
Israeli Shekel	4,399	9,610
Japanese Yen	165,382	185,616
Kenyan Shilling	1,419	-
Malaysian Ringgit	6,391	6,592
Mexican Peso	2,343	(2,901)
New Taiwan Dollar	38,537	16,070
New Zealand Dollar	2,963	3,749
Norwegian Krone	10,525	6,418
Philippine Peso	862	9,830
Polish Zloty	1,940	-
Pound Sterling	162,880	207,901
Romanian Leu	1,152	-
Russian Ruble	19	5
Singapore Dollar	5,777	19,177
South African Rand	6,416	3,363
South Korean Won	55,698	33,190
Swedish Krona	37,414	55,282
Swiss Franc	88,918	72,773
Thai Bhat	11,123	11,570
Turkish Lira	11,510	5,365
UAE Dirham	2,712	-
Total Foreign Investment Securities	1,545,920	1,430,724
U.S. Dollar	11,178,336	11,315,010
Total Investment Securities	\$12,724,256	\$12,745,734

Note: Differences due to rounding.

GASB 40: Foreign Currency Risk for the Insurance Fund As of June 30 (\$ in Thousands)

	2020	2019
Australian Dollar	\$15,280	\$21,721
Brazilian Real	12,760	15,323
Canadian Dollar	11,291	30,999
Chilean Peso	-	319
Columbian Peso	-	2,511
Czech Koruna	1,345	-
Danish Krone	23,192	10,784
Egyptian Pound	375	407
Euro	253,147	201,301
Hong Kong Dollar	61,962	37,232
Hungarian Forint	3,052	-
Indian Rupee	17,657	5,826
Indonesian Rupiah	8,305	12,021
Israeli Shekel	1,922	4,007
Japanese Yen	74,009	81,435
Kenyan Shilling	643	-
Malaysian Ringgit	2,862	2,689
Mexican Peso	1,057	(1,207)
New Taiwan Dollar	13,231	6,548
New Zealand Dollar	1,330	1,522
Norwegian Krone	4,526	2,863
Philippine Peso	370	4,096
Polish Zloty	876	-
Pound Sterling	71,797	89,626
Romanian Leu	520	-
Russian Ruble	8	3
Singapore Dollar	2,982	8,172
South African Rand	2,890	1,482
South Korean Won	24,909	13,794
Swedish Krona	16,814	24,169
Swiss Franc	39,095	31,751
Thai Bhat	4,875	4,704
Turkish Lira	5,361	1,833
Total Foreign Investment Securities	678,443	615,931
U.S. Dollar	4,806,610	4,827,571
Total Investment Securities	\$5,485,053	\$5,443,502

Note: Differences due to rounding

GASB 72 - Fair Value Measurement and Applications

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

KRS defined the Fair Value Hierarchy and Levels as follows:

Level 1

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

Level 2

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

Level 3

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

Net Asset Value (NAV)

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

Fair Value Measurements and Application (GASB 72) Pension Funds As of June 30, 2020 (\$ in Thousands)

Asset Type	Fair Value	Level		
		1	2	3
Public Equity				
Emerging Markets	\$265,805	\$263,287	\$-	\$2,518
US Equity	2,426,639	2,412,440	-	14,199
Non-US Equity	2,124,988	1,317,906	-	807,082
Total Public Equity	4,817,432	3,993,633	-	823,799
Core Fixed Income				
Agencies	7,385	-	7,385	-
Asset-Backed	318,689	-	318,689	-
Bank & Finance	604,118	975	353,886	249,257
Cash & Cash Equivalent	609,380	-	34,644	574,736
Collateralized Mortgage	883	-	883	-
Commercial Mortgage	99,961	-	99,961	-
Healthcare	92,225	-	92,225	-
Insurance	17,967	-	17,967	-
Municipals	5,227	-	5,227	-
Sovereign Debt	59,427	-	59,427	-
US Corporate	1,852,344	9,594	1,841,065	1,685
US Government	507,603	252,350	255,253	-
Total Fixed Income	4,175,209	262,919	3,086,612	825,678
Derivatives				
Futures	484	484	-	-
Options	387	-	387	-
Swaps	162	-	162	-
Total Derivatives	1,033	484	549	-
Other				
Real Estate	158,010	-	-	158,010
Real Return	529,422	373,128	156,016	278
Total Other	687,432	373,128	156,016	158,288
Total Investments at Fair Value	9,681,106	4,630,163	3,243,177	1,807,765
Investments Measured at NAV				
Absolute Return	175,389	-	-	175,389
Specialty Credit	777,177	-	-	777,177
Opportunistic	314,576	-	-	314,576
Private Equity	1,035,383	211	-	1,035,172
Real Estate	566,014	-	-	566,014
Real Return	195,748	-	-	195,748
Total Investments Measured at NAV	3,064,287	211	-	3,064,076
Cash and Accruals	(21,137)			
Total Investments	\$12,724,256	\$4,630,374	\$3,243,177	\$4,871,840

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

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

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

Fair Value Measurements and Application (GASB 72) Pension Funds As of June 30, 2020 (\$ in Thousands)

Asset Type	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Absolute Return ⁽¹⁾	\$175,389	\$-	Daily - Quarterly	2 days - 60 Days
Specialty Credit ⁽²⁾	777,177	588,058	Daily - Quarterly	90 Days
Opportunistic ⁽³⁾	314,576	-	Annually	
Real Estate ⁽⁴⁾	566,014	259,775		
Real Return ⁽⁵⁾	195,748	32,422	Daily	30 - 60 Days
Private Equity ⁽⁶⁾	1,035,383	184,147		
Total Investments Measured at NAV	\$3,064,287	\$1,064,402		

⁽¹⁾ This type includes multiple hedge fund and fund-of-fund investments that invest in various strategies to diversify risks and reduce volatility. As of September 30, 2020 all of these investments have been redeemed and are in the process of being liquidated.

⁽²⁾ This type includes 13 high yield specialty credit managers with multiple strategies. These managers may invest in U.S. or non-U.S. investment grade corporate credit, U.S. or non U.S. non-investment grade corporate credit, including both bonds and bank loans, municipal bonds, non-U.S. sovereign debt, mortgages including residential mortgage backed securities, commercial mortgage backed securities and whole loans, asset-backed securities and emerging market debt.

⁽³⁾ This type includes investments that are intended to provide favorable risk-adjusted returns while maintaining low correlation with equity and fixed income markets. Currently, we have 1 manager in this category that is pursuing a regulatory capital relief strategy.

⁽⁴⁾ This type includes 12 real estate funds that invest primarily in U.S. commercial real estate; however, there is one manager who invests solely in non-U.S. commercial real estate. The fair value of the investments have been determined using the NAV per share of the Plan's ownership interest and in the partners' capital. Distributions from each fund will be received as the underlying investments of the funds are liquidated. It is expected that the funds will be liquidated over the next 7 to 10 years. Because it is not probable that any individual investment will be sold, the fair value of each individual investment has been determined using the NAV per share of the Plan's ownership interest in the partners' capital. Due to restrictions in the contract, redemptions are not likely until the assets of the fund are liquidated.

⁽⁵⁾ This type includes 10 real return managers that invest in multiple strategies such as infrastructure, agriculture, royalties, commodities, and natural resources. These investments are intended to provide both favorable risk-adjusted returns and correlation with inflation to help with the hedging of inflation for the broader plan.

⁽⁶⁾ This type includes 37 managers with multiple strategies. These investments cannot be redeemed with the funds. Instead, the nature of the investments in this type is that distributions are received through the liquidation of the underlying assets of the fund. It is expected that each fund will remain invested for a period of 5 to 10 years. It is probable that the all of the investments in this type will be sold at an amount different from the NAV per share of the Plan's ownership interest in partners' capital. Therefore, the fair values of the investment in this asset class have been determined using recent observable transaction information.

**Fair Value Measurements and Application (GASB 72) Insurance Fund
As of June 30, 2020 (\$ in Thousands)**

Asset Type	Fair Value	Level		
		1	2	3
Public Equity				
Emerging Markets	\$118,091	\$116,691	\$-	\$1,400
US Equity	1,079,569	1,073,266	-	6,303
Non-US Equity	943,906	580,011	-	363,895
Total Public Equity	2,141,566	1,769,968	-	371,598
Core Fixed Income				
Agencies	3,094	-	3,094	-
Asset-Backed	128,539	-	128,539	-
Bank & Finance	265,114	408	137,029	127,677
Cash & Cash Equivalent	206,639	-	11,523	195,116
Collateralized Mortgage	301	-	301	-
Commercial Mortgage	34,959	-	34,959	-
Healthcare	37,809	-	37,809	-
Insurance	8,194	-	8,194	-
Municipals	2,138	-	2,138	-
Sovereign Debt	26,213	-	26,213	-
US Corporate	753,620	4,121	748,740	759
US Government	195,319	96,936	98,383	-
Total Fixed Income	1,661,939	101,465	1,236,922	323,552
Derivatives				
Futures	171	171	-	-
Options	150	-	150	-
Swaps	31	-	31	-
Total Derivatives	352	171	181	-
Other				
Real Estate	75,177	-	-	75,177
Real Return	224,620	156,539	67,992	89
Total Other	299,797	156,539	67,992	75,266
Total investments by fair value level	4,103,654	2,028,143	1,305,095	770,416
Investments Measured at NAV				
Absolute Return	71,915	-	-	71,915
Specialty Credit	334,424	-	-	334,424
Opportunistic	160,184	-	-	160,184
Private Equity	488,985	184	-	488,801
Real Estate	240,536	-	-	240,536
Real Return	87,507	-	-	87,507
Total Investments Measured at NAV	1,383,551	184	-	1,383,367
Cash & Accruals	(2,152)			
Total Investments	\$5,485,053	\$2,028,327	\$1,305,095	\$2,153,783

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

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

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

Fair Value Measurements and Application (GASB 72) Insurance Fund As of June 30, 2020 (\$ in Thousands)

Asset Type	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Absolute Return ⁽¹⁾	\$71,915	\$-	Daily - Quarterly	2 days - 60 Days
Specialty Credit ⁽²⁾	334,424	258,510	Daily - Quarterly	90 Days
Opportunistic ⁽³⁾	160,184	-	Annually	
Real Estate ⁽⁴⁾	240,536	109,821		
Real Return ⁽⁵⁾	87,507	12,969	Daily	30 - 60 Days
Private Equity ⁽⁶⁾	488,985	89,198		
Total Investments Measured at NAV	\$1,383,551	\$470,498		

⁽¹⁾ This type includes multiple hedge fund and fund-of-fund investments that invest in various strategies to diversify risks and reduce volatility. As of September 30, 2020 all of these investments have been redeemed and are in the process of being liquidated.

⁽²⁾ This type includes 13 high yield specialty credit managers with multiple strategies. These managers may invest in U.S. or non-U.S. investment grade corporate credit, U.S. or non U.S. non-investment grade corporate credit, including both bonds and bank loans, municipal bonds, non-U.S. sovereign debt, mortgages including residential mortgage backed securities, commercial mortgage backed securities and whole loans, asset-backed securities and emerging market debt.

⁽³⁾ This type includes investments that are intended to provide favorable risk-adjusted returns while maintaining low correlation with equity and fixed income markets. Currently, we have 1 manager in this category that is pursuing a regulatory capital relief strategy.

⁽⁴⁾ This type includes 12 real estate funds that invest primarily in U.S. commercial real estate; however, there is one manager who invests solely in non-U.S. commercial real estate. The fair value of the investments have been determined using the NAV per share of the Plan's ownership interest and in the partners' capital. Distributions from each fund will be received as the underlying investments of the funds are liquidated. It is expected that the funds will be liquidated over the next 7 to 10 years. Because it is not probable that any individual investment will be sold, the fair value of each individual investment has been determined using the NAV per share of the Plan's ownership interest in the partners' capital. Due to restrictions in the contract, redemptions are not likely until the assets of the fund are liquidated.

⁽⁵⁾ This type includes 10 real return managers that invest in multiple strategies such as infrastructure, agriculture, royalties, commodities, and natural resources. These investments are intended to provide both favorable risk-adjusted returns and correlation with inflation to help with the hedging of inflation for the broader plan.

⁽⁶⁾ This type includes 41 managers with multiple strategies. These investments cannot be redeemed with the funds. Instead, the nature of the investments in this type is that distributions are received through the liquidation of the underlying assets of the fund. It is expected that each fund will remain invested for a period of 5 to 10 years. It is probable that the all of the investments in this type will be sold at an amount different from the NAV per share of the Plan's ownership interest in partners' capital. Therefore, the fair values of the investment in this asset class have been determined using recent observable transaction information.

Money-Weighted Rates of Return

In accordance with GASB *Statement No. 67, Financial Reporting for Pension Plans*, and GASB *Statement No. 74, Financial Reporting for Post-Employment Benefit Plans Other than Pension Plans*, KRS provides this additional disclosure regarding its money-weighted rate of return for the Pension and Insurance Funds for the periods of June 30, 2019 through June 30, 2020. The money-weighted rate of return is a method of calculating period-by-period returns on the Pension and Insurance Funds' investments that adjusts for the changing amounts actually invested. For the purposes of this Statement, money-weighted rate of return is calculated as the internal rate of return on the Pension and Insurance Funds' investments, net of the Pension and Insurance Funds' investment expenses, then adjusted for the changing amounts actually invested.

Money-Weighted Rates of Return As of June 30						
	CERS		KERS		SPRS	
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		
Pension Funds						
2020	0.84%	0.71%	2.35%	0.96%	2.21%	
2019	5.78%	5.80%	5.73%	5.68%	5.71%	
	CERS		KERS		SPRS	
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		
Insurance Fund						
2020	0.36%	0.27%	0.98%	0.21%	0.64%	
2019	5.73%	5.81%	4.95%	5.61%	5.74%	

Note E. Securities Lending Transactions

Kentucky Revised Statutes Sections 61.650 and 386.020(2) permit the Pension and Insurance Funds to lend their securities to broker-dealers and other entities. The borrowers of the securities agree to transfer to the Funds' custodial banks either cash collateral or other securities with an initial fair value of 102% or 105% of the value of the borrowed securities. The borrowers of the securities simultaneously agree to return the borrowed securities in exchange for the collateral at a later date. The types of securities lent include U.S. Treasuries, U.S. Agencies, U.S. Corporate Bonds, U.S. Equities, Global Fixed Income Securities, and Global Equities Securities.

The IPS does not address any restrictions on the amount of loans that can be made. As of June 30, 2020, KRS had no credit risk exposure to borrowers because the collateral amounts received exceeded the amounts out on loan. The contracts with the custodial banks require them to indemnify KRS if the borrowers fail to return the securities and one or both of the custodial banks have failed to live up to their contractual responsibilities relating to the lending of securities.

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

As of June 30, 2020, the cash collateral received for the securities on loan for the Pension and Insurance Funds was \$236.2 million and \$118.9 million, respectively. The total collateral received included both cash and non-cash totaling \$367.3 million and \$183.7 million, respectively. The fair value of the underlying securities on loan was \$356.9 million and \$178.5 million, respectively.

Note F. Risk of Loss

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

During the period of July 1, 2018 to May 26, 2019, claims against the KRS Board, or any of its staff as a result of an actual or alleged breach of fiduciary duty, were insured with two commercial insurance policies. Hallmark Specialty provides coverage of up to \$2.5 million and ANV Global Services provides coverage up to \$2.5 million for a total coverage of \$5 million, with a deductible/retention of \$250,000 for each claim (the retention increases to \$500,000 from \$250,000 for any claims arising out of the (1) KERS plans and (2) any investment in any alternative investment - including any private equity funds or hedge funds for all plans). Defense costs incurred in defending such claims will be paid by the insurance company. However, the total defense cost and claims paid shall not exceed the total aggregate coverage of the policies. The aggregate limit for all loss is \$5 million. The Voluntary Compliance Program (cyber privacy violations) sub-limit is \$200,000, and the Health Insurance Portability and Accountability Act (HIPAA) and Patient Protection and Affordable Care Act (PPACA) fines and penalties sub-limit is \$1.5 million. Claims against the KRS Board, or any of its staff as a result of an actual or alleged breach of fiduciary duty, are self-insured effective May 26, 2019.

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

Note G. Contingencies

In the normal course of business, KRS is involved in litigation concerning the right of participants, or their beneficiaries, to receive benefits. KRS does not anticipate any material losses as a result of the contingent liabilities.

Note H. Defined Benefit Pension Plan

KRS is an agency within the Executive branch of the Commonwealth of Kentucky. All regular full-time employees in non-hazardous positions of any Kentucky State Department, Board, or Agency are directed by Executive Order (EO) to participate in KRS. These employees participate in KERS Non-Hazardous, a cost-sharing, multiple-employer defined pension plan that provides retirement, disability, and death benefits to plan members. Plan benefits are extended to beneficiaries of plan members under certain circumstances. Tier 1 Plan members contributed 5% of creditable compensation for the fiscal years ended June 30, 2020, 2019, and 2018. Tier 2 and Tier 3 Plan members contributed 6% of creditable compensation for the fiscal years ended June 30, 2020, 2019, and 2018.

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

Payroll and Contributions as of June 30 (\$ in Thousands)			
	2020	2019	2018
Covered Payroll	\$13,837	\$13,311	\$13,287
Required Employer Contributions	11,545	11,097	6,570
Employer Percentage Contributed	100%	100%	100%

Note I. Income Tax Status

The Internal Revenue Service (IRS) has ruled that KRS qualifies under Section 401(a) of the Internal Revenue Code so is, generally, not subject to tax. KRS is subject to income tax on any unrelated business income (UBI).

Note J. Equipment

Equipment as of June 30 (\$ in Thousands)		
	2020	2019
Equipment, cost	\$2,885	\$2,885
Less Accumulated Depreciation	(2,826)	(2,747)
Equipment, net	\$59	\$138

Accumulated depreciation rose to \$2.8 million in fiscal year 2020, an increase of \$79 thousand over fiscal year 2019

Note K. Intangible Assets

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

Software Expenses as of June 30 (\$ in Thousands)		
	2020	2019
Software, Cost	\$17,302	\$17,302
Less Accumulated Amortization	(15,742)	(14,763)
Intangible Assets, Net	\$1,560	\$2,539

Accumulated amortization rose to \$15.7 million in fiscal year 2020, an increase of \$978 thousand over fiscal year 2019.

Note L. Actuarial Valuation

KRS' actuary, Gabriel, Roeder, Smith & Co. (GRS), completed the actuarial valuation of the Pension and Insurance plans for the period ended June 30, 2020. The last experience study for the five-year period ended June 30, 2018 was completed prior to the June 2019 valuation. At that time, the actuary made changes to the actuarial assumptions used in the annual valuation. For example, one of the more significant changes was to the mortality assumption rate, which presumes improvement in life expectancy. The 2020 valuation utilized the same assumptions. The following two charts show the economic assumptions and target asset allocations for the Pension Funds and Insurance Fund.

Economic Assumptions - Pension as of June 30										
	CERS		CERS		KERS		KERS		SPRS	
	Non-Hazardous	Hazardous								
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
Assumed Investment Return	6.25%	6.25%	6.25%	6.25%	5.25%	5.25%	6.25%	6.25%	5.25%	5.25%
Inflation Factor	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%
Payroll Growth	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Economic Assumptions - Insurance as of June 30										
	CERS		CERS		KERS		KERS		SPRS	
	Non-Hazardous	Hazardous								
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
Assumed Investment Return	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%
Inflation Factor	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%	2.30%
Payroll Growth	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Target Asset Allocation

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

Target Asset Allocation - Pension As of June 30, 2020

Allocations Apply Only to KERS and SPRS in Pension Funds

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Growth	53.50%	
US Equity	15.75%	4.50%
Non-US Equity	15.75%	5.25%
Private Equity	7.00%	5.15%
Specialty Credit/High Yield	15.00%	3.90%
Liquidity	23.50%	
Core Bonds	20.50%	(0.25)%
Cash	3.00%	(0.75)%
Diversifying Strategies	23.00%	
Real Estate	5.00%	5.30%
Opportunistic/Absolute Return	3.00%	2.25%
Real Return	15.00%	3.95%
Total	100.00%	3.33%

Target Asset Allocation - Pension and Insurance As of June 30, 2020

Allocations Apply to CERS, CERS-Haz, and KERS-Haz in Pension Funds and All Plans are included in the Insurance Fund

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Growth	62.50%	
US Equity	18.75%	4.50%
Non-US Equity	18.75%	5.25%
Private Equity	10.00%	6.65%
Specialty Credit/High Yield	15.00%	3.90%
Liquidity	14.50%	
Core Bonds	13.50%	(0.25)%
Cash	1.00%	(0.75)%
Diversifying Strategies	23.00%	
Real Estate	5.00%	5.30%
Opportunistic	3.00%	2.25%
Real Return	15.00%	3.95%
Total	100.00%	3.96%

Long Term Inflation Expectation is 2.30%

NOTE: Minor deviations are expected between the actuarial assumed rate of return and the expected rate of return reported in the above charts. The actuarial assumed rates of return are based on a review of economic assumptions completed periodically as warranted but not longer than every 5 years; whereas, the expected rate of return is calculated annually for GASB purposes by taking KRS' current asset allocation and applying the most recent long term market expectations for each asset class as of June 30.

Note M. GASB 67 and GASB 74 Valuations

The following details actuarial information and assumptions utilized in determining the unfunded (overfunded) actuarial accrued liabilities for both Pension and Insurance Funds. Please note that calculations for TPL, net fiduciary position, NPL, total OPEB liability, net OPEB fiduciary position, and net OPEB liability reported in the Plans' Required Supplementary Information (RSI) on pages 68-100 are based on June 30, 2019, actuarial valuations, rolled forward to June 30, 2020. The prior year valuations are used as the basis for the roll forward method and are applied to complete the current year pension and OPEB valuations as of the measurement date, June 30, 2020, in accordance with GASB *Statement No. 67*, paragraph 37, and GASB *Statement No. 74*, paragraph 41.

GASB 67

Basis of Calculations

GRS completed reports by plan in compliance with GASB *Statement No. 67 Financial Reporting for Pension Plans*. The TPL, NPL, and sensitivity information are based on an actuarial valuation date of June 30, 2019. The TPL was rolled forward from the valuation date to the Plans' fiscal year ended June 30, 2020, using generally accepted actuarial principles. Information disclosed for years prior to June 30, 2017, were prepared by KRS' prior actuary. Separate reports will be provided at a later date with additional accounting information determined in accordance with GASB *Statement No. 68, Accounting and Financial Reporting for Pensions*.

Assumptions

There have been no changes in actuarial assumptions since June 30, 2019. The actuarially determined contribution rates effective for the fiscal year ended June 30, 2020, that are documented in the schedules were calculated as of June 30, 2017, for KERS and SPRS plans and June 30, 2018, for CERS plans. Based on the June 30, 2019, actuarial valuation report, the actuarial methods and assumptions used to calculate these contributions rates are:

- Investment Return - 6.25% for KERS Hazardous, CERS Non-Hazardous, and CERS Hazardous, 5.25% for KERS Non-Hazardous and SPRS.
- Inflation - 2.30% for all plans.
- Salary Increases - 3.30% to 11.55% for CERS Non-Hazardous, 3.05% to 18.55% for CERS Hazardous, 3.55% to 15.55% for KERS Non-Hazardous, 3.55% to 19.55% for KERS Hazardous, and 3.05% to 15.55% for SPRS, varies by service.
- Payroll Growth - 2% for CERS Non-Hazardous and Hazardous, 0% for KERS Non-Hazardous, Hazardous, and SPRS.
- Mortality - RP-2000 Combined Mortality Table projected to 2013 with Scale BB (set-back 1 year for females)

Plan Provisions

House Bill 1 passed during the Special Legislative Session allowed certain agencies in the KERS Non-Hazardous plan to elect to cease participating in KRS as of June 30, 2020 under different provisions than were previously established. Senate Bill 249 passed during the 2020 Legislative Session delayed the effective date of cessation for these provisions to June 30, 2021. Since each employer's election is unknown at this time, GRS did not make any adjustment to the TPL to reflect this legislation.

Senate Bill 249 also changed the funding period for the amortization of the unfunded liability to 30 years as of June 30, 2021. Gains and losses incurring in future years will be amortized over separate, 20-year amortization bases. This change does not impact the calculation of TPL and only impacts the calculation of the contribution rates that would be payable starting July 1, 2020.

Additionally, House Bill 271 passed during the 2020 Legislative Session removed provisions that reduce the monthly payment to a surviving spouse of a member whose death was due to a duty-related injury upon remarriage of the spouse. It also increased benefits for a very small number of beneficiaries. This did not have a material (or measurable) impact on the liability of the plans and therefore, we did not make any adjustment to the TPL to reflect this legislation. There were no other material plan provision changes and it is our opinion that these procedures are reasonable and appropriate, and comply with applicable requirements under GASB *Statement No. 67*.

Discount Rate

The following single discount rates were used to measure the TPL as of June 30, 2019.

CERS Non-Hazardous	6.25%
CERS Hazardous	6.25%
KERS Non-Hazardous	5.25%
KERS Hazardous	6.25%
SPRS	5.25%

These single discount rates were based on the expected rate of return on pension investments for each plan. Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the Pension Plans' fiduciary net position and future contributions were projected to be sufficient to finance all the future benefit payments of the current plan members. Therefore, the long-term expected rates of return on Pension Plans' investments were applied to all periods of projected benefit payments to determine the TPL for each plan.

The projections of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Except where noted, the future contributions are projected assuming that each participating employer in KRS contributes the actuarially determined employer contribution rate each future year calculated in accordance with the current funding policy, as most recently revised by Senate Bill 249, passed during the 2020 Legislative Session. This includes the phase-in provisions from House Bill 362 (passed in 2020) which kept CERS contributions level for fiscal year ending 2021.

If there is a pattern of legislation that has a resulting effect of employers making contributions less than the actuarially determined rate, it may be required to project contributions that are reflective of recent actual contribution efforts regardless of the stated funding policy (as required by paragraph 42 of GASB *Statement No. 67*). Legislation has been enacted three times (for FY18/19, FY 19/20, and FY 20/21) that allowed certain employers (referred to as "Quasi" agencies) in the KERS Non-Hazardous fund to contribute 41.06% of pay into the retirement fund, which is significantly less than the actuarially determined contribution rate. We believe this constitutes a pattern and as such, the projection for the KERS Non-Hazardous Fund assumes these Quasi agencies contribute no more than 41.06% of pay throughout the entire projection.

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

Based on guidance issued by GASB in connection with GASB *Statement No. 74*, the 1% member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered as an Other Post Employment Benefit (OPEB) asset. As a result, the reported pension fiduciary net positions as of June 30, 2017 and later are net of the 401(h) asset balance. Beginning in FY2020 the 401(h) contributions are being deposited directly into the insurance funds. Any 401(h) contributions received prior to FY2020 and deposited into the pension fund will be used to pay Tier 3 retiree insurance premiums until those funds have been exhausted.

Additional Disclosures

The reports are based upon information furnished to GRS by the KRS, which includes benefit provisions, membership information, and financial data. GRS did not audit this data and information, but did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by KRS. Please see the "Actuarial Valuation Report as of June 30, 2019", for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for KRS' fiscal year ending June 30, 2020.

GASB 74

GRS completed reports by plan in compliance with GASB *Statement No. 74, Financial Reporting for Postemployment Benefit Plans Other than Pension Plans* for the fiscal year ended June 30, 2020. Separate reports will be provided at a later date with additional accounting information determined in accordance with GASB *Statement No. 75, Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*.

Basis of Calculations

The total OPEB liability, net OPEB liability (NOL), and sensitivity information are based on an actuarial valuation date of June 30, 2019. The total OPEB liability was rolled forward from the valuation date to the plan's fiscal year ended June 30, 2020, using generally accepted actuarial principles.

Assumptions

The discount rates used to calculate the total OPEB liability decreased (0.25%-0.41%) for all Funds. The assumed increase in future healthcare costs, or trend assumption, was reviewed during the June 30, 2019, valuation process and was updated to better reflect more current expectations relating to anticipated future increases in the medical costs. Also, the June 30, 2020, GASB *Statement No. 74* actuarial information reflects the anticipated savings from the repeal of "Cadillac Tax" and "Health Insurer Fee", which occurred in December of 2019. The assumed load on pre-Medicare premiums to reflect the cost of the Cadillac Tax was removed and the Medicare premiums were reduced by 11% to reflect the repeal of the Health Insurer Fee. There were no other material assumption changes and it is GRS' opinion that these procedures are reasonable and appropriate, and comply with applicable requirements under GASB *Statement No. 74*.

The actuarially determined contribution rates effective for fiscal year ended 2019 that are documented in the schedules were calculated as of June 30, 2017, for KERS and SPRS plans and June 30, 2018, for CERS plans. Based on the June 30, 2018, actuarial valuation reports, the actuarial methods and assumptions used to calculate these contribution rates are:

- Investment Return - 6.25% for all Investment Fund Plans.
- Inflation - 2.30% for all Investment Fund Plans.
- Salary Increases - 3.30% to 11.55% for CERS Non-Hazardous, 3.05% to 18.55% for CERS Hazardous, 3.55% to 15.55% for KERS Non-Hazardous, 3.55% to 19.55% for KERS Hazardous, 3.05% to 15.55% for SPRS, varies by service.
- Payroll Growth - 2.00% for CERS Non-Hazardous and CERS Hazardous, 0.00% for KERS Non-Hazardous, KERS Hazardous, and SPRS.
- Mortality - RP-2000 Combined Mortality Table, projected to 2013 with Scale BB (set-back 1 year for females).
- Health Care Trend Rates:
 - Pre-65 - Initial trend starting at 7.00% on January 1, 2020, and gradually decreasing to an ultimate trend rate of 4.05% over a period of 12 years for CERS Non-Hazardous, CERS Hazardous.
 - Post-65 - Initial trend starting at 5.00% on January 1, 2020, and gradually decreasing to an ultimate trend rate of 4.05% over a period of 10 years for CERS Non-Hazardous, CERS Hazardous.
 - Pre-65 - Initial trend starting at 7.25% on January 1, 2019, and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years for KERS Non-Hazardous, KERS Hazardous and SPRS.
 - Post-65 - Initial trend starting at 5.10% on January 1, 2019, and gradually decreasing to an ultimate trend rate of 4.05% over a period of 11 years for KERS Non-Hazardous, KERS Hazardous and SPRS.

Plan Provisions

House Bill 1 passed during the 2019 Special Legislative Session allowed certain agencies in the KERS Non-Hazardous plan to elect to cease participating in KRS as of June 30, 2020, under different provisions than were previously established. Senate 249 passed during the 2020 Legislative Session delayed that effective date of cessation for these provisions to June 30, 2021. Since each employer's election is unknown at this time, GRS did not make any adjustment to the total OPEB liability to reflect this legislation.

Senate Bill 249 also changed the funding period for the amortization of the unfunded liability to 30 years as of June 30, 2019. Gains and losses incurring in future years will be amortized over separate 20-year amortization bases. This change does not impact the calculation of the Total OPEB Liability and only impacts the calculation of the contribution rates that would be payable starting July 1, 2020. There were no other material plan provision changes and it is GRS' opinion that these procedures are reasonable and appropriate, and comply with applicable requirements under GASB *Statement No. 74*.

Implicit Employer Subsidy for non-Medicare retirees

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

Discount Rates

The following single discount rates were used to measure the total OPEB liability as of June 30, 2020.

CERS Non-Hazardous	5.34%
CERS Hazardous	5.30%
KERS Non-Hazardous	5.43%
KERS Hazardous	5.28%
SPRS	5.40%

The single discount rates are based on the expected rate of return on OPEB plan investments of 6.25% and a municipal bond rate of 2.45%, as reported in Fidelity Index's *20-Year Municipal GO AA Index* as of June 28, 2020. Based on the stated assumptions and the projection of cash flows as of each fiscal year ending, the plan's fiduciary net position and future contributions were projected to be sufficient to finance the future benefit payments of the current plan members. Therefore, the long-term expected rate of return on insurance plan investments was applied to all periods of the projected benefit payments paid from the retirement plan. However, the cost associated with the implicit subsidy is not currently being included in the calculation of the System's actuarial determined contributions, and it is understood that any cost associated with the implicit subsidy will not be paid out of the Plan's trust. Therefore, the municipal bond rate was applied to future expected benefit payments associated with the implicit subsidy.

The projection of cash flows used to determine the single discount rate must include an assumption regarding actual employer contributions made each future year. Except where noted below, the future contributions are projected assuming that each participating employer in KRS contributes the actuarially determined employer contribution rate each future year calculated in accordance with the current funding policy, as most recently revised by Senate Bill 249, passed during the 2020 Legislative Session. This includes the phase-in provisions from House Bill 362 (passed in 2018) that applies to the CERS Funds as well as the provisions from Senate Bill 249 (passed in 2020) which kept CERS contributions level from fiscal year ending 2021.

If there is a pattern of legislation that has a resulting effect of employers making contributions less than the actuarially determined rate, GRS may be required to project contributions that are reflective of recent actual contribution efforts regardless of the stated funding policy (as required by paragraph 50 of GASB *No. 74*). Legislation has been enacted three times (for FY18/19, FY 19/20, and FY 20/21) that allowed certain employer (referred to as "Quasi" agencies) in the KERS Non-Hazardous Fund to contribute 8.41% of pay into the insurance fund, which is less than the actuarially determined contribution rate. GRS believes this constitutes a pattern and as such, the projection for the KERS Non-Hazardous Fund assumes these Quasi agencies contribute no more than 8.41% of pay throughout the entire projection.

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

Based on guidance issued by GASB in connection with the GASB *Statement No. 74*, the 1% member contributions for Tier 2 and Tier 3 members to a 401(h) subaccount is considered as an OPEB asset. As a result, the reported insurance fiduciary net position includes these 401(h) assets. Additionally, these member contributions and associated investment income are included in the reconciliation of the fiduciary net position. Beginning in FY2020 the 401(h) contributions are being deposited directly into the insurance funds. Any 401(h) contributions received prior to FY2020 and deposited into the pension fund will be used to pay Tier 3 retiree insurance premiums until those funds have been exhausted.

Additional Disclosures¹

The reports are based upon information furnished to GRS by the KRS, which includes benefit provisions, membership information, and financial data. GRS did not audit this data and information, but GRS did apply a number of tests and concluded that it was reasonable and consistent. GRS is not responsible for the accuracy or completeness of the information provided by the KRS. Please see the “Actuarial Valuation Report as of June 30, 2019”, for additional discussion of the nature of the actuarial calculations and more information related to participant data, economic and demographic assumptions, and benefit provisions. These reports should be considered together as a complete report for KRS’ fiscal year ending June 30, 2020.

Sensitivity of the NPL to Changes in the Discount Rate Fiscal Year 2020					
As of June 30, 2020 (\$ in Thousands)					
	CERS	CERS	KERS	KERS	SPRS
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous	
	Current 6.25%	Current 6.25%	Current 5.25%	Current 6.25%	Current 5.25%
1% Decrease	\$9,458,677	\$3,726,146	\$16,223,729	\$717,449	\$891,868
Current Discount Rate	7,669,917	3,015,028	14,164,653	560,677	755,288
1% Increase	\$6,188,756	\$2,434,569	\$12,472,483	\$433,056	\$644,122

Sensitivity of the Net OPEB Liability to Changes in the Discount Rate and Healthcare Trend Rate					
As of June 30, 2020 (\$ in Thousands)					
	CERS	CERS	KERS	KERS	SPRS
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous	
	Single 5.34%	Single 5.30%	Single 5.43%	Single 5.28%	Single 5.40%
Sensitivity of the Net OPEB Liability to Changes in the Discount Rate					
1% Decrease	\$3,102,175	\$1,254,449	\$3,026,103	\$126,165	\$187,528
Single Discount Rate	2,414,696	924,105	2,538,908	42,769	138,602
1% Increase	\$1,850,046	\$657,916	\$2,139,021	\$(24,330)	\$99,093
Sensitivity of the Net OPEB Liability to Changes in the Current Healthcare Cost Trend Rate					
1% Decrease	\$1,869,578	\$660,393	\$2,136,914	\$(20,042)	\$98,159
Current Healthcare Cost Trend Rate	2,414,696	924,105	2,538,908	42,769	138,602
1% Increase	\$3,076,209	\$1,248,318	\$3,025,819	\$119,675	\$188,131

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

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

	2020	2019
Total Pension Liability (TPL)	\$14,697,244	\$14,192,966
Plan Fiduciary Net Position	7,027,327	7,159,921
Net Pension Liability	\$7,669,917	\$7,033,045
Ratio of Plan Fiduciary Net Position to TPL	47.81%	50.45%
Covered Payroll ⁽¹⁾	\$2,462,752	\$2,424,796
Net Pension Liability as a Percentage of Covered Employee Payroll	311.44%	290.05%

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

	2020	2019
Total Pension Liability (TPL)	\$5,394,732	\$5,176,003
Plan Fiduciary Net Position	2,379,704	2,413,708
Net Pension Liability	\$3,015,028	\$2,762,295
Ratio of Plan Fiduciary Net Position to TPL	44.11%	46.63%
Covered Employee Payroll ⁽¹⁾	\$559,551	\$553,541
Net Pension Liability as a Percentage of Covered Employee Payroll	538.83%	499.02%

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

	2020	2019
Total Pension Liability (TPL)	\$16,472,733	\$16,356,674
Plan Fiduciary Net Position	2,308,080	2,233,672
Net Pension Liability	\$14,164,653	\$14,123,002
Ratio of Plan Fiduciary Net Position to TPL	14.01%	13.66%
Covered Payroll ⁽¹⁾	\$1,476,156	\$1,485,854
Net Pension Liability as a Percentage of Covered Employee Payroll	959.56%	950.50%

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

	2020	2019
Total Pension Liability (TPL)	\$1,251,027	\$1,227,226
Plan Fiduciary Net Position	690,350	680,932
Net Pension Liability	\$560,677	\$546,294
Ratio of Plan Fiduciary Net Position to TPL	55.18%	55.49%
Covered Payroll ⁽¹⁾	\$171,840	\$160,600
Net Pension Liability as a Percentage of Covered Employee Payroll	326.28%	340.16%

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

	2020	2019
Total Pension Liability (TPL)	\$1,049,237	\$1,035,000
Plan Fiduciary Net Position	293,949	286,165
Net Pension Liability	\$755,288	\$748,835
Ratio of Plan Fiduciary Net Position to TPL	28.02%	27.65%
Covered Payroll ⁽¹⁾	\$49,019	\$49,515
Net Pension Liability as a Percentage of Covered Employee Payroll	1,540.81%	1,512.34%

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

Development of Single Discount Rate for OPEB

As of June 30

	CERS	CERS	KERS	KERS	SPRS
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous	
2020					
Single Discount Rate	5.34%	5.30%	5.43%	5.28%	5.40%
Long-Term Expected Rate of Return	6.25%	6.25%	6.25%	6.25%	6.25%
Long-Term Municipal Bond Rate	2.45%	2.45%	2.45%	2.45%	2.45%
2019					
Single Discount Rate	5.68%	5.69%	5.73%	5.66%	5.76%
Long-Term Expected Rate of Return	6.25%	6.25%	6.25%	6.25%	6.25%
Long-Term Municipal Bond Rate	3.13%	3.13%	3.13%	3.13%	3.13%

Note: Fixed-income municipal bonds with 20 years to maturity that include only federally tax-exempt municipal bonds as reported in fidelity index's "20-Year municipal GO AA index" as of June 30, 2020 and June 30, 2019.

Schedule of the Employers' Net OPEB Liability - CERS Non-Hazardous Plan

As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Employee Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Employee Payroll
2020	\$4,996,309	\$2,581,613	\$2,414,696	51.67%	\$2,620,585	92.14%
2019	\$4,251,466	\$2,569,511	\$1,681,955	60.44%	\$2,577,378	65.26%

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

Schedule of the Employers' Net OPEB Liability - CERS Hazardous Plan

As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Employee Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Employee Payroll
2020	\$2,245,222	\$1,321,117	\$924,105	58.84%	\$596,001	155.05%
2019	\$2,080,574	\$1,340,714	\$739,860	64.44%	\$583,632	126.77%

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

Schedule of the Employers' Net OPEB Liability - KERS Non-Hazardous Plan

As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Employee Payroll (1)	Net OPEB Liability as a Percentage of Covered Employee Payroll
2020	\$3,599,557	\$1,060,649	\$2,538,908	29.47%	\$1,482,431	171.27%
2019	\$3,217,985	\$995,089	\$2,222,896	30.92%	\$1,515,953	146.63%

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

Schedule of the Employers' Net OPEB Liability - KERS Hazardous Plan

As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Employee Payroll (1)	Net OPEB Liability as a Percentage of Covered Employee Payroll
2020	\$564,524	\$521,755	\$42,769	92.42%	\$182,209	23.47%
2019	\$507,204	\$534,053	\$(26,849)	105.29%	\$151,448	-17.73%

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

Schedule of the Employer's Net OPEB Liability-SPRS Plan

As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Employee Payroll (1)	Net OPEB Liability as a Percentage of Covered Employee Payroll
2020	\$339,942	\$201,340	\$138,602	59.23%	\$48,231	287.37%
2019	\$312,553	\$201,206	\$111,347	64.38%	\$48,780	228.26%

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

Note N. Pension Legislation

2020 Regular Session

The 2020 Regular Session of the Kentucky General Assembly adjourned on Wednesday, April 15, 2020. Six bills and five resolutions passed this Session that will have an impact on KERS.

1. Senate Bill 249 (C. McDaniel) resets the amortization period for financing the unfunded liability of all KRS plans from 24-years to 30-years; extends by one year the date for most Quasi-governmental agencies to decide if they want to voluntarily cease participation in KERS; and pauses the CERS employer rate phase-in for one year.

2. House Bill 352 (S. Rudy), the State Executive Branch budget bill, sets the employer contribution rates for KERS and SPRS for July 1, 2020 through June 30, 2021. The General Assembly would typically approve a budget for the two-year period beginning on July 1, 2020 and extending through June 30, 2022 (FY Ended 2021 and FY Ended 2022). However, due to the COVID-19 crisis, the legislature only passed a one-year budget, and a budget for FY Ending 2022 will have to be introduced in a future Session.

The bill also froze the contribution rate for Quasi-governmental agencies from July 1, 2020 - June 30, 2021 at 49.47% (41.06% pension and 8.41% insurance) for all Non-Hazardous duty employees employed by Mental Health/Mental Retardation Boards, Local and District Health Departments, State-supported universities and community colleges, domestic violence centers, rape crisis centers, child advocacy centers, and any other agency eligible to voluntarily cease participation in KERS pursuant to KRS 61.522.

3. House Bill 484 (R. Webber, et al) separates the governance of CERS from KRS. The bill establishes one 9-member board for KERS and SPRS, and a second 9-member board for CERS. Further, the bill establishes a third 8-member board, the Kentucky Public Pensions Authority Board (KPPA), which will be responsible for the day-to-day operations of all three systems including having all current staff members be under its authority. The employees will still be subject to the provisions of Kentucky Revised Statute Chapter 18A and the State Personnel Cabinet.

4. House Bill 271 (J. Blanton) concerns in-line-of-duty death benefits. Previously, surviving spouses of members who died due to a duty-related injury would have their monthly benefit payments reduced if they remarried. House Bill 271 removes those provisions and the monthly benefit amount will no longer be reduced.

The bill also restores the original benefit amount for surviving spouses of members who have already remarried and increases the benefits for beneficiaries who chose to receive lifetime monthly benefits in lieu of the line-of-duty survivor benefits to the amount calculated under the line-of-duty survivor provisions.

Finally, the bill provides a window for a surviving spouse of a member who died prior to April 13, 2018 to make a claim for line-of-duty survivor benefits on or before January 1, 2021.

5. Senate Bill 177 (A. Kerr) mandates that local boards of education shall allow emergency leave to any full-time or part-time classified employee if it is in relation to the COVID-19 public health emergency. This will count toward the number of days worked during the school year for determining service credit.

6. Senate Bill 239 (M. Wilson) includes provisions for Mayors and other members of a city legislative body who are age 62 and above to retire and begin drawing a benefit, but they do not have to resign office to do so. They would not build any further retirement service credit for this extended time in office.

The bill also makes one more important change. Under Kentucky Revised Statute 95.022 cities may re-employ as many retired police officers as they deem necessary, but the city is only excused from paying employer contributions and insurance premiums for a certain, limited number of these re-employed retirees. If they exceed this number, the city is responsible for paying contributions on the rest of the retired officers they employ. Senate Bill 239 removes School Resource Officers (SROs) from this limit, so SROs will no longer be included in the count. Removing SROs from the count means a city can hire other types of officers in those places, which allows a city to have more officers on the job without paying additional contributions for retirement and insurance.

7. Finally, five Senate Resolutions were adopted during the 2020 Regular Session that confirmed recent gubernatorial appointments (or reappointments) to the KRS Board of Trustees.

A. **Senate Resolution 93** (J. Adams) confirmed the reappointment of Patrick Kelly Downard to the Board for a term expiring June 17, 2023.

B. **Senate Resolution 234** (J. Adams) confirmed the appointment of Joseph L. Grossman to the Board for a term expiring June 17, 2022.

C. **Senate Resolution 236** (J. Adams) confirmed the appointment of Caswell Prewitt Lane to the Board for a term expiring June 17, 2023.

D. **Senate Resolution 237** (J. Adams) confirmed the appointment of John Carroll Cheshire III to the Board for a term expiring June 17, 2023; and,

E. **Senate Resolution 270** (J. Adams) confirmed the reappointment of Matthew Louis Monteiro to the Board for a term expiring June 17, 2023.

Note O. Litigation

City of Fort Wright

In June 2014, the City of Fort Wright and several other participating employers in CERS filed a lawsuit against KRS, alleging that the Board invested CERS funds in investments that were prohibited by both statutory and common law. In addition, the plaintiffs alleged that the Board paid substantial asset management fees, which the suit alleges were improper. On September 20, 2018, Franklin Circuit Court issued an Opinion and Order denying the City of Fort Wright's Motion for Declaratory Judgment and granting KRS' Cross-Motion for Declaratory Judgment. The Court stated in relevant part, "There is nothing in the record or in the City's pleadings to this Court that persuades this Court that the Board did not follow the law or did not appropriately apply the facts to the law." The City of Fort Wright filed an appeal with the Kentucky Court of Appeals. In a January 10, 2020, Opinion, the Court of Appeals affirmed the decision of Franklin Circuit Court. The City of Fort Wright filed a Motion for Discretionary Review with the Supreme Court of Kentucky. On September 16, 2020, the Supreme Court of Kentucky granted this Motion. On September 28, 2020, KRS filed a Cross Motion for Discretionary Review. The case is currently being litigated.

On September 2, 2015, a CERS member filed a complaint that is substantially similar in terms of allegations and ambiguous requests for relief to that of the City of Fort Wright. The exact nature and scope of the relief sought is unclear; therefore, no provision has been made in the combining financial statements. The member's complaint is currently being held in abeyance pending the outcome of the City of Fort Wright's appeal. No new action has been taken in this matter to date.

Seven Counties

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

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

On August 24, 2018, the U.S. Court of Appeals for the Sixth Circuit (the Sixth Circuit) issued a two to one Opinion affirming the decision that Seven Counties is eligible to file for bankruptcy under Chapter 11. However, the Sixth Circuit went on to state, "lacking state court precedent characterizing the nature of the relationship between Seven

Counties and KERS, we CERTIFY that question to the Kentucky Supreme Court.” KERS filed a petition to have the Opinion Reheard En Banc by the entire Sixth Circuit. On October 5, 2018, the Sixth Circuit issued an order holding the petition in abeyance pending a response from the Kentucky Supreme Court on the certified question of law. On November 1, 2018, the Supreme Court of Kentucky issued an Order granting certification of the question. The certified question of law was briefed by the parties and oral arguments were held before the Supreme Court of Kentucky on March 6, 2019. On August 29, 2019, the Supreme Court of Kentucky ruled that Seven Counties’ participation in and its contributions to KERS are based on a statutory obligation. The Supreme Court of Kentucky’s ruling was forwarded to the Sixth Circuit for further consideration.

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

Mayberry

In December 2017, members and beneficiaries of KERS filed a derivative action suit in Franklin Circuit Court naming KRS as a nominal defendant. The suit alleges that investment managers actively pursued KRS while it was under the control of Trustees who were acting adversely to its interests, and that the investment managers recommended risky investments in alternative investment strategies which resulted in billions of dollars in losses to KRS. The Amended Complaint alleges numerous claims against KRS Trustees and Officers, hedge fund sellers, actuarial, fiduciary, and investment advisors, and an annual report certifier. Plaintiffs alleged that the defendants breached statutory, fiduciary, and other duties and engaged in civil conspiracy. The Complaint further alleged claims against Officers and hedge fund sellers, actuarial, fiduciary, and investment advisors, and an annual report certifier for aiding and abetting breaches of statutory, fiduciary, and other duties. Plaintiffs sought compensatory and punitive damages, as well as equitable relief. More specifically, plaintiffs sought compensatory damages against defendants for the violations of statutory, fiduciary, and other duties; while also seeking punitive damages against hedge fund sellers, investment, actuarial, and fiduciary advisors and each of their principals/officers named as defendants. Further, plaintiffs requested several forms of equitable relief, which included directing a complete accounting of fees associated with fund of hedge funds and other absolute return strategies.

On April 19, 2018, KRS and plaintiffs filed a Joint Notice to the Court and Parties notifying the parties that (1) KRS will not pursue the claims asserted by plaintiffs; and (2) KRS would not have been in a position to pursue those claims had they been brought prior to the filing of the Complaint. Since then, the Franklin Circuit Court has ruled on various defendants’ motions to dismiss, denying nearly all of them. On January 10, 2019, Kohlberg, Kravis, Roberts (KKR), Henry Kravis and George Roberts (collectively, “KKR Parties”) amended their Answer to assert cross-claims against KRS. Certain Officer and Trustee defendants appealed the denial of their Motion to Dismiss on immunity grounds to the Court of Appeals and that appeal was transferred to the Supreme Court of Kentucky. The hedge fund defendants filed a Petition for Writ of Prohibition in the Court of Appeals arguing that the Circuit Judge acted outside his jurisdiction. The Writ was issued on April 23, 2019, and the judgment granting standing was vacated. Plaintiffs promptly appealed the Court of Appeals’ decision to the Supreme Court of Kentucky. On July 9, 2020, the Supreme Court of Kentucky issued an Opinion stating that the plaintiffs, as beneficiaries of a defined-benefit plan who have received all of their vested benefits so far and are legally entitled to receive their benefits for the rest of their lives, do not have a concrete stake in this case and therefore lack standing to bring this claim. The case was remanded to the circuit court with directions to dismiss the complaint. Thereafter, plaintiffs filed a motion seeking to amend their complaint to add parties and claims that would purportedly correct the standing defect identified by the Supreme Court of Kentucky. Furthermore, the Attorney General of the Commonwealth sought leave to intervene in this action through a motion filed July 20, 2020, and an Intervening Complaint on July 22, 2020. The matter is pending with Franklin Circuit Court.

A number of related cases have also developed based on issues raised in the above referenced Mayberry action. There has been an action filed by certain Mayberry Trustees and Officers seeking reimbursement by KRS of legal fees. KRS has also filed an action against Hallmark Specialty Insurance seeking a declaratory judgment that Hallmark has a duty to defend and indemnify KRS in the Mayberry action. Two of the hedge fund defendants in the Mayberry action have also filed an action in the United States District Court for the Eastern District of Kentucky naming individual members of the current KRS Board as defendants. This action is seeking a judgment declaring that the Trustees violated plaintiffs’ right to due process as well as an award of costs and attorneys’ fees. Three actions have been filed in Delaware Chancery Court regarding the Mayberry action. One filed by Prisma Capital Partners and one

filed by Blackstone Alternative Asset Management allege breaches of warranties, representations and more relating to the Subscription Agreements signed by KRS. The Blackstone action was voluntarily dismissed without prejudice on July 8, 2019. The third was filed by Prisma Capital Partners against the Daniel Boone Fund, LLC. Finally, an action was filed by PAAMCO against KRS in California alleging breach of warranties, representations and more relating to the Subscription Agreements. Litigation of those cases is currently ongoing.

Western Kentucky University

On November 17, 2016, Western Kentucky University (WKU), a participating employer, filed a petition for declaration of rights in the Franklin Circuit Court in Frankfort, KY. The petition involved a dispute as to whether WKU can terminate a group of its employees, which participated in KERS, and reutilize those same employees through a privatization process, in order to excuse WKU from its obligations to pay contributions to the KERS Fund. On March 10, 2020, Franklin Circuit Court issued an Opinion and Order declaring that:

1. As of August 1, 2016, former WKU employees are Sodexo employees, not WKU employees;
2. As of August 1, 2016, WKU is no longer required to provide employer or employee contributions to KERS on behalf of the former employees;
3. WKU and its former employees are not responsible for any penalties or interest since August 1, 2016, insofar as they are related to contributions to KERS on behalf of the former employees at issue; and,
4. The former WKU employees had a break in service from WKU as of July 31, 2016, and may have full access to their retirement benefits being held by KERS and administered by KRS for all benefits earned prior to August 1, 2016.

KRS filed an appeal of this Opinion and Order with the Court of Appeals on June 17, 2020. Litigation is ongoing.

Note P. Reciprocity Agreement

KRS has a reciprocity agreement with Kentucky Teachers' Retirement System (TRS) for the payment of insurance benefits for those members who have creditable service in both systems.

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

As a result of the passage of House Bill 1 on September 1, 2008, if a retiree is re-employed in a regular full time position and has chosen health insurance coverage through KRS, the employer is required to reimburse KRS for the health insurance premium paid on the retiree's behalf, not to exceed the cost of the single premium rate. For the fiscal years ended June 30, 2020 and 2019, the reimbursement totaled \$11.5 million and \$10.5 million, respectively.

Also, for new plan participants after August 31, 2008, House Bill 1 required an active member contribution of 1% in addition to the member pension contribution. This 1% is applicable to all Non-hazardous and Hazardous plans. Due to a change in accounting for the 1% contribution, the contribution was placed in the Insurance Fund starting fiscal year 2020. For the fiscal year ended June 30, 2020, members paid into the Insurance Fund \$23.1 million. For the fiscal year ended June 30, 2019, members paid into the Pension Fund \$21.3 million.

In addition, employers are required to report employer contributions on retired re-employed members. These are reported within the employer contributions on the financial statements. Please see the chart below for the breakdown.

Retired Re-employed Employer Contributions As of June 30 (\$ in Thousands)	CERS		KERS		SPRS	KRS Total
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		
FY 2020	\$12,116	\$4,339	\$32,438	\$2,772	\$0	\$51,665
FY 2019	9,953	\$3,691	\$28,138	\$2,540	\$64	\$44,386

Note R. Related Party

Perimeter Park West, Inc. (PPW) was established in 1998 as a 501(c) (25) corporation located at 1260 and 1270 Louisville Road, Frankfort, Kentucky. As such, PPW can only acquire and hold title to real property. The only source of revenue for the Corporation is rent paid from KRS. When excess cash is on hand at PPW, the money is paid back to the PPW shareholders in the form of dividends. PPW's expenses are for the maintenance of the property. Title to the property is held in the name of PPW and there is no mortgage on the property. KRS does not have title to the property, however, KRS maintains PPW as an investment on its books and the Pension plans are the sole shareholders. PPW's market value was \$7.3 million as of June 30, 2020. PPW is audited annually and submits IRS Form 990 as required for this entity.

The sole purpose of PPW is to protect the Pension and Insurance Trusts of KRS should someone become injured on the property. If this occurred and a lawsuit was filed against the property, the suit would be filed against PPW instead of the Pension and Insurance Trusts.

The current lease between PPW and KRS was entered into on December 1, 2019, and continuing thereafter until altered by a new agreement or termination of the lease. The premises, consisting of 85,357 square feet, are rented for the fiscal year period of July 1 to June 30. The contractual lease payments through June 30, 2024, are:

FY 2020 - \$934,188

FY 2021 - \$1,066,968

FY 2022 - \$1,066,968

FY 2023 - \$1,066,968

FY 2024 - \$1,066,968

Note S. Reduction of Receivables

Employers reported June 2019 wages earned in the following month of July 2019 (next fiscal year) and the new Annual Required Contribution (ARC) rate was applied. The Commonwealth's approved budget guidelines paid contributions at the fiscal year 2019 ARC rate in effect when the wages were earned. It is unlikely that KRS will receive payments at the new ARC rate for that period; therefore, contribution receivables have been reduced as of June 30, 2020 as noted in the chart. For fiscal year 2020, no reduction was necessary since the contribution rate did not change.

Reduction of Receivables As of June 30 (\$ in Thousands)		
	2020	2019
KERS Non-Hazardous	\$0	\$15,947
KERS Hazardous	0	921
SPRS	0	1,134
TOTAL	\$0	\$18,002

Note T. Prisma Daniel Boone Fund

The funds invested with Prisma Daniel Boone Fund continue to be held in a contingency reserve to cover potential obligations arising from the Mayberry Action (see Note O for details of Mayberry Case). The total reported in reserve as of June 30, 2020, is \$98.1 million for the Pension Funds and \$40.8 million for the Insurance Fund. This is based on the May 31, 2020, report because Absolute Return managers are reported on a one month lag.

Note U. Subsequent Events

Management has evaluated the period June 30, 2020, to December 3, 2020, (the date the combining financial statements were available to be issued) for items requiring recognition or disclosure in the combining financial statements.

Note V. Coronavirus

Before the onset of the coronavirus, or COVID-19, in Kentucky in March 2020, KRS staff was assessing the risks and potential action necessary to address these risks. On March 6, 2020, the Governor of Kentucky declared a state of emergency with the first confirmed case of COVID-19. KRS staff acted quickly with these goals in mind:

- To preserve the health and safety of staff, members and other stakeholders,
- To protect the assets of every plan,
- To maintain vigilance in cyber security, and
- To ensure all required services were available to our members

With change as significant as has been experienced since the beginning of this state of emergency, there has been an increase in risk. These risks and the KRS responses to these risks are discussed in the following table.

Risk to Employee Health

RISK	RESPONSE
Employees contract the COVID-19 virus.	KRS adheres to state and Centers for Disease Control and Prevention (CDC) guidelines for employee health. By mid-March, 60% of KRS staff were “Healthy at Home” by working remotely. Since mid-April, at least 85% of staff have been working from home (WFH). For those still working in the office, social distancing of desks, use of masks, gloves and hand sanitizer, and deep cleaning services helped make the office work-ready.
Large numbers of employees are out of the office simultaneously.	KRS utilizes cross training of employees and has an up-to-date Business Continuity Plan (COOP). For tasks that require a physical presence in the office, the teams have been divided to limit exposure and the risk that the entire team will be out simultaneously.
Employees need to work from home instead of the office.	Information Technology (IT) has aggressively developed solutions that allow all employees who have internet access at home to WFH as securely as they would from the office. HR encouraged employees to keep safety in mind in their new home-based workspaces. Leadership developed WFH Guidelines and a WFH tips on the internal website.
Health requirements change frequently, and employees find it difficult to keep up.	Executive leadership created a daily email update on COVID-19 with the latest news for employees and their supervisors. As of October 2020, this communication email is a weekly update developed by the Communications division in coordination with executive leadership.
Supplies important to keeping employees healthy have limited availability.	Staff placed orders as early as possible. Efforts were coordinated with state purchasing agents including getting masks and hand sanitizer from another state agency.

Risk to Funds

RISK	RESPONSE
Budgetary stress at the state/county level resulting in reduction of or deferment of plan contributions so that the actuarially determined contribution (ADC) is not met.	KRS leadership meets regularly with legislative leadership, including the Public Pension Oversight Board (PPOB), to ensure there is adequate awareness on this risk. The KRS actuary supports the effort of education and awareness on this risk in the valuation, sensitivity studies and in presentations. Staff continues to manage funds to achieve the assumed rate of return with a long-term focus. Liquidity is managed to ensure adequate funds are available to pay benefits in the case of decreased contributions.
Reduction in participating agency staffing and/or overall compensation (layoffs, furloughs, attrition, etc.) causes payroll decline resulting in missed payroll assumptions.	KRS leadership meets regularly with legislative leadership, including the Public Pension Oversight Board (PPOB), to ensure there is adequate awareness on this risk. The KRS actuary supports the effort of education and awareness on this risk in the valuation, sensitivity studies and in presentations. Staff continues to manage funds to achieve the assumed rate of return with a long-term focus. Liquidity is managed to ensure adequate funds are available to pay benefits in the case of decreased contributions.
Persisting low rates will hamper the income generation of the safety/liquidation focused funds of the allocation. In addition, a historically low risk-free rate has depressed the return expectation of other asset classes, despite increasing risk premiums.	An updated asset-liability study was conducted by the KRS consultant, Wilshire, and resulted in new asset allocation guidelines that take into account these headwinds. The result was a modest increase in exposure to risk assets to maintain expected returns and a similar level of liquidity. The KRS Investment Committee continues to monitor these risks and is well-positioned to take action when necessary.
Market volatility has been elevated in 2020 reaching unprecedented levels during the equity selloff in March. Subsequent waves of coronavirus infections/hospitalizations could lead to shutdowns and economic shocks causing market volatility spikes.	KRS manages plan assets to achieve long-term objectives, and must accept short-term downside risks. During the first half of 2020 equity market declines presented opportunities to rebalance into risk assets at more attractive valuations.
Rising coronavirus infection rates lead to KRS investment service providers to work remotely.	Operational disaster recovery responses are tested regularly and significantly mitigate any threat to the ability of KRS to operate smoothly.

Risk to Cyber Security

RISK	RESPONSE
Crises like the COVID-19 pandemic increase the risk of security attacks/breeches/threats.	KRS has had an excellent cyber security program in place since 2006. It has already taken steps to mitigate the ever-growing number of cyber threats including garnering support from Trustees and executive leadership, budgetary resources and trained staff.
Work from home increases security risks.	Security and IT staff created minimum requirements for internet speed and virus protection for staff who WFH. IT utilized laptop/desktop encryption and various other measures to increase security for those staff who WFH.
Significant changes to infrastructure without corresponding assessment.	IT immediately attained an informal third-party evaluation of the state of the network as it relates to moving a large percentage of staff to WFH. A formal assessment is planned in the next fiscal year.

Risk to Services

RISK	RESPONSE
Offices close to public and end in-person services.	KRS closed its offices to the public on March 17, 2020, and remains closed as of the writing of this note. This eliminated one-on-one counseling, in-person member and employer training and health insurance open enrollment fairs. KRS successfully replaced these with video conferencing tools. Business teams increased the number and frequency of recorded and live webinars and trainings. All of these were conducted virtually via web-based tools.
The public cannot attend Board of Trustee and Committee meetings.	It is critical that stakeholders across Kentucky have access to view Board meetings. With this in mind, KRS has been live streaming its Board meetings since April 2018. Since April 2020, the members and support staff of the Board and its committees now utilize video conferring tools to meet virtually. These virtual meetings are live streamed to FaceBook @kyretirement.
Sudden increase in requests for service.	KRS cross trains employees and has the flexibility to rearrange resources to address spikes in service requests. More importantly, KRS insists on a culture of continuous enhancements often looking to technology to improve the efficiency of operations. KRS provides a web-based self-service, https://kyret.ky.gov/Pages/Login.aspx to all its members. Here members have access to a plethora of account-specific information and services.
Supply chain issues.	Staff closely monitor supplies and utilize resources available to all state agencies via the 45A Model Procurement avenues.
Postal Service Delays.	Member self-service has a document upload capability that allows members to upload documents from their home computer or phone. We also accept emailed and faxed documents. KRS installed a mail drop box for members who wish to drop off forms and documents at the KRS offices.
Decrease in Productivity.	KRS has long-established methods of monitoring productivity. WFH options will allow staff to remain “Healthy at Home”. Intentional communications keep staff knowledgeable and well connected with management and co-workers.
WFH makes training new employees more difficult.	Video and audio conferencing solutions are utilized to replace in-person training. IT secured video cameras for staff to make this more effective. Staff continue to attend conferences, webinars and other third-party trainings virtually.
WFH makes maintaining a specific business culture more difficult.	Leadership has intentionally increased communications efforts across every level at KRS. Video and audio conferencing solutions are utilized to mirror “water cooler” interactions. Every level of management has creatively approached the issue of maintaining a family-like atmosphere at KRS where every person contributes and feels valued.

REQUIRED

SUPPLEMENTARY INFORMATION

INCLUDING GASB 67 AND 74

Schedule of Employer NPL

CERS Non-Hazardous

CERS Hazardous

KERS Non-Hazardous

KERS Hazardous

SPRS

Schedule of Changes in Employers' TPL

CERS Non-Hazardous

CERS Hazardous

KERS Non-Hazardous

KERS Hazardous

SPRS

Notes to Schedule of Employers' Contributions

Schedule of Employers' Contributions Pension

CERS Non-Hazardous

CERS Hazardous

KERS Non-Hazardous

KERS Hazardous

SPRS

Schedule of Employers' NOL

CERS Non-Hazardous

CERS Hazardous

KERS Non-Hazardous

KERS Hazardous

SPRS

Schedule of Changes in Employers' Net OPEB Liability

CERS Non-Hazardous

CERS Hazardous

KERS Non-Hazardous

KERS Hazardous

SPRS

Notes to Schedule of Employers' OPEB Contribution

Schedule of Employers' OPEB Contributions

CERS Non-Hazardous

CERS Hazardous

KERS Non-Hazardous

KERS Hazardous

SPRS

Money Weighted Rates of Return

Report on Internal Control

Schedule of Employers' NPL - CERS Non-Hazardous Pension Funds

As of June 30 (\$ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll(1)	Net Pension Liability as a Percentage of Covered Payroll
2020	\$14,697,244	\$7,027,327	\$7,669,917	47.81%	\$2,462,752	311.44%
2019	14,192,966	7,159,921	7,033,045	50.45%	2,424,796	290.05%
2018	13,109,268	7,018,963	6,090,305	53.54%	2,454,927	248.08%
2017	12,540,545	6,687,237	5,853,308	53.32%	2,376,290	246.32%
2016	11,065,013	6,141,395	4,923,618	55.50%	2,417,187	203.69%
2015	10,740,325	6,440,800	4,299,525	59.97%	2,296,716	187.20%
2014	\$9,772,522	\$6,528,146	\$3,244,376	66.80%	\$2,272,270	142.78%

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

These tables are intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of Employers' NPL - CERS Hazardous Pension Funds

As of June 30 (\$ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll(1)	Net Pension Liability as a Percentage of Covered Payroll
2020	\$5,394,732	\$2,379,704	\$3,015,028	44.11%	\$559,551	538.83%
2019	5,176,003	2,413,708	2,762,295	46.63%	553,541	499.02%
2018	4,766,794	2,348,337	2,418,457	49.26%	562,853	429.68%
2017	4,455,275	2,217,996	2,237,279	49.78%	526,559	424.89%
2016	3,726,115	2,010,174	1,715,941	53.95%	526,334	326.02%
2015	3,613,308	2,078,202	1,535,106	57.52%	483,641	317.41%
2014	\$3,288,826	\$2,087,002	\$1,201,824	63.46%	\$479,164	250.82%

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

These tables are intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of Employers' NPL - KERS Non-Hazardous Pension Funds

As of June 30 (\$ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll(1)	Net Pension Liability as a Percentage of
						Covered Payroll
2020	\$16,472,733	\$2,308,080	\$14,164,653	14.01%	\$1,476,156	959.56%
2019	16,356,674	2,233,672	14,123,002	13.66%	1,485,854	950.50%
2018	15,608,221	2,004,446	13,603,775	12.84%	1,509,955	900.94%
2017	15,445,206	2,056,870	13,388,336	13.32%	1,602,396	835.52%
2016	13,379,781	1,980,292	11,399,489	14.80%	1,631,025	698.92%
2015	12,359,673	2,327,783	10,031,890	18.83%	1,544,234	649.64%
2014	\$11,550,110	\$2,578,291	\$8,971,819	22.32%	\$1,577,496	568.74%

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

These tables are intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of Employers' NPL - KERS Hazardous Pension Funds

As of June 30 (\$ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll(1)	Net Pension Liability as a Percentage of
						Covered Payroll
2020	\$1,251,027	\$690,350	\$560,677	55.18%	\$171,840	326.28%
2019	1,227,226	680,932	546,294	55.49%	160,600	340.16%
2018	1,150,610	645,485	505,125	56.10%	152,936	330.29%
2017	1,098,630	601,529	497,101	54.75%	178,511	278.47%
2016	919,517	527,879	391,638	57.41%	158,828	246.58%
2015	895,433	552,468	342,965	61.70%	128,680	266.53%
2014	\$816,850	\$561,484	\$255,366	68.74%	\$129,076	197.84%

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

These tables are intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of Employers' NPL - SPRS Pension Funds

As of June 30 (\$ in Thousands)

Year	Total Pension Liability (TPL)	Plan Fiduciary Net Position	Net Pension Liability	Ratio of Plan Fiduciary Net Position to TPL	Covered Payroll(1)	Net Pension Liability as a Percentage of
						Covered Payroll
2020	\$1,049,237	\$293,949	\$755,288	28.02%	\$49,019	1,540.81%
2019	1,035,000	286,165	748,835	27.65%	49,515	1,512.34%
2018	969,622	267,572	702,050	27.60%	50,346	1,394.45%
2017	943,271	255,737	687,534	27.11%	54,065	1,271.68%
2016	795,421	218,012	577,409	27.41%	46,685	1,236.82%
2015	734,156	247,228	486,928	33.68%	45,765	1,063.97%
2014	\$681,118	\$260,974	\$420,144	38.32%	\$44,616	941.69%

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

These tables are intended to show information for ten years; additional year's information will be displayed as it becomes available.

Schedule of Changes in Employers' TPL - CERS Non-Hazardous

As of June 30 (\$ in Thousands)

Total Pension Liability (TPL)	2020	2019	2018	2017	2016	2015	2014
Service Cost	\$280,092	\$254,643	\$254,169	\$193,082	\$209,101	\$207,400	\$192,482
Interest	861,720	794,935	760,622	803,555	780,587	733,002	710,526
Benefit Changes	-	-	15,708	-	-	-	-
Difference between Expected and Actual Experience	173,345	87,377	279,401	(208,015)	-	49,966	-
Changes of Assumptions	-	727,351	-	1,388,800	-	606,293	-
Benefit Payments	(810,879)	(780,608)	(741,177)	(701,891)	(665,000)	(628,858)	(597,136)
Net Change in TPL	504,278	1,083,698	568,723	1,475,532	324,687	967,803	305,872
TPL – Beginning	14,192,966	13,109,268	12,540,545	11,065,013	10,740,325	9,772,522	9,466,650
TPL – Ending (a)	\$14,697,244	\$14,192,966	\$13,109,268	\$12,540,545	\$11,065,013	\$10,740,325	\$9,772,522
Plan Fiduciary Net Position ⁽¹⁾							
Contributions – Employer	\$475,416	\$393,453	\$358,017	\$333,554	\$284,105	\$298,565	\$324,231
Contributions – Member ⁽²⁾	168,994	159,064	160,370	150,715	141,674	140,311	128,568
Net Investment Income ⁽²⁾	56,180	390,664	573,829	825,900	(40,800)	110,568	895,530
Retirement Benefit	(795,960)	(766,221)	(726,569)	(687,461)	(651,246)	(615,335)	(582,850)
Administrative Expense	(22,304)	(21,659)	(19,592)	(19,609)	(19,385)	(18,212)	(18,615)
Refunds of Contributions	(14,918)	(14,387)	(14,608)	(14,430)	(13,753)	(13,523)	(14,286)
Other	-	44 ⁽⁵⁾	361 ⁽⁵⁾	(42,827) ⁽⁴⁾	-	10,280	-
Net Change in Plan Fiduciary Net Position	(132,592)	140,958	331,808	545,843	(299,405)	(87,346)	732,578
Plan Fiduciary Net Position - Beginning	7,159,921	7,018,963	6,687,237	6,141,395	6,440,800	6,528,146	5,795,568
Prior Year Adjustment	0	-	(82)	-	-	-	-
Plan Fiduciary Net Position – Ending (b)	7,027,329	7,159,921	7,018,963	6,687,237	6,141,395	6,440,800	6,528,146
Net Pension Liability – Ending (a) – (b)	\$7,669,915	\$7,033,045	\$6,090,305	\$5,853,308	\$4,923,618	\$4,299,525	\$3,244,376
Plan Fiduciary Net Position as a Percentage	47.81%	50.45%	53.54%	53.32%	55.50%	59.97%	66.80%
Covered Payroll ⁽³⁾	\$2,462,752	\$2,424,796	\$2,454,927	\$2,376,290	\$2,417,187	\$2,296,716	\$2,272,270
Net Pension Liability as a Percentage of Covered Payroll	311.44%	290.05%	248.08%	246.32%	203.69%	187.20%	142.78%

⁽¹⁾ Does not include 401(h) assets for fiscal years 2017 and later.

⁽²⁾ Does not include 401(h) contributions and investment income on 401(h) contributions for fiscal years 2017 and later.

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

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

⁽⁵⁾ Northern Trust Settlement.

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

Schedule of Changes in Employers' TPL - CERS Hazardous

As of June 30 (\$ in Thousands)

Total Pension Liability (TPL)	2020	2019	2018	2017	2016	2015	2014
Service Cost	\$109,887	\$77,426	\$81,103	\$58,343	\$66,249	\$71,934	\$66,761
Interest	314,762	289,741	270,694	270,860	262,886	247,008	238,665
Benefit Changes	-	-	2,172	-	-	-	-
Difference between Expected and Actual Experience	73,696	27,364	205,882	92,588	-	41,935	-
Changes of Assumptions	-	276,541	-	536,667	-	166,849	-
Benefit Payments	(279,616)	(261,863)	(248,332)	(229,299)	(216,327)	(203,244)	(192,299)
Net Change in TPL	218,729	409,209	311,519	729,159	112,807	324,482	113,127
TPL – Beginning	5,176,003	4,766,794	4,455,275	3,726,115	3,613,308	3,288,826	3,175,699
TPL – Ending (a)	\$5,394,732	\$5,176,003	\$4,766,794	\$4,455,275	\$3,726,115	\$3,613,308	\$3,288,826
Plan Fiduciary Net Position ⁽¹⁾							
Contributions – Employer	\$168,443	\$138,053	\$127,660	\$115,947	\$105,713	\$108,071	\$115,240
Contributions – Member ⁽²⁾	63,236	58,661	61,089	60,101	52,972	47,692	43,722
Net Investment Income ⁽²⁾	15,914	132,232	191,324	270,473	(9,020)	37,104	288,490
Retirement Benefit	(275,802)	(259,009)	(244,118)	(226,984)	(213,448)	(200,134)	(189,635)
Administrative Expense	(1,981)	(1,726)	(1,504)	(1,421)	(1,366)	(1,288)	(1,721)
Refunds of Contributions	(3,814)	(2,854)	(4,214)	(2,315)	(2,879)	(3,111)	(2,664)
Other	-	14 ⁽⁵⁾	111 ⁽⁵⁾	(7,979) ⁽⁴⁾	-	2,865	-
Net Change in Plan Fiduciary Net Position	(34,004)	65,371	130,348	207,822	(68,028)	(8,801)	253,432
Plan Fiduciary Net Position – Beginning	2,413,708	2,348,337	2,217,996	2,010,174	2,078,202	2,087,002	1,833,570
Prior Year Adjustment	-	-	(7)	-	-	-	-
Plan Fiduciary Net Position – Ending (b)	2,379,704	2,413,708	2,348,337	2,217,996	2,010,174	2,078,202	2,087,002
Net Pension Liability – Ending (a) – (b)	\$3,015,028	\$2,762,295	\$2,418,457	\$2,237,279	\$1,715,941	\$1,535,106	\$1,201,824
Plan Fiduciary Net Position as a Percentage of Covered Payroll ⁽³⁾	44.11%	46.63%	49.26%	49.78%	53.95%	57.52%	63.46%
Net Pension Liability as a Percentage of Covered Payroll	538.83%	499.02%	429.68%	424.89%	326.02%	317.41%	250.82%

⁽¹⁾ Does not include 401(h) assets for fiscal years 2017 and later.

⁽²⁾ Does not include 401(h) contributions and investment income on 401(h) contributions for fiscal years 2017 and later.

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

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

⁽⁵⁾ Northern Trust Settlement.

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Schedule of Changes in Employers' TPL - KERS Non-Hazardous

As of June 30 (\$ in Thousands)

Total Pension Liability (TPL)	2020	2019	2018	2017	2016	2015	2014
Service Cost	\$179,702	\$184,988	\$195,681	\$143,858	\$139,631	\$143,847	\$133,361
Interest	832,178	793,163	785,123	870,725	891,897	859,509	853,653
Benefit Changes	-	-	9,624	-	-	-	-
Difference between Expected and Actual Experience	115,515	70,529	153,565	(134,379)	-	30,958	-
Changes of Assumptions	-	700,464	-	2,145,530	923,999	694,592	-
Benefit Payments	(1,011,336)	(1,000,691)	(980,978)	(960,309)	(935,419)	(919,343)	(903,564)
Net Change in TPL	116,059	748,453	163,015	2,065,425	1,020,108	809,563	83,450
TPL – Beginning	16,356,674	15,608,221	15,445,206	13,379,781	12,359,673	11,550,110	\$11,466,660
TPL – Ending (a)	\$16,472,733	\$16,356,674	\$15,608,221	\$15,445,206	\$13,379,781	\$12,359,673	\$11,550,110
Plan Fiduciary Net Position ⁽¹⁾							
Contributions – Employer	\$948,592	\$1,035,462	\$689,143	\$757,121	\$513,084	\$521,691	\$296,836
Contributions – Member ⁽²⁾	96,594	93,759	104,972	100,543	106,494	104,606	97,487
Net Investment Income ⁽²⁾	52,499	112,371	144,881	220,985	(20,663)	44,570	337,922
Retirement Benefit	(999,813)	(988,349)	(967,375)	(948,490)	(923,288)	(905,791)	(889,937)
Administrative Expense	(11,941)	(11,712)	(10,692)	(10,957)	(10,989)	(10,474)	(11,145)
Refunds of Contributions	(11,523)	(12,342)	(13,603)	(11,819)	(12,130)	(13,552)	(13,627)
Other	-	37 ⁽⁵⁾	301 ⁽⁵⁾	(30,805) ⁽⁴⁾	-	8,442	-
Net Change in Fiduciary Net Position	74,408	229,226	(52,373)	76,578	(347,491)	(250,508)	(182,463)
Plan Fiduciary Net Position – Beginning	2,233,672	2,004,446	2,056,870	1,980,292	2,327,783	2,578,291	2,760,754
Prior Year Adjustment	-	-	(51)	-	-	-	-
Plan Fiduciary Net Position – Ending (b)	2,308,080	2,233,672	2,004,446	2,056,870	1,980,292	2,327,783	2,578,291
Net Pension Liability – Ending (a) – (b)	\$14,164,653	\$14,123,002	\$13,603,775	\$13,388,336	\$11,399,489	\$10,031,890	\$8,971,819
Plan Fiduciary Net Position as a Percentage	14.01%	13.66%	12.84%	13.32%	14.80%	18.83%	22.32%
Covered Payroll ⁽³⁾	\$1,476,156	\$1,485,854	\$1,509,955	\$1,602,396	\$1,631,025	\$1,544,234	\$1,577,496
Net Pension Liability as a Percentage of Covered Payroll	959.56%	950.50%	900.94%	835.52%	698.92%	649.64%	568.74%

⁽¹⁾ Does not include 401(h) assets for fiscal years 2017 and later.

⁽²⁾ Does not include 401(h) contributions and investment income on 401(h) contributions for fiscal years 2017 and later.

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

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

⁽⁵⁾ Northern Trust Settlement.

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

Schedule of Changes in Employers' TPL - KERS Hazardous

As of June 30 (\$ in Thousands)

Total Pension Liability (TPL)	2020	2019	2018	2017	2016	2015	2014
Service Cost	\$25,568	\$27,117	\$28,641	\$21,081	\$20,751	\$18,729	\$16,880
Interest	74,357	69,657	66,536	66,589	64,851	61,005	59,594
Benefit Changes	-	-	705	-	-	-	-
Difference between Expected and Actual Experience	(1,095)	1,395	24,215	26,902	-	6,067	-
Changes of Assumptions	-	50,658	-	127,878	-	52,165	-
Benefit Payments	(75,029)	(72,211)	(68,117)	(63,338)	(61,518)	(59,383)	(57,151)
Net Change in TPL	23,801	76,616	51,980	179,112	24,084	78,583	19,323
TPL – Beginning	1,227,226	1,150,610	1,098,630	919,517	895,433	816,850	797,527
TPL – Ending (a)	\$1,251,027	\$1,227,226	\$1,150,610	\$1,098,630	\$919,517	\$895,433	\$816,850
Plan Fiduciary Net Position ⁽¹⁾							
Contributions – Employer	\$59,115	\$55,259	\$43,661	\$52,974	\$23,759	\$28,536	\$11,670
Contributions - Member ⁽²⁾	19,769	17,118	17,891	17,524	15,739	13,207	12,546
Net Investment Income	6,739	36,380	51,467	70,994	(1,653)	8,701	80,724
Retirement Benefit	(71,861)	(69,527)	(65,616)	(61,231)	(59,306)	(56,773)	(54,320)
Administrative Expense	(1,176)	(1,103)	(975)	(919)	(916)	(844)	(897)
Refunds of Contributions	(3,168)	(2,684)	(2,501)	(2,106)	(2,211)	(2,610)	(2,830)
Other	-	4 ⁽⁵⁾	33 ⁽⁵⁾	(3,586) ⁽⁴⁾	-	767	-
Net Change in Plan Fiduciary Net Position	9,418	35,447	43,960	73,650	(24,588)	(9,016)	46,893
Plan Fiduciary Net Position – Beginning	680,932	645,485	601,529	527,879	552,468	561,484	514,591
Prior Year Adjustment	0	0	(4)	0	0	0	0
Fiduciary Net Position – Ending (b)	690,350	680,932	645,485	601,529	527,879	552,468	561,484
Net Pension Liability – Ending (a) – (b)	\$560,677	\$546,294	\$505,125	\$497,101	\$391,638	\$342,965	\$255,366
Plan Fiduciary Net Position as a Percentage	55.18%	55.49%	56.10%	54.75%	57.41%	61.70%	68.74%
Covered Payroll ⁽³⁾	\$171,840	\$160,600	\$152,936	\$178,511	\$158,828	\$128,680	\$129,076
Net Pension Liability as a Percentage of Covered Payroll	326.28%	340.16%	330.29%	278.47%	246.58%	266.53%	197.84%

⁽¹⁾ Does not include 401(h) assets for fiscal years 2017 and later.

⁽²⁾ Does not include 401(h) contributions and investment income on 401(h) contributions for fiscal years 2017 and later.

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

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

⁽⁵⁾ Northern Trust Settlement.

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Schedule of Changes in Employer's TPL - SPRS

As of June 30 (\$ in Thousands)

Total Pension Liability (TPL)	2020	2019	2018	2017	2016	2015	2014
Service Cost	\$13,192	\$11,726	\$11,890	\$8,297	\$8,402	\$7,695	\$7,142
Interest	52,697	49,301	47,978	51,769	52,951	50,661	50,391
Benefit Changes	-	-	184	-	-	-	-
Difference between Expected and Actual Experience	10,859	20,952	25,126	8,143	-	9,331	-
Changes of Assumptions	-	44,510	-	136,602	56,191	40,201	-
Benefit Payments	(62,511)	(61,111)	(58,827)	(56,960)	(56,279)	(54,850)	(53,239)
Net Change in TPL	14,237	65,378	26,351	147,850	61,265	53,038	4,294
TPL - Beginning	1,035,000	969,622	943,271	795,421	734,156	681,118	676,824
TPL - Ending (a)	\$1,049,237	\$1,035,000	\$969,622	\$943,271	\$795,421	\$734,156	\$681,118
Plan Fiduciary Net Position ⁽¹⁾							
Contributions – Employer	\$59,453	\$60,048	\$46,877	\$63,239	\$25,822	\$31,990	\$20,279
Contributions - Member ⁽²⁾	4,767	5,062	5,522	5,348	5,263	5,244	5,075
Net Investment Income ⁽²⁾	6,341	14,816	18,437	26,795	(3,843)	3,426	40,374
Retirement Benefit	(62,423)	(60,949)	(58,805)	(56,934)	(56,268)	(54,765)	(53,026)
Administrative Expense	(266)	(225)	(194)	(181)	(178)	(201)	(215)
Refunds of Contributions	(88)	(162)	(22)	(26)	(11)	(85)	(213)
Other	-	3 ⁽⁵⁾	21 ⁽⁵⁾	(517) ⁽⁴⁾	-	645	-
Net Change in Plan Fiduciary Net Position	7,784	18,593	11,836	37,724	(29,215)	(13,746)	12,274
Plan Fiduciary Net Position – Beginning	286,165	267,572	255,737	218,012	247,228	260,974	248,700
Prior Year Adjustment	0	0	(1)	0	0	0	0
Plan Fiduciary Net Position – Ending (b)	293,949	286,165	267,572	255,737	218,012	247,228	260,974
Net Pension Liability – Ending (a) – (b)	\$755,288	\$748,835	\$702,050	\$687,534	\$577,409	\$486,928	\$420,144
Plan Fiduciary Net Position as a Percentage	28.02%	27.65%	27.60%	27.11%	27.41%	33.68%	38.32%
Covered Payroll ⁽³⁾	\$49,019	\$49,515	\$50,346	\$54,065	\$46,685	\$45,765	\$44,616
Net Pension Liability as a Percentage of Covered Payroll	1,540.81%	1,512.34%	1,394.45%	1,271.68%	1,236.82%	1,063.97%	941.69%

⁽¹⁾ Does not include 401(h) assets for fiscal years 2017 and later.

⁽²⁾ Does not include 401(h) contributions and investment income on 401(h) contributions for fiscal years 2017 and later.

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

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

⁽⁵⁾ Northern Trust Settlement.

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The actuarially determined contribution rates effective for fiscal year ended 2020 that are documented in the schedule on the following pages, were calculated as of June 30, 2018, for CERS plans and as of June 30, 2017, for KERS and SPRS plans. Based on the June 30, 2018, and the June 30, 2017, actuarial valuation report, the actuarial methods and assumptions used to calculate these contribution rates are below:

Notes to Schedule of Employers' Contribution					
Item	CERS	CERS	KERS	KERS	SPRS
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous	
Determined by the Actuarial Valuation as of:	June 30, 2018	June 30, 2018	June 30, 2017	June 30, 2017	June 30, 2017
Actuarial Cost Method:	Entry Age Normal				
Asset Valuation Method:	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay				
Amortization Period:	25 Years, Closed	25 Years, Closed	26 Years, Closed	26 Years, Closed	26 Years, Closed
Payroll Growth	2.00%	2.00%	0.00%	0.00%	0.00%
Investment Return:	6.25%	6.25%	5.25%	6.25%	5.25%
Inflation:	2.30%	2.30%	2.30%	2.30%	2.30%
Salary Increase:	3.30% to 11.55%, varies by service	3.05% to 18.55%, varies by service	3.55% to 15.55%, varies by service	3.55% to 19.55%, varies by service	3.05% to 15.55%, varies by service
Mortality:	RP-2000 Combined Mortality Table, projected to 2013 with Scale BB (set back 1 year for females)	RP-2000 Combined Mortality Table, projected to 2013 with Scale BB (set back 1 year for females)	RP-2000 Combined Mortality Table, projected to 2013 with Scale BB (set back 1 year for females)	RP-2000 Combined Mortality Table, projected to 2013 with Scale BB (set back 1 year for females)	RP-2000 Combined Mortality Table, projected to 2013 with Scale BB (set back 1 year for females)
Phase-In provision	Board certified rate is phased into the actuarially determined rate in accordance with HB 362 enacted in 2018.	Board certified rate is phased into the actuarially determined rate in accordance with HB 362 enacted in 2018.	N/A	N/A	N/A

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

Fiscal Year Ending	Actuarially Determined Contribution ⁽¹⁾	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll ⁽²⁾	Actual Contributions as a Percentage of Covered Payroll
2020	\$554,612	\$475,416	\$79,196	\$2,462,752	19.30%
2019	529,575	393,453	136,122	2,424,796	16.23%
2018	355,473	358,017	(2,544)	2,454,927	14.58%
2017	331,492	333,554	(2,062)	2,376,290	14.04%
2016	282,767	284,106	(1,339)	2,417,187	11.75%
2015	297,715	298,566	(851)	2,296,716	13.00%
2014	324,231	324,231	-	2,272,270	14.27%
2013	294,914	294,914	-	2,236,277	13.19%
2012	261,764	275,736	(13,972)	2,236,546	12.33%
2011	\$218,985	\$248,519	\$(29,534)	\$2,276,596	10.92%

⁽¹⁾ Actuarially determined contribution rate for fiscal year ended 2020 is based on the contribution rate calculated with the June 30, 2018, actuarial valuation.

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

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

Fiscal Year Ending	Actuarially Determined Contribution ⁽¹⁾	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll ⁽²⁾	Actual Contributions as a Percentage of Covered Payroll
2020	\$206,922	\$168,443	\$38,479	\$559,551	30.10%
2019	197,559	138,053	59,506	553,541	24.94%
2018	124,953	127,660	(2,707)	562,853	22.68%
2017	114,316	115,947	(1,631)	526,559	22.02%
2016	104,952	105,713	(761)	526,334	20.08%
2015	107,514	108,071	(557)	483,641	22.35%
2014	115,240	115,240	-	479,164	24.05%
2013	120,140	120,140	-	461,673	26.02%
2012	83,589	89,329	(5,740)	464,229	19.24%
2011	\$78,796	\$85,078	\$(6,282)	\$466,964	18.22%

⁽¹⁾ Actuarially determined contribution rate for fiscal year ended 2020 is based on the contribution rate calculated with the June 30, 2018, actuarial valuation.

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

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

Fiscal Year Ending	Actuarially Determined Contribution ⁽¹⁾	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll ⁽²⁾	Actual Contributions as a Percentage of Covered Payroll
2020	\$1,048,513	\$948,592	\$99,921	\$1,476,156	64.26%
2019	1,055,402	1,035,462	19,940	1,485,854	69.69%
2018	633,879	689,143	(55,264)	1,509,955	45.64%
2017	623,813	757,121	(133,308)	1,602,396	47.25%
2016	512,670	513,084	(414)	1,631,025	31.46%
2015	520,948	521,691	(743)	1,544,234	33.78%
2014	520,765	296,836	223,929	1,577,496	18.82%
2013	485,396	280,874	204,522	1,644,409	17.08%
2012	441,094	214,786	226,308	1,644,897	13.06%
2011	\$381,915	\$193,754	\$188,161	\$1,731,633	11.19%

⁽¹⁾ Actuarially determined contribution rate for fiscal year ended 2020 is based on the contribution rate calculated with the June 30, 2017, actuarial valuation.

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

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

Fiscal Year Ending	Actuarially Determined Contribution ⁽¹⁾	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll ⁽²⁾	Actual Contributions as a Percentage of Covered Payroll
2020	\$59,096	\$59,115	\$(19)	\$171,840	34.40%
2019	55,230	55,259	(29)	160,600	34.41%
2018	31,321	43,661	(12,340)	152,936	28.55%
2017	37,630	52,974	(15,344)	178,511	29.68%
2016	23,690	23,759	(69)	158,828	14.96%
2015	28,374	28,536	(162)	128,680	22.18%
2014	13,570	11,670	1,900	129,076	9.04%
2013	21,502	27,334	(5,832)	131,015	20.86%
2012	20,265	20,809	(544)	131,977	15.77%
2011	\$20,605	\$19,141	\$1,464	\$133,054	14.39%

⁽¹⁾ Actuarially determined contribution rate for fiscal year ended 2020 is based on the contribution rate calculated with the June 30, 2017, actuarial valuation.

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

Schedule of Employer's Contributions Pension - SPRS

As of June 30 (\$ in Thousands)

Fiscal Year Ending	Actuarially Determined Contribution ⁽¹⁾	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll ⁽²⁾	Actual Contributions as a Percentage of Covered Payroll
2020	\$58,358	\$59,453	\$(1,095)	\$49,019	121.29%
2019	58,948	60,048	(1,100)	49,515	121.27%
2018	36,033	46,877	(10,844)	50,346	93.11%
2017	35,937	63,240	(27,303)	54,065	116.97%
2016	25,723	25,822	(99)	46,685	55.31%
2015	31,444	31,990	(546)	45,765	69.90%
2014	25,808	20,279	5,529	44,616	45.45%
2013	23,117	18,501	4,616	45,256	40.88%
2012	20,498	15,362	5,136	48,373	31.76%
2011	\$18,463	\$12,657	\$5,806	\$48,693	25.99%

⁽¹⁾ Actuarially determined contribution rate for fiscal year ended 2020 is based on the contribution rate calculated with the June 30, 2017, actuarial valuation.

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

Schedule of the Employers' Net OPEB Liability - CERS Non-Hazardous Plan

As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2020	\$4,996,309	\$2,581,613	\$2,414,696	51.67%	\$2,620,585	92.14%
2019	4,251,466	2,569,511	1,681,955	60.44%	2,577,378	65.26%
2018	4,189,606	2,414,126	1,775,480	57.62%	2,570,156	69.08%
2017	\$4,222,878	\$2,212,536	\$2,010,342	52.39%	\$2,480,130	81.06%

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

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

Schedule of the Employers' Net OPEB Liability - CERS Hazardous Plan

As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2020	\$2,245,222	\$1,321,117	\$924,105	58.84%	\$596,001	155.05%
2019	2,080,574	1,340,714	739,860	64.44%	583,632	126.77%
2018	1,993,941	1,280,982	712,959	64.24%	588,526	121.14%
2017	\$2,015,673	\$1,189,001	\$826,672	58.99%	\$542,710	152.32%

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

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

Schedule of the Employers' Net OPEB Liability - KERS Non-Hazardous Plan

As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2020	\$3,599,557	\$1,060,649	\$2,538,908	29.47%	\$1,482,431	171.27%
2019	3,217,985	995,089	2,222,896	30.92%	1,515,953	146.63%
2018	3,262,117	891,205	2,370,912	27.32%	1,573,898	150.64%
2017	\$3,353,332	\$817,370	\$2,535,962	24.37%	\$1,593,097	159.18%

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

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

Schedule of the Employers' Net OPEB Liability - KERS Hazardous Plan

As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2020	\$564,524	\$521,755	\$42,769	92.42%	\$182,209	23.47%
2019	507,204	534,053	(26,849)	105.29%	151,448	(17.73)%
2018	485,904	519,072	(33,168)	106.83%	190,317	(17.43)%
2017	\$494,869	\$488,838	\$6,031	98.78%	\$171,087	3.53%

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

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

Schedule of the Employer's Net OPEB Liability - SPRS Plan

As of June 30 (\$ in Thousands)

Year	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability/(Asset)	Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	Covered Payroll ⁽¹⁾	Net OPEB Liability as a Percentage of Covered Payroll
2020	\$339,942	\$201,340	\$138,602	59.23%	\$48,231	287.37%
2019	312,553	201,206	111,347	64.38%	48,780	228.26%
2018	301,012	190,847	110,165	63.40%	50,064	220.05%
2017	\$313,234	\$178,838	\$134,396	57.09%	\$48,873	274.99%

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

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

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

	2020	2019	2018	2017
Total OPEB Liability				
Service Cost	\$131,289	\$119,011	\$122,244	\$85,468
Interest on Total OPEB liability	236,126	240,352	242,048	240,854
Benefit Changes	-	-	4,306	-
Difference between Expected and Actual Experience	505,843	(404,301)	(240,568)	(6,641)
Assumption Changes	60,225	268,842	(4,876)	520,286
Benefit Payments ⁽¹⁾	(188,640)	(162,044)	(156,426)	(140,120)
Net Change in Total OPEB Liability	744,843	61,860	(33,272)	699,847
Total OPEB Liability - Beginning	4,251,466	4,189,606	4,222,878	3,523,031
Total OPEB Liability - Ending (a)	\$4,996,309	\$4,251,466	\$4,189,606	\$4,222,878
Plan Fiduciary Net Position				
Contributions – Employer ⁽²⁾	\$179,521	\$168,905	\$145,809	\$133,326
Contributions – Member	12,964	11,801	10,825	9,158
Benefit Payments ⁽¹⁾	(188,640)	(162,044)	(156,426)	(140,120)
OPEB Plan Net Investment Income	9,160	137,591	202,068	264,782
OPEB Plan Administrative Expense	(903)	(877)	(761)	(789)
Other ⁽⁴⁾	-	9	75	-
Net Change in Plan Fiduciary Net Position	12,102	155,385	201,590	266,357
Plan Fiduciary Net Position – Beginning	2,569,511	2,414,126	2,212,536	1,946,179
Plan Fiduciary Net Position – Ending (b)	2,581,613	2,569,511	2,414,126	2,212,536
Net OPEB Liability – Ending (a) – (b)	\$2,414,696	\$1,681,955	\$1,775,480	\$2,010,342
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	51.67%	60.44%	57.62%	52.39%
Covered Payroll ⁽³⁾	\$2,620,585	\$2,577,378	\$2,570,156	\$2,480,130
Net OPEB Liability as a Percentage of Covered Employee Payroll	92.14%	65.26%	69.08%	81.06%

⁽¹⁾ Benefit payments include expected benefits due to the implicit subsidy for members under age 65. They are also offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

⁽²⁾ Employer contributions include expected benefits due to the implicit subsidy for members under age 65.

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

⁽⁴⁾ Northern Trust Settlement.

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

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

	2020	2019	2018	2017
Total OPEB Liability				
Service Cost	\$47,443	\$32,623	\$33,948	\$20,493
Interest on Total OPEB liability	115,998	116,768	118,009	113,166
Benefit Changes	-	-	484	-
Difference between Expected and Actual Experience	38,156	(103,317)	(100,348)	(2,470)
Assumption Changes	46,925	116,618	(2,500)	391,061
Benefit Payments ⁽¹⁾	(83,874)	(76,059)	(71,325)	(63,656)
Net Change in Total OPEB Liability	164,648	86,633	(21,732)	458,594
Total OPEB Liability - Beginning	2,080,574	1,993,941	2,015,673	1,557,079
Total OPEB Liability - Ending (a)	\$2,245,222	\$2,080,574	\$1,993,941	\$2,015,673
Plan Fiduciary Net Position				
Contributions – Employer ⁽²⁾	\$59,662	\$60,445	\$51,615	\$44,325
Contributions – Member	2,762	2,458	2,173	1,708
Benefit Payments ⁽¹⁾	(83,874)	(76,059)	(71,325)	(63,656)
OPEB Plan Net Investment Income	2,315	73,317	109,854	143,892
OPEB Plan Administrative Expense	(462)	(434)	(376)	(381)
Other ⁽⁴⁾	-	5	40	-
Net Change in Plan Fiduciary Net Position	(19,597)	59,732	91,981	125,888
Plan Fiduciary Net Position – Beginning	1,340,714	1,280,982	1,189,001	1,063,113
Plan Fiduciary Net Position – Ending (b)	1,321,117	1,340,714	1,280,982	1,189,001
Net OPEB Liability – Ending (a) – (b)	\$924,105	\$739,860	\$712,959	\$826,672
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	58.84%	64.44%	64.24%	58.99%
Covered Payroll ⁽³⁾	\$596,001	\$583,632	\$588,526	\$542,710
Net OPEB Liability as a Percentage of Covered Employee Payroll	155.05%	126.77%	121.14%	152.32%

⁽¹⁾ Benefit payments include expected benefits due to the implicit subsidy for members under age 65. They are also offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

⁽²⁾ Includes expected benefits due to the implicit subsidy for members under age 65.

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

⁽⁴⁾ Northern Trust Settlement.

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

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

	2020	2019	2018	2017
Total OPEB Liability				
Service Cost	\$59,600	\$61,345	\$66,360	\$46,992
Interest	179,811	186,820	191,178	192,911
Benefit Changes	-	-	1,865	-
Difference between Expected and Actual Experience	288,235	(302,189)	(191,147)	(3,921)
Changes of Assumptions	13,767	158,004	(11,235)	414,835
Benefit Payments ⁽¹⁾	(159,841)	(148,112)	(148,236)	(139,601)
Net Change in Total OPEB Liability	381,572	(44,132)	(91,215)	511,216
Total OPEB Liability - Beginning	3,217,985	3,262,117	3,353,332	2,842,116
Total OPEB Liability - Ending (a)	\$3,599,557	\$3,217,985	\$3,262,117	\$3,353,332
Plan Fiduciary Net Position				
Contributions – Employer ⁽²⁾	\$208,300	\$201,155	\$152,985	\$162,636
Contributions – Member	6,128	5,963	5,786	5,156
Benefit Payments ⁽¹⁾	(159,841)	(148,112)	(148,236)	(139,601)
OPEB Plan Net Investment Income	11,820	45,749	64,028	94,239
OPEB Plan Administrative Expense	(847)	(875)	(760)	(861)
Other ⁽⁴⁾	-	4	32	-
Net Change in Plan Fiduciary Net Position	65,560	103,884	73,835	121,569
Plan Fiduciary Net Position – Beginning	995,089	891,205	817,370	695,801
Plan Fiduciary Net Position – Ending (b)	1,060,649	995,089	891,205	817,370
Net OPEB Liability – Ending (a) – (b)	\$2,538,908	\$2,222,896	\$2,370,912	\$2,535,962
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	29.47%	30.92%	27.32%	24.37%
Covered Payroll ⁽³⁾	\$1,482,431	\$1,515,953	\$1,573,898	\$1,593,097
Net OPEB Liability as a Percentage of Covered Employee Payroll	171.27%	146.63%	150.64%	159.18%

⁽¹⁾ Benefit payments include expected benefits due to the implicit subsidy for members under age 65. They are also offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

⁽²⁾ Employer contributions includes expected benefits due to the implicit subsidy for members under age 65.

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

⁽⁴⁾ Northern Trust Settlement.

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

Schedule of Changes in Employers' Net OPEB Liability - KERS Hazardous Plan

As of June 30 (\$ in Thousands)

	2020	2019	2018	2017
Total OPEB Liability				
Service Cost	\$11,548	\$12,337	\$12,893	\$8,002
Interest on Total OPEB liability	28,101	27,990	28,500	27,591
Benefit Changes	-	-	167	-
Difference between Expected and Actual Experience	27,668	(30,947)	(31,240)	(1,029)
Assumption Changes	11,428	31,687	(581)	89,401
Benefit Payments ⁽¹⁾	(21,425)	(19,767)	(18,704)	(16,618)
Net Change in Total OPEB Liability	57,320	21,300	(8,965)	107,347
Total OPEB Liability - Beginning	507,204	485,904	494,869	387,522
Total OPEB Liability - Ending (a)	\$564,524	\$507,204	\$485,904	\$494,869
Plan Fiduciary Net Position				
Contributions – Employer ⁽²⁾	\$7,441	\$5,556	\$5,165	\$4,579
Contributions – Member	1,105	934	909	811
Benefit Payments ⁽¹⁾	(21,425)	(19,767)	(18,704)	(16,618)
OPEB Plan Net Investment Income	704	28,373	42,950	59,614
OPEB Plan Administrative Expense	(123)	(117)	(104)	(105)
Other ⁽⁴⁾	0	2	18	-
Net Change in Plan Fiduciary Net Position	(12,298)	14,981	30,234	48,281
Plan Fiduciary Net Position – Beginning	534,053	519,072	488,838	440,557
Plan Fiduciary Net Position – Ending (b)	521,755	534,053	519,072	488,838
Net OPEB Liability – Ending (a) – (b)	\$42,769	\$(26,849)	\$(33,168)	\$6,031
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	92.42%	105.29%	106.83%	98.78%
Covered Payroll ⁽³⁾	\$182,209	\$151,448	\$190,317	\$171,087
Net OPEB Liability as a Percentage of Covered Employee Payroll	23.47%	(17.73)%	(17.43)%	3.53%

⁽¹⁾ Benefit payments include expected benefits due to the implicit subsidy for members under age 65. They are also offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

⁽²⁾ Employer contributions includes expected benefits due to the implicit subsidy for members under age 65.

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

⁽⁴⁾ Northern Trust Settlement.

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

Schedule of Changes in Employer's Net OPEB Liability - SPRS Plan

As of June 30 (\$ in Thousands)

	2020	2019	2018	2017
Total OBEPL Liability				
Service Cost	\$5,389	\$4,816	\$6,087	\$4,147
Interest on Total OPEB liability	17,600	17,724	18,432	17,993
Benefit Changes	-	-	34	-
Difference between Expected and Actual Experience	13,810	(14,295)	(23,320)	(573)
Assumption Changes	4,578	16,483	(358)	57,312
Benefit Payments ⁽¹⁾	(13,988)	(13,187)	(13,097)	(12,123)
Net Change in Total OPEB Liability	27,389	11,541	(12,222)	66,756
Total OPEB Liability - Beginning	312,553	301,012	313,234	246,478
Total OPEB Liability - Ending (a)	\$339,942	\$312,553	\$301,012	\$313,234
Plan Fiduciary Net Position				
Contributions – Employer ⁽²⁾	\$12,873	\$12,623	\$8,535	\$7,862
Contributions – Member	196	176	155	131
Benefit Payments ⁽¹⁾	(13,988)	(13,187)	(13,097)	(12,123)
OPEB Plan Net Investment Income	1,124	10,815	16,470	21,627
OPEB Plan Administrative Expense	(71)	(69)	(62)	(66)
Other ⁽⁴⁾	-	1	8	-
Net Change in Plan Fiduciary Net Position	134	10,359	12,009	17,431
Plan Fiduciary Net Position – Beginning	201,206	190,847	178,838	161,407
Plan Fiduciary Net Position – Ending (b)	201,340	201,206	190,847	178,838
Net OPEB Liability – Ending (a) – (b)	\$138,602	\$111,347	\$110,165	\$134,396
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	59.23%	64.38%	63.40%	57.09%
Covered Payroll ⁽³⁾	\$48,231	\$48,780	\$50,064	\$48,873
Net OPEB Liability as a Percentage of Covered Employee Payroll	287.37%	228.26%	220.05%	274.99%

⁽¹⁾ Benefit payments include expected benefits due to the implicit subsidy for members under age 65. They are also offset by insurance premiums received from retirees, Medicare Drug Reimbursements, and Humana Gain Share Payments (in applicable years).

⁽²⁾ Employer contributions includes expected benefits due to the implicit subsidy for members under age 65.

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

⁽⁴⁾ Northern Trust Settlement.

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

The actuarially determined contribution rates effective for fiscal year ending 2020 that are documented in the schedules on the previous pages are calculated as of June 30, 2017, for KERS and SPRS plans and June 30, 2018, for the CERS plans. Based on the June 30, 2017, and June 30, 2018, actuarial valuation report, the actuarial methods and assumptions used to calculate these contribution rates follow.

Notes to Schedule of Employers' OPEB Contributions

Notes to Schedule of Employers' OPEB Contributions					
Item	CERS	CERS	KERS	KERS	SPRS
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous	
Determined by the Actuarial Valuation as of:	June 30, 2018	June 30, 2018	June 30, 2017	June 30, 2017	June 30, 2017
Actuarial Cost Method:	Entry Age Normal				
Asset Valuation Method:	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay				
Amortization Period:	25 Years, Closed	25 Years, Closed	26 Years, Closed	26 Years, Closed	26 Years, Closed
Payroll Growth Rate:	2.00%	2.00%	0.00%	0.00%	0.00%
Investment Return:	6.25%	6.25%	6.25%	6.25%	6.25%
Inflation:	2.30%	2.30%	2.30%	2.30%	2.30%
Salary Increase:	3.30% to 11.55%, varies by service	3.05% to 18.55%, varies by service	3.55% to 15.55%, varies by service	3.55% to 19.55%, varies by service	3.05% to 15.55%, varies by service
Mortality:	RP-2000 Combined Mortality Table, projected to 2013 with Scale BB (set back 1 year for females)	RP-2000 Combined Mortality Table, projected to 2013 with Scale BB (set back 1 year for females)	RP-2000 Combined Mortality Table, projected to 2013 with Scale BB (set back 1 year for females)	RP-2000 Combined Mortality Table, projected to 2013 with Scale BB (set back 1 year for females)	RP-2000 Combined Mortality Table, projected to 2013 with Scale BB (set back 1 year for females)
Healthcare Trend Rates:					
Pre-65	Initial trend starting at 7.00% at January 1, 2020 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 12 years. The 2019 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 7.00% at January 1, 2020 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 12 years. The 2019 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 7.25% at January 1, 2019 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2018 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 7.25% at January 1, 2019 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2018 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 7.25% at January 1, 2019 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years. The 2018 premiums were known at the time of the valuation and were incorporated into the liability measurement.
Post-65	Initial trend starting at 5.00% at January 1, 2020 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 10 years. The 2019 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 5.00% at January 1, 2020 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 10 years. The 2019 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 5.10% at January 1, 2019 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 11 years. The 2018 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 5.10% at January 1, 2019 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 11 years. The 2018 premiums were known at the time of the valuation and were incorporated into the liability measurement.	Initial trend starting at 5.10% at January 1, 2019 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 11 years. The 2018 premiums were known at the time of the valuation and were incorporated into the liability measurement.
Phase-In provision	Board certified rate is phased into the actuarially determined rate in accordance with HB 362 enacted in 2018.	Board certified rate is phased into the actuarially determined rate in accordance with HB 362 enacted in 2018.	N/A	N/A	N/A

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

Fiscal Year Ending ⁽¹⁾	Actuarially Determined Contribution ⁽²⁾	Total Employer Contribution ⁽³⁾	Contribution Deficiency (Excess)	Covered Payroll ⁽⁴⁾	Actual Contributions as a Percentage of Covered Payroll
2020	\$124,740	\$129,267	\$(4,527)	\$2,620,585	4.93%
2019	160,055	139,655	20,400	2,577,378	5.42%
2018	120,797	124,619	(3,822)	2,570,156	4.85%
2017	122,270	120,712	1,558	2,480,130	4.87%
2016	110,987	111,836	(849)	2,352,762	4.75%
2015	119,511	119,444	67	2,296,716	5.20%
2014	130,652	123,278	7,374	2,272,270	5.43%
2013	195,561	159,993	35,568	2,236,277	7.15%
2012	214,421	171,925	42,496	2,236,546	7.69%
2011	\$213,429	\$186,886	\$26,543	\$2,276,596	8.21%

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

⁽²⁾ Actuarially determined contribution for fiscal year ended 2020 are based on the contribution rate calculated with the June 30, 2018, actuarial valuation.

⁽³⁾ Employer contributions do not include the expected implicit subsidy included in exhibit 3.

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

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

Fiscal Year Ending ⁽¹⁾	Actuarially Determined Contribution ⁽²⁾	Total Employer Contribution ⁽³⁾	Contribution Deficiency (Excess)	Covered Payroll ⁽⁴⁾	Actual Contributions as a Percentage of Covered Payroll
2020	\$56,739	\$57,897	\$(1,158)	\$596,001	9.71%
2019	71,028	62,272	8,756	583,632	10.67%
2018	55,027	56,002	(975)	588,526	9.52%
2017	53,131	51,537	1,594	542,710	9.50%
2016	64,253	67,619	(3,366)	492,851	13.72%
2015	69,103	71,778	(2,675)	483,641	14.84%
2014	74,360	74,792	(432)	479,164	15.61%
2013	102,011	85,319	16,692	461,673	18.48%
2012	110,763	92,564	18,199	464,229	19.94%
2011	\$109,227	\$98,592	\$10,635	\$466,964	21.11%

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

⁽²⁾ Actuarially determined contribution for fiscal year ended 2020 are based on the contribution rate calculated with the June 30, 2018, actuarial valuation.

⁽³⁾ Employer contributions do not include the expected implicit subsidy included in exhibit 3.

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

Schedule of Employers' OPEB Contributions - KERS Non-Hazardous

As of June 30 (\$ in Thousands)

Fiscal Year Ending ⁽¹⁾	Actuarially Determined Contribution ⁽²⁾	Total Employer Contribution ⁽³⁾	Contribution Deficiency (Excess)	Covered Payroll ⁽⁴⁾	Actual Contributions as a Percentage of Covered Payroll
2020	\$183,821	\$175,007	\$8,814	\$1,482,431	11.81%
2019	187,978	178,964	9,014	1,515,953	11.81%
2018	132,365	136,419	(4,054)	1,573,898	8.67%
2017	133,024	152,356	(19,332)	1,593,097	9.56%
2016	121,899	135,816	(13,917)	1,529,249	8.88%
2015	130,455	135,940	(5,485)	1,544,234	8.80%
2014	208,881	166,610	42,271	1,577,496	10.56%
2013	286,143	165,331	120,812	1,644,409	10.05%
2012	297,904	156,057	141,847	1,644,897	9.49%
2011	\$294,898	\$129,336	\$165,562	\$1,731,633	7.47%

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

⁽²⁾ Actuarially determined contribution for fiscal year ended 2020 are based on the contribution rate calculated with the June 30, 2017, actuarial valuation.

⁽³⁾ Employer contributions do not include the expected implicit subsidy included in exhibit 3.

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

Schedule of Employers' OPEB Contributions - KERS Hazardous

As of June 30 (\$ in Thousands)

Fiscal Year Ending ⁽¹⁾	Actuarially Determined Contribution ⁽²⁾	Total Employer Contribution ⁽³⁾	Contribution Deficiency (Excess)	Covered Payroll ⁽⁴⁾	Actual Contributions as a Percentage of Covered Payroll
2020	\$4,482	\$5,776	\$(1,294)	\$182,209	3.17%
2019	3,726	4,970	(1,244)	151,448	3.28%
2018	2,550	5,288	(2,738)	190,317	2.78%
2017	4,688	5,620	(932)	171,087	3.28%
2016	9,186	16,766	(7,580)	147,563	11.36%
2015	13,152	14,882	(1,730)	128,680	11.57%
2014	15,627	23,874	(8,247)	129,076	18.50%
2013	26,253	25,682	571	132,015	19.45%
2012	28,326	24,538	3,788	131,977	18.59%
2011	\$29,585	\$19,953	\$9,632	\$133,054	15.00%

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

⁽²⁾ Actuarially determined contribution for fiscal year ended 2020 are based on the contribution rate calculated with the June 30, 2017, actuarial valuation.

⁽³⁾ Employer contributions do not include the expected implicit subsidy included in exhibit 3.

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

Schedule of Employer's OPEB Contributions - SPRS

As of June 30 (\$ in Thousands)

Fiscal Year Ending ⁽¹⁾	Actuarially Determined Contribution ⁽²⁾	Total Employer Contribution ⁽³⁾	Contribution Deficiency (Excess)	Covered Payroll ⁽⁴⁾	Actual Contributions as a Percentage of Covered Payroll
2020	\$13,133	\$13,133	\$-	\$48,231	27.23%
2019	13,283	13,288	(5)	48,780	27.24%
2018	9,062	9,397	(335)	50,064	18.77%
2017	9,222	9,222	-	48,873	18.87%
2016	8,553	10,237	(1,684)	45,551	22.47%
2015	9,890	10,382	(492)	45,765	22.69%
2014	20,879	14,493	6,386	44,616	32.48%
2013	27,234	16,829	10,405	45,256	37.19%
2012	28,247	11,960	16,287	48,373	24.72%
2011	\$25,773	\$11,051	\$14,722	\$48,693	22.70%

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

⁽²⁾ Actuarially determined contribution for fiscal year ended 2020 are based on the contribution rate calculated with the June 30, 2017, actuarial valuation.

⁽³⁾ Employer contributions do not include the expected implicit subsidy included in exhibit 3.

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

Money-Weighted Rates of Return

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

See below for the money-weighted rates of return for multiple periods including fiscal year June 30, 2020, as calculated by the custodian bank, BNY Mellon:

Money - Weighted Rates of Return As of June 30						
	CERS	CERS	KERS	KERS	SPRS	
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		
Pension Funds						
2020	0.84%	0.71%	2.35%	0.96%	2.21%	
2019	5.78%	5.80%	5.73%	5.68%	5.71%	
2018	8.82%	8.82%	7.63%	8.69%	7.68%	
2017	13.80%	13.72%	12.08%	13.45%	12.50%	
2016	-0.62%	-0.46%	-0.97%	-0.33%	-1.76%	
2015	1.65%	1.88%	1.89%	1.69%	1.71%	
2014	15.56%	15.50%	15.50%	15.65%	15.66%	
Insurance Fund						
	CERS	CERS	KERS	KERS	SPRS	
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		
2020	0.36%	0.27%	0.98%	0.21%	0.64%	
2019	5.73%	5.81%	4.95%	5.61%	5.74%	
2018	9.22%	9.35%	7.95%	8.93%	9.39%	
2017	13.67%	13.69%	13.77%	13.75%	13.69%	

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

Additional Supporting Schedules

Schedule of Administrative Expenses

Schedule of Direct Investment Expenses

Schedule of Professional Consultant Fees

Report on Internal Control

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

	2020	2019
Personnel		
Salaries and Per Diem	\$14,725	\$14,098
Pension, Insurance Related Benefits	14,616	13,789
Unemployment Compensation	6	8
Tuition Assistance	12	17
Total Personnel	29,359	27,912
Contractual		
Actuarial Services	512	642
Audit Services	160	259
Healthcare	7	(390)
Legal Counsel	811	1,306
Medical Review Services	249	247
Miscellaneous	93	92
Total Contractual	1,832	2,156
Communication		
Printing	104	99
Telephone	113	127
Postage	412	321
Travel	62	78
Total Communication	691	625
Internal Audit		
Travel/Conferences	1	-
Total Internal Audit	1	-
Investments-Pension Funds		
Travel/Conferences	35	20
Dues/Subscriptions	1	3
Legal	32	195
Total Investments	\$68	\$218
Rentals		
Office Space	\$999	\$788
Equipment	74	90
Total Rentals	1,073	878
Information Technology		
Software	3,224	2,476
Total Information Technology	3,224	2,476
Miscellaneous		
Utilities	186	207
Supplies	107	108
Insurance	10	-
Dues & Subscriptions	56	49
Maintenance	1	16
Other	2	22
Total Miscellaneous	362	402
Depreciation/Amortization	1,058	1,759
Total Pension Fund Administrative Expense	37,668	36,425
Healthcare Fees	2,406	2,372
Total Insurance Fund Administrative Expense	2,406	2,372
Total Administrative Expenses	\$40,074	\$38,797

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

	2020	2019
PENSION FUNDS		
Security Lending Fees		
Borrower (Income) Rebates	\$3,052	\$7,756
Lending Agent Fees	327	364
Total Security Lending	3,379	8,120
Contractual Services		
Investment Management	48,816	50,694
Security Custody	1,252	1,229
Investment Consultant	672	583
Performance Fees	2,366	26,563
Total Contractual Services	53,106	79,069
INSURANCE FUND		
Security Lending Fees		
Borrower (Income) Rebates	1,327	2,862
Lending Agent Fees	140	157
Total Security Lending	1,467	3,019
Contractual Services		
Investment Management	18,738	23,263
Security Custody	765	832
Investment Consultant	288	245
Performance Fees	1,484	13,171
Total Contractual Services	21,275	37,511
Total Investment Expenses	\$79,227	\$127,719

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

	2020	2019
Actuarial Services	\$512	\$642
Medical Review Services	249	247
Audit Services	160	259
Legal Counsel	842	1,501
Healthcare	7	(390)
Miscellaneous	93	92
Total	\$1,863	\$2,351

**REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND
OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN
ACCORDANCE WITH GOVERNMENT AUDITING STANDARDS**

REPORT OF INDEPENDENT AUDITORS

Board of Trustees
Kentucky Retirement Systems
Frankfort, Kentucky

We have audited, in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States, the combining financial statements of the Pension Funds and Insurance Fund of the Kentucky Retirement Systems (KRS), as of and for the year ended June 30, 2020, and the related notes to the combining financial statements, which comprise KRS' basic combining financial statements (collectively, the financial statements), and have issued our report thereon dated December 3, 2020.

Internal Control over Financial Reporting

In planning and performing our audit of the financial statements, we considered KRS' internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of KRS' internal control. Accordingly, we do not express an opinion on the effectiveness of KRS' internal control.

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

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

Compliance and Other Matters

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

Purpose of this Report

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

Dean Dorton Allen Ford, PLLC

Lexington, Kentucky
December 3, 2020

INVESTMENTS

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MEMORANDUM

To: Kentucky Retirement Systems
From: Wilshire Associates
Subject: 2019-20 Fiscal Year Investment Portfolio CAFR Letter
Date: November 5, 2020

Economic Review

The fiscal year ended June 30, 2020 will be remembered for the COVID-19 pandemic, the severe economic slowdown, and wildly turbulent financial markets left in its wake. In spite of this, a global 60/40 portfolio produced a 5.3% return for the year thanks to a rapid recovery of risk asset in Q2 2020.

The world of investing was introduced to an unprecedented set of conditions in Q1 2020. As the COVID-19 virus spread globally, the response was to separate people and close nonessential businesses, with others working remotely. The U.S. unemployment rate jumped to 14.7% in April as payrolls were slashed by over 20 million jobs, and U.S. GDP fell by 31.7% (annualized) in Q2.

The fight against the Coronavirus made positive strides as the second quarter advanced, with parts of the country beginning to loosen Coronavirus-related restrictions. However, more than a dozen states were forced to pause or reverse their reopening plans. Government response was swift and decisive, with the Federal Reserve cutting short-term rates to near zero and the Congress passing a \$2 trillion stimulus bill. A surprising employment report in May pointed towards an eventual recovery, while unemployment claims began to point towards a bottom and perhaps the beginning of a recovery, albeit off extremely weak levels.

Capital Markets Review

U.S. Equity

The U.S. stock market, as measured by the Wilshire 5000 Index, was up over 10% in the second half of 2019, capping off the strongest year for stocks since 2013. Trade talks with China improved in the latter half of the year, and the expectation of continued monetary easing by the Federal Reserve bolstered markets. Investors were encouraged by 2.6% and 2.4% GDP growth (respectively) in Q3 and Q4, which compared favorably to global economic conditions.

The tide changed quickly in 2020, with U.S. stocks down -20.70% in Q1, the worst quarter since the Global Financial Crisis. Uncertainty and a declining outlook were the driving forces behind the sell-off, as the COVID-19 pandemic worsened and significantly limited global commerce. Energy was by far the worst performing sector, down over 50% for the quarter as oil markets were rocked by a downward shock to demand.

Despite the slow pace of economic recovery, U.S. equities experienced a V-shaped recovery in Q2, recovering most of the losses from Q1 with a 21.94% return for the quarter resulting in a 6.78% return for

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the trailing one-year period. Small- and micro-cap stocks outperformed large-cap companies, having underperformed during the Q1 selloff, while the outperformance of growth compared to value accelerated. For the year ended June 30, 2020 the Wilshire Large-Cap Growth Index outperformed its Value counterpart by nearly 20%, with returns of 18.31% and -1.46% respectively.

Non-U.S. Equity

Equity markets outside of the U.S. also ended 2019 with strong advances, although they generally underperformed the U.S. equity market. Conditions in the UK and Germany showed signs of economic weakness but improving sentiment. Japan experienced economic expansion throughout 2019, due mostly to capital expenditures and private consumption. China benefitted from good news on the trade front although the country's economic growth cooled to near 30-year lows.

Non-U.S. equity sold off during Q1 as the COVID-19 virus was officially categorized as a global pandemic, with the MSCI ACWI ex USA Index falling -23.36%. Across continental Europe, quarantine efforts were implemented and began to bear fruit by quarter end as cases in Italy, one of the worst afflicted countries, and Spain appeared to be approaching a peak. China began relaxing severe travel restrictions and the lockdown of Wuhan. The official Purchasing Manager's Index for China indicated that manufacturing in the country was expanding after a dramatic slowdown.

Despite lagging U.S. stocks, equity markets abroad also enjoyed a strong rebound during Q2, with the MSCI ACWI ex USA Index returning 16.12% and cutting one-year losses to -4.80%. Although the 19-nation euro region is expected to shrink more than -8% in 2020, survey data shows that economic sentiment is improving. China's economic recovery continued during the second quarter due, in part, to government support policies and the reopening of some overseas markets.

Fixed Income

The U.S. Treasury yield curve fell across all maturities during the second half of 2019, with the biggest declines occurring in the short end of the curve. The 10-year Treasury yield ended the year at 1.92%, down 8 basis points from June. The Federal Open Market Committee decreased its overnight rate by 0.25% at the July, September, and October meetings.

As the coronavirus became a global pandemic in Q1 2020, the U.S. Treasury yield curve fell dramatically across the maturity spectrum. While the largest decreases occurred in the short end, yields across the curve all fell in excess of 100 basis points. The 10-year Treasury yield ended the quarter at 0.70%, down 122 basis points from December. The Federal Open Market Committee decreased its overnight rate by 1.50% during two unscheduled meetings in March. The Fed also announced quantitative easing measures, committing to Treasury purchases of at least \$500 billion and mortgage-backed securities of at least \$200 billion over the coming months. Credit spreads were up big during the quarter within both the investment grade and high yield markets.

After a dramatic drop in Q1, the yield curve was little changed during the second quarter. Although the entire curve ended below 1.50% it also was steeper than it had been in two years. The 10-year Treasury yield ended the quarter at 0.66%, down just 4 basis points from March. The Federal Open Market Committee met twice during the quarter, as scheduled, with no change to their overnight rate, which they expect will be near zero until at least 2022. Chair Jerome Powell attempted to temper expectations by



stating that, “The path forward for the economy is extraordinarily uncertain.” Credit spreads tightened significantly during the quarter, as evidenced by the double-digit return within the high yield market.

Real Assets

Real estate struggled during the fiscal year ended June 30, 2020, with the Wilshire Global RESI falling -5.15%. Real estate securities produced positive returns in three of the four quarters in this timeframe, but fell by -7.21% during Q1 2020 as the pandemic caused particular trouble for office and retail related properties.

Commodity results were also negative for the year, with the Bloomberg Commodity Index posting a -19.40% return for the one-year period ending June 30, 2020. As countries closed down to slow the spread of the coronavirus, demand for crude oil cratered and prices fell -66.5% to \$20.48 per barrel, the lowest level since the end of the 2001 recession. Crude oil jumped 91.7% in Q2 to \$39.27 per barrel, but remained well below the levels of 2019.

MLPs were already suffering losses in the second half of 2019, before being among the worst performing market segments in Q1, down -57.2% for the quarter. Off these lows, midstream Energy was among the best performing market segments in Q2 2020, up 32.6% for the quarter, but much like crude oil remained significantly depressed compared to 2019 levels.

Asset Allocation Review

The Board maintained the previously approved asset allocation changes from the June 7th, 2018 meeting, which maintained the probability of achieving the assumed rates of return while improving the liquidity profile of the portfolios. The asset allocation policy for the significantly underfunded KERS Non-Hazardous and SPRS plans decreases expected volatility and sensitivity to economic growth cycles. The asset allocation targets align with the actuarial assumed rate of returns previously approved by the Board: 6.25% for the pension plans (CERS Non Hazardous, CERS Hazardous, and KERS Hazardous) and all of the insurance plans, and 5.25% for the KERS Non Hazardous and the State Police pension.

Pension Review

The KRS Pension Plan Composite (“Pension Plan”) ended the fiscal year with assets of \$12.7 billion as of June 30, 2020, unchanged from June 30, 2019. The Pension Plan returned 1.15% net of fees for the year, outperforming the KRS Allocation Index (0.51%) and KRS IPS Benchmark (0.72%) in that time. The plan ranked in the 85th percentile of the Investment Metrics All Public Plan Total Fund Universe, net of fees, for the fiscal year. The KERS and SPRS plans underperformed their 5.25% assumed rate of return for the year ended 6/30/2020, while the other three pension plans fell short of the 6.25% target.

Insurance Review

The KRS Insurance Plan Composite (“Insurance Plan”) ended the fiscal year with assets of \$5.5 billion as of June 30, 2020, up from \$5.4 billion on June 30, 2019. The Insurance Plan returned 0.48% net of fees for the year, outperforming the KRS Allocation Index (0.24%) and KRS IPS Benchmark (0.13%) in that time. The plan ranked in the 90th percentile of the Investment Metrics All Public Plan Total Fund Universe, net of fees, for the fiscal year. In addition, all of the plans underperformed their 6.25% assumed rate of return for the year ended 6/30/2020.

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Investment Committee Initiatives

Investment Policy

At the February 4, 2020 Investment Committee meeting, the committee approved an updated Investment Policy Statement (IPS). The update centered on clarifying some governance issues and language cleanup.

Actuarial Assumptions

The committee ratified existing actuarial assumptions relating to the inflation rate (2.3%), payroll growth rate (0% and 2% depending on plan), and assumed rates of return (5.25% and 6.25% depending on plan) at the May 21, 2020, Investment Committee meeting. These data points are used to project cash flows needed in studies to determine the health of the plans and in making decisions in asset liability studies and allocation decisions.

House Bill 484

HB 484 was signed into law in April 2020 transferring the administration of CERS from the KRS Board to a newly established CERS Board effective April 1, 2021. The KRS Board will remain tasked with the administration of KERS and SPRS. A new entity, KPPA, established by the legislation, will be responsible for daily operational duties as required by the KRS and CERS Boards.

Emerging Market and Non-U.S. Small Cap Search Process

Staff and consultant continued to work to create greater efficiencies in the public equity allocation as tasked by the Investment Committee. In response, staff and consultant have determined what methods of market access are most efficient within the KRS portfolios, both in terms of opportunity for outperformance and wise fee dollar usage.

KRS portfolios will be more active in nature within Non-U.S. markets as they are perceived to be less efficient than their domestic counterparts, especially so when referring to the international small cap and emerging market segments. To that end, staff and consultant have begun a search process to identify alternative means of exposure to those parts of the market and hope to have those investments funded by January 2021.

Investment Activity

The 2020 fiscal year was busy in terms of both funding new investments and rebalancing amongst existing investment strategies. The Investment Committee approved several investments in the areas of active public equities, core fixed income, specialty finance / credit opportunities, private equity, and real estate.

New Activity

- Approved an allocation to JPMorgan (Emerging Market Equity – Growth) for 5-7% of the Non-U.S Equity allocation, which amounted to roughly \$180 million across the Pension and Insurance funds at time of initial funding.
- Approved an allocation to Pzena (Emerging Market Equity – Value) for 5-7% of the Non-U.S Equity allocation, which amounted to roughly \$180 million across the pension and insurance funds at time of initial funding.
- Approved an allocation to Next Century (U.S. Micro-cap Equity – Growth) for 2.5-3.5% of the domestic equity allocation, which amounted to roughly \$80 million across the Pension and Insurance funds at time of initial funding.
- Approved a \$200 million allocation to Capital Spring (Specialty Finance), focusing in the quick service and fast casual restaurant market.
- Approved a \$300 million allocation to Arrowmark Partners (Opportunistic) which brings the total amount committed to the strategy to \$625 million. The strategy focuses on providing funding to address regulatory capital relief.
- Approved a \$75 million allocation to Middleground Partners (Private Equity), a leveraged buyout fund focused on U.S. industrial and distribution markets.

- Approved a \$250 million allocation to Adams Street Partner (Private Equity), to serve as senior debt used to finance private equity transactions. Further, the committee approved an additional \$250 million allocation in a sidecar co-investment to the strategy.
- Approved a \$212.5 million allocation to Barings Real Estate European Value Add Fund II.
- Approved an allocation to Putnam (Real Return), a multi-asset portfolio funded in the last month of the fiscal year from the exit from the PIMCO All Asset and Nuveen Real Return portfolio strategies, which amounted to roughly \$650 million.
- Approved a \$200 million allocation to Blue Torch, focusing in distressed and special situations, with the initial funding occurring in the early months of the 2021 fiscal year.

Other Activity

- Transitioning the remaining balance (post carve-out to fund the above-mentioned active emerging market investments) of the BlackRock MSCI ACWI Ex-US portfolio to the BlackRock MSCI World Ex-US strategy.
- Rebalancing activity was significant as volatility spiked during the second half of the fiscal year. Most notably during late March and April, a shift to risk assets was conducted in order to take advantage of a rebound from the late February to late March selloff that occurred in response to COVID-19 concerns. In general, the Core Fixed Income segment of the portfolio was reduced by approximately \$840 million (along with additional cash) and redeployed to the public equity markets (roughly \$560 million) and Specialty Credit / Opportunistic strategies (approximately \$340 million).

Investment Summary

The KRS Board is charged with the responsibility of investing KRS' assets to provide benefits to KRS members. To achieve this goal, the Board follows the IPS that thoughtfully grows the asset base while at the same time protects against undue risks and losses in all investment areas. The Board recognizes its fiduciary duty not only to invest the funds in compliance with the "Prudent Person Rule", but to also manage the funds while recognizing the long-term nature of KRS' investments. In order to carry out their fiduciary duties the Board has created clearly defined investment policies, objectives, and strategies for both the Pension and Insurance portfolios.

Investment Policy

The IPS was issued by KRS' Board in connection with investing the Pension and Insurance Funds of KERS, CERS, and SPRS, supersedes all prior documents entitled IPS. The policy is located on the KRS website at kyret.ky.gov and outlines staff responsibilities, use of service providers, investment philosophy, investment objectives, asset allocations, and investment guidelines.

The following charts represent the composites for the total Pension and Insurance Funds (dollar-weighted by plan).

Pension Board Policy vs. Actual Asset Allocation										
As of June 30, 2020										
	GROWTH					LIQUIDITY		DIVERSIFYING STRATEGIES		
	Total Plan	U.S. Equity	Non U.S. Equity	Private Equity	Specialty Credit	Core Fixed Income	Cash	Real Estate	Absolute Return/ Opportunistic	Real Return
KERS and SPRS Policy's Pension Asset Allocation	100.00%	15.75%	15.75%	7.00%	15.00%	20.50%	3.00%	5.00%	3.00%	15.00%
Actual Pension Asset Allocation	100.00%	17.42%	16.43%	7.59%	15.35%	25.32%	5.20%	4.32%	3.76%	4.61%
CERS, CERS Hazardous, and KERS Hazardous Policy's Pension Asset Allocation	100.00%	18.75%	18.75%	10.00%	15.00%	13.50%	1.00%	5.00%	3.00%	15.00%
Actual Pension Asset Allocation	100.00%	19.53%	19.59%	8.44%	16.27%	18.68%	2.75%	4.29%	4.04%	6.41%

Insurance Board Policy vs. Actual Asset Allocation										
As of June 30, 2020										
	GROWTH					LIQUIDITY		DIVERSIFYING STRATEGIES		
	Total Plan	U.S. Equity	Non U.S. Equity	Private Equity	Specialty Credit	Core Fixed Income	Cash	Real Estate	Absolute Return/ Opportunistic	Real Return
Policy's Insurance Asset Allocation	100.00%	18.75%	18.75%	10.00%	15.00%	13.50%	1.00%	5.00%	3.00%	15.00%
Actual Insurance Asset Allocation	100.00%	19.71%	19.48%	9.07%	16.35%	18.28%	2.54%	4.39%	4.38%	5.80%

Investment Strategies

Diversification

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

Rebalancing

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

Investments Performance Review Procedures

At least once each quarter, the Investment Committee, on behalf of the KRS Board, reviews the performance of the portfolio to determine compliance with the IPS. The Investment Committee also reviews a report created and presented by the KRS Compliance Officer who is part of the independent Internal Audit Division. The Compliance Officer performs tests daily, monthly, and quarterly to assure compliance with the restrictions imposed by the IPS.

Investment Consulting

The Board employs industry leading external consultants to assist in determining and reviewing the asset allocation guidelines. Consultants also provide performance reports covering both the internally managed and externally managed assets. A letter from our consulting firm, Wilshire Associates, precedes this section and provides a discussion of current allocations, performance, and significant changes during the fiscal year.

Investment Objectives

The investment objectives of the portfolios are to produce results that exceed the stated goals over both short-term and long-term periods.

- **Shorter-Term** (5 years and less): The returns of the particular asset classes of the managed funds, measured on an annual basis, should exceed the returns achieved by a policy benchmark portfolio of comparable unmanaged market indices.
- **Medium-Term** (5 to 20 years): The returns of the particular asset classes of the managed funds of KRS, measured on a rolling 5 to 20 year basis, should exceed the returns achieved by a policy benchmark portfolio composed of comparable unmanaged market indices and perform above the median of an appropriate peer universe, if there is one.
- **Longer-Term**: The total assets of KRS should achieve a return of 5.25% for KERS Non-Hazardous and SPRS pensions and 6.25% for all other Pension and Insurance plans. This is measured for 20 years and beyond and should exceed the actuarially required rate of return as well as the return achieved by its total fund benchmark.

In keeping with KRS Board's fiduciary responsibility, when all else is equal, the Board encourages the investment of KRS' assets in securities of corporations that provide a positive contribution to the economy of the Commonwealth.

The following section was prepared by the Investment Operations staff members with support from the KRS Investment Committee. Information reported in the respective schedules and supplemental information was provided by our investment consultant and custodial bank.

Investment Results

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

Fiscal Year 2020 Results

For the fiscal year ended June 30, 2020, KRS Pension Funds in total earned a net return of 1.15%, outperforming its benchmark return of 0.50%. KRS Insurance Fund in total for that period earned a return net of fees of 0.48% compared to the benchmark return of 0.13%.

Net Returns By Plan: Pension Fund As of June 30, 2020 (\$ in Thousands)

Plan	Market Value	% of Total	1 Year		3 Years		5 Years		10 Years		Inception		
			KRS	Index	KRS	Index	KRS	Index	GANIR	KRS	Index	KRS	Index
CERS	\$7,048,683	55.40%	0.84%	0.51%	5.07%	4.85%	5.60%	5.41%	5.29%	7.37%	7.53%	8.82%	8.90%
CERS HAZ	2,377,414	18.68%	0.71%	0.51%	5.04%	4.85%	5.60%	5.41%	5.53%	7.36%	7.53%	8.82%	8.90%
KERS	2,317,530	18.21%	2.36%	1.07%	5.17%	4.76%	5.31%	5.33%	4.76%	7.26%	7.47%	8.79%	8.88%
KERS HAZ	693,944	5.45%	0.95%	0.51%	5.06%	4.85%	5.58%	5.41%	5.42%	7.36%	7.53%	8.82%	8.90%
SPRS	286,685	2.25%	2.21%	1.07%	5.17%	4.83%	5.21%	5.28%	5.13%	7.17%	7.46%	8.76%	8.88%
Total	\$12,724,256	100.00%	1.15%	0.50%	5.14%	4.75%	5.58%	5.38%		7.37%	7.55%	8.82%	8.90%

Net Returns By Plan: Insurance Fund As of June 30, 2020 (\$ in Thousands)

Plan	Market Value	% of Total	1 Year		3 Years		5 Years		10 Years		Inception	
			KRS	Index								
CERS	\$2,481,793	45.25%	0.36%	0.24%	5.04%	4.85%	5.66%	5.50%	7.50%	8.13%	7.21%	7.51%
CERS HAZ	1,300,188	23.70%	0.26%	0.24%	5.06%	4.85%	5.70%	5.50%	7.52%	8.14%	7.21%	7.51%
KERS	990,149	18.05%	0.97%	0.24%	4.59%	4.80%	5.31%	5.45%	7.20%	8.09%	7.12%	7.50%
KERS HAZ	513,885	9.37%	0.20%	0.24%	4.84%	4.86%	5.51%	5.49%	7.42%	8.12%	7.18%	7.51%
SPRS	199,038	3.63%	0.65%	0.24%	5.18%	4.85%	5.76%	5.50%	7.55%	8.14%	7.22%	7.51%
Total	\$5,485,053	100.00%	0.48%	0.13%	5.01%	4.77%	5.64%	5.49%	7.47%	8.19%	7.20%	7.53%

Benchmarks

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

Benchmarks As of June 30, 2020				
Index	Asset Class	Asset Allocation by Fund		
		KERS/SPRS	KERS-H/CERS/ CER-H	Insurance
Russell 3000	U.S. Equity	15.75%	18.75%	18.75%
MSCI ACWI Ex-US IMI	Non U.S. Equity	15.75%	18.75%	18.75%
50% Bloomberg Barclays US High Yield, 50% S&P LSTA Leveraged Loan	High Yield/Specialty Credit	15.00%	15.00%	15.00%
Bloomberg Barclay's US Aggregate	Core Fixed Income	20.50%	13.50%	13.50%
NCREIF ODCE	Real Estate	5.00%	5.00%	5.00%
Highest Assumed Rate of Participating Plans	Opportunistic/Absolute Return	3.00%	3.00%	3.00%
US CPI + 3%	Real Return	15.00%	15.00%	15.00%
Actual Performance	Private Equity < 5 years	7.00%	10.00%	10.00%
Russell 3000 Quarter Lagged + 300 bps	Private Equity > 5 years			
Citi Group 3-mos Treasury Bill	Cash	3.00%	1.00%	1.00%

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

Long-Term Results

The chart below displays the growth of \$1,000 over the course of 10 years given the performance of KRS' portfolios compared to the benchmark and the actuarial assumed rate of return. Beginning with the fiscal year 2018 valuation, the Board lowered the actuarial rates of return to 5.25% for KERS Non-Hazardous and SPRS pension plans and 6.25% for all other plans.

Since June 30, 2011, returns ranged from a minimum of (0.52)% in 2016 to a maximum of 18.96% in 2011. For fiscal year 2020, the annualized total net return fell short of the actuarially assumed rates of return. Translating this into dollars, an ending balance of \$1,000 in fiscal year 2010 would have a balance of \$2,041 in fiscal year 2020 compared to \$1,943 and \$2,013. The annualized benchmark would have returned \$2,080.

Pension Fund Growth

As of June 30 (in Whole \$)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Fund Return	18.96%	0.14%	10.82%	15.55%	2.01%	-0.52%	13.47%	8.57%	5.83%	1.15%
Performance BM	20.34%	0.90%	11.21%	14.91%	3.13%	-0.19%	13.28%	7.91%	6.00%	0.50%
Actuarial Assumed ROR CERS, CERS-H, and KERS-H	7.75%	7.75%	7.75%	7.75%	7.75%	7.50%	7.50%	6.25%	6.25%	6.25%
Actuarial Assumed ROR KERS and SPRS	7.75%	7.75%	7.75%	7.75%	7.75%	7.50%	6.75%	5.25%	5.25%	5.25%

KRS Pension Fund	\$1,000	\$1,190	\$1,191	\$1,320	\$1,525	\$1,556	\$1,548	\$1,757	\$1,907	\$2,018	\$2,041
Performance Benchmark	1,000	1,203	1,214	1,350	1,552	1,600	1,597	1,809	1,952	2,070	2,080
Actuarial Assumed ROR CERS, CERS-H, and KERS-H	1,000	1,078	1,161	1,251	1,348	1,452	1,561	1,678	1,783	1,895	2,013
Actuarial Assumed ROR KERS and SPRS	\$1,000	\$1,078	\$1,161	\$1,251	\$1,348	\$1,452	\$1,561	\$1,667	\$1,754	\$1,846	\$1,943

The chart below shows theoretical annual returns for the Insurance Fund since June 30, 2011, where returns range from a minimum of -1.71% in 2012 to a maximum of 23.47% in 2011. As of June 30, 2020, the Insurance Fund portfolios earned 0.48% versus the annualized benchmark return of 0.13%. The chart below indicates that with an ending balance of \$1,000 in fiscal year 2010, the Insurance Fund would have earned \$2,057 compared to the actuarially assumed rate of return of \$2,013 and the annualized benchmark return of \$2,211 over the 10-year period.

Insurance Fund

As of June 30 (in Whole \$)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Fund Return	23.47%	(1.71)%	10.11%	14.89%	1.86%	-0.09%	13.72%	9.05%	5.67%	0.48%
Performance BM	26.93%	0.58%	11.05%	15.03%	3.79%	0.03%	13.55%	8.48%	5.89%	0.13%
Actuarial Assumed ROR	7.75%	7.75%	7.75%	7.75%	7.75%	7.50%	7.50%	6.25%	6.25%	6.25%

KRS Insurance Fund	\$1,000	\$1,235	\$1,214	\$1,336	\$1,535	\$1,564	\$1,562	\$1,777	\$1,938	\$2,047	\$2,057
Performance Benchmark	1,000	1,269	1,277	1,418	1,631	1,693	1,693	1,923	2,086	2,208	2,211
Actuarial Assumed ROR	\$1,000	\$1,078	\$1,161	\$1,251	\$1,348	\$1,452	\$1,561	\$1,678	\$1,783	\$1,895	\$2,013

U.S. Equity

For the fiscal year ended June 30, 2020, the KRS Pension Funds' U.S. Equity portfolio posted a return of 4.86% versus the benchmark return of 6.53%. The KRS Insurance U.S. Equity portfolio posted a return of 4.76% compared to the benchmark return of 6.53%. Relative underperformance was a product of allocation as the portfolio tilts slightly smaller in terms of market cap versus the Russell 3000 index; large caps outperformed small caps by over 14% during the fiscal year. The portfolio also employs a value tilt which was detrimental to relative performance as growth outpaced value by over 30% during the period (21.9% vs -9.4%). Since inception, performance has remained sound. The Pension Fund's Public Equity portfolio has generated an annualized return of 11.08% throughout its duration against the benchmark's annualized return of 11.18%. The Insurance Fund has returned 9.49% since inception, while the benchmark returned 9.48%.

Return on U.S. Equity As of June 30, 2020

	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	4/1/1984	4.86%	8.96%	9.14%	12.95%	11.08%
Performance Benchmark		6.53%	10.04%	10.03%	13.71%	11.18%
KRS Insurance	7/1/1992	4.76%	8.90%	9.31%	12.95%	9.49%
Performance Benchmark		6.53%	10.04%	10.03%	13.66%	9.48%

Note: Pension and Insurance benchmark is the KY Domestic Equity Blend

2020 Top 10 U.S. Equity Holdings

Pension Funds

As of June 30, 2020 (\$ in Thousands)

Company	Shares	Market Value
MICROSOFT CORP	479,647	97,613
APPLE INC	263,371	96,078
AMAZON.COM INC	29,284	80,789
FACEBOOK INC	176,973	40,185
ALPHABET INC-CL A	24,273	34,420
BERKSHIRE HATHAWAY INC	182,139	32,514
ALPHABET INC-CL C	20,052	28,346
VISA INC	128,816	24,883
JOHNSON & JOHNSON	152,346	21,424
HOME DEPOT INC	83,763	20,983
Total	1,540,664	\$477,235

2020 Top 10 U.S. Equity Holdings

Insurance Fund

As of June 30, 2020 (\$ in Thousands)

Company	Shares	Market Value
MICROSOFT CORP	212,782	43,303
APPLE INC	116,898	42,644
AMAZON.COM INC	13,023	35,928
FACEBOOK INC	78,776	17,888
ALPHABET INC-CL A	10,838	15,369
BERKSHIRE HATHAWAY INC	81,624	14,571
ALPHABET INC-CL C	8,922	12,612
VISA INC	57,451	11,098
JOHNSON & JOHNSON	67,293	9,463
HOME DEPOT INC	37,375	9,363
Total	684,982	\$212,239

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

Non-U.S. Equity

For the fiscal year ended June 30, 2020, the KRS Pension Funds' Non-U.S. Equity portfolio returned (2.03)%, compared to its benchmark of (4.74)%. The KRS Insurance Non-U.S. Equity portfolio returned (2.10)% versus its benchmark of (4.74)% during the same period. Virus fears and continued geo-political issues weighed on international markets. The relative outperformance of the KRS portfolios can be attributed to strong stock selection within the active mandates, particularly within the growth mandates, both outperforming the MSCI ACWI Ex-U.S. Index by 15%. Since inception, the Insurance Non-U.S. Equity portfolios have outperformed the benchmark by 0.67%; while the Pension portfolio has slightly underperformed the benchmark.

Return on Non-U.S. Equity

As of June 30, 2020

	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	7/1/2000	-2.03%	3.17%	3.86%	5.35%	2.88%
Performance Benchmark		-4.74%	0.99%	2.38%	5.32%	2.94%
KRS Insurance	4/1/2000	-2.10%	3.02%	3.76%	5.03%	2.86%
Performance Benchmark		-4.74%	0.99%	2.38%	5.30%	2.19%

Note: Pension and Insurance benchmark is the KY Ret Int'l Equity Blended Index.

2020 Top 10 Non-U.S. Equity Holdings

Pension Funds

As of June 30, 2020 (\$ in Thousands)

Company	Shares	Market Value
SANOFI	185,685	\$18,905
HDFC BANK LTD	553,794	18,429
TAIWAN SEMICONDUCTOR MANUFACTU	942,939	16,925
CSL LTD	84,350	16,688
CELLNEX TELECOM SA	270,553	16,482
PARTNERS GROUP HOLDING AG	17,790	16,135
DSV PANALPINA A/S	129,720	15,830
TENCENT HOLDINGS LTD	243,600	15,671
NOVARTIS AG	179,468	15,611
SAMSUNG ELECTRONICS CO LTD	296,081	15,392
Total	2,903,980	\$166,068

2020 Top 10 Non-U.S. Equity Holdings

Insurance Fund

As of June 30, 2020 (\$ in Thousands)

Company	Shares	Market Value
TAIWAN SEMICONDUCTOR MANUFACTU	474,966	\$10,530
SANOFI	83,705	8,522
HDFC BANK LTD	239,557	7,841
SAMSUNG ELECTRONICS CO LTD	148,560	7,603
DSV PANALPINA A/S	60,140	7,339
CSL LTD	35,730	7,060
CELLNEX TELECOM SA	115,610	7,043
TENCENT HOLDINGS LTD	109,400	7,038
NOVARTIS AG	80,316	6,986
PARTNERS GROUP HOLDING AG	7,440	6,748
Total	1,355,424	\$76,710

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

Core Fixed Income

For the fiscal year ended June 30, 2020, the KRS Pension Funds' Fixed Income portfolio returned 5.33% versus the Bloomberg Barclays U.S. Aggregate Bond Index return of 8.74%. The KRS Insurance Fixed Income portfolio posted a 4.93% rate of return, which underperformed the Bloomberg Barclays U.S. Aggregate Bond Index by 3.81%. Relative underperformance is primarily due to the overweight portfolio positioning in the front end of the curve as short-term yields failed to keep pace with the rally in longer rates as reflected in the index.

Return on Core Fixed Income

As of June 30, 2020

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	7/1/2013	5.33%	4.23%	3.80%	N/A	3.59%
Performance Benchmark	7/1/2013	8.74%	5.32%	4.30%	N/A	3.96%
KRS Insurance	7/1/2013	4.93%	4.13%	3.72%	N/A	3.24%
Performance Benchmark	7/1/2013	8.74%	5.32%	4.30%	N/A	3.96%

Note: Pension and Insurance benchmark is KY Ret Core Fixed Income Blended Index.

2020 Top 10 Core Fixed Income Holdings

Pension Funds

As of June 30, 2020 (\$ in Thousands)

Issuer	Shares	Base Market Value
U S TREASURY NOTE	147,876,000	\$ 151,232
U S TREASURY BILL	91,351,000	\$ 91,301
CITIGROUP INC	24,298,000	\$ 25,626
BOEING CO/THE	22,595,000	\$ 24,055
GOLDMAN SACHS GROUP INC/THE	21,043,000	\$ 21,631
JPMORGAN CHASE & CO	20,155,000	\$ 21,103
WELLS FARGO & CO	17,223,000	\$ 17,701
ABBVIE INC 144A	16,220,000	\$ 17,016
BANK OF AMERICA CORP	14,197,000	\$ 15,606
MPLX LP	15,333,000	\$ 15,417
Total	390,291,000	\$400,688

Top 10 Core Fixed Income Holdings

Insurance Fund

As of June 30, 2020 (\$ in Thousands)

Issuer	Shares	Base Market Value
U S TREASURY NOTE	83,391,000	\$86,050
CITIGROUP INC	9,331,000	9,827
BOEING CO/THE	9,861,000	10,465
GOLDMAN SACHS GROUP INC/THE	9,309,000	9,552
JPMORGAN CHASE & CO	5,430,000	5,803
WELLS FARGO & CO	5,482,000	5,636
ABBVIE INC 144A	6,340,000	6,721
BANK OF AMERICA CORP	5,340,000	5,873
MPLX LP	4,662,000	4,717
AT&T	6,246,000	6,381
Total	145,392,000	\$ 151,025

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

Specialty Credit

For the fiscal year ended June 30, 2020, the KRS Pension Funds' Specialty Credit portfolio returned (1.38)% versus the benchmark return of (0.98)%. The KRS Insurance Specialty Credit portfolio posted a (1.64)% rate of return, versus the benchmark return of (0.98)%.

Return on Specialty Credit

As of June 30, 2020

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	7/1/2017	(1.38)%	3.71%	N/A	N/A	3.71%
Performance Benchmark	7/1/2017	(0.98)%	2.71%	N/A	N/A	2.71%
KRS Insurance	7/1/2017	(1.64)%	3.40%	N/A	N/A	3.40%
Performance Benchmark	7/1/2017	(0.98)%	2.71%	N/A	N/A	2.71%

Note: Pension and Insurance benchmark is High Yield Custom Benchmark.

2020 Top 10 Specialty Credit Holdings

Pension Funds

As of June 30, 2020 (\$ in Thousands)

Issuer	Shares	Base Market Value
CS ADJ INVEST PTNS PARALLEL LP	47,582,524	\$47,582
CSC HOLDINGS LLC 144A	19,088,000	20,252
CCO HOLDINGS LLC / CCO HO 144A	17,049,000	17,533
POWERSCOURT	12,060,246	12,199
FORD MOTOR CREDIT CO LLC	12,533,000	12,065
BAUSCH HEALTH COS INC 144A	12,242,000	12,013
OCCIDENTAL PETROLEUM CORP	14,363,000	11,839
1011778 BC ULC / NEW RED 144A	11,115,000	10,911
VISTRA OPERATIONS CO LLC 144A	10,628,000	10,802
T-MOBILE USA INC	10,347,000	10,643
Total	167,007,770	\$165,839

Top 10 Specialty Credit Holdings

Insurance Funds

As of June 30, 2020 (\$ in Thousands)

Issuer	Shares	Base Market Value
CS ADJ INVEST PTNS PARALLEL LP	20,392,081	\$20,392
CSC HOLDINGS LLC 144A	7,560,000	8,021
CCO HOLDINGS LLC / CCO HO 144A	6,599,000	6,791
POWERSCOURT	5,947,304	6,016
FORD MOTOR CREDIT CO LLC	5,073,000	4,884
BAUSCH HEALTH COS INC 144A	4,868,000	4,783
OCCIDENTAL PETROLEUM CORP	5,489,000	4,498
1011778 BC ULC / NEW RED 144A	4,669,000	4,597
VISTRA OPERATIONS CO LLC 144A	4,341,000	4,409
T-MOBILE USA INC	3,875,000	3,979
Total	68,813,385	\$68,370

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

Opportunistic

For the fiscal year ended June 30, 2020, the KRS Pension and Insurance Funds' Opportunistic portfolio both returned (2.76)% versus the S&P LSTA Leveraged Loan Index return of (1.99)%.

Return on Opportunistic

As of June 30, 2020

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	7/1/2018	-2.76%	N/A	N/A	N/A	3.72%
Performance Benchmark	6/1/2018	-1.99%	N/A	N/A	N/A	0.96%
KRS Insurance	7/1/2018	-2.76%	N/A	N/A	N/A	3.72%
Performance Benchmark	6/1/2018	-1.99%	N/A	N/A	N/A	0.96%

Note: Pension and Insurance benchmark is S&P LSTA Leveraged Loan Index.

Private Equity

For the fiscal year ended June 30, 2020, the KRS Pension Funds' Private Equity portfolio posted a return of 0.29%, while the Insurance Private Equity portfolio returned (5.83)%. The Investment Committee determined that the short-term benchmark (1, 3, and 5 year) should match actual performance because of the difficulty in assessing short-term returns. Fund performance is typically based on quarterly estimates of each underlying business's value, and managers are often slow to mark valuations up or down. This can distort relative performance against a public market benchmark during periods when that index moves dramatically. A better indication of program performance would be the mid- to longer-term time periods because more underlying company holdings have likely transacted at a specific (rather than estimated) valuation.

For the five years ended June 30, 2020, the Pension and Insurance Funds' Private Equity portfolios returned 8.77% and 9.03%, respectively. Over the past 10 years, the Pension Fund trailed its benchmark by 2.72% but still produced a 11.27% return. The Insurance Fund's 12.30% return was below its benchmark of 14.28%. Since inception in 2002, the Pension portfolio's 10.56% return is above its benchmark by 0.28%, while the Insurance portfolio's 9.33% return has slightly lagged its benchmark return of 9.78%.

Return on Private Equity

As of June 30, 2020

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	7/1/2002	0.29%	8.59%	8.77%	11.27%	10.56%
Performance Benchmark		0.29%	8.59%	8.77%	13.99%	10.28%
KRS Insurance	7/1/2002	-5.83%	7.31%	9.03%	12.30%	9.33%
Performance Benchmark		-5.83%	7.31%	9.03%	14.28%	9.78%

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

Real Estate

For the fiscal year ended June 30, 2020, the KRS Pension Funds' Real Estate portfolio saw returns of 9.77%, exceeding its benchmark return of 3.93%. The KRS Insurance Real Estate portfolio also surpassed the benchmark, returning 10.00% compared to 3.93%. For the five years ending June 30, 2020, both the Pension and Insurance Fund portfolios outperformed the benchmarks return by 2.29% and 2.58% respectively.

Return on Real Estate

As of June 30, 2020

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	Jul-84	9.77%	9.93%	9.77%	10.59%	6.28%
Performance Benchmark		3.93%	5.85%	7.48%	10.42%	6.39%
KRS Insurance	May-09	10.00%	10.03%	10.06%	10.90%	9.27%
Performance Benchmark		3.93%	5.85%	7.48%	10.42%	5.84%

Note: Pension and Insurance benchmark is NCREIF ODCE

Real Return

For the fiscal year ended June 30, 2020, the KRS Pension Funds' Real Return portfolio returned (9.24)% equaling its benchmark return of (9.24)%. The KRS Insurance Real Return portfolio posted a return of (7.13)%, also in line with the benchmark return of (7.13)% for the period. Since inception, the Pension and Insurance Real Return portfolios have outperformed their respective benchmarks by 0.91% and 0.63% respectively.

Return on Real Return

As of June 30, 2020

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	7/1/2011	-9.24%	-0.95%	1.11%	N/A	2.32%
Performance Benchmark		-9.24%	-0.95%	1.11%	N/A	1.41%
KRS Insurance	7/1/2011	-7.13%	-0.25%	1.44%	N/A	2.35%
Performance Benchmark		-7.13%	-0.25%	1.44%	N/A	1.72%

Note: Pension and Insurance benchmark is Custom - Allocation Specific.

Absolute Return

For the fiscal year ended June 30, 2020, the KRS Pension and Insurance Funds' Absolute Return portfolios returned (4.19)% and (4.11)%, respectively, versus a benchmark return of 0.87%. The majority of these assets have been in redemption over the past year or longer, making comparison to active investments difficult.

Since inception in 2010, the Pension and Insurance portfolios have both outperformed their benchmark by 0.11% and 0.07% respectively. The portfolios originally consisted of three fund-of-funds, with several underlying funds eventually becoming direct investments by KRS.

Return on Absolute Return

As of June 30, 2020 (\$ in Thousands)

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	4/1/2010	-4.19%	0.18%	-0.13%	3.18%	2.84%
Performance Benchmark		0.87%	2.63%	1.46%	2.79%	2.73%
KRS Insurance	4/1/2010	-4.11%	0.24%	-0.09%	3.19%	2.80%
Performance Benchmark		0.87%	2.63%	1.46%	2.79%	2.73%

Note: Pension and Insurance benchmark is the Absolute Return Index.

2020 Top 10 Alternative Asset Holdings

Pension Funds

As of June 30, 2020 (\$ in Thousands)

Issuer	Sub Asset Class	Market Value
ARROWMARK FUND I	OPP	\$314,576
PROLOGIS	REAL EST	149,814
BAY HILLS EMERGING PARTNERS	PVT EQ	138,352
DANIEL BOONE LLC	ABS RET	98,127
STOCKBRIDGE FUND LP	REAL EST	87,818
HARRISON STREET CORE PROPERTY	REAL EST	83,941
HORSLEY BRIDGE V	PVT EQ	80,974
BAY HILLS EMERGING PARTNERS II-B	PVT EQ	64,596
FUNDAMENTAL PARTNERS III	REAL EST	59,365
AMERRA-KRS AGRI HOLDING CORP	REAL RTN	49,211
Total		\$1,126,774

2020 Top 10 Alternative Asset Holdings

Insurance Fund

As of June 30, 2020 (\$ in Thousands)

Issuer	Sub Asset Class	Market Value
ARROWMARK FUND I	OPP	\$160,184
BAY HILLS EMERGING PARTNERS II-B	PVT EQ	58,192
PROLOGIS	REAL EST	57,991
SECONDARY OPP FUND III LP	PVT EQ	51,779
STOCKBRIDGE FUND LP	REAL EST	41,522
DANIEL BOONE LLC	ABS RET	40,765
HARRISON STREE CORE PROPERTY	REAL EST	39,734
VISTA EQUITY PARTNERS	PVT EQ	28,986
GREEN EQUITY INVESTORS VI LP	PVT EQ	28,124
AMERRA-KRS AGRI HOLDING CORP	REAL RTN	26,498
Total		\$533,775

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

Cash

For the fiscal year ended June 30, 2020, the KRS Pension Funds' Cash portfolio returned 1.89%, outpacing its benchmark, the FTSE Treasury Bill - 3 Month by 0.33%. The KRS Insurance Cash portfolio underperformed the index, posting a return of 1.44% during the same 12-month period.

As the accompanying table indicates, longer-term Cash portfolios have performed well compared to their benchmark. For the five years ending June 30, 2020, the Pension Fund portfolio has outperformed its custom benchmark by 0.37% on an annualized basis. Since its inception, the portfolio has exceeded its benchmark by 0.43% per year. The Insurance portfolio has also done very well, exceeding its benchmark return over the five-year and since inception periods by 0.10% and 0.13%, respectively.

Return on Cash

As of June 30, 2020

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	Jan-88	1.89%	2.05%	1.52%	0.93%	3.50%
Performance Benchmark		1.56%	1.72%	1.15%	0.61%	3.07%
KRS Insurance	Jul-92	1.44%	1.77%	1.25%	0.76%	2.59%
Performance Benchmark		1.56%	1.72%	1.15%	0.61%	2.46%

Note: Pension and Insurance benchmark is the Citi Group 3-month Treasury.

Additional Schedules

In the following pages are additional schedules which include the assets under management for each firm KRS employs, external investment-related expenses, commissions paid, and portfolio summaries for each of the five Pension and Insurance plans for the fiscal year ended June 30, 2020.

Investment Advisors & Assets Under Management	
Actively Managed - Alphabetical by Manager	
As of June 30, 2020 (\$ in Thousands)	
Advisor	Assets Under Management
Adams Street	\$34,782
American Century Investments	498,109
Arrowmark	494,895
Baring Real Estate	68,972
Black Diamond Capital Management	62,256
BlackRock ACWI Ex-US	1,066,260
BNY Mellon Accruals	(1,053)
BSP Private Credit	126,263
BTG Pactual	33,277
Cash Accounts	555,215
Capital Springs	67,974
Cerberus	174,435
Columbia Capital	546,046
DivcoWest	4,052
Franklin Templeton	387,472
Greenfield Acquisition Partners	27,998
H/2 Credit Partners	95,531
Harrison Street	123,675
IFM Infrastructure Debt Fund	64,417
Internally Managed Accounts	576,426
JP Morgan Emerging Markets	199,472
Lazard Asset Management	567,686
Loomis, Sayles & Company	723,562
Lord Abbett	2,506,656
LSV Asset Management	497,991
Lubert-Adler	84,165
Magnetar Capital	29,042
Manulife Financial	473,746
Marathon Bluegrass	484,493
Mesa West	130,356
Middle Ground	24,750

Investment Advisors & Assets Under Management**Actively Managed - Alphabetical by Manager****As of June 30, 2020 (\$ in Thousands)**

Advisor	Assets Under Management
Next Century	100,936
NISA Investment Advisors	321,947
Northern Trust Global Investments	330,502
Nuveen Real Asset	(355)
Oberland Capital	11,046
Patron Capital	25,818
Perimeter Park	7,300
Prologis	207,805
Putnam	655,349
Pzena Emergings Markets	184,868
River Road Asset Management	251,951
Rubenstein Capital	24,536
S&P 500	2,059,136
Shenkman Capital	295,840
Stockbridge	129,340
Strategic Value Special Fund	36,616
Taurus Mine Finance	34,007
Tenaska Power	861
Tortoise Capital	121,735
Transition Accounts	1,799
Walton Street	25,381
Waterfall Investment	315,125
Westfield Capital	267,105
White Oak	198,902
Assets Under Management	\$16,336,471

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

Advisor	Assets Under Management
AMERRA Capital Management	\$110,206
Arbor Investments	78
Arcano Capital	25,904
ARES Capital	33,280
Bay Hills Emerging Partners	278,232
Blackstone Capital Partners	54,627
CM Growth Capital Partners	9,050
Columbia Asset Management	3,693
Crestview Partners	57,199
CVC Capital Partners	41,799
DAG Ventures	70,451
DB Secondary Opportunities	69,038
DCM	12,131
Essex Woodland	11,619
Fundamental Partners	84,808
Gotham Neutral Strategies	17,069
Governor's Lane	359
Green Equity Investors	141,250
Harvest Partners	52,133
Hellman & Friedman	9,190
H.I.G Capital	55,236
Horsley Bridge International	89,971
Institutional Venture Partners	6,152
Invesco	47
JW Childs Equity	23
Kayne Anderson	28,822
Keyhaven Capital Partners	37,789
Levine Leichtman	86,240
Liquidalts H2O Force	18,821
Luxor Capital	1,340
Matlin Patterson	8,025

Investment Advisors & Assets Under Management
Managers With Terminated or Runoff Status - Alphabetical by Manager
As of June 30, 2020 (\$ in Thousands)

Advisor	Assets Under Management
Merit Capital Partners	218
MHR Insituional Advisors	953
Mill Road Capital	7,332
Myriad Opportunities	55,444
New Mountain Partners	65,013
Oak Hill Partners	8,331
Oaktree Capital Management	17
Pacific Alternative Asset Management Company	9
Pine River Capital	173
Prisma Capital	138,892
Riverside Capital	26,884
SRS Partners	12,416
Sun Capital Partners IV	222
Systematic	3
Technology Crossover Ventures	339
Tricadia Select	4,970
Triton Fund	19,321
VantagePoint Capital Partners	9,179
Vista Equity Partners	90,870
Warburg Pincus	8,490
Wayzata Investment Partners	9,180
Assets Under Management	1,872,838
Total	\$18,209,309

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

Note: For fiscal year 2020, KRS separated the managers by actively managed and terminated/runoff. Managers who are actively managed are either fully funded or are in the investment phase of the strategy. Managers who are in a terminated or runoff status are in the process of liquidation or are in the final investment phase awaiting payout.

Investment Advisors & Assets Under Management by Plan and Asset Class

Pension Funds

As of June 30, 2020 (\$ in Thousands)

Advisor/Asset Class	CERS	CERS	KERS	KERS	SPRS Haz	Total
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		
Absolute Return	\$101,867	\$32,268	\$32,734	\$8,541	\$3,544	\$178,954
Blackstone Strategic Opportunistic	1,136	359	365	95	40	1,995
Gotham Neutral Strategies	6,865	2,175	2,206	575	239	12,060
Governor's Lane	144	46	46	12	5	253
Liquidalts H2O Force	7,544	2,390	2,424	633	262	13,253
Luxor Capital	572	181	184	48	20	1,005
Myriad Opportunities	22,572	7,150	7,253	1,893	785	39,653
Pacific Alternative Asset Management Company	4	1	1	1	-	7
Pine River Capital	74	23	24	6	3	130
Prisma Capital	55,857	17,694	17,950	4,683	1,943	98,127
SRS Partners	5,070	1,606	1,629	425	176	8,906
Tricadia Select	2,029	643	652	170	71	3,565
Accruals	\$(366)	\$(123)	\$(119)	\$(36)	\$(15)	\$(659)
BNYM Fee Accruals	(366)	(123)	(119)	(36)	(15)	(659)
Cash	\$187,008	\$69,501	\$125,602	\$23,151	\$9,965	\$415,227
Cash	187,008	69,501	125,602	23,151	9,965	415,227
Core Fixed Income	\$1,305,553	\$448,507	\$584,523	\$136,118	\$74,940	\$2,549,641
Lord Abbett	933,715	320,766	418,043	97,350	53,596	1,823,470
Loomis, Sayles & Company Core	273,428	93,934	122,420	28,508	15,695	533,985
NISA Investment Advisors	98,410	33,807	44,060	10,260	5,649	192,186
Opportunistic	\$187,406	\$61,954	\$54,800	\$16,990	\$6,769	\$327,919
Arrowmark	187,406	61,954	54,800	16,990	6,769	327,919
Private Equity	\$597,907	\$201,345	\$180,315	\$54,980	\$17,339	\$1,051,886
Arbor Investments II	30	10	25	3	2	70
Arcano Capital	10,095	3,142	8,452	1,069	556	23,314
ARES Capital IV	14,905	5,087	-	1,348	425	21,765
Bay Hills Capital Partners	106,224	34,250	55,951	10,640	4,807	211,872
Black Diamond Capital Management	25,281	8,629	-	2,287	721	36,918
Blackstone Capital Partners	19,708	9,368	784	1,719	52	31,631
CM Growth I	3,527	1,098	2,953	373	194	8,145
Columbia Asset Management IV	1,439	448	1,205	152	79	3,323
Crestview Partners	24,053	7,913	8,282	2,328	949	43,525
CVC Capital Partners	18,728	6,392	-	1,695	534	27,349
DAG Ventures	26,890	9,032	19,295	2,772	1,270	59,259
DB Private Equity	13,401	3,858	-	-	-	17,259
DCM VI	4,727	1,472	3,958	501	260	10,918
Essex Woodland VIII	4,116	1,281	3,446	436	227	9,506
Green Equity Investors	50,526	19,257	10,900	4,597	718	85,998
Harvest Partners	21,223	6,338	48	1,745	99	29,453
Hellman & Friedman	2,894	901	2,423	307	159	6,684
H.I.G. Capital	21,346	8,642	2,062	1,928	387	34,365
Horsley Bridge International V	35,061	10,914	29,355	3,712	1,932	80,974
Institutional Venture Partners XII	2,398	746	2,007	254	132	5,537
JW Childs III	9	3	8	1	-	21
Kayne Anderson	10,318	3,214	-	879	-	14,411
Keyhaven Capital Partners	15,013	4,887	6,618	1,480	638	28,636
Levine Leichtman	36,488	12,185	-	3,254	783	52,710
Matlin Patterson	3,127	974	2,618	331	172	7,222

Merit Capital Partners	85	26	71	9	5	196
Middle Ground	11,839	3,696	-	965	-	16,500
Mill Road Capital	2,857	889	2,392	303	158	6,599
New Mountain Partners	26,648	8,809	7,999	2,558	1,014	47,028
Oak Hill Partners	2,702	841	2,263	286	149	6,241
Riverside Capital VI	12,874	3,584	-	997	150	17,605
Strategic Value Special Fund	17,501	5,464	-	1,427	-	24,392
Triton Fund	8,664	2,957	-	784	247	12,652
VantagePoint Capital Partners	3,577	1,113	2,995	379	197	8,261
Vista Equity Partners	32,252	11,756	1,299	2,791	86	48,184
Warburg Pincus	3,075	957	2,575	326	170	7,103
Wayzata Investment Partners	4,306	1,212	331	344	67	6,260
Public Equity	\$2,603,269	\$878,935	\$739,053	\$257,145	\$95,252	\$4,573,654
American Century Investments	198,147	65,490	54,071	19,062	6,980	343,750
BlackRock	410,452	136,115	111,636	39,404	14,646	712,253
Franklin Templeton	158,387	52,349	43,220	15,237	5,580	274,773
Internally Managed	224,535	77,175	66,035	22,713	8,460	398,918
Invesco	27	9	8	2	1	47
Lazard Asset Management	227,895	75,323	62,188	21,924	8,028	395,358
LSV Asset Management	196,875	65,070	53,723	18,940	6,936	341,544
Next Century	39,118	13,422	11,462	3,933	1,458	69,393
Northern Trust	143,117	48,561	41,065	14,200	5,247	252,190
River Road Asset Management	97,375	33,410	28,531	9,788	3,630	172,734
S & P 500	803,333	276,334	236,654	81,489	30,410	1,428,220
Transition Accounts	741	245	203	72	26	1,287
Westfield Capital	103,267	35,432	30,257	10,381	3,850	183,187
Emerging Markets	\$153,394	\$50,699	\$41,858	\$14,756	\$5,405	\$266,112
JP Morgan Emerging Markets	79,894	26,406	21,802	7,686	2,815	138,603
Pzena Emerging Markets	73,500	24,293	20,056	7,070	2,590	127,509
Real Estate	\$325,906	\$104,278	\$99,665	\$30,661	\$12,803	\$573,313
Baring Real Estate	27,162	8,589	9,019	2,467	1,043	48,280
DivcoWest IV	1,968	613	-	168	60	2,809
Fundamental Partners	33,399	10,561	11,090	3,034	1,282	59,366
Greenfield Acquisition Partners	13,629	4,247	-	1,164	419	19,459
Harrison Street	46,573	14,567	16,691	4,136	1,973	83,940
Lubert-Adler	36,750	11,535	5,936	3,235	1,266	58,722
Patron Capital	10,458	3,307	3,472	950	401	18,588
Perimeter Park West	1,682	1,832	1,880	1,541	365	7,300
Prologis	84,285	26,652	27,985	7,656	3,236	149,814
Rubenstein Capital II	11,915	3,713	-	1,018	366	17,012
Stockbridge	46,490	14,825	20,457	4,073	1,973	87,818
Walton Street	11,595	3,837	3,135	1,219	419	20,205
Real Return	\$434,909	\$147,390	\$104,454	\$39,247	\$15,687	\$741,687
AMERRA Capital Management	50,867	16,060	-	4,560	2,307	73,794
BTG Pactual	15,871	5,086	-	1,370	634	22,961
IFM Infrastructure Debt Fund	25,554	8,800	7,523	2,317	898	45,092
Internal TIPS	72	25	21	6	2	126
Magnetar MTP EOF II	11,185	3,537	5,573	994	493	21,782
Nuveen Real Asset	(133)	(46)	(39)	(12)	(5)	(235)
Oberland Capital	5,469	1,707	-	446	-	7,622
Putnam	257,107	88,541	75,693	23,313	9,037	453,691
Taurus Mining Finance	16,158	5,515	-	1,462	461	23,596
Tenaska Power II	348	116	253	39	18	774
Tortoise Capital	52,411	18,049	15,430	4,752	1,842	92,484
Specialty Credit	\$1,151,830	\$382,660	\$354,645	\$112,391	\$44,996	\$2,046,522
Adam Street	13,513	4,556	4,417	1,314	548	24,348

BSP Private Credit	49,509	16,397	12,459	4,475	1,157	83,997
Capital Springs	28,045	9,289	7,058	2,535	655	47,582
Cerberus	71,969	23,836	18,112	6,506	1,681	122,104
Columbia Asset Management	213,162	71,890	83,994	21,137	9,797	399,980
H/2 Credit Partners	34,984	10,991	18,175	3,100	1,531	68,781
Manulife Financial	203,865	67,957	36,589	17,925	7,507	333,843
Loomis, Sayles & Company Core	23	7	4	2	1	37
Marathon Bluegrass	174,317	57,275	91,963	15,537	8,303	347,395
Mesa West	50,255	15,853	9,834	4,509	1,477	81,928
Shenkman Capital	111,089	37,629	18,114	17,632	4,652	189,116
Waterfall Investment	121,382	40,577	33,864	10,513	5,825	212,161
White Oak	79,717	26,403	20,062	7,206	1,862	135,250
Total Assets Under Management	\$7,048,683	\$2,377,414	\$2,317,530	\$693,944	\$286,685	\$12,724,256

Investment Advisors & Assets Under Management by Plan and Asset Class

Insurance Fund

As of June 30, 2020 (\$ in Thousands)

Advisor/Asset Class	CERS	CERS	KERS	KERS	SPRS Haz	Total
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		
Absolute Return	\$32,817	\$18,387	\$11,560	\$7,676	\$2,880	\$73,320
Blackstone Strategic Opportunistic	352	197	124	82	31	786
Gotham Neutral Strategies	2,242	1,256	789	525	197	5,009
Governor's Lane	47	27	17	11	4	106
Liquidalts H2O Force	2,492	1,396	878	583	219	5,568
Luxor Capital	150	84	53	35	13	335
Myriad Opportunities	7,068	3,960	2,490	1,653	620	15,791
Pacific Alternative Asset Management Company	1	1	-	-	-	2
Pine River Capital	19	11	7	4	2	43
Prisma Capital	18,246	10,223	6,427	4,268	1,601	40,765
SRS Partners	1,571	880	553	368	138	3,510
Tricadia Select	629	352	222	147	55	1,405
Accruals	\$(179)	\$(94)	\$(70)	\$(37)	\$(14)	\$(394)
BNYM Fee Accruals	(179)	(94)	(70)	(37)	(14)	(394)
Cash	\$65,386	\$29,695	\$29,678	\$10,211	\$5,018	\$139,988
Cash	65,386	29,695	29,678	10,211	5,018	139,988
Core Fixed Income	\$449,233	\$238,685	\$185,922	\$91,639	\$36,971	\$1,002,450
IG Credit	-	-	-	-	-	-
Lord Abbett	306,159	162,668	126,709	62,454	25,196	683,186
Loomis, Sayles & Company Core	84,923	45,121	35,147	17,323	6,990	189,504
NISA Investment Advisors	58,151	30,896	24,066	11,862	4,785	129,760
Opportunistic	\$75,670	\$41,224	\$27,054	\$16,818	\$6,210	\$166,976
Arrowmark	75,670	41,224	27,054	16,818	6,210	166,976
Private Equity	\$243,615	\$136,615	\$50,111	\$46,029	\$20,866	\$497,236
Arbor Investments II	3	2	2	1	-	8
Arcano Capital	1,043	559	585	279	124	2,590
ARES Capital IV	6,561	3,549	-	866	539	11,515
Bay Hills Captial Partners	34,950	18,865	3,875	5,546	3,124	66,360
Black Diamond Capital Management	14,438	7,809	-	1,905	1,186	25,338
Blackstone Capital Partners	10,995	6,567	129	1,711	813	20,215
CM Growth I	365	195	205	97	43	905
Columbia Asset Management IV	149	80	83	40	18	370
Crestview Partners	7,367	3,979	574	1,111	643	13,674
CVC Capital Partners	8,234	4,454	-	1,086	676	14,450
DAG Ventures	5,275	3,007	1,336	1,080	494	11,192

DB Private Equity	24,084	13,013	7,282	6,046	1,354	51,779
DCM VI	489	262	274	130	58	1,213
Essex Woodland VIII	851	456	478	227	101	2,113
Green Equity Investors	26,606	15,892	5,084	5,362	2,308	55,252
Harvest Partners	10,105	5,937	3,292	2,353	993	22,680
Hellman & Friedman	1,009	541	566	270	120	2,506
H.I.G. Capital	11,494	6,640	143	1,708	886	20,871
Horsley Bridge International V	3,625	1,940	2,033	968	431	8,997
Institutional Venture Partners XII	248	133	139	66	29	615
JW Childs III	1	-	1	-	-	2
Kayne Anderson	5,966	3,603	2,623	1,599	620	14,411
Keyhaven Capital Partners	4,877	2,633	458	754	431	9,153
Levine Leichtman	17,141	9,600	2,295	2,973	1,521	33,530
Matlin Patterson	323	173	181	87	39	803
Merit Capital Partners	8	5	5	3	1	22
MHR Institutional Partners	384	205	215	103	46	953
Middle Ground	1,237	660	5,775	413	165	8,250
Mill Road Capital	295	158	166	79	35	733
New Mountain Partners	9,431	5,090	1,106	1,511	847	17,985
Oak Hill Partners	842	451	472	225	100	2,090
Oaktree Capital Management	7	3	4	2	1	17
Riverside Capital VI	5,330	2,829	-	692	428	9,279
Strategic Value Special Fund	3,818	2,076	4,694	1,326	310	12,224
Sun Capital	89	48	50	24	11	222
Technology Crossover Ventures	136	73	77	37	16	339
Triton Fund	3,800	2,055	-	502	312	6,669
VantagePoint Capital Partners	370	198	207	99	44	918
Vista Equity Partners	19,450	11,695	5,365	4,378	1,798	42,686
Warburg Pincus	559	299	314	149	66	1,387
Wayzata Investment Partners	1,660	881	23	221	135	2,920
Public Equity	\$897,642	\$459,616	\$411,790	\$189,859	\$72,464	\$2,031,371
American Century Investments	67,235	35,274	31,445	14,800	5,605	154,359
BlackRock	158,347	80,803	66,426	34,956	13,475	354,007
Franklin Templeton	49,089	25,754	22,958	10,806	4,092	112,699
Internally Managed	78,561	39,751	36,669	16,011	6,118	177,110
Invesco	-	-	-	-	-	-
Lazard Asset Management	75,062	39,380	35,105	16,523	6,258	172,328
LSV Asset Management	68,145	35,751	31,870	15,000	5,681	156,447
Next Century	13,942	7,229	6,418	2,854	1,100	31,543
Northern Trust	34,612	17,947	15,933	7,087	2,733	78,312
River Road Asset Management	35,012	18,154	16,117	7,170	2,764	79,217
S & P 500	280,323	140,223	131,670	57,009	21,691	630,916
Systematic	1	1	1	-	-	3
Transition Accounts	223	117	104	49	19	512
Westfield Capital	37,090	19,232	17,074	7,594	2,928	83,918
Emerging Markets	\$51,497	\$27,017	\$24,085	\$11,336	\$4,293	\$118,228
JP Morgan Emerging Markets	26,513	13,910	12,400	5,836	2,210	60,869
Pzena Emerging Markets	24,984	13,107	11,685	5,500	2,083	57,359
Real Estate	\$110,335	\$60,466	\$34,584	\$25,436	\$9,716	\$240,537
Baring Real Estate	9,502	5,214	2,938	2,198	840	20,692
DivcoWest IV	573	312	176	132	50	1,243
Fundamental Partners	11,683	6,411	3,613	2,702	1,033	25,442
Greenfield Acquisition Partners	3,940	2,141	1,210	907	341	8,539
Harrison Street	18,233	9,973	5,759	4,172	1,598	39,735
Lubert-Adler	11,710	6,396	3,609	2,702	1,026	25,443
Patron Capital	3,320	1,822	1,027	768	293	7,230

Perimeter Park West	-	-	-	-	-	-
Prologis	26,629	14,614	8,235	6,159	2,354	57,991
Rubenstein Capital II	3,472	1,886	1,066	799	301	7,524
Stockbridge	18,927	10,426	6,159	4,345	1,665	41,522
Walton Street	2,346	1,271	792	552	215	5,176
Real Return	\$147,852	\$77,269	\$51,394	\$30,940	\$10,841	\$318,296
AMERRA Capital Management	16,863	9,309	4,840	3,925	1,475	36,412
BTG Pactual	4,670	2,566	1,592	1,079	409	10,316
IFM Infrastructure Debt Fund	8,948	4,610	3,291	1,852	624	19,325
Internally Managed	126	65	46	26	9	272
Magnetar MTP EOF II	3,348	1,852	987	777	296	7,260
Nuveen Real Asset	(56)	(29)	(20)	(11)	(4)	(120)
Oberland Capital	1,069	581	1,315	372	87	3,424
Putnam	93,371	48,108	34,344	19,325	6,510	201,658
Taurus Mining Finance	5,932	3,209	-	783	487	10,411
Tenaska Power II	37	20	17	9	4	87
Tortoise Capital	13,544	6,978	4,982	2,803	944	29,251
Specialty Credit	\$407,925	\$211,308	\$164,041	\$83,978	\$29,793	\$897,045
Adam Street	4,731	2,500	1,835	987	381	10,434
BSP Private Credit	18,888	10,301	7,180	4,336	1,561	42,266
Capital Springs	9,113	4,970	3,464	2,092	753	20,392
Cerberus	23,386	12,754	8,890	5,368	1,933	52,331
Columbia Asset Management	74,695	38,591	20,653	8,914	3,213	146,066
H/2 Credit Partners	12,357	6,808	3,668	2,829	1,088	26,750
Loomis, Sayles & Company	17	9	6	4	1	37
Manulife Financial	63,290	34,500	22,773	14,178	5,162	139,903
Marathon Bluegrass	60,401	33,016	24,201	14,480	5,000	137,098
Mesa West	22,505	12,419	6,280	5,250	1,974	48,428
Shenkman Capital	44,255	15,857	35,256	8,408	2,948	106,724
Waterfall Investment	45,842	24,069	19,022	10,603	3,428	102,964
White Oak	28,445	15,514	10,813	6,529	2,351	63,652
Total Assets Under Management	\$2,481,793	\$1,300,188	\$990,149	\$513,885	\$199,038	\$5,485,053

External Investment Expense - Pension Funds Asset Class/Type Breakdown

For the fiscal year ending June 30, 2020 (\$ in Thousands)

	US Public	Non US Equity	Core Fixed Income	Real Return	Private Equity	Real Estate	Absolute Return	Opportunistic	Specialty Credit	Cash	Total
Fee for Long Balance	\$-	\$6	\$-	\$0	\$1	\$2	\$-	\$-	\$2	\$-	\$11
Securities Lending Fee Rebate	1,007	(40)	834	223	-	-	-	-	1,028	-	3,052
Investment Advisory Fees	1,801	7,292	2,585	4,128	8,430	5,777	806	-	13,892	-	44,711
Performance/Incentive Fees	-	-	-	(1,406)	(2,462)	5,270	171	2,469	(1,676)	-	2,366
Securities Lending Fees	131	60	47	42	-	-	-	-	47	-	327
Taxes and Insurance	-	-	-	-	116	-	-	-	-	-	116
Administration	251	-	-	-	-	-	-	-	-	1,465	1,716
Miscellaneous	-	26	-	1,365	(1,129)	1,270	-	-	670	6	2,208
Commission on Future Contracts	2	-	40	3	-	-	-	-	9	-	54
Consultant Fees	-	-	-	-	-	-	-	-	-	672	672
Custodial Fees	-	-	-	-	-	-	-	-	-	1,252	1,252
	\$3,192	\$7,344	\$3,506	\$4,355	\$4,956	\$12,319	\$977	\$2,469	\$13,972	\$3,395	\$56,485

External Investment Expense - Insurance Fund Asset Class/Type Breakdown

For the fiscal year ending June 30, 2020 (\$ in Thousands)

	US Public	Non US Equity	Core Fixed Income	Real Return	Private Equity	Real Estate	Absolute Return	Opportunistic	Specialty Credit	Cash	Total
Fee for Long Balance	\$-	\$2	\$-	\$0	\$0	\$1	\$-	\$-	\$1	\$-	\$4
Securities Lending Fee Rebate	458	2	419	90	-	-	-	-	357	-	1,326
Investment Advisory Fees	849	3,185	1,053	1,794	5,994	2,442	321	-	6,088	-	21,726
Performance/Incentive Fees	-	-	-	298	(1,961)	2,240	68	1,258	(419)	-	1,484
Securities Lending Fees	55	27	21	19	-	-	-	-	19	-	141
Administration	111	-	-	-	-	-	-	-	-	631	742
Miscellaneous	-	12	-	(237)	(4,469)	602	-	-	293	2	(3,797)
Taxes and Insurance	-	-	-	-	42	-	-	-	-	-	42
Commission on Future Contracts	1	-	15	1	-	-	-	-	4	-	21
Consultant Fees	-	-	-	-	-	-	-	-	-	288	288
Custodial Fees	-	-	-	-	-	-	-	-	-	765	765
	\$1,474	\$3,228	\$1,508	\$1,965	\$(394)	\$5,285	\$389	\$1,258	\$6,343	\$1,686	\$22,742

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

External Investment Expenses
For the fiscal year ending June 30, 2020 (\$ in Thousands)

Expense	Fees Paid	Share of Total
Portfolio Management		
Pension Funds	\$51,182	64.60%
Insurance Fund	20,222	25.52%
Securities Lending		
Pension Funds	3,379	4.26%
Insurance Fund	1,467	1.85%
Custody		
Pension Funds	1,252	1.58%
Insurance Fund	765	0.97%
Consultant		
Pension Funds	672	0.85%
Insurance Fund	288	0.36%
Total Pension Funds	56,485	71.30%
Total Insurance Fund	22,742	28.70%
Total Expenses	\$79,227	100.00%

Schedule of Commissions Paid (Whole \$)
For the fiscal year ending June 30, 2020

Assets	Total Shares	Commissions Paid	Price per Share
U.S. Equities	49,967,404	\$694,973	0.01
Non U.S. Equities	217,808,417	\$1,203,092	0.01
Total	267,775,821	\$1,898,065	0.01

Fair Values By Plan - Pension Funds

As of June 30, 2020 (\$ in Thousands)

	CERS Non-Hazardous		CERS-Hazardous		KERS Non-Hazardous		KERS-Hazardous	
	Fair Value (FV)	% of Total FV	Fair Value (FV)	% of Total FV	Fair Value (FV)	% of Total FV	Fair Value (FV)	% of Total FV
Assets								
Liquidity								
Cash	\$186,642	2.65%	\$69,378	2.92%	\$125,483	5.42%	\$23,115	3.33%
Core Fixed Income	1,305,553	18.52%	448,507	18.86%	584,523	25.22%	136,118	19.61%
Growth								
Public Equity	2,756,663	39.11%	929,634	39.10%	780,911	33.70%	271,903	39.18%
US Equity	1,367,655	19.40%	470,093	19.77%	402,247	17.36%	138,360	19.94%
Non-US Equity	1,235,614	17.53%	408,842	17.20%	336,806	14.53%	118,785	17.12%
Emerging Markets	153,394	2.18%	50,699	2.13%	41,858	1.81%	14,756	2.12%
Specialty Credit	1,151,830	16.34%	382,660	16.10%	354,645	15.30%	112,391	16.20%
Private Equity	597,907	8.48%	201,345	8.47%	180,315	7.78%	54,980	7.92%
Diversifying Strategies								
Opportunistic	187,406	2.66%	61,954	2.60%	54,800	2.36%	16,990	2.45%
Real Return	434,907	6.17%	147,390	6.20%	104,454	4.51%	39,247	5.66%
Real Estate	325,908	4.62%	104,278	4.39%	99,665	4.30%	30,661	4.42%
Absolute Return	101,867	1.45%	32,268	1.36%	32,734	1.41%	8,541	1.23%
TOTAL PORTFOLIO	\$7,048,683		\$2,377,414		\$2,317,530		\$693,944	

Fair Values By Plan - Insurance Fund

As of June 30, 2020 (\$ in Thousands)

	CERS Non-Hazardous		CERS-Hazardous		KERS Non-Hazardous		KERS-Hazardous	
	Fair Value (FV)	% of Total FV	Fair Value (FV)	% of Total FV	Fair Value (FV)	% of Total FV	Fair Value (FV)	% of Total FV
Assets								
Liquidity								
Cash	\$65,207	2.63%	\$29,601	2.28%	\$29,608	2.99%	\$10,174	1.98%
Core Fixed Income	449,232	18.10%	238,685	18.36%	185,921	18.78%	91,640	17.83%
Growth								
Public Equity	949,140	38.24%	486,634	37.43%	435,875	44.02%	201,193	39.15%
US Equity	479,541	19.32%	242,539	18.65%	223,881	22.61%	97,724	19.02%
Non-US Equity	418,102	16.85%	217,078	16.70%	187,909	18.98%	92,133	17.93%
Emerging Markets	51,497	2.07%	27,017	2.08%	24,085	2.43%	11,336	2.21%
Specialty Credit	407,924	16.44%	211,308	16.25%	164,041	16.57%	83,979	16.34%
Private Equity	243,617	9.82%	136,615	10.51%	50,110	5.06%	46,030	8.96%
Diversifying Strategies								
Opportunistic	75,671	3.05%	41,224	3.17%	27,054	2.73%	16,818	3.27%
Real Return	147,851	5.96%	77,269	5.94%	51,394	5.19%	30,940	6.02%
Real Estate	110,334	4.44%	60,466	4.65%	34,585	3.49%	25,435	4.95%
Absolute Return	32,817	1.32%	18,386	1.41%	11,561	1.17%	7,676	1.49%
TOTAL PORTFOLIO	\$2,481,793		\$1,300,188		\$990,149		\$513,885	

Fair Values By Plan - Pension Funds

As of June 30, 2020 (\$ in Thousands)

	SPRS		Total	
	Fair Value (FV)	% of Total FV	Fair Value (FV)	% of Total FV
Assets				
Liquidity				
Cash	\$9,950	3.47%	\$414,568	3.26%
Core Fixed Income	74,940	26.14%	2,549,641	20.04%
Growth				
Public Equity	100,655	35.11%	4,839,766	38.04%
US Equity	51,536	17.98%	2,429,891	19.10%
Non-US Equity	43,716	15.25%	2,143,763	16.85%
Emerging Markets	5,405	1.88%	266,112	2.09%
Specialty Credit	44,996	15.69%	2,046,522	16.08%
Private Equity	17,339	6.05%	1,051,886	8.27%
Diversifying Strategies				
Opportunistic	6,769	2.36%	327,919	2.58%
Real Return	15,687	5.47%	741,685	5.83%
Real Estate	12,803	4.47%	573,315	4.50%
Absolute Return	3,544	1.24%	178,954	1.40%
TOTAL PORTFOLIO	\$286,685		\$12,724,256	

Fair Values By Plan - Insurance Fund

As of June 30, 2020 (\$ in Thousands)

	SPRS INS		Total	
	Fair Value (FV)	% of Total FV	Fair Value (FV)	% of Total FV
Assets				
Liquidity				
Cash	\$5,004	2.51%	\$139,594	2.54%
Core Fixed Income	36,972	18.58%	1,002,450	18.28%
Growth				
Public Equity	76,758	38.56%	2,149,600	39.19%
US Equity	37,335	18.76%	1,081,020	19.71%
Non-US Equity	35,130	17.65%	950,352	17.33%
Emerging Markets	4,293	2.16%	118,228	2.15%
Specialty Credit	29,793	14.97%	897,045	16.35%
Private Equity	20,863	10.48%	497,235	9.07%
Diversifying Strategies				
Opportunistic	6,211	3.12%	166,978	3.04%
Real Return	10,842	5.45%	318,296	5.80%
Real Estate	9,716	4.88%	240,536	4.39%
Absolute Return	2,879	1.45%	73,319	1.34%
TOTAL PORTFOLIO	\$199,038		\$5,485,053	

ACTUARIAL

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Certification of Actuarial Results

Re: Certification for the Actuarial Results as of June 30, 2020.

Dear Board of Trustees:

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

Under state statute, the Board of Trustees must approve the employer contribution rates determined by each actuarial valuation. The contribution rates are determined actuarially based upon the membership, plan assets, assumptions, and funding policies adopted by the KRS Board. This actuarial valuation (as of June 30, 2020) was used by the Board of Trustees to certify the KERS, CERS, and SPRS employer contribution rates for the period beginning July 1, 2021 and ending June 30, 2022.

FINANCING OBJECTIVES AND FUNDING POLICY

KRS administers pension and health insurance funds to provide for monthly retirement income and retiree health insurance benefits. The total employer contribution rate is comprised of a contribution to each respective fund.

The employer contribution rate is determined in accordance with Section 61.565 of Kentucky Statute, which was last amended by SB249 (passed during the 2020 legislative session). As specified by the Statute, the employer contribution rate 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. Gains and losses incurring in future years (including those incurred in this June 30, 2020 valuation) are amortized as separate closed 20-year amortization bases.

Absent changes in benefits, assumptions, or material liability or investment gains or losses, the total contribution rate for each fund is expected to remain stable, as a percentage of payroll, in future years. If new legislation is enacted between the valuation date and the date the contribution rates become effective, the Board may recertify the calculated rates in order to reflect the impact of new legislation. Such adjustments are based on information supplied by the actuary.

PROGRESS TOWARD REALIZATION OF FINANCING OBJECTIVES

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a plan's funded status. In the absence of benefit improvements, assumption changes, or actuarial losses, it should increase over time, until it reaches at least 100%. As of June 30, 2020, the funded ratios for the pension and health insurance funds are as follows:

Funding Level As of June 30

System	2020		2019		2018		2017	
	Pension Fund	Insurance Fund						
CERS Non-Hazardous	49.4%	78.5%	49.1%	70.7%	52.7%	76.7%	52.8%	66.4%
CERS Hazardous	45.1%	78.2%	45.3%	75.8%	48.4%	74.6%	48.1%	66.9%
KERS Non-Hazardous	14.2%	42.7%	13.4%	36.3%	12.9%	36.4%	13.6%	30.7%
KERS Hazardous	55.3%	126.0%	54.8%	123.1%	55.5%	130.0%	54.1%	117.6%
SPRS	28.1%	75.0%	27.0%	71.3%	27.1%	71.6%	27.0%	65.2%

ASSUMPTIONS AND METHODS

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, 2018 actuarial valuation and the Board adopted updated assumptions for first use in the June 30, 2019 actuarial valuation.

The assumed increase in future healthcare costs, or trend assumption, is reviewed on an annual basis and was updated since the June 30, 2019 valuation to better reflect the plan's anticipated long-term healthcare cost increases. There were no other changes in actuarial assumptions since the prior valuation.

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

It is our opinion that the actuarial assumptions used to perform this valuation are internally consistent and reasonably reflect the anticipated future experience of the System. 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.

ADDITIONAL DISCLOSURES

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

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

DATA

Member data for retired, active and inactive members was supplied as of June 30, 2020, by the KRS staff. The staff also supplied asset information as of June 30, 2020. 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 KRS.

IMPACT DUE TO COVID-19

The actuarial valuations were performed as of June 30, 2020, which is approximately three months after the start of the COVID-19 pandemic in the United States. It is uncertain how the mortality and other demographic behavior (e.g. retirement and turnover) may change during the next couple years. However, if government budgets are constrained then we would expect lower than expected salary increases for individual members and a possible reduction in active membership until the Commonwealth's economy recovers. There may also be increased volatility and uncertainty in future investment returns.

CERTIFICATION

We certify that the information presented herein is accurate and fairly portrays the actuarial position of the Retirement Systems as of June 30, 2020. All of our work conforms with generally accepted actuarial principles and practices,

and in conformity with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of Kentucky Code of Laws and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

The undersigned are independent actuaries and consultants. Mr. Newton and Mr. White are Enrolled Actuaries. All three of the undersigned are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries. All are experienced in performing valuations for large public retirement systems.

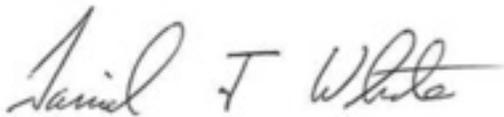
Sincerely,

Gabriel, Roeder, Smith & Co.

A handwritten signature in cursive script, appearing to read "J. Newton".

Joseph P. Newton, FSA, MAAA, EA

Senior Consultant

A handwritten signature in cursive script, appearing to read "Daniel J. White".

Daniel J. White, FSA, MAAA, EA

Senior Consultant

A handwritten signature in cursive script, appearing to read "Janie Shaw".

Janie Shaw, ASA, MAAA

Consultant

Summary of Actuarial Assumptions

The results of the actuarial valuation are based upon the assumptions and funding policies adopted by the Board and statutory funding requirements. Assumptions and funding policies are reviewed against actual plan experience at least once every five years through the completion of the Actuarial Experience Study. In general, the assumptions and methods used in the June 30, 2020 valuation are based on the most recent actuarial experience study for the five-year period ending June 30, 2018, submitted, and adopted by the Board in April 2019.

1. Actuarial Cost Method: The actuarial valuation was prepared using the entry age normal cost (EANC) method as required by state statute. Under this method, the present value of future benefits is determined for each member and allocated equitably as a level percentage of payroll from the member's entry age into the plan to the assumed age of exit from the plan. The portion of the present value of future benefits allocated to the current valuation year is called the normal cost. The portion of the present value of future benefits allocated to prior years of service is called the actuarial accrued liability. The unfunded actuarial accrued liability represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. Relative to the pension fund and the insurance fund, an employer contribution rate has been established to be equal to the sum of the normal cost and the amount needed to amortize the unfunded actuarial accrued liability (UAAL).

2. UAAL Amortization Method: Effective for the June 30, 2019 valuation, the actuarial accrued liability contribution is calculated by amortizing the unfunded accrued liability as of June 30, 2019 over a closed 30-year amortization period. Gains and losses incurring in future years are amortized as separated closed 20-year amortization bases. This amortization cost is calculated using a 0.00% payroll growth assumption for the KERS and SPRS Funds and a 2.00% payroll growth assumption for the CERS Funds.

3. Asset Valuation Method: The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the investment return assumption. The amount recognized each year is 20% of the difference between market value and expected market value.

4. Retiree Insurance Funding Policy: Effective for the June 30, 2019, valuation, the actuarial accrued liability is calculated by amortizing the unfunded accrued liability as of June 30, 2019 over a closed 30-year amortization period. Gains/losses incurring in future years are amortized as separated closed 20-year amortization bases. This amortization cost is calculated using a 0.00% payroll growth assumption for the KERS and SPRS Funds and a 2.00% payroll growth assumption for the CERS Funds.

5. Investment Return Assumption: The future investment earnings of plan assets are assumed to accumulate at a rate of 6.25% per annum for the CERS Non-Hazardous Retirement System, the CERS Hazardous Retirement System, the KERS Hazardous Retirement System, and all Insurance Systems. This rate consists of a 2.30% price inflation component and a 3.95% real rate of return component. The assumed rate of return for the KERS Non-Hazardous Retirement System and the State Police Retirement System is 5.25% and consists of a 2.30% inflationary component and a 2.95% real rate of return component. This assumption was adopted in 2017.

6. Salary Increase Assumptions: Active member salaries are assumed to increase at the rates provided in Table 1. The rates include a price inflation and productivity component, and an additional increase due to promotion based upon plan experience. The price inflation component is 2.30% for all plans and the productivity component is 1.00% for the non-hazardous systems and 1.25% for the hazardous systems. This assumption was adopted in 2019.

Table 1. Salary Increase Assumptions

Service	CERS Non-Hazardous	CERS Hazardous	KERS Non-Hazardous	KERS Hazardous	SPRS
0	10.30%	19.05%	15.30%	20.05%	16.05%
1	7.30%	7.55%	6.80%	7.55%	8.55%
2	6.30%	5.55%	6.05%	6.55%	7.55%
3	4.80%	4.80%	5.80%	6.55%	5.55%
4	4.55%	4.55%	5.30%	5.55%	5.55%
5	4.55%	4.55%	4.80%	5.05%	5.55%
6	4.30%	4.55%	4.55%	4.55%	5.55%
7	4.30%	4.05%	4.30%	4.05%	4.55%
8	4.05%	4.05%	4.05%	4.05%	4.55%
9	4.05%	3.55%	3.80%	3.55%	3.55%
10	3.80%	3.55%	3.80%	3.55%	3.55%
11	3.80%	3.55%	3.30%	3.55%	3.55%
12	3.55%	3.55%	3.30%	3.55%	3.55%
13	3.55%	3.55%	3.30%	3.55%	3.55%
14	3.55%	3.55%	3.30%	3.55%	3.55%
15 & Over	3.30%	3.55%	3.30%	3.55%	3.55%

7. Health Care Cost Trend Rate:

The costs for retiree medical premiums are assumed to increase according to the assumptions provided in Table 2.

Table 2: Health Care Cost Trend Rate (See footnotes 1-3)

January ⁽¹⁾	Non-Medicare Plans	Medicare Plans	Dollar Contribution ⁽²⁾
2022	6.40%	2.90% ⁽³⁾	1.50%
2023	6.30%	6.30%	1.50%
2024	6.20%	6.20%	1.50%
2025	6.10%	6.10%	1.50%
2026	6.00%	6.00%	1.50%
2027	5.80%	5.80%	1.50%
2028	5.60%	5.60%	1.50%
2029	5.40%	5.40%	1.50%
2030	5.20%	5.20%	1.50%
2031	5.00%	5.00%	1.50%
2032	4.80%	4.80%	1.50%
2033	4.60%	4.60%	1.50%
2034	4.40%	4.40%	1.50%
2035	4.20%	4.20%	1.50%
2036+	4.05%	4.05%	1.50%

⁽¹⁾ All increases are assumed to occur on January 1. The 2021 premiums were known at the time of the June 30, 2020 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.

⁽³⁾ Humana provided "Not to Exceed" 2022 Medicare premiums, which were incorporated into the liability measurement and resulted in an assumed 2.90% increase Medicare premiums at January 1, 2022.

8. Payroll Growth Assumption: For purposes of determining the amortization rate to finance the unfunded actuarial accrued liability, the active member payroll in CERS (Non-hazardous and Hazardous) is assumed to increase at a rate of 2.00% per year and the active member payroll in KERS (Non-hazardous and Hazardous) and SPRS is assumed to increase at the rate of 0.00% per annum. This assumption was adopted in 2017.

9. Retiree Cost of Living Adjustments (COLA): SB2 only allows the Cost of Living Adjustments (COLAs) to be awarded on a biennial basis if the State Legislature so authorizes and either (i) the system is over 100% funded or (ii) the Legislature appropriates sufficient funds to pay the increased liability for the COLA.

10. Retirement Rate Assumptions: The probability, or the likelihood, that a member will retire at a specified age or level of service is provided in Table 3. These assumptions were adopted in 2019.

Table 3a: Retirement Rate Assumptions CERS (See footnotes 1 - 3)

Age	Non-Hazardous				Service	Hazardous		
	CERS Normal Retirement		CERS Early Retirement ⁽¹⁾			CERS Members Participating before 9/1/2008 ⁽²⁾	CERS Members Participating between 9/1/2008 and 1/1/2014 ⁽³⁾	CERS Members Participating after 1/1/2014 ⁽³⁾
	Male	Female	Male	Female				
Under 45	35.00%	27.00%			5	17.00%		
45	35.00%	27.00%			6	17.00%		
46	35.00%	27.00%			7	17.00%		
47	35.00%	27.00%			8	17.00%		
48	35.00%	27.00%			9	17.00%		
49	35.00%	27.00%			10	17.00%		
50	30.00%	27.00%			11	17.00%		
51	30.00%	27.00%			12	17.00%		
52	30.00%	27.00%			13	17.00%		
53	30.00%	27.00%			14	17.00%		
54	30.00%	27.00%			15	17.00%		
55	30.00%	27.00%	4.00%	5.00%	16	17.00%		
56	30.00%	27.00%	4.00%	5.00%	17	17.00%		
57	30.00%	27.00%	4.00%	5.00%	18	17.00%		
58	30.00%	27.00%	4.00%	5.00%	19	17.00%		
59	30.00%	27.00%	4.00%	5.00%	20	30.00%		
60	30.00%	27.00%	4.00%	8.00%	21	22.50%		
61	30.00%	27.00%	4.00%	9.00%	22	18.00%		
62	30.00%	40.00%	15.00%	20.00%	23	21.00%		
63	30.00%	35.00%	15.00%	18.00%	24	24.00%		
64	30.00%	30.00%	15.00%	16.00%	25	27.00%	21.60%	16.00%
65	30.00%	30.00%			26	30.00%	24.00%	16.00%
66	30.00%	27.00%			27	33.00%	26.40%	16.00%
67	30.00%	27.00%			28	36.00%	28.80%	16.00%
68	30.00%	27.00%			29	39.00%	31.20%	16.00%
69	30.00%	27.00%			30+	39.00%	31.20%	100.00%
70	30.00%	27.00%						
71	30.00%	27.00%						
72	30.00%	27.00%						
73	30.00%	27.00%						
74	30.00%	27.00%						
75	100.00%	100.00%						

(1) The annual rate of retirement is 11% for male members and 12% for female members with 25-26 years of service.

(2) The annual rate of retirement is 100% at age 62.

(3) The annual rate of retirement is 100% at age 60.

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

Hazardous System: For members hired after 7/1/2003 and prior to 9/1/2008, the rates shown above are multiplied by 80% if the member is under age 62 to reflect the different retiree health insurance benefit.

Table 3b: Retirement Rate Assumptions KERS (See footnotes 1 - 3)

Age	Non-Hazardous				Service	Hazardous			
	KERS Normal Retirement		KERS Early Retirement ⁽¹⁾			KERS Members participating before 9/1/2008 ⁽²⁾		KERS Members participating between 9/1/2008 and 1/1/2014 ⁽³⁾	KERS Members participating after 1/1/2014 ⁽³⁾
	Male	Female	Male	Female		Age 55-61	Age 62+		
Under 45	20.00%	33.00%			5	10.00%	35.00%		
45	21.00%	33.00%			6	10.00%	35.00%		
46	22.00%	33.00%			7	10.00%	35.00%		
47	23.00%	33.00%			8	10.00%	35.00%		
48	24.00%	33.00%			9	10.00%	35.00%		
49	25.00%	33.00%			10	10.00%	35.00%		
50	26.00%	33.00%			11	10.00%	35.00%		
51	27.00%	33.00%			12	10.00%	35.00%		
52	28.00%	33.00%			13	10.00%	35.00%		
53	29.00%	33.00%			14	10.00%	35.00%		
54	30.00%	33.00%			15	10.00%	35.00%		
55	30.00%	33.00%	5.00%	5.00%	16	10.00%	35.00%		
56	30.00%	33.00%	5.00%	5.00%	17	10.00%	35.00%		
57	30.00%	33.00%	5.00%	5.00%	18	10.00%	35.00%		
58	30.00%	33.00%	5.00%	5.00%	19	10.00%	35.00%		
59	30.00%	33.00%	5.00%	5.00%	20	50.00%	50.00%		
60	30.00%	33.00%	5.00%	8.00%	21	32.00%	32.00%		
61	30.00%	33.00%	8.00%	9.00%	22	32.00%	32.00%		
62	35.00%	35.00%	15.00%	20.00%	23	32.00%	32.00%		
63	30.00%	33.00%	15.00%	18.00%	24	32.00%	32.00%		
64	30.00%	33.00%	15.00%	16.00%	25	32.00%	32.00%	25.60%	16.00%
65	30.00%	33.00%			26	32.00%	32.00%	25.60%	16.00%
66	30.00%	33.00%			27	32.00%	32.00%	25.60%	16.00%
67	30.00%	33.00%			28	32.00%	32.00%	25.60%	16.00%
68	30.00%	33.00%			29	32.00%	32.00%	25.60%	16.00%
69	30.00%	33.00%			30+	32.00%	32.00%	25.60%	100.00%
70	30.00%	33.00%							
71	30.00%	33.00%							
72	30.00%	33.00%							
73	30.00%	33.00%							
74	30.00%	33.00%							
75	100.00%	100.00%							

(1) The annual rate of retirement is 12% for male members and 14% for female members with 25-26 years of service.

(2) The annual rate of retirement is 100% at age 65.

(3) The annual rate of retirement is 100% at age 60.

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

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

Table 3c: Retirement Rate Assumptions SPRS (See footnotes 1 - 2)

Service	Hazardous		
	SPRS Members Participating before 9/1/2008 ⁽¹⁾	SPRS Members Participating between 9/1/2008 and 1/1/2014 ⁽²⁾	SPRS Members participating after 1/1/2014 ⁽³⁾
20	22.00%		
21	22.00%		
22	22.00%		
23	28.00%		
24	28.00%		
25	28.00%	17.60%	16.00%
26	28.00%	17.60%	16.00%
27	28.00%	17.60%	16.00%
28	44.00%	22.40%	16.00%
29	44.00%	22.40%	16.00%
30	44.00%	22.40%	100.00%
31	58.00%	22.40%	
32	58.00%	22.40%	
33	58.00%	35.20%	
34	58.00%	35.20%	
35	58.00%	35.20%	
36	58.00%	46.40%	
37	58.00%	46.40%	
38	58.00%	46.40%	
39	58.00%	46.40%	
40+	58.00%	46.40%	

(1) The annual rate of service retirement is 100% at age 55.

(2) The annual rate of service retirement is 100% at age 60.

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

11. Mortality Assumptions: Pre-retirement mortality: PUB-2010 General Mortality table, for the Non-Hazardous Systems, and the PUB-2010 Public Safety Mortality table for the Hazardous Systems, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010.

Post-retirement mortality (non-disabled): System-specific mortality table based on mortality experience from 2013-2018, projected with the ultimate rates from MP-2014 mortality improvement scale using a base year of 2019.

Table 4a provides the life expectancy for a non-disabled retiree in future years based on the assumption with full generational projection:

Post-retirement mortality (disabled): PUB-2010 Disabled Mortality table, with a 4-year set-forward for both male and female rates, projected with the ultimate rates from the MP-2014 mortality improvement scale using a base year of 2010.

These mortality assumptions were adopted in 2019. Table 4 provides sample annual rates of mortality in the base year of each table (2019 for the retired member mortality rates and 2010 for the active member and disabled member mortality rates).

Table 4: Sample Annual Rate of Mortality								
Age	Active Member Mortality		Active Member Mortality		Retired Member Mortality		Disabled Member Mortality	
	Non-Hazardous		Hazardous		Males	Females	Males	Females
	Males	Females	Males	Females				
20	0.04%	0.01%	0.04%	0.02%	0.03%	0.01%	0.29%	0.16%
22	0.03%	0.01%	0.04%	0.02%	0.03%	0.01%	0.29%	0.18%
32	0.04%	0.02%	0.04%	0.03%	0.04%	0.02%	0.49%	0.44%
42	0.08%	0.04%	0.07%	0.06%	0.07%	0.04%	1.11%	1.07%
52	0.18%	0.10%	0.14%	0.10%	0.31%	0.22%	2.20%	1.79%
62	0.37%	0.22%	0.32%	0.19%	1.04%	0.72%	3.19%	2.35%
72	0.84%	0.60%	0.98%	0.60%	1.79%	1.18%	5.54%	4.32%

Table 4a: Life Expectancy for an Age 65 Retiree in Years					
Gender	Year of Retirement				
	2020	2025	2030	2035	2040
Male	21.0	21.4	21.8	22.2	22.6
Female	24.0	24.4	24.8	25.2	25.6

12. Withdrawal Rates: The probability, or likelihood, of active members terminating employment prior to retirement is provided in Table 5. The rates below include the pre-retirement mortality rates described in item #11. These assumptions were adopted in 2019.

Table 5: Selected Rates of Termination Prior to Retirement							
	CERS Non-Hazardous	CERS Hazardous		KERS Non-Hazardous	KERS		SPRS
Years of Service	Years of Service			Years of Service			Years of Service
1	20.00%	20.00%	1	20.00%	25.00%	1	15.00%
2	15.58%	9.11%	2	16.45%	19.68%	2	4.82%
3	12.48%	7.24%	3	13.39%	15.12%	3	3.76%
4	10.66%	6.14%	4	11.61%	12.45%	4	3.15%
5	9.37%	5.37%	5	10.34%	10.56%	5	2.71%
6	8.37%	4.76%	6	9.35%	9.09%	6	2.37%
7	7.56%	4.27%	7	8.55%	7.89%	7	2.09%
8	6.87%	3.85%	8	7.87%	6.87%	8	1.86%
9	6.27%	3.49%	9	7.28%	5.99%	9	1.66%
10	5.74%	3.18%	10	6.76%	5.22%	10	1.48%
11	5.27%	2.89%	11	6.30%	4.53%	11	1.32%
12	4.84%	2.63%	12	5.88%	3.90%	12	1.17%
13	4.45%	2.40%	13	5.49%	3.33%	13	1.04%
14	4.09%	2.18%	14	5.14%	2.80%	14	0.92%
15	3.76%	1.98%	15	4.81%	2.31%	15	0.80%
16	3.45%	1.80%	16	4.51%	1.86%	16	0.70%
17	3.16%	1.62%	17	4.22%	1.43%	17	0.60%
18	2.89%	1.46%	18	3.96%	1.03%	18	0.51%
19	2.64%	1.30%	19	3.70%	0.66%	19	0.42%
20	2.39%	1.16%	20	3.47%	0.30%	20	0.34%
21	2.16%	0.00%	21	3.24%	0.00%	21	0.00%
22	1.94%	0.00%	22	3.02%	0.00%	22	0.00%
23	1.74%	0.00%	23	2.82%	0.00%	23	0.00%
24	1.54%	0.00%	24	2.62%	0.00%	24	0.00%
25	1.35%	0.00%	25	2.43%	0.00%	25	0.00%
26+	0.00%	0.00%	26+	0.00%	0.00%	26+	0.00%

13. Rates of Disablement: KRS provides disability benefits for those individuals meeting specific qualifications established by state law. This assumption provides the probability, or likelihood, that a member will become disabled during the course of employment for various age levels. These assumptions were adopted in 2019.

Table 6: Sample Rates of Disablement					
	CERS Non-Hazardous	CERS Hazardous	KERS Non-Hazardous	KERS Hazardous	SPRS
Nearest Age	Probability	Probability	Probability	Probability	Probability
20	0.04%	0.07%	0.03%	0.05%	0.05%
30	0.06%	0.12%	0.06%	0.08%	0.09%
40	0.14%	0.26%	0.12%	0.18%	0.20%
50	0.39%	0.73%	0.34%	0.50%	0.56%
60	1.02%	1.90%	0.88%	1.32%	1.46%

14. Assumption Changes Since Prior Valuation: The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated to better reflect more current expectations relating to anticipated future increases in the medical costs. The assumed impact of the Cadillac Tax (previously a 0.9% load on employer paid non-Medicare premiums for those who became participants prior to July 1, 2003) was removed to reflect its repeal since the prior valuation.

Summary of Actuarial Valuation Results					
	CERS Non-Hazardous	CERS Hazardous	KERS Non-Hazardous	KERS Hazardous	SPRS
Recommended Contribution Rate (Fiscal Year 2022)⁽¹⁾					
Pension Fund Contribution	23.88%	43.23%	75.32%	33.43%	127.99%
Insurance Fund Contribution	4.17%	8.73%	9.71%	0.00%	18.07%
Recommended Employer Contribution	28.05%	51.96%	85.03%	33.43%	146.06%
Funded Status as of Valuation Date As of June 30, 2020 (in Whole \$)					
Pension Fund					
Actuarial Liability	\$14,610,867,358	\$5,431,298,482	\$16,348,961,571	\$1,283,769,521	\$1,053,157,155
Actuarial Value of Assets	7,220,607,024	2,447,885,345	2,323,298,166	709,586,801	296,126,111
Unfunded Liability on Actuarial Value of Assets	7,390,260,334	2,983,413,137	14,025,663,405	574,182,720	757,031,044
Funding Ratio on Actuarial Value of Assets	49.42%	45.07%	14.21%	55.27%	28.12%
Market Value of Assets	7,027,327,214	2,379,703,906	2,308,080,030	690,349,952	293,949,424
Unfunded Liability on Market Value of Assets	\$7,583,540,144	\$3,051,594,576	\$14,040,881,541	\$593,419,569	\$759,207,731
Funding Ratio on Market Value of Assets	48.10%	43.81%	14.12%	53.78%	27.91%
Insurance Fund					
Actuarial Liability	\$3,392,085,755	\$1,740,970,549	\$2,564,787,757	\$427,976,729	\$276,143,386
Actuarial Value of Assets	2,661,350,936	1,362,027,828	1,095,958,769	539,251,445	207,017,723
Unfunded Liability on Actuarial Value of Assets	730,734,819	378,942,721	1,468,828,988	(111,274,716)	69,125,663
Funding Ratio on Actuarial Value of Assets	78.46%	78.23%	42.73%	126.00%	74.97%
Market Value of Assets	2,581,612,912	1,321,116,766	1,060,648,531	521,754,873	201,340,037
Unfunded Liability on Market Value of Assets	\$810,472,843	\$419,853,783	\$1,504,139,226	\$(93,778,144)	\$74,803,349
Funding Ratio on Market Value of Assets	76.11%	75.88%	41.35%	121.91%	72.91%
Member Data (See Footnotes)					
Number of Active Members	81,250	9,419	31,703	4,094	798
Total Annual Payroll (Active Members) ⁽²⁾	\$2,565,390,935	\$568,557,746	\$1,387,760,907	\$170,825,646	\$46,144,943
Average Annual Pay (Active Members)	\$31,574	\$60,363	\$43,774	\$41,726	\$57,826
Number of Retired Members & Beneficiaries	65,414	10,452	47,333	4,628	1,669
Average Annual Retirement Allowance	\$11,671	\$26,291	\$20,450	\$14,927	\$37,407
Number of Vested Inactive Members	50,599	1,767	31,829	2,201	300
Number of Inactive Members Due a Refund	45,093	1,823	21,670	4,740	289

⁽¹⁾ Rates do not reflect the CERS phase-in provisions, which limit the certified contribution rates to a 12% increase from the prior year. The recommended certified contribution rates for CERS for FYE 2022 are 26.95% of pay for the non-hazardous fund and 44.33% of pay for the hazardous fund.

⁽²⁾ Annual payroll included in the Summary of Actuarial Valuation Results is based upon the annualized monthly payroll for active members as of the valuation date. The annual payroll recorded in the financial section is based upon the sum of the monthly payroll for active members recorded for each month of fiscal year ending June 30, 2020.

CERS Funds

The Insurance Fund contribution rates and the employer contribution rates for CERS Non-Hazardous and CERS Hazardous shown in the tables below are the full funding rates presented by the actuary in the 2011 through 2020 annual valuations.

House Bill 362 was enacted during the 2018 legislative session that limits the annual increase in the CERS employer contribution over the prior fiscal year to 12% per year for the period of July 1, 2018 to June 30, 2028, or until the full actuarial required contribution is met.

Recommended Employer Contribution Rates

As of June 30

County Employees Retirement System

CERS (Non-Hazardous Employers)

Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
6/30/2011	2012-2013	4.68%	7.94%	12.62%	8.59%	21.21%
6/30/2012	2013-2014	4.68%	9.06%	13.74%	5.84%	19.58%
6/30/2013	2014-2015	4.35%	8.40%	12.75%	5.35%	18.10%
6/30/2014	2015-2016	4.23%	8.19%	12.42%	4.88%	17.30%
6/30/2015	2016-2017	3.80%	10.15%	13.95%	4.93%	18.88%
6/30/2016	2017-2018	3.70%	10.78%	14.48%	4.70%	19.18%
6/30/2017	2018-2019	5.85%	15.99%	21.84%	6.21%	28.05%
6/30/2018	2019-2020	5.80%	16.72%	22.52%	4.76%	27.28%
6/30/2019	2020-2021	6.63%	17.18%	23.81%	5.43%	29.24%
6/30/2020	2021-2022	6.46%	17.42%	23.88%	4.17%	28.05%

CERS (Hazardous Employers)

Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
6/30/2011	2012-2013	7.40%	12.70%	20.10%	21.84%	41.94%
6/30/2012	2013-2014	6.44%	15.33%	21.77%	16.02%	37.79%
6/30/2013	2014-2015	6.35%	14.38%	20.73%	14.97%	35.70%
6/30/2014	2015-2016	6.21%	14.05%	20.26%	13.42%	33.68%
6/30/2015	2016-2017	4.52%	17.19%	21.71%	9.79%	31.50%
6/30/2016	2017-2018	4.40%	17.80%	22.20%	9.35%	31.55%
6/30/2017	2018-2019	6.78%	28.91%	35.69%	12.17%	47.86%
6/30/2018	2019-2020	6.35%	30.63%	36.98%	9.52%	46.50%
6/30/2019	2020-2021	11.36%	30.66%	42.02%	9.86%	51.88%
6/30/2020	2021-2022	11.00%	32.23%	43.23%	8.73%	51.96%

The insurance fund contribution rates and the employer contribution rates for CERS Non-Hazardous and CERS Hazardous shown in the above tables are the full funding rates presented by the actuary in the 2011 through 2020 annual valuations. However, in the case of CERS Non-Hazardous and CERS Hazardous, in 2006 the actuary recommended a five-year phase-in of the rate which requires the payment of the insurance benefit normal cost with a five-year phase-in of the unfunded accrued liability (UAL) associated with the insurance funds. In 2008 this recommendation was changed to a ten-year phase-in from the initial starting date. This phase-in was complete and the full actuarial rates were paid in FYE 2018. HB 362 (passed during the 2018 legislative session) limited the employer contribution rate increases to 12% per year over the prior fiscal year for the period of July 1, 2018 to June 30, 2028. SB 249 (passed during the 2020 legislative session) froze the contribution rates for one year so that the rates for FYE 2021 were equal to FYE 2020.

KERS Funds

The contribution rates for KERS Non-Hazardous and KERS Hazardous shown in the tables below are the full funding rates presented by the actuary for 2011 through 2020 annual valuations. However, actual employer contributions were less than the recommended rates for years 2009 through 2014. SB 2 required full funding starting in fiscal year 2015. HB 265 from the 2018 legislative session reduced the employer contribution rate for KERS quasi-governmental agencies to the fiscal year 2018 rate for fiscal year 2019, which was 49.47%. The 2019 Special Legislative Session HB 1 sets the employer contribution rate at 49.47%, retroactive to July 1, 2019, for fiscal year 2020 for KERS quasi-governmental agencies.

Recommended Employer Contribution Rates

As of June 30

KERS (Non-Hazardous Employers)

Valuation Date	Applicable Fiscal Year	Pension Fund: Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
6/30/2011	2012-2013	4.38%	23.65%	28.03%	16.52%	44.55%
6/30/2012	2013-2014	4.26%	28.31%	32.57%	12.71%	45.28%
6/30/2013	2014-2015	4.13%	26.71%	30.84%	7.93%	38.77%
6/30/2014	2015-2016	4.10%	29.47%	33.57%	7.74%	41.31%
6/30/2015	2016-2017	3.60%	35.33%	38.93%	8.35%	47.28%
6/30/2016	2017-2018	4.93%	37.05%	41.98%	8.41%	50.39%
6/30/2017	2018-2019	8.17%	62.86%	71.03%	12.40%	83.43%
6/30/2018	2019-2020	7.98%	66.56%	74.54%	10.65%	85.19%
6/30/2019	2020-2021	7.99%	65.29%	73.28%	11.15%	84.43%
6/30/2020	2021-2022	7.90%	67.42%	75.32%	9.71%	85.03%

KERS (Hazardous Employers)

Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
6/30/2011	2012-2013	7.47%	8.69%	16.16%	19.73%	35.89%
6/30/2012	2013-2014	6.09%	10.91%	17.00%	11.84%	28.84%
6/30/2013	2014-2015	5.79%	10.58%	16.37%	9.97%	26.34%
6/30/2014	2015-2016	5.69%	11.40%	17.09%	7.12%	24.21%
6/30/2015	2016-2017	6.93%	14.15%	21.08%	2.74%	23.82%
6/30/2016	2017-2018	6.44%	14.04%	20.48%	1.34%	21.82%
6/30/2017	2018-2019	9.67%	24.72%	34.39%	2.46%	36.85%
6/30/2018	2019-2020	9.24%	25.18%	34.42%	0.00%	34.42%
6/30/2019	2020-2021	9.21%	26.79%	36.00%	0.00%	36.00%
6/30/2020	2021-2022	8.84%	24.59%	33.43%	0.00%	33.43%

The contribution rates for KERS Non-Hazardous and KERS Hazardous shown in the above tables are the full funding rates presented by the actuary in the 2011 through 2020 annual valuations. However, the actual employer contribution rates have been less than those shown above. As a result of HB 1 passed in 2008 the statute called for an employer contribution rate at an increasing percentage of the full funding rates until 100% was achieved in 2025 for KERS Non-Hazardous and 2019 for KERS Hazardous. SB2 eliminated this phase-in beginning with the June 30, 2013 actuarial valuation. Additionally, HB 265 (passed during the 2018 legislative session), HB 1 (passed during the 2019 special legislative session), and HB 352 (passed during the 2020 legislative session) reduced the FYE 2019-2021 employer contribution rate to 49.47% for Regional Mental Health/Mental Retardation Boards, Local and District Health Departments, State Universities, Community Colleges and any other agencies eligible to voluntarily cease participating in the KERS non-hazardous fund.

SPRS Funds

The contribution rates for SPRS shown in the below tables are the full funding rates presented by the actuary in the 2011 through 2020 annual valuations. However, the actual employer contribution rates have been less than those shown below. As a result of HB1 passed in 2008 the statute called for an employer contribution rate at an increasing percentage of the full funding rates. SB2 eliminated this phase-in beginning with the June 30, 2013, actuarial valuation.

Recommended Employer Contribution Rates

As of June 30

SPRS Employers

Valuation Date	Applicable Fiscal Year	Pension Fund Normal Cost	Pension Fund: Payment on Unfunded Liability	Pension Fund Contribution	Insurance Fund Contribution	Recommended Employer Contribution
6/30/2011	2012-2013	8.12%	39.36%	47.48%	55.93%	103.41%
6/30/2012	2013-2014	8.14%	45.21%	53.35%	43.17%	96.52%
6/30/2013	2014-2015	8.46%	45.44%	53.90%	21.86%	75.76%
6/30/2014	2015-2016	8.39%	50.05%	58.44%	19.17%	77.61%
6/30/2015	2016-2017	8.77%	57.70%	66.47%	18.87%	85.34%
6/30/2016	2017-2018	11.16%	60.41%	71.57%	18.10%	89.67%
6/30/2017	2018-2019	16.21%	102.84%	119.05%	27.23%	146.28%
6/30/2018	2019-2020	15.81%	104.73%	120.54%	19.50%	140.04%
6/30/2019	2020-2021	19.39%	104.40%	123.79%	19.69%	143.48%
6/30/2020	2021-2022	19.04%	108.95%	127.99%	18.07%	146.06%

The contribution rates for SPRS shown in the above tables are the full funding rates presented by the actuary in the 2011 through 2020 annual valuations. However, the actual employer contribution rates have been less than those shown above. As a result of HB 1 passed in 2008 the statute called for an employer contribution rate at an increasing percentage of the full funding rates. SB2 eliminated this phase-in beginning with the June 30, 2013, actuarial valuation.

Summary of Actuarial Unfunded Liabilities

As of June 30 (\$ in Thousands)

CERS (Non-Hazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2011	\$8,918,085	\$5,629,611	\$5,577,252	\$3,288,474	\$3,340,833	63.13%	62.54%
6/30/2012	9,139,568	5,547,236	5,372,770	3,592,332	3,766,798	60.69%	58.79%
6/30/2013	9,378,876	5,637,094	5,780,830	3,741,782	3,598,046	60.10%	61.64%
6/30/2014	9,772,523	6,117,134	6,507,300	3,655,389	3,265,222	62.60%	66.59%
6/30/2015	10,740,325	6,474,849	6,416,854	4,265,477	4,323,472	60.29%	59.75%
6/30/2016	11,076,457	6,535,372	6,106,187	4,541,084	4,970,270	59.00%	55.13%
6/30/2017	12,803,509	6,764,873	6,687,237	6,038,636	6,116,272	52.84%	52.23%
6/30/2018	13,191,505	6,950,225	7,018,963	6,241,280	6,172,542	52.69%	53.21%
6/30/2019	14,356,114	7,049,527	7,159,921	7,306,587	7,196,192	49.10%	49.87%
6/30/2020	\$14,610,867	\$7,220,607	\$7,027,327	\$7,390,260	\$7,583,540	49.42%	48.10%

CERS (Non-Hazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2011	\$3,073,973	\$1,433,451	\$1,451,984	\$1,640,522	\$1,621,989	46.63%	47.23%
6/30/2012	2,370,771	1,512,854	1,439,226	857,917	931,545	63.81%	60.71%
6/30/2013	2,443,894	1,628,244	1,633,697	815,650	810,197	66.62%	66.85%
6/30/2014	2,616,915	1,831,199	1,899,557	785,715	717,357	69.98%	72.59%
6/30/2015	2,907,827	1,997,456	1,948,454	910,371	959,373	68.69%	67.01%
6/30/2016	2,988,121	2,079,811	1,943,757	908,310	1,044,364	69.60%	65.05%
6/30/2017	3,355,151	2,227,401	2,212,536	1,127,750	1,142,616	66.39%	65.94%
6/30/2018	3,092,623	2,371,430	2,414,126	721,193	678,497	76.68%	78.06%
6/30/2019	3,567,947	2,523,249	2,569,511	1,044,698	998,435	70.72%	72.02%
6/30/2020	\$3,392,086	\$2,661,351	\$2,581,613	\$730,735	\$810,473	78.46%	76.11%

CERS (Hazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2011	\$2,859,041	\$1,779,545	\$1,760,603	\$1,079,496	\$1,098,438	62.24%	61.58%
6/30/2012	3,009,992	1,747,379	1,677,940	1,262,613	1,332,052	58.05%	55.75%
6/30/2013	3,124,206	1,801,691	1,830,658	1,322,514	1,293,548	57.67%	58.60%
6/30/2014	3,288,826	1,967,640	2,082,998	1,321,186	1,205,827	59.83%	63.34%
6/30/2015	3,613,308	2,096,783	2,073,397	1,516,525	1,539,911	58.03%	57.38%
6/30/2016	3,704,456	2,139,119	2,003,669	1,565,337	1,700,787	57.74%	54.09%
6/30/2017	4,649,047	2,238,320	2,217,996	2,410,726	2,431,051	48.15%	47.71%
6/30/2018	4,792,548	2,321,721	2,348,337	2,470,827	2,444,211	48.44%	49.00%
6/30/2019	5,245,365	2,375,106	2,413,708	2,870,258	2,831,657	45.28%	46.02%
6/30/2020	\$5,431,298	\$2,447,885	\$2,379,704	\$2,983,413	\$3,051,595	45.07%	43.81%

CERS (Hazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2011	\$1,647,703	\$770,790	\$774,509	\$876,912	\$873,194	46.78%	47.01%
6/30/2012	1,364,843	829,041	788,071	535,802	576,772	60.74%	57.74%
6/30/2013	1,437,333	892,774	894,232	544,558	543,101	62.11%	62.21%
6/30/2014	1,493,864	997,733	1,034,308	496,131	459,557	66.79%	69.24%
6/30/2015	1,504,015	1,087,707	1,061,561	416,308	442,454	72.32%	70.58%
6/30/2016	1,558,818	1,135,784	1,062,602	423,034	496,216	72.86%	68.17%
6/30/2017	1,788,433	1,196,780	1,189,001	591,653	599,431	66.92%	66.48%
6/30/2018	1,684,028	1,256,306	1,280,982	427,722	403,046	74.60%	76.07%
6/30/2019	1,732,879	1,313,659	1,340,714	419,221	392,165	75.81%	77.37%
6/30/2020	\$1,740,971	\$1,362,028	\$1,321,117	\$378,943	\$419,854	78.23%	75.88%

Summary of Actuarial Unfunded Liabilities As of June 30 (\$ in Thousands)

KERS (Non-Hazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2011	\$11,182,142	\$3,726,986	\$3,538,878	\$7,455,156	\$7,643,264	33.33%	31.65%
6/30/2012	11,361,048	3,101,317	2,980,402	8,259,731	8,380,647	27.30%	26.23%
6/30/2013	11,386,602	2,636,123	2,747,428	8,750,479	8,639,174	23.15%	24.13%
6/30/2014	11,550,110	2,423,957	2,560,420	9,126,154	8,989,691	20.99%	22.17%
6/30/2015	12,359,673	2,350,990	2,307,858	10,008,683	10,051,815	19.02%	18.67%
6/30/2016	13,224,698	2,112,287	1,953,422	11,112,412	11,271,276	15.97%	14.77%
6/30/2017	15,591,641	2,123,623	2,056,870	13,468,018	13,534,771	13.62%	13.19%
6/30/2018	15,675,232	2,019,278	2,004,446	13,655,954	13,670,786	12.88%	12.79%
6/30/2019	16,466,427	2,206,280	2,233,672	14,260,147	14,232,755	13.40%	13.57%
6/30/2020	\$16,348,962	\$2,323,298	\$2,308,080	\$14,025,663	\$14,040,882	14.21%	14.12%

KERS (Non-Hazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2011	\$4,280,090	\$451,620	\$433,305	\$3,828,469	\$3,846,784	10.55%	10.12%
6/30/2012	3,125,330	446,081	430,806	2,679,250	2,694,524	14.27%	13.78%
6/30/2013	2,128,754	497,584	509,364	1,631,170	1,619,390	23.37%	23.93%
6/30/2014	2,226,760	621,237	664,776	1,605,523	1,561,984	27.90%	29.85%
6/30/2015	2,413,705	695,018	687,684	1,718,687	1,726,021	28.79%	28.49%
6/30/2016	2,456,678	743,270	695,189	1,713,408	1,761,489	30.26%	28.30%
6/30/2017	2,683,496	823,918	817,370	1,859,579	1,866,126	30.70%	30.46%
6/30/2018	2,435,506	887,121	891,205	1,548,385	1,544,301	36.42%	36.59%
6/30/2019	2,733,065	991,427	995,089	1,741,639	1,737,977	36.28%	36.41%
6/30/2020	\$2,564,788	\$1,095,959	\$1,060,649	\$1,468,829	\$1,504,139	42.73%	41.35%

KERS (Hazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2011	\$721,293	\$510,749	\$510,628	\$210,545	\$210,665	70.81%	70.79%
6/30/2012	752,699	497,226	478,104	255,473	274,596	66.06%	63.52%
6/30/2013	783,981	505,657	513,162	278,324	270,818	64.50%	65.46%
6/30/2014	816,850	527,897	559,504	288,953	257,346	64.63%	68.50%
6/30/2015	895,433	556,688	550,120	338,746	345,313	62.17%	61.44%
6/30/2016	936,706	559,487	524,679	377,219	412,027	59.73%	56.01%
6/30/2017	1,121,420	607,159	601,529	514,261	519,891	54.14%	53.64%
6/30/2018	1,151,923	639,262	645,485	512,661	506,438	55.50%	56.04%
6/30/2019	1,226,195	671,647	680,932	554,548	545,262	54.77%	55.53%
6/30/2020	\$1,283,770	\$709,587	\$690,350	\$574,183	\$593,420	55.27%	53.78%

KERS (Hazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2011	\$507,059	\$329,962	\$321,072	\$177,097	\$185,987	65.07%	63.32%
6/30/2012	384,592	345,574	333,298	39,018	51,294	89.85%	86.66%
6/30/2013	385,518	370,774	374,310	14,743	11,208	96.18%	97.09%
6/30/2014	396,987	419,396	435,504	(22,409)	(38,517)	105.64%	109.70%
6/30/2015	374,904	451,514	441,626	(76,610)	(66,722)	120.43%	117.80%
6/30/2016	377,745	473,160	440,596	(95,415)	(62,851)	125.26%	116.64%
6/30/2017	419,440	493,458	488,838	(74,019)	(69,399)	117.65%	116.55%
6/30/2018	393,481	511,441	519,072	(117,961)	(125,592)	129.98%	131.92%
6/30/2019	426,705	525,315	534,053	(98,610)	(107,348)	123.11%	125.16%
6/30/2020	\$427,977	\$539,251	\$521,755	\$(111,275)	\$(93,778)	126.00%	121.91%

**Summary of Actuarial Unfunded Liabilities
As of June 30 (\$ in Thousands)**

SPRS (Pension)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2011	\$634,379	\$285,581	\$279,934	\$348,799	\$354,445	45.02%	44.13%
6/30/2012	647,689	259,792	252,897	387,897	394,792	40.11%	39.05%
6/30/2013	651,581	241,800	248,559	409,780	403,022	37.11%	38.15%
6/30/2014	681,118	242,742	260,763	438,377	420,355	35.64%	38.28%
6/30/2015	734,156	248,388	246,968	485,769	487,188	33.83%	33.64%
6/30/2016	775,160	234,568	217,594	540,593	557,566	30.26%	28.07%
6/30/2017	967,145	261,320	255,737	705,824	711,408	27.02%	26.44%
6/30/2018	989,528	268,259	267,572	721,269	721,956	27.11%	27.04%
6/30/2019	1,045,318	282,162	286,165	763,156	759,153	26.99%	27.38%
6/30/2020	\$1,053,157	\$296,126	\$293,949	\$757,031	\$759,208	28.12%	27.91%

SPRS (Insurance)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2011	\$438,428	\$123,687	\$127,368	\$314,740	\$311,060	28.21%	29.05%
6/30/2012	333,904	124,372	125,568	209,532	208,336	37.25%	37.61%
6/30/2013	222,327	136,321	142,831	86,006	79,496	61.32%	64.24%
6/30/2014	234,271	155,595	165,168	78,676	69,103	66.42%	70.50%
6/30/2015	254,839	167,775	165,018	87,064	89,821	65.84%	64.75%
6/30/2016	257,197	172,704	161,366	84,494	95,831	67.15%	62.74%
6/30/2017	276,641	180,464	178,838	96,178	97,803	65.23%	64.65%
6/30/2018	262,088	187,535	190,847	74,553	71,242	71.55%	72.82%
6/30/2019	276,809	197,395	201,206	79,415	75,604	71.31%	72.69%
6/30/2020	\$276,143	\$207,018	\$201,340	\$69,126	\$74,803	74.97%	72.91%

Solvency Test

As of June 30 (\$ in Thousands)

CERS (Non-Hazardous Pension Fund)

Actuarial Liabilities								
Valuation Date	(1)	(2)	(3)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets			
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Portion)		(1)	(2)	(3)	
6/30/2011	\$1,110,967	\$5,209,784	\$2,597,334	\$5,629,611	100.00%	86.70%	0.00%	
6/30/2012	1,117,549	5,416,933	2,605,085	5,547,236	100.00%	81.80%	0.00%	
6/30/2013	1,149,611	5,638,371	2,590,894	5,637,094	100.00%	79.60%	0.00%	
6/30/2014	1,204,383	5,873,279	2,694,860	6,117,134	100.00%	83.60%	0.00%	
6/30/2015	1,216,585	6,489,863	3,033,878	6,474,849	100.00%	81.00%	0.00%	
6/30/2016	1,231,027	6,785,530	3,059,900	6,535,372	100.00%	78.20%	0.00%	
6/30/2017	1,277,432	7,731,682	3,794,396	6,764,873	100.00%	71.00%	0.00%	
6/30/2018	1,269,287	8,196,719	3,725,500	6,950,225	100.00%	69.30%	0.00%	
6/30/2019	1,280,679	8,905,545	4,169,890	7,049,527	100.00%	64.80%	0.00%	
6/30/2020	\$1,312,554	\$9,088,237	\$4,210,077	\$7,220,607	100.00%	65.00%	0.00%	

CERS (Non-Hazardous Insurance Fund)

Actuarial Liabilities								
Valuation Date	(1)	(2)	(3)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets			
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Portion)		(1)	(2)	(3)	
6/30/2011	\$-	\$1,460,808	\$1,613,165	\$1,433,451	100.00%	98.10%	0.00%	
6/30/2012	-	1,146,908	1,223,864	1,512,854	100.00%	100.00%	29.90%	
6/30/2013	-	1,205,599	1,238,295	1,628,244	100.00%	100.00%	34.10%	
6/30/2014	-	1,318,183	1,298,732	1,831,199	100.00%	100.00%	39.50%	
6/30/2015	-	1,372,597	1,535,231	1,997,456	100.00%	100.00%	40.70%	
6/30/2016	-	1,484,937	1,503,184	2,079,811	100.00%	100.00%	39.60%	
6/30/2017	-	1,603,438	1,751,713	2,227,401	100.00%	100.00%	35.60%	
6/30/2018	-	1,525,322	1,567,301	2,371,430	100.00%	100.00%	54.00%	
6/30/2019	-	1,830,692	1,737,255	2,523,249	100.00%	100.00%	39.90%	
6/30/2020	\$-	\$1,746,160	\$1,645,926	\$2,661,351	100.00%	100.00%	55.60%	

CERS (Hazardous Pension Fund)

Actuarial Liabilities								
Valuation Date	(1)	(2)	(3)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets			
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Portion)		(1)	(2)	(3)	
6/30/2011	\$382,072	\$1,768,512	\$708,457	\$1,779,545	100.00%	79.00%	0.00%	
6/30/2012	381,672	1,889,884	738,435	1,747,379	100.00%	72.30%	0.00%	
6/30/2013	390,471	1,988,030	745,705	1,801,691	100.00%	71.00%	0.00%	
6/30/2014	415,070	2,077,517	796,239	1,967,640	100.00%	74.70%	0.00%	
6/30/2015	422,359	2,297,703	893,246	2,096,783	100.00%	72.90%	0.00%	
6/30/2016	428,713	2,388,712	887,031	2,139,119	100.00%	71.60%	0.00%	
6/30/2017	458,808	2,910,601	1,279,638	2,238,320	100.00%	61.10%	0.00%	
6/30/2018	442,637	3,151,057	1,198,853	2,321,721	100.00%	59.60%	0.00%	
6/30/2019	458,559	3,399,954	1,386,852	2,375,106	100.00%	56.40%	0.00%	
6/30/2020	\$454,801	\$3,606,091	\$1,370,407	\$2,447,885	100.00%	55.30%	0.00%	

CERS (Hazardous Insurance Fund)

Actuarial Liabilities								
Valuation Date	(1)	(2)	(3)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets			
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Portion)		(1)	(2)	(3)	
6/30/2011	\$-	\$771,631	\$876,071	\$770,790	100.00%	99.90%	0.00%	
6/30/2012	-	575,099	789,744	829,041	100.00%	100.00%	32.20%	
6/30/2013	-	660,955	776,377	892,774	100.00%	100.00%	29.90%	
6/30/2014	-	700,312	793,553	997,733	100.00%	100.00%	37.50%	
6/30/2015	-	790,714	713,301	1,087,707	100.00%	100.00%	41.60%	
6/30/2016	-	879,360	679,458	1,135,784	100.00%	100.00%	37.70%	
6/30/2017	-	994,764	793,669	1,196,780	100.00%	100.00%	25.50%	
6/30/2018	-	1,001,717	682,311	1,256,306	100.00%	100.00%	37.30%	
6/30/2019	-	1,072,861	660,018	1,313,659	100.00%	100.00%	36.50%	
6/30/2020	\$-	\$1,154,389	\$586,582	\$1,362,028	100.00%	100.00%	35.40%	

Solvency Test

As of June 30 (\$ in Thousands)

KERS (Non-Hazardous Pension Fund)

Actuarial Liabilities								
Valuation Date	(1)	(2)	(3)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets			
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Portion)		(1)	(2)	(3)	
6/30/2011	\$916,569	\$8,482,714	\$1,782,859	\$3,726,986	100.00%	33.10%	0.00%	
6/30/2012	885,137	8,708,536	1,767,375	3,101,317	100.00%	25.40%	0.00%	
6/30/2013	922,928	8,709,324	1,754,351	2,636,123	100.00%	19.70%	0.00%	
6/30/2014	928,558	8,870,693	1,750,860	2,423,957	100.00%	16.90%	0.00%	
6/30/2015	925,934	9,437,468	1,996,271	2,350,990	100.00%	15.10%	0.00%	
6/30/2016	920,120	10,010,168	2,294,410	2,112,286	100.00%	11.90%	0.00%	
6/30/2017	934,559	11,608,346	3,048,736	2,123,623	100.00%	10.20%	0.00%	
6/30/2018	892,033	11,929,018	2,854,180	2,019,278	100.00%	9.40%	0.00%	
6/30/2019	881,020	12,513,230	3,072,176	2,206,280	100.00%	10.60%	0.00%	
6/30/2020	\$869,196	\$12,467,523	\$3,012,243	\$2,323,298	100.00%	11.70%	0.00%	

KERS (Non-Hazardous Insurance Fund)

Actuarial Liabilities								
Valuation Date	(1)	(2)	(3)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets			
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Portion)		(1)	(2)	(3)	
6/30/2011	\$-	\$2,568,003	\$1,712,087	\$451,620	100.00%	17.60%	0.00%	
6/30/2012	-	1,924,069	1,201,262	446,081	100.00%	23.20%	0.00%	
6/30/2013	-	1,338,773	789,981	497,584	100.00%	37.20%	0.00%	
6/30/2014	-	1,425,605	801,155	621,237	100.00%	43.60%	0.00%	
6/30/2015	-	1,428,350	985,355	695,018	100.00%	48.70%	0.00%	
6/30/2016	-	1,483,636	973,042	743,270	100.00%	50.10%	0.00%	
6/30/2017	-	1,575,294	1,108,202	823,918	100.00%	52.30%	0.00%	
6/30/2018	-	1,475,954	959,552	887,121	100.00%	60.10%	0.00%	
6/30/2019	-	1,686,605	1,046,461	991,427	100.00%	58.80%	0.00%	
6/30/2020	\$-	\$1,589,742	\$975,045	\$1,095,959	100.00%	68.90%	0.00%	

KERS (Hazardous Pension Fund)

Actuarial Liabilities								
Valuation Date	(1)	(2)	(3)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets			
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Portion)		(1)	(2)	(3)	
6/30/2011	\$86,614	\$490,395	\$144,284	\$510,749	100.00%	86.50%	0.00%	
6/30/2012	82,101	521,689	148,910	497,226	100.00%	79.60%	0.00%	
6/30/2013	82,146	545,597	156,238	505,657	100.00%	77.60%	0.00%	
6/30/2014	83,664	581,231	151,955	527,897	100.00%	76.40%	0.00%	
6/30/2015	83,606	633,189	178,638	556,688	100.00%	74.70%	0.00%	
6/30/2016	86,705	648,482	201,519	559,487	100.00%	72.90%	0.00%	
6/30/2017	93,350	746,350	281,720	607,159	100.00%	68.80%	0.00%	
6/30/2018	89,106	810,311	252,506	639,262	100.00%	67.90%	0.00%	
6/30/2019	86,663	879,818	259,713	671,647	100.00%	66.50%	0.00%	
6/30/2020	\$95,528	\$898,128	\$290,114	\$709,587	100.00%	68.40%	0.00%	

KERS (Hazardous Insurance Fund)

Actuarial Liabilities								
Valuation Date	(1)	(2)	(3)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets			
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Portion)		(1)	(2)	(3)	
6/30/2011	\$-	\$285,540	\$221,519	\$329,962	100.00%	100.00%	20.10%	
6/30/2012	-	196,579	188,013	345,574	100.00%	100.00%	79.20%	
6/30/2013	-	202,032	183,486	370,774	100.00%	100.00%	92.00%	
6/30/2014	-	206,477	190,509	419,396	100.00%	100.00%	100.00%	
6/30/2015	-	221,115	153,789	451,514	100.00%	100.00%	100.00%	
6/30/2016	-	228,361	149,384	473,160	100.00%	100.00%	100.00%	
6/30/2017	-	243,816	175,623	493,458	100.00%	100.00%	100.00%	
6/30/2018	-	248,775	144,706	511,441	100.00%	100.00%	100.00%	
6/30/2019	-	282,070	144,635	525,315	100.00%	100.00%	100.00%	
6/30/2020	\$-	\$281,924	\$146,053	\$539,251	100.00%	100.00%	100.00%	

Solvency Test

As of June 30 (\$ in Thousands)

SPRS (Pension Fund)

Actuarial Liabilities								
Valuation Date	(1)	(2)	(3)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets			
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Portion)		(1)	(2)	(3)	
6/30/2011	\$43,574	\$499,194	\$91,611	\$285,581	100.00%	48.50%	0.00%	
6/30/2012	41,139	523,017	83,533	259,792	100.00%	41.80%	0.00%	
6/30/2013	39,788	535,720	76,072	241,800	100.00%	37.70%	0.00%	
6/30/2014	41,831	563,011	76,276	242,742	100.00%	35.70%	0.00%	
6/30/2015	41,567	605,855	86,734	248,388	100.00%	34.10%	0.00%	
6/30/2016	41,871	636,499	96,791	234,568	100.00%	30.30%	0.00%	
6/30/2017	44,798	773,982	148,365	261,320	100.00%	28.00%	0.00%	
6/30/2018	43,835	800,788	144,905	268,259	100.00%	28.00%	0.00%	
6/30/2019	41,948	848,396	154,974	282,162	100.00%	28.30%	0.00%	
6/30/2020	\$40,831	\$863,579	\$148,747	\$296,126	100.00%	29.60%	0.00%	

SPRS (Insurance Fund)

Actuarial Liabilities								
Valuation Date	(1)	(2)	(3)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets			
	Active Member Contributions	Retired Members & Beneficiaries	Active Members (Employer Portion)		(1)	(2)	(3)	
6/30/2011	\$-	\$252,440	\$185,988	\$123,687	100.00%	49.00%	0.00%	
6/30/2012	-	190,259	143,645	124,372	100.00%	65.40%	0.00%	
6/30/2013	-	139,509	82,818	136,321	100.00%	97.70%	0.00%	
6/30/2014	-	143,402	90,869	155,595	100.00%	100.00%	13.40%	
6/30/2015	-	170,447	84,392	167,775	100.00%	98.40%	0.00%	
6/30/2016	-	177,094	80,103	172,704	100.00%	97.50%	0.00%	
6/30/2017	-	186,390	90,251	180,464	100.00%	96.80%	0.00%	
6/30/2018	-	183,151	78,937	187,535	100.00%	100.00%	5.60%	
6/30/2019	-	199,959	76,850	197,395	100.00%	98.70%	0.00%	
6/30/2020	\$-	\$207,638	\$68,506	\$207,018	100.00%	99.70%	0.00%	

Active Member Valuation

Methodology The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the investment return assumption. The amount recognized each year is 20% of the difference between market value and expected market value. The Asset Valuation Method was adopted in 2006.

Summary of Active Member Valuation Data

As of June 30 (\$ in Thousands)

CERS Non-Hazardous Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll ⁽¹⁾	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
6/30/2011	1,102	85,285	\$2,276,596	\$27	1.10%	46.8	9.0
6/30/2012	1,080	83,052	2,236,546	27	0.90%	47.5	9.1
6/30/2013	1,081	81,815	2,236,277	27	1.50%	47.8	9.3
6/30/2014	1,101	81,115	2,272,270	28	2.50%	48.1	9.6
6/30/2015	1,092	80,852	2,296,716	28	1.40%	48.0	9.5
6/30/2016	1,095	80,664	2,352,762	29	2.70%	47.9	9.4
6/30/2017	1,096	82,198	2,452,407	30	2.29%	47.9	9.4
6/30/2018	1,092	81,818	2,466,801	30	1.06%	47.7	9.2
6/30/2019	1,094	81,506	2,521,860	31	2.62%	47.7	9.1
6/30/2020	1,087	81,250	\$2,565,391	\$32	2.05%	47.8	9.1

CERS Hazardous Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll ⁽¹⁾	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
6/30/2011	281	9,407	\$466,964	\$50	1.70%	39.1	9.5
6/30/2012	254	9,130	464,229	51	2.40%	39.3	10.3
6/30/2013	248	9,123	461,673	51	(0.50)%	39.1	10.3
6/30/2014	254	9,194	479,164	52	3.00%	39.2	10.6
6/30/2015	246	9,172	483,641	53	1.20%	39.1	10.6
6/30/2016	246	9,084	492,851	54	2.90%	39.1	10.6
6/30/2017	250	9,495	541,633	57	5.14%	39.2	10.5
6/30/2018	247	9,263	533,618	58	0.99%	38.5	10.2
6/30/2019	243	9,474	559,353	59	2.49%	38.6	10.1
6/30/2020	243	9,419	\$568,558	\$60	2.24%	38.4	10.0

⁽¹⁾ Annual payroll included in the Schedule of Active Member Valuation Data is based upon the annualized monthly payroll for active members as of the valuation date. The annual payroll recorded in the financial section is based upon the sum of the monthly payroll for active members recorded for each month of fiscal year ending June 30, 2020.

Member data in actuarial section will differ from reported data in other CAFR sections. For this section, the data is reported by account instead of by person (ex: a member could have vested service in KERS, but is currently active in a CERS and is reported in two membership categories).

KERS Non-Hazardous Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll ⁽¹⁾	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
6/30/2011	427	46,617	\$1,731,633	\$37	(3.60)%	43.8	9.4
6/30/2012	286	42,196	1,644,897	39	4.90%	44.3	9.8
6/30/2013	285	42,226	1,644,409	39	(0.10)%	44.5	10.1
6/30/2014	353	40,365	1,577,496	39	0.40%	44.8	10.5
6/30/2015	348	39,056	1,544,234	40	1.20%	45.0	10.6
6/30/2016	349	37,779	1,529,249	40	2.40%	45.1	10.7
6/30/2017	342	37,234	1,531,535	41	1.62%	45.4	10.9
6/30/2018	338	35,139	1,471,477	42	1.81%	45.2	10.8
6/30/2019	331	33,696	1,437,647	43	1.88%	45.4	11.0
6/30/2020	313	31,703	\$1,387,761	\$44	2.60%	45.7	11.2

KERS Hazardous Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll ⁽¹⁾	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
6/30/2011	16	4,291	\$133,054	\$31	(7.30)%	41.3	6.9
6/30/2012	14	4,086	131,977	32	4.20%	41.1	7.3
6/30/2013	14	4,127	132,015	32	(1.00)%	40.6	7.2
6/30/2014	18	4,024	129,076	32	0.30%	40.6	7.4
6/30/2015	17	3,886	128,680	33	3.20%	40.7	7.5
6/30/2016	17	3,959	147,563	37	12.60%	40.4	7.5
6/30/2017	18	4,047	162,418	40	7.67%	40.3	7.6
6/30/2018	18	3,929	158,213	40	0.34%	39.8	7.3
6/30/2019	18	3,705	150,446	41	0.84%	39.8	7.3
6/30/2020	19	4,094	\$170,826	\$42	2.76%	39.8	7.3

SPRS Schedule of Active Member Valuation Data

Valuation Date	Number of Employers	Total Active Members	Annual Covered Payroll ⁽¹⁾	Annual Average Pay	% Increase In Average Pay	Average Age	Average Years of Service Credit
6/30/2011	1	965	\$48,693	\$50	(5.90)%	37.7	10.6
6/30/2012	1	907	48,373	53	5.70%	37.3	10.4
6/30/2013	1	902	45,256	50	(5.90)%	37.0	10.0
6/30/2014	1	855	44,616	52	4.00%	37.8	10.9
6/30/2015	1	937	45,765	49	(6.40)%	36.8	9.8
6/30/2016	1	908	45,551	50	2.71%	37.0	10.0
6/30/2017	1	903	48,598	54	7.28%	37.5	10.6
6/30/2018	1	886	48,808	55	2.36%	37.3	10.5
6/30/2019	1	883	47,752	54	(1.83)%	36.7	10.0
6/30/2020	1	798	\$46,145	\$58	6.93%	37.5	10.7

⁽¹⁾ Annual payroll included in the Schedule of Active Member Valuation Data is based upon the annualized monthly payroll for active members as of the valuation date. The annual payroll recorded in the financial section is based upon the sum of the monthly payroll for active members recorded for each month of fiscal year ending June 30, 2020.

Member data in actuarial section will differ from reported data in other CAFR sections. For this section, the data is reported by account instead of by person (ex: a member could have vested service in KERS, but is currently active in a CERS and is reported in two membership categories).

Summary of Retired Member Valuation Data

As of June 30 (\$ in Thousands)

CERS (Non-Hazardous)

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances ⁽¹⁾	% Increase In Allowances	Average Annual Allowance
6/30/2011	3,250	1,077	43,211	\$38,861	\$7,881	\$483,594	6.84%	\$11
6/30/2012	3,300	1,207	45,304	41,161	9,746	515,008	6.50%	11
6/30/2013	3,570	1,198	47,676	56,721	13,750	557,979	8.34%	12
6/30/2014	3,480	1,221	49,935	33,975	8,996	582,958	4.48%	12
6/30/2015	4,020	1,304	52,651	44,962	10,369	617,551	5.93%	12
6/30/2016	4,409	721	56,339	49,487	5,822	661,217	7.07%	12
6/30/2017	4,141	1,467	59,013	47,074	40,823	667,468	0.95%	11
6/30/2018	4,650	1,725	61,938	57,343	14,436	710,374	6.43%	11
6/30/2019	4,472	1,871	64,539	53,392	16,649	747,117	5.17%	12
6/30/2020	3,550	2,675	65,414	\$40,409	\$24,066	\$763,459	2.19%	\$12

CERS (Hazardous)

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances ⁽¹⁾	% Increase In Allowances	Average Annual Allowance
6/30/2011	502	102	6,468	\$14,641	\$1,298	\$160,259	9.08%	\$25
6/30/2012	483	73	6,878	14,149	1,187	173,221	8.09%	25
6/30/2013	519	104	7,293	10,924	1,510	182,635	5.43%	25
6/30/2014	469	116	7,646	9,940	1,567	191,008	4.58%	25
6/30/2015	526	138	8,034	13,430	2,284	202,153	5.84%	25
6/30/2016	604	75	8,563	14,642	1,494	215,302	6.50%	25
6/30/2017	576	141	8,998	15,102	3,724	226,680	5.28%	25
6/30/2018	779	190	9,587	22,292	3,297	245,675	8.38%	26
6/30/2019	608	172	10,023	16,096	2,957	258,813	5.35%	26
6/30/2020	621	192	10,452	\$19,621	\$3,643	\$274,791	6.17%	\$26

⁽¹⁾ The Annualized Retirement Allowance is the annualized value of the monthly retirement allowance for retired members and beneficiaries as of the valuation date. Consequently, the values will not match the fiscal year total benefit payments recorded in the financial section.

Member data in actuarial section will differ from reported data in other CAFR sections. For this section, the data is reported by account instead of by person (ex: a member could have vested service in KERS, but is currently active in CERS and is reported in two membership categories).

KERS (Non-Hazardous)

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances ⁽¹⁾	% Increase In Allowances	Average Annual Allowance
6/30/2011	1,592	940	38,597	\$31,931	\$12,615	\$821,197	2.41%	\$21
6/30/2012	1,707	1,078	39,226	37,458	13,774	844,881	2.88%	22
6/30/2013	1,982	1,014	40,194	41,468	14,209	872,140	3.23%	22
6/30/2014	2,067	1,038	41,223	31,433	15,143	866,047	(0.70)%	21
6/30/2015	2,140	1,094	42,269	32,433	14,902	883,578	2.02%	21
6/30/2016	2,441	706	44,004	61,294	9,942	934,930	5.81%	21
6/30/2017	2,181	1,269	44,916	35,150	48,778	921,302	(1.46)%	21
6/30/2018	2,853	1,243	46,526	50,360	18,711	952,951	3.44%	20
6/30/2019	2,226	1,342	47,410	36,115	20,359	968,706	1.65%	20
6/30/2020	1,806	1,883	47,333	\$29,576	\$30,319	\$967,963	(0.08)%	\$20

KERS (Hazardous)

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances ⁽¹⁾	% Increase In Allowances	Average Annual Allowance
6/30/2011	288	59	3,064	\$5,013	\$519	\$45,609	10.93%	\$15
6/30/2012	243	54	3,253	4,213	591	49,231	7.94%	15
6/30/2013	229	52	3,430	2,391	500	51,122	3.84%	15
6/30/2014	256	66	3,620	3,762	612	54,272	6.16%	15
6/30/2015	203	65	3,758	3,144	985	56,431	3.98%	15
6/30/2016	237	29	3,966	3,028	458	59,001	4.55%	15
6/30/2017	206	79	4,093	2,771	2,609	59,162	0.27%	14
6/30/2018	321	44	4,370	5,394	507	64,050	8.26%	15
6/30/2019	227	60	4,537	4,242	769	67,523	5.42%	15
6/30/2020	214	123	4,628	\$3,102	\$1,543	\$69,081	2.31%	\$15

SPRS State Police Retirement System

Valuation Date	Number Added	Number Removed	Total Retirees & Beneficiaries	Annualized Retirement Allowances Added	Annualized Retirement Allowances Removed	Annualized Retirement Allowances ⁽¹⁾	% Increase In Allowances	Average Annual Allowance
6/30/2011	52	12	1,263	\$2,342	\$390	\$47,467	4.29%	\$38
6/30/2012	52	16	1,299	3,027	607	49,887	5.10%	38
6/30/2013	63	16	1,346	1,471	453	50,906	2.04%	38
6/30/2014	95	28	1,413	3,360	833	53,432	4.96%	38
6/30/2015	62	15	1,460	1,947	449	54,930	2.80%	38
6/30/2016	65	10	1,515	2,004	285	56,650	3.13%	37
6/30/2017	30	9	1,536	1,046	443	57,253	1.06%	37
6/30/2018	81	17	1,600	2,837	464	59,626	4.14%	37
6/30/2019	74	27	1,647	2,735	957	61,404	2.98%	37
6/30/2020	61	39	1,669	\$2,411	\$1,382	\$62,432	1.68%	\$37

⁽¹⁾ The Annualized Retirement Allowance is the annualized value of the monthly retirement allowance for retired members and beneficiaries as of the valuation date. Consequently, the values will not match the fiscal year total benefit payments recorded in the financial section.

Member data in actuarial section will differ from reported data in other CAFR sections. For this section, the data is reported by account instead of by person (ex: a member could have vested service in KERS, but is currently active in CERS and is reported in two membership categories).

Summary of Benefit Provisions KERS, CERS, and SPRS Plans

Plan Funding

State statute requires active members to contribute 5% of creditable compensation for non-hazardous members and 8% of creditable compensation for hazardous members. For members participating on or after September 1, 2008 an additional 1% of creditable compensation is required. This amount is credited to the Insurance Fund and is non-refundable to the member. Employers contribute at the rate determined by the Board to be necessary for the actuarial soundness of the systems, as required by KRS 61.565 and KRS 61.752. KERS rates are subject to state budget approval.

Membership Eligibility

For non-school board employers, all regular full-time positions that average 100 or more hours of work per month over a fiscal or calendar year. For school board employers, all regular full-time positions that average 80 hours of work per month over the actual days worked during the school year.

Retirement Eligibility for Non-Hazardous Employees

Age	Years of Service	Allowance Reduction
Tier 1 Members Whose Participation Began Before 9/1/2008		
65	1 month	None
Any	27	None
55	5	6.5% per year for first five years, and 4.5% for next five years before age 65 or 27 years of service.
Any	25	6.5% per year for first five years, and 4.5% for next five years before age 65 or 27 years of service.
Tier 2 Members Whose Participation Began On or After 9/1/2008 but before 1/1/2014		
65	5	None
57	Rule of 87	None
60	10	6.5% per year for first five years, and 4.5% for next five years before age 65 or Rule of 87 (age plus years of service)
Tier 3 Members Whose Participation Began On or After 1/1/2014		
65	5	None
57	Rule of 87	None

Retirement Eligibility for Hazardous

Age	Years of Service	Allowance Reduction
Tier 1 Members Whose Participation Began Before 9/1/2008		
55	1 month	None
Any	20	None
50	15	6.5% per year for first five years, and 4.5% for next five years before age 55 or 20 years of service.
Tier 2 Members Whose Participation Began On or After 9/1/2008 but before 1/1/2014		
60	5	None
Any	25	None
50	15	6.5% per year for first five years, and 4.5% for next five years before age 60 or 25 years of service.
Tier 3 Members Whose Participation Began On or After 1/1/2014		
60	5	None
Any	25	None

Benefit Formula

Tier 1: Members whose participation began before 9/1/2008

Final Compensation	Benefit Factor	Years of Service
Average of the five highest years of compensation.	KERS 1.97% if:	Member does not have 13 months of service credit for 1/1/1998-1/1/1999.
	KERS 2.00% if:	Member has 13 months of service credit from 1/1/1998-1/1/1999.
	KERS 2.20% if:	Member has 20 or more years of service, including 13 months from 1/1/1998-1/1/1999 and retires by 1/1/2009.
	CERS 2.20% if:	Member begins participating prior to 8/1/2004.
	CERS 2.00% if:	Member begins participating on or after 8/1/2004 but before 9/1/2008.

Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program).

If a member retires with less than four years of service credit, the member's benefit is equal to the actuarially equivalent of two times their member contribution balance with interest.

Benefit Formula

Tier 2: Members whose participation began on or after 9/1/2008 but before 1/1/2014

Final Compensation	Benefit Factor	Years of Service	
Average of the last five years of compensation	KERS & CERS increasing percent based on service at retirement up to 30 years* plus 2.00% for each year of service over 30 years	Member begins participating on or after 9/1/2008 but before 1/1/2014.	
	*Service		Multiplier
	10 years or less		1.10%
	10-20 years		1.30%
	20-26 years		1.50%
	26-30 years	1.75%	

Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program)

Benefit Formula for Hazardous for Tier 1: Members whose participation began before 9/1/2008

Final Compensation	Benefit Factor	Years of Service	
Average of the three highest years of compensation.	CERS 2.50% if:	Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program).	
	KERS 2.49% if:		Member begins participating before 9/1/2008.
	SPRS 2.50% if:		
If a member retires with less than four years of service, the member's benefit is equal to the actuarially equivalent of two times their member contribution balance with interest.			

Benefit Formula for Hazardous for Tier 2: Members whose participation began on or after 9/1/2008 but before 1/1/2014

Final Compensation	Benefit Factor	Years of Service		
Average of the three highest complete years of compensation.	CERS, KERS, & SPRS increasing percent based on service at retirement*		Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program).	
	*Service	Multiplier		Member begins participating on or after 9/1/2008 but before 1/1/2014.
	10 years or less	1.30%		
	10-20 years	1.50%		
	20-25 years	2.25%		
25+ years	2.50%			

Benefit Formula for Hazardous for Tier 3: Members whose participation began on or after 1/1/2014

Each year that the member is active, a 7.50% employer pay credit and the employee's 8.00% contribution will be credited to each member's hypothetical cash balance account. The hypothetical account will earn interest at a minimum rate of 4%, annually. If KRS' geometric average net investment return for the previous five years exceeds 4%, then the hypothetical account will be credited with an additional amount of interest in that year equal to 75% of the amount of the return which exceeds 4%. All interest credits will be applied to the hypothetical account balance on June 30 based on the account balance as of June 30 of the previous year. At retirement, the member's hypothetical account balance may be converted into an annuity based on an actuarial factor.

Benefit Formula

Tier 3: Members whose participation began on or after 1/1/2014

Accumulated Account Balance / Actuarial Factor = Monthly Life Annuity

	Accumulated Account Balance					Actuarial Factor
	Member	Employer	Base Annual	Upside Sharing		
	Contributions	Contributions	Interest	Interest (FY 2020)		
CERS Non-Hazardous	5.00%	4.00%	4.00%	0.97%	See www.kyret.ky.gov for most recent Actuarial Factors	
CERS Hazardous	8.00%	7.50%	4.00%	1.15%		
KERS Non-Hazardous	5.00%	4.00%	4.00%	0.57%		
KERS Hazardous	8.00%	7.50%	4.00%	0.07%		
SPRS	8.00%	7.50%	4.00%	0.85%		

Note: Accumulated Account Balance is comprised of member contributions, employer contributions, annual interest and annual upside sharing interest. For additional information on the calculation of the annual interest for Tier 3 see Upside Sharing Interest in Note B.

Note: Please see Plan Provisions for additional details.

Summary of Benefit Provisions KERS, CERS SPRS Plans

Post-Retirement Death Benefits

If the member is receiving a monthly benefit based on at least four (4) years of creditable service, the retirement system will pay a \$5,000 death benefit payment to the beneficiary named by the member specifically for this benefit.

Disability Benefits

Members participating before 8/1/2004 may retire on account of disability provided the member has at least 60 months of service credit (requirement is waived if line of duty disability) and is not eligible for an unreduced benefit. Additional service credit may be added for computation of benefits under the benefit formula.

Members participating on or after 8/1/2004 but before 1/1/2014 may retire on account of disability provided the member has at least 60 months of service credit. Benefits are computed as the greater of 20% of member's monthly final rate of pay or the amount calculated under the Benefit Formula based upon actual service.

Members participating on or after 1/1/2014 may retire on account of disability provided the member has at least 60 months of service credit. The hybrid account which includes member contributions, employer contributions and interest credits can be withdrawn from the System as a lump sum or an annuity equal to the greater of 20% of the member's monthly final rate of pay or the annuitized hypothetical account into a single life annuity option.

Members disabled as a result of a single duty-related injury or act of violence related to their job may be eligible for special benefits.

Pre-Retirement Death Benefits

The beneficiary of a deceased active member is eligible for a monthly benefit if the member died while in the line of duty with one month of service credit. The beneficiary of a deceased active member who did not die in the line of duty is eligible for a monthly benefit if the member was: (1) eligible for retirement at the time of death or, (2) under the age of 65 for non-hazardous members and under age 55 for hazardous members with at least 60 months of service credit and currently working for a participating agency at the time of death or (3) no longer working for a participating agency but at the time of death had at least 144 months of service credit. If the beneficiary of a deceased active member is not eligible for a monthly benefit, the beneficiary will receive a lump-sum payment of the member's contributions and any accumulated interest.

Cost of Living Adjustment

SB 2 of 2013 eliminated all future COLAs unless the State Legislature so authorizes on a biennial basis and either (i) the system is over 100% funded or (ii) the Legislature appropriates sufficient funds to pay the increased liability for the COLA.

Insurance Benefits

For members participating prior to July 1, 2003, KRS pays a percentage of the monthly premium for single coverage based upon the service credit accrued at retirement. Members participating on or after July 1, 2003 and before September 1, 2008 are required to earn at least 10 years of service credit in order to be eligible for insurance benefits at retirement. Members participating on or after September 1, 2008 are required to earn at least 15 years of service credit in order to be eligible for insurance benefits at retirement. The monthly health insurance contribution will be \$10 for each year of earned service increased by the CPI prior to July 1, 2009, and by 1.5% annually from July 1, 2009.

Refunds

Upon termination of employment, a refund of member contributions and accumulated interest is available to the member.

Interest on Accounts

For employees participating prior to September 1, 2008, the interest paid is set by the Board of Trustees and will not be less than 2.0%, for employees participating on or after September 1, 2008 but before January 1, 2014, interest will be credited at a rate of 2.5%. For employees participating on or after January 1, 2014, interest will be credited at a minimum rate of 4.0% (see Note B for additional details on the annual interest calculation).

Benefit Changes since the Prior Valuation

House Bill 1 passed during the 2019 special legislative session which allowed additional agencies in the KERS Non-Hazardous fund to elect to cease participating in the System as of June 30, 2020 under different provisions than were previously established for cessation. Senate Bill 249 passed during the 2020 legislative session which delayed the effective date of cessation for these provisions to June 30, 2021. House Bill 271 passed during the 2020 legislative session which removed provisions that reduce the monthly payment to a surviving spouse of a member whose death was due to an in line of duty or duty-related injury upon remarriage of the surviving spouse. It also increased benefits for a very small number of surviving spouses and dependent children who did not initially elect the in line of duty or duty-related benefit. There were no other material benefit provision changes since the prior valuation.

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Fund Statistics

Definitions

Active members are those members who are currently employed by a participating agency and contributing to KRS as a condition of employment.

Inactive members are those members who are no longer employed with a participating agency but have not yet retired or taken a refund of contributions.

Retired members include both members and beneficiaries who are receiving a monthly benefit from KRS.

A single member may have multiple accounts, which contribute to one pension. Each person is only counted once in the Membership by System report. A member who has both a membership account and a retired account is included in the retired count. Members who have multiple membership accounts are included under the system where they most recently contributed. Members who have more than one retirement account are included in the system with the greatest service credit. If the retired accounts have equal service credit, they are counted first in SPRS, CERS Hazardous, KERS Hazardous, CERS Non-Hazardous, then KERS Non-Hazardous. These tables do not include individuals receiving payments under dependent child accounts, Qualified Domestic Relations Orders, or multiple beneficiary accounts.

CERS Non-Hazardous Membership As of June 30, 2020

Fiscal Year	Active	Inactive	Retired	Total
2013	82,631	67,013	44,164	193,808
2014	82,494	70,231	46,112	198,837
2015	82,969	72,965	48,515	204,449
2016	83,346	75,904	51,673	210,923
2017	84,401	78,940	54,018	217,359
2018	84,435	81,608	56,629	222,672
2019	84,632	85,300	58,933	228,865
2020	83,458	90,673	60,877	235,008

CERS Hazardous Membership As of June 30, 2020

Fiscal Year	Active	Inactive	Retired	Total
2013	9,069	1,956	5,840	16,865
2014	9,189	2,038	6,066	17,293
2015	9,188	2,142	6,389	17,719
2016	9,139	2,309	6,834	18,282
2017	9,321	2,442	7,186	18,949
2018	9,285	2,581	7,647	19,513
2019	9,402	2,702	8,000	20,104
2020	9,350	2,924	8,431	20,705

KERS Non-Hazardous Membership As of June 30, 2020

Fiscal Year	Active	Inactive	Retired	Total
2013	40,710	40,375	37,240	118,325
2014	40,500	41,213	38,022	119,735
2015	39,289	42,479	38,827	120,595
2016	38,121	43,926	40,099	122,146
2017	36,725	44,848	40,813	122,386
2018	34,845	45,768	42,175	122,788
2019	33,432	46,721	42,874	123,027
2020	31,190	48,583	43,592	123,365

KERS Hazardous Membership As of June 30, 2020

Fiscal Year	Active	Inactive	Retired	Total
2013	4,057	2,882	2,312	9,251
2014	4,094	3,318	2,467	9,879
2015	3,932	3,761	2,575	10,268
2016	3,987	4,067	2,739	10,793
2017	4,061	4,363	2,823	11,247
2018	3,963	4,716	3,010	11,689
2019	3,779	5,094	3,146	12,019
2020	4,112	5,838	3,242	13,192

SPRS Membership As of June 30, 2020

Fiscal Year	Active	Inactive	Retired	Total
2013	901	236	1,240	2,377
2014	861	239	1,279	2,379
2015	940	257	1,324	2,521
2016	924	262	1,379	2,565
2017	910	278	1,393	2,581
2018	891	290	1,445	2,626
2019	899	313	1,484	2,696
2020	798	349	1,523	2,670

Kentucky Retirement Systems Membership Totals As of June 30, 2020

Fiscal Year	Active	Inactive	Retired	Total
2013	137,368	112,462	90,796	340,626
2014	137,138	117,039	93,946	348,123
2015	136,318	121,604	97,630	355,552
2016	135,517	126,468	102,725	364,710
2017	135,418	130,871	106,234	372,523
2018	133,419	134,963	110,906	379,288
2019	132,144	140,130	114,437	386,711
2020	128,908	148,367	117,665	394,940

Principal Participating Employers in CERS As of June 30, 2020

Participating Employer	Rank	Covered Employees	% of Total System
Jefferson County Board of Education	1	5,982	6.41%
Louisville Jefferson County Metro Government	2	4,805	5.15%
Fayette County Board of Education	3	1,982	2.12%
Lexington Fayette Urban County Government	4	1,716	1.84%
Judicial Department Administrative Office of the Courts	5	1,585	1.70%
Boone County Board of Education	6	1,196	1.28%
Bullitt County Board of Education	7	1,128	1.21%
Hardin County Board of Education	8	1,032	1.11%
Warren County Board of Education	9	961	1.03%
Pike County Board of Education	10	930	1.00%
All Others		72,024	77.15%
Total		93,341	100.00%

Schedule of Participating Employers in CERS As of June 30, 2020

Agency Classification	Number of Agencies	Number of Employees
Airport Boards	5	531
Ambulance Services	19	416
Area Development Districts	14	645
Boards of Education	172	48,154
Cities	221	10,275
Community Action Agencies	21	2,861
Conservation Districts	49	58
County Attorneys	79	567
County Clerks	16	588
Development Authorities	6	10
Fire Departments	32	1,001
Fiscal Courts	118	10,982
Hospitals & Clinics (incl. Dental)	1	342
Housing Authorities	41	419
Jailers	2	68
Libraries	85	1,259
Other Retirement Systems	2	3
P1 State Agencies	4	1,585
Parks and Recreation	7	55
Planning Commissions	16	204
Police Departments	2	15
Riverport Authorities	5	69
Sanitation Districts	9	352
Sheriff Departments	12	737
Special Districts & Boards	49	1,370
Tourist Commissions	23	178
Urban Government Agencies	2	6,521
Utility Boards	120	4,076
Total	1,132	93,341

Total Employees By Tier Levels

Tier 1	35,962
Tier 2	15,864
Tier 3	41,515

Principal Participating Employers in KERS As of June 30, 2020

Participating Employer	Rank	Covered Employees	% of Total System
Department for Community Based Services	1	4,344	12.08%
Department of Highways	2	3,608	10.04%
Department of Corrections	3	3,553	9.88%
Judicial Department Administrative Office of the Courts	4	1,401	3.90%
Department of Juvenile Justice	5	1,041	2.90%
Unified Prosecutorial System	6	957	2.66%
Kentucky State Police	7	891	2.48%
Department of Revenue	8	782	2.18%
Northern Kentucky University	9	747	2.08%
New Vista of the Bluegrass, Inc	10	745	2.07%
All Others		17,879	49.73%
Total		35,948	100.00%

Schedule of Participating Employers in KERS As of June 30, 2020

Agency Classification	Number of Agencies	Number of Employees
County Attorneys	59	172
Health Departments	60	1,956
Master Commissioner	34	65
Non-P1 State Agencies	34	791
Other Retirement Systems	1	22
P1 State Agencies	128	28,835
Regional Mental Health Units	12	1,809
Universities	7	2,298
Total	335	35,948

Total Employees By Tier Levels

Tier 1	16,966
Tier 2	6,360
Tier 3	12,622

Schedule of Participating Employers in SPRS As of June 30, 2020

Agency Classification	Number of Agencies	Number of Employees
Kentucky State Police - Uniformed Police Officers	1	798

Total Employees By Tier Levels

Tier 1	402
Tier 2	196
Tier 3	200

Average Monthly Benefit by Length of Service in CERS As of June 30, 2020 (in Whole \$)

Service Credit Range	CERS Non-Hazardous		CERS Hazardous	
	Number of Accounts	Average Monthly Benefit	Number of Accounts	Average Monthly Benefit
Under 5 years	9,681	\$164	1,192	\$403
5 or more but less than 10	11,420	342	1,123	708
10 or more but less than 15	11,520	541	1,068	1,268
15 or more but less than 20	9,539	810	1,077	1,825
20 or more but less than 25	11,283	1,011	4,113	2,596
25 or more but less than 30	12,823	1,920	1,531	3,592
30 or more but less than 35	3,046	2,689	426	4,335
35 or more	814	3,723	88	5,421
Total	70,126	\$951	10,618	\$2,175

Average Monthly Benefit by Length of Service in KERS As of June 30, 2020 (in Whole \$)

Service Credit Range	KERS Non-Hazardous		KERS Hazardous	
	Number of Accounts	Average Monthly Benefit	Number of Accounts	Average Monthly Benefit
Under 5 years	6,390	\$174	875	\$204
5 or more but less than 10	6,093	435	870	575
10 or more but less than 15	5,652	724	792	1,029
15 or more but less than 20	4,839	1,064	719	1,539
20 or more but less than 25	5,189	1,412	1,169	2,025
25 or more but less than 30	13,091	2,295	206	2,872
30 or more but less than 35	6,737	3,235	59	3,732
35 or more	2,527	4,586	6	4,231
Total	50,518	\$1,658	4,696	\$1,236

Average Monthly Benefit by Length of Service in SPRS As of June 30, 2020 (in Whole \$)

Service Credit Range	Number of Accounts	Average Monthly Benefit
Under 5 years	140	\$550
5 or more but less than 10	56	969
10 or more but less than 15	65	1,420
15 or more but less than 20	122	2,116
20 or more but less than 25	523	2,723
25 or more but less than 30	501	3,728
30 or more but less than 35	231	4,803
35 or more	60	6,203
Total	1,698	\$3,095

Note: These tables reflect the Average Monthly Pension Benefit. A single member may have multiple accounts, which contribute to one pension. These tables do not reflect dependent child accounts, Qualified Domestic Relations Order (QDRO) accounts or multiple beneficiary accounts.

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

Fiscal Year	Non-Hazardous			Hazardous		
	Pension	Insurance	Total	Pension	Insurance	Total
2012	5,381,602	1,428,821	6,810,423	1,672,970	785,874	2,458,844
2013	5,795,568	1,618,960	7,414,528	1,833,571	891,320	2,724,891
2014	6,528,147	1,878,711	8,406,858	2,087,002	1,030,303	3,117,305
2015	6,440,800	1,920,946	8,361,746	2,078,202	1,056,480	3,134,682
2016	6,141,396	1,908,550	8,049,946	2,010,177	1,056,097	3,066,274
2017	6,739,142	2,160,553	8,899,695	2,227,679	1,179,313	3,406,992
2018	7,086,322	2,346,767	9,433,089	2,361,047	1,268,272	3,629,319
2019	7,242,975	2,486,458	9,729,433	2,429,613	1,324,809	3,754,422
2020	\$7,110,889	\$2,498,051	\$9,608,940	\$2,395,688	\$1,305,132	\$3,700,820

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

Fiscal Year	Non-Hazardous			Hazardous		
	Pension	Insurance	Total	Pension	Insurance	Total
2012	2,977,935	418,490	3,396,425	476,589	330,730	807,319
2013	2,760,753	496,040	3,256,793	514,592	372,883	887,475
2014	2,578,290	646,905	3,225,195	561,484	433,525	995,009
2015	2,327,782	665,639	2,993,421	552,468	439,113	991,581
2016	1,980,292	668,318	2,648,610	527,880	437,397	965,277
2017	2,092,781	781,406	2,874,187	605,921	484,442	1,090,363
2018	2,048,890	846,762	2,895,652	651,173	513,384	1,164,557
2019	2,286,625	942,136	3,228,761	687,877	527,108	1,214,985
2020	\$2,362,231	\$1,006,498	\$3,368,729	\$697,366	\$514,740	\$1,212,106

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

Fiscal Year	Pension	Insurance	Total
2012	250,476	125,398	375,874
2013	248,698	142,691	391,389
2014	260,974	164,958	425,932
2015	247,229	164,714	411,943
2016	218,013	160,949	378,962
2017	256,383	178,191	434,574
2018	268,425	189,994	458,419
2019	287,242	200,128	487,370
2020	\$295,044	\$200,245	\$495,289

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

Fiscal Year	Pension	Insurance	Total
2012	\$10,758,706	\$3,089,313	\$13,848,019
2013	11,153,182	3,521,894	14,675,076
2014	12,015,897	4,154,402	16,170,299
2015	11,646,481	4,246,892	15,893,373
2016	10,877,757	4,231,311	15,109,068
2017	11,921,906	4,783,905	16,705,811
2018	12,415,856	5,165,179	17,581,035
2019	12,934,332	5,480,639	18,414,971
2020	\$12,861,218	\$5,524,666	\$18,385,884

Note: For additional historical data for all charts presented, please visit our website for previous annual reports at <https://kyret.ky.gov/Publications/Pages/Comprehensive-Annual-Financial-Reports.aspx>

Changes in Fiduciary Net Position - CERS Non-Hazardous Pension Fund

As of June 30 (\$ in Thousands)

Additions	2012	2013	2014	2015	2016	2017	2018	2019	2020
Members' Contributions	\$119,123	\$120,777	\$122,459	\$133,637	\$133,987	\$150,714	\$160,370	\$159,064	\$168,994
Employers' Contributions	270,664	294,914	324,231	297,714	282,767	331,493	355,473	393,302	475,311
Health Insurance Contributions (HB1)	5,101	4,659	6,109	6,674	7,687	9,158	10,826	11,801	5
Net Investment Income (Loss)	(3,349)	579,161	895,531	110,569	(40,799)	825,901	578,377	394,558	56,682
Bank of America Settlement	-	-	-	10,280	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	-	-	361	44	-
Pension Spiking	-	-	-	850	1,339	2,061	2,544	151	105
Total Additions	391,539	999,511	1,348,330	559,724	384,981	1,319,327	1,107,951	958,920	701,097
Deductions									
Benefit Payments	524,385	553,204	582,850	615,335	651,247	687,460	726,568	766,221	795,960
Refunds	12,765	13,306	14,286	13,524	13,754	14,430	14,608	14,387	14,918
Administrative Expenses	16,740	17,743	18,615	18,212	19,078	19,614	19,592	21,659	22,304
Capital Project Expenses	9	-	-	-	307	77	-	-	-
Total Deductions	553,899	584,253	615,751	647,071	684,385	721,581	760,768	802,267	833,182
Net Increase (Decrease) in Fiduciary Net Position	\$(162,360)	\$415,258	\$732,579	\$(87,347)	\$(299,404)	\$597,746	\$347,183	\$156,653	\$(132,085)

CERS Non-Hazardous Insurance Fund

Additions	2012	2013	2014	2015	2016	2017	2018	2019	2020
Employers' Contributions	\$164,297	\$158,212	\$121,161	\$115,836	\$108,269	\$117,310	\$120,798	\$135,570	\$124,740
Net Investment Income (Loss)	(32,992)	147,194	232,330	36,731	(1,422)	259,586	197,520	133,697	8,656
Retired Re-employed (HB1)	-	-	2,117	3,608	3,567	3,402	3,821	4,085	4,528
Member Drug Reimbursement	8,443	5,360	6	-	-	1	11	6	4
Premiums Received from Retirees	17,493	16,293	1,450	582	629	707	637	616	596
Humana Gain Share	-	-	-	-	-	-	-	3,574	-
Northern Trust Settlement	-	-	-	-	-	-	75	9	-
Health Insurance Contributions (HB1)	-	-	-	-	-	-	-	-	12,959
Total Additions	157,241	327,059	357,064	156,757	111,043	381,006	322,862	277,557	151,483
Deductions									
Health Insurance Premiums	141,694	132,489	96,804	113,734	122,713	124,573	131,631	133,005	135,094
Administrative Expenses	5,545	4,431	508	782	726	789	761	877	903
Self-Funded Healthcare Costs	-	-	-	-	-	3,635	4,248	3,979	3,887
Excise Tax Insurance	-	-	-	6	-	6	6	6	6
Total Deductions	147,239	136,920	97,312	114,522	123,439	129,003	136,646	137,867	139,890
Net Increase (Decrease) in Fiduciary Net Position	\$10,002	\$190,139	\$259,751	\$42,235	\$(12,396)	\$252,003	\$186,216	\$139,690	\$11,593

Changes in Fiduciary Net Position - CERS Hazardous Pension Fund

As of June 30 (\$ in Thousands)

Additions	2012	2013	2014	2015	2016	2017	2018	2019	2020
Members' Contributions	\$41,797	\$42,863	\$42,631	\$46,609	\$51,554	\$60,102	\$61,089	\$58,661	\$63,236
Employers' Contributions	77,311	120,140	115,240	107,515	104,952	114,315	124,953	137,664	168,201
Health Insurance Contributions (HB1)	811	734	1,091	1,084	1,418	1,708	2,173	2,458	1
Net Investment Income (Loss)	(24,724)	181,171	288,490	37,104	(9,021)	270,473	192,174	132,970	15,992
Bank of America Settlement	-	-	-	2,865	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	-	-	111	14	-
Pension Spiking	-	-	-	557	762	1,632	2,707	387	242
Total Additions	95,195	344,908	447,452	195,734	149,665	448,230	383,207	332,154	247,672
Deductions									
Benefit Payments	169,352	179,696	189,635	200,134	213,448	226,985	244,119	259,008	275,802
Refunds	3,516	3,158	2,664	3,111	2,879	2,315	4,214	2,854	3,814
Administrative Expenses	1,319	1,202	1,721	1,289	1,337	1,421	1,504	1,726	1,981
Capital Project Expenses	-	-	-	-	26	7	-	-	-
Total Deductions	174,187	184,056	194,020	204,534	217,690	230,728	249,837	263,588	281,597
Net Increase (Decrease) in Fiduciary Net Position	\$(79,992)	\$160,852	\$253,431	\$(8,800)	\$(68,025)	\$217,502	\$133,370	\$68,566	\$(33,925)

CERS Hazardous Insurance Fund

Additions	2012	2013	2014	2015	2016	2017	2018	2019	2020
Employers' Contributions	\$90,204	\$84,962	\$74,265	\$71,008	\$66,757	\$50,743	\$55,027	\$61,106	\$56,739
Net Investment Income (Loss)	(16,127)	79,885	125,278	20,283	1,102	142,929	109,004	72,580	2,237
Retired Re-employed (HB1)	-	-	526	770	862	794	975	1,166	1,158
Member Drug Reimbursement	871	562	-	-	-	-	-	-	-
Premiums Received from Retirees	695	657	32	10	(106)	(301)	(265)	(53)	(32)
Humana Gain Share	-	-	-	-	-	-	-	506	-
Northern Trust Settlement	-	-	-	-	-	-	40	5	-
Health Insurance Contributions (HB1)	-	-	-	-	-	-	-	-	2,760
Total Additions	75,643	166,066	200,101	92,071	68,615	194,165	164,781	135,310	62,862
Deductions									
Health Insurance Premiums	50,155	59,941	60,843	65,553	68,518	70,407	74,844	78,190	81,849
Administrative Expenses	688	679	275	339	480	381	376	434	462
Self-Funded Healthcare Costs	-	-	-	-	-	160	603	149	228
Total Deductions	50,843	60,620	61,117	65,894	68,998	70,948	75,823	78,773	82,539
Net Increase (Decrease) in Fiduciary Net Position	\$24,800	\$105,446	\$138,983	\$26,177	\$(383)	\$123,216	\$88,958	\$56,537	\$(19,677)

Changes in Fiduciary Net Position - KERS Non-Hazardous Pension Fund

As of June 30 (\$ in Thousands)

Additions	2012	2013	2014	2015	2016	2017	2018	2019	2020
Members' Contributions	\$96,418	\$96,744	\$92,941	\$100,424	\$101,677	\$100,544	\$104,972	\$93,759	\$96,594
Employers' Contributions	211,071	280,874	296,836	520,948	512,670	644,803	619,988	948,866	948,578
General Fund Appropriations	-	-	-	-	-	58,193	67,574	75,858	-
Health Insurance Contributions (HB1)	5,337	3,344	4,546	4,181	4,817	5,156	5,786	5,963	1
Employer Cessation	-	-	-	-	-	53,215	17	10,643	20
Net Investment Income (Loss)	9,789	303,011	337,923	44,570	(20,662)	220,985	147,577	114,918	53,696
Bank of America Settlement	-	-	-	8,442	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	-	-	301	37	-
Pension Spiking	-	-	-	743	414	909	1,564	95	(6)
Total Additions	322,615	683,973	732,246	679,308	598,916	1,083,805	947,779	1,250,139	1,098,883
Deductions									
Benefit Payments	858,151	873,906	889,937	905,790	923,288	948,489	967,374	988,349	999,813
Refunds	12,004	12,907	13,627	13,552	12,130	11,819	13,603	12,342	11,523
Administrative Expenses	8,776	10,719	11,145	10,474	10,807	10,974	10,692	11,712	11,941
Capital Project Expenses	8	-	-	-	181	34	-	-	-
Total Deductions	878,939	897,532	914,709	929,816	946,406	971,316	991,669	1,012,403	1,023,277
Net Increase (Decrease) in Fiduciary Net Position	\$(56,324)	\$(213,559)	\$(182,463)	\$(250,508)	\$(347,490)	\$112,489	\$(43,890)	\$237,736	\$75,606

KERS Non-Hazardous Insurance Fund

Additions	2012	2013	2014	2015	2016	2017	2018	2019	2020
Employers' Contributions	\$146,844	\$162,191	\$164,176	\$132,208	\$131,935	\$133,024	\$132,364	\$173,576	\$170,479
Net Investment Income (Loss)	(4,803)	40,661	96,738	8,690	(3,904)	90,915	61,331	43,202	10,624
Retired Re-employed (HB1)	-	-	2,433	3,732	3,880	3,765	4,055	3,996	4,502
Member Drug Reimbursement	7,865	4,846	8	-	-	1	5	3	2
Premiums Received from Retirees	15,666	14,294	918	272	240	248	216	184	183
Humana Gain Share Payment	-	-	-	-	-	-	-	3,079	-
Employer Cessations	-	-	-	-	-	15,567	-	1,391	25
Northern Trust Settlement	-	-	-	-	-	-	32	4	-
Health Insurance Contribution (HB1)	-	-	-	-	-	-	-	-	6,127
Total Additions	165,563	221,992	264,273	144,902	132,151	243,520	198,003	225,435	191,942
Deductions									
Health Insurance Premiums	163,841	140,157	112,671	123,127	126,550	127,648	130,069	127,221	125,006
Administrative Expenses	5,203	4,285	736	893	818	861	760	875	847
Self-Funded Healthcare Costs	-	-	-	2,145	2,095	1,920	1,819	1,962	1,724
Excise Tax Insurance	-	-	-	3	6	3	3	3	3
Total Deductions	169,044	144,442	113,407	126,168	129,469	130,432	132,651	130,061	127,580
Net Increase (Decrease) in Fiduciary Net Position	\$(3,481)	\$77,550	\$150,866	\$18,734	\$2,679	\$113,088	\$65,352	\$95,374	\$64,362

Changes in Fiduciary Net Position - KERS Hazardous Pension Fund

As of June 30 (\$ in Thousands)

Additions	2012	2013	2014	2015	2016	2017	2018	2019	2020
Members' Contributions	\$11,602	\$11,467	\$11,995	\$12,670	\$15,055	\$17,523	\$17,891	\$17,118	\$19,769
Employers' Contributions	17,367	27,334	11,670	28,374	23,690	37,630	32,790	55,229	59,096
General Fund Appropriations	-	-	-	-	-	15,000	10,000	-	-
Health Insurance Contributions (HB1)	629	402	551	537	684	811	909	934	4
Net Investment Income (Loss)	(10,286)	51,497	80,724	8,701	(1,652)	70,993	51,848	36,704	6,805
Bank of America Settlement	-	-	-	767	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	-	-	33	4	-
Pension Spiking	-	-	-	162	70	344	871	29	19
Total Additions	19,312	90,700	104,941	51,211	37,847	142,301	114,342	110,018	85,693
Deductions									
Benefit Payments	48,424	48,855	54,320	56,774	59,306	61,231	65,616	69,527	71,861
Refunds	2,543	2,762	2,830	2,609	2,211	2,106	2,501	2,684	3,168
Administrative Expenses	877	733	897	844	903	919	975	1,103	1,176
Capital Project Expenses	-	-	-	-	15	4	-	-	-
Total Deductions	51,844	52,350	58,048	60,227	62,435	64,260	69,092	73,314	76,205
Net Increase (Decrease) in Fiduciary Net Position	\$(32,532)	\$38,350	\$46,892	\$(9,016)	\$(24,588)	\$78,041	\$45,250	\$36,704	\$9,488

KERS Hazardous Insurance Fund

Additions	2012	2013	2014	2015	2016	2017	2018	2019	2020
Employers' Contributions	\$23,984	\$25,144	\$23,336	\$14,173	\$15,929	\$4,688	\$4,302	\$3,725	\$4,482
Net Investment Income (Loss)	60	32,887	52,214	7,793	(882)	59,188	42,567	28,049	638
Retired Re-employed (HB1)	-	-	538	709	837	932	986	1,245	1,294
Member Drug Reimbursement	351	243	-	-	-	-	-	-	1
Premiums Received from Retirees	876	895	37	14	(13)	(51)	(50)	(19)	(5)
Humana Gain Share	-	-	-	-	-	-	-	213	-
Northern Trust Settlement	-	-	-	-	-	-	18	2	-
Health Insurance Contributions (HB1)	-	-	-	-	-	-	-	-	1,100
Total Additions	25,271	59,169	76,126	22,689	15,871	64,757	47,823	33,215	7,510
Deductions									
Health Insurance Premiums	13,941	16,837	15,405	17,000	17,490	17,562	18,697	19,280	19,630
Administrative Expenses	335	179	78	101	97	105	104	117	123
Self-Funded Healthcare Costs	-	-	-	-	-	45	79	94	125
Excise Tax Insurance	-	-	-	-	-	-	-	-	-
Total Deductions	14,276	17,016	15,482	17,101	17,587	17,712	18,880	19,491	19,878
Net Increase (Decrease) in Fiduciary Net Position	\$10,995	\$42,153	\$60,642	\$5,588	\$(1,716)	\$47,045	\$28,943	\$13,724	\$(12,368)

Changes in Fiduciary Net Position - SPRS Pension Fund

As of June 30 (\$ in Thousands)

Additions	2012	2013	2014	2015	2016	2017	2018	2019	2020
Members' Contributions	\$5,154	\$4,495	\$5,005	\$5,150	\$5,149	\$5,349	\$5,522	\$5,062	\$4,767
Employers' Contributions	15,040	18,501	20,279	31,444	25,723	38,028	36,486	58,947	58,358
General Fund Appropriations	-	-	-	-	-	25,000	10,000	1,086	1,086
Health Insurance Contributions (HB1)	46	48	70	94	113	131	155	176	-
Net Investment Income (Loss)	43	25,954	40,374	3,427	(3,841)	26,795	18,487	14,863	6,359
Bank of America Settlement	-	-	-	646	-	-	-	-	-
Northern Trust Settlement	-	-	-	-	-	-	21	3	-
Pension Spiking	-	-	-	546	99	210	392	15	9
Total Additions	20,283	48,998	65,729	41,307	27,243	95,513	71,063	80,152	70,579
Deductions									
Benefit Payments	48,867	50,559	53,026	54,766	56,268	56,935	58,805	60,948	62,423
Refunds	149	31	214	85	11	26	22	162	88
Administrative Expenses	73	184	215	201	176	181	194	225	266
Capital Project Expenses	-	-	-	-	4	1	-	-	-
Total Deductions	49,089	50,774	53,454	55,052	56,459	57,143	59,021	61,335	62,777
Net Increase (Decrease) in Fiduciary Net Position	\$(28,806)	\$(1,776)	\$12,276	\$(13,745)	\$(29,216)	\$38,370	\$12,042	\$18,817	\$7,802
SPRS Insurance Fund									
Additions	2012	2013	2014	2015	2016	2017	2018	2019	2020
Employers' Contributions	\$10,810	\$16,829	\$14,498	\$10,379	\$10,228	\$9,222	\$9,397	\$13,282	\$13,133
Net Investment Income (Loss)	(1,458)	12,993	20,508	2,921	(48)	21,570	16,420	10,766	1,108
Retired Re-employed (HB1)	-	-	(5)	3	9	-	-	6	-
Member Drug Reimbursement	279	178	-	-	-	-	-	-	-
Premiums Received from Retirees	20	23	11	1	(29)	(55)	(41)	(13)	(12)
Humana Gain Share	-	-	-	-	-	-	-	144	-
Northern Trust Settlement	-	-	-	-	-	-	8	1	-
Health Insurance contributions (HB1)	-	-	-	-	-	-	-	-	196
Total Additions	9,651	30,023	35,012	13,304	10,160	30,737	25,784	24,186	14,425
Deductions									
Health Insurance Premiums	10,791	12,546	12,688	13,483	13,836	13,405	13,881	13,942	14,215
Administrative Expenses	201	184	58	65	89	66	62	69	71
Self-Funded Healthcare Costs	-	-	-	-	-	24	38	40	22
Excise Tax Insurance	-	-	-	-	-	-	-	-	-
Total Deductions	10,992	12,730	12,745	13,548	13,925	13,495	13,981	14,051	14,308
Net Increase (Decrease) in Fiduciary Net Position	\$(1,341)	\$17,293	\$22,267	\$(244)	\$(3,765)	\$17,242	\$11,803	\$10,135	\$117

**Schedule of Benefit Expenses CERS Non-Hazardous
As of June 30 (in Whole \$)**

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2013				
Average Benefit	591	1,042	878	625
Number of Accounts	11,266	33,393	4,537	1,075
Total Monthly Benefits	\$6,661,524	\$34,797,169	\$3,982,213	\$672,310
% of Total Monthly Benefits	14.45%	75.46%	8.64%	1.45%
Fiscal Year 2014				
Average Benefit	\$596	\$1,042	\$856	\$613
Number of Accounts	11,885	34,911	4,729	1,110
Total Monthly Benefits	\$7,081,048	\$36,375,607	\$4,047,035	\$680,784
% of Total Monthly Benefits	14.70%	75.49%	8.40%	1.41%
Fiscal Year 2015				
Average Benefit	\$612	\$1,044	\$862	\$616
Number of Accounts	12,749	36,746	4,854	1,161
Total Monthly Benefits	\$7,801,662	\$38,375,001	\$4,186,130	\$715,032
% of Total Monthly Benefits	15.27%	75.13%	8.20%	1.40%
Fiscal Year 2016				
Average Benefit	\$623	\$1,045	\$874	\$626
Number of Accounts	14,014	39,066	5,118	1,268
Total Monthly Benefits	\$8,724,563	\$40,823,334	\$4,472,723	\$793,726
% of Total Monthly Benefits	15.92%	74.48%	8.16%	1.45%
Fiscal Year 2017				
Average Benefit	\$634	\$1,050	\$883	\$616
Number of Accounts	14,792	40,873	5,280	1,318
Total Monthly Benefits	\$9,374,583	\$42,912,604	\$4,661,375	\$811,542
% of Total Monthly Benefits	16.23%	74.29%	8.07%	1.41%
Fiscal Year 2018				
Average Benefit	\$647	\$1,062	\$892	\$645
Number of Accounts	15,713	42,918	5,425	1,359
Total Monthly Benefits	\$10,169,605	\$45,560,863	\$4,838,284	\$875,980
% of Total Monthly Benefits	16.55%	74.15%	7.87%	1.43%
Fiscal Year 2019				
Average Benefit	\$668	\$1,067	\$901	\$657
Number of Accounts	16,710	44,594	5,479	1,363
Total Monthly Benefits	\$11,167,300	\$47,580,052	\$4,934,518	\$895,303
% of Total Monthly Benefits	17.29%	73.68%	7.64%	1.39%
Fiscal Year 2020				
Average Benefit	\$673	\$1,070	\$904	\$667
Number of Accounts	17,378	45,973	5,405	1,370
Total Monthly Benefits	\$11,693,581	\$49,186,433	\$4,888,554	\$913,574
% of Total Monthly Benefits	17.54%	73.76%	7.33%	1.37%

Note: This table includes individuals receiving a monthly benefit as of June 30 in the indicated fiscal year. A single member may have multiple accounts which contribute to one pension. This table represents all individuals receiving a benefit including dependent children, Qualified Domestic Relations Order(QDRO) accounts and multiple beneficiary accounts. If a member has died or a disability decision is pending, the monthly benefit amount is reflected as zero until the account status changes.

Schedule of Benefit Expenses - CERS Hazardous

As of June 30 (in Whole \$)

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2013				
Average Benefit	1,433	2,429	1,121	1,073
Number of Accounts	1,883	4,683	681	119
Total Monthly Benefits	\$2,699,176	\$11,374,811	\$763,700	\$127,689
% of Total Monthly Benefits	18.04%	76.01%	5.10%	0.85%
Fiscal Year 2014				
Average Benefit	\$1,467	\$2,437	\$1,125	\$1,008
Number of Accounts	1,974	4,873	695	119
Total Monthly Benefits	\$2,895,353	\$11,876,578	\$781,685	\$119,935
% of Total Monthly Benefits	18.47%	75.77%	4.99%	0.77%
Fiscal Year 2015				
Average Benefit	\$1,480	\$2,448	\$1,145	\$954
Number of Accounts	2,097	5,139	688	127
Total Monthly Benefits	\$3,103,613	\$12,581,191	\$787,549	\$121,103
% of Total Monthly Benefits	18.70%	75.82%	4.75%	0.73%
Fiscal Year 2016				
Average Benefit	\$1,494	\$2,453	\$1,137	\$975
Number of Accounts	2,269	5,485	742	143
Total Monthly Benefits	\$3,388,890	\$13,452,235	\$843,463	\$139,353
% of Total Monthly Benefits	19.01%	75.47%	4.73%	0.78%
Fiscal Year 2017				
Average Benefit	\$1,509	\$2,473	\$1,138	\$997
Number of Accounts	2,394	5,764	794	149
Total Monthly Benefits	\$3,612,099	\$14,255,349	\$903,238	\$148,515
% of Total Monthly Benefits	19.09%	75.35%	4.77%	0.78%
Fiscal Year 2018				
Average Benefit	\$1,542	\$2,505	\$1,141	\$1,110
Number of Accounts	2,540	6,189	811	158
Total Monthly Benefits	\$3,917,668	\$15,503,185	\$925,221	\$175,316
% of Total Monthly Benefits	19.09%	75.55%	4.51%	0.85%
Fiscal Year 2019				
Average Benefit	\$1,546	\$2,522	\$1,163	\$1,166
Number of Accounts	2,655	6,488	822	168
Total Monthly Benefits	\$4,104,061	\$16,365,945	\$956,017	\$195,932
% of Total Monthly Benefits	18.98%	75.69%	4.42%	0.91%
Fiscal Year 2020				
Average Benefit	\$1,590	\$2,554	\$1,174	\$1,205
Number of Accounts	2,771	6,864	814	169
Total Monthly Benefits	\$4,406,958	\$17,527,561	\$955,266	\$203,646
% of Total Monthly Benefits	19.08%	75.90%	4.14%	0.88%

Note: This table includes individuals receiving a monthly benefit as of June 30 in the indicated fiscal year. A single member may have multiple accounts which contribute to one pension. This table represents all individuals receiving a benefit including dependent children, Qualified Domestic Relations Order (QDRO) accounts and multiple beneficiary accounts. If a member has died or a disability decision is pending, the monthly benefit amount is reflected as zero until the account status changes.

Schedule of Benefit Expenses - KERS Non-Hazardous

As of June 30 (in Whole \$)

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2013				
Average Benefit	1,003	1,915	1,020	\$889
Number of Accounts	6,441	32,310	2,687	962
Total Monthly Benefits	\$6,459,840	\$61,882,399	\$2,740,491	\$855,033
% of Total Monthly Benefits	8.98%	86.02%	3.81%	1.19%
Fiscal Year 2014				
Average Benefit	\$992	\$1,911	\$987	\$886
Number of Accounts	6,678	33,106	2,706	954
Total Monthly Benefits	\$6,624,472	\$63,255,779	\$2,671,749	\$845,468
% of Total Monthly Benefits	9.03%	86.18%	3.64%	1.15%
Fiscal Year 2015				
Average Benefit	\$992	\$1,901	\$996	\$909
Number of Accounts	6,896	33,940	2,696	983
Total Monthly Benefits	\$6,843,193	\$64,503,048	\$2,684,720	\$893,407
% of Total Monthly Benefits	9.13%	86.09%	3.58%	1.19%
Fiscal Year 2016				
Average Benefit	\$989	\$1,886	\$1,005	\$902
Number of Accounts	7,390	35,192	2,770	1,014
Total Monthly Benefits	\$7,312,293	\$66,383,638	\$2,784,928	\$914,804
% of Total Monthly Benefits	9.45%	85.77%	3.60%	1.18%
Fiscal Year 2017				
Average Benefit	\$992	\$1,883	\$1,013	\$924
Number of Accounts	7,628	35,890	2,772	1,028
Total Monthly Benefits	\$7,565,780	\$67,591,003	\$2,807,938	\$950,318
% of Total Monthly Benefits	9.59%	85.65%	3.56%	1.20%
Fiscal Year 2018				
Average Benefit	\$998	\$1,879	\$1,019	\$940
Number of Accounts	8,070	37,141	2,767	1,007
Total Monthly Benefits	\$8,049,794	\$69,780,011	\$2,818,593	\$946,466
% of Total Monthly Benefits	9.87%	85.52%	3.45%	1.16%
Fiscal Year 2019				
Average Benefit	\$993	\$1,876	\$1,029	\$933
Number of Accounts	8,387	37,751	2,751	997
Total Monthly Benefits	\$8,328,706	\$70,826,696	\$2,831,527	\$930,110
% of Total Monthly Benefits	10.04%	85.42%	3.41%	1.12%
Fiscal Year 2020				
Average Benefit	\$984	\$1,872	\$1,031	\$937
Number of Accounts	8,622	38,233	2,676	987
Total Monthly Benefits	\$8,483,484	\$71,585,386	\$2,759,983	\$924,459
% of Total Monthly Benefits	10.13%	85.47%	3.30%	1.10%

Note: This table includes individuals receiving a monthly benefit as of June 30 in the indicated fiscal year. A single member may have multiple accounts which contribute to one pension. This table represents all individuals receiving a benefit including dependent children, Qualified Domestic Relations Order (QDRO) accounts and multiple beneficiary accounts. If a member has died or a disability decision is pending, the monthly benefit amount is reflected as zero until the account status changes.

Schedule of Benefit Expenses - KERS Hazardous

As of June 30 (in Whole \$)

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2013				
Average Benefit	\$961	\$1,543	\$662	\$725
Number of Accounts	1,751	1,417	190	93
Total Monthly Benefits	\$1,682,541	\$2,186,334	\$125,704	\$67,440
% of Total Monthly Benefits	41.42%	53.82%	3.10%	1.66%
Fiscal Year 2014				
Average Benefit	\$971	\$1,560	\$649	\$749
Number of Accounts	1,851	1,497	191	89
Total Monthly Benefits	\$1,797,900	\$2,335,190	\$123,867	\$66,679
% of Total Monthly Benefits	41.58%	54.01%	2.86%	1.54%
Fiscal Year 2015				
Average Benefit	\$986	\$1,556	\$661	\$714
Number of Accounts	1,912	1,566	193	90
Total Monthly Benefits	\$1,884,477	\$2,436,923	\$127,477	\$64,250
% of Total Monthly Benefits	41.76%	54.00%	2.82%	1.42%
Fiscal Year 2016				
Average Benefit	\$984	\$1,542	\$663	\$730
Number of Accounts	2,046	1,658	194	94
Total Monthly Benefits	\$2,011,530	\$2,557,114	\$128,663	\$68,605
% of Total Monthly Benefits	42.21%	53.65%	2.70%	1.44%
Fiscal Year 2017				
Average Benefit	\$993	\$1,541	\$662	\$721
Number of Accounts	2,101	1,719	205	96
Total Monthly Benefits	\$2,086,732	\$2,648,685	\$135,625	\$69,255
% of Total Monthly Benefits	42.24%	53.61%	2.75%	1.40%
Fiscal Year 2018				
Average Benefit	\$1,002	\$1,551	\$684	\$737
Number of Accounts	2,215	1,877	205	100
Total Monthly Benefits	\$2,218,520	\$2,911,409	\$140,174	\$73,704
% of Total Monthly Benefits	41.52%	54.48%	2.62%	1.38%
Fiscal Year 2019				
Average Benefit	\$1,020	\$1,561	\$708	\$744
Number of Accounts	2,269	1,987	208	99
Total Monthly Benefits	\$2,315,435	\$3,101,783	\$147,342	\$73,702
% of Total Monthly Benefits	41.07%	55.01%	2.61%	1.31%
Fiscal Year 2020				
Average Benefit	\$1,017	\$1,561	\$701	\$739
Number of Accounts	2,334	2,061	207	94
Total Monthly Benefits	\$2,374,412	\$3,216,376	\$145,112	\$69,433
% of Total Monthly Benefits	40.90%	55.40%	2.50%	1.20%

This table includes individuals receiving a monthly benefit as of June 30 in the indicated fiscal year. A single member may have multiple accounts which contribute to one pension. This table represents all individuals receiving a benefit including dependent children, Qualified Domestic Relations Order (QDRO) accounts and multiple beneficiary accounts. If a member has died or a disability decision is pending, the monthly benefit amount is reflected as zero until the account status changes.

Schedule of Benefit Expenses - SPRS

As of June 30 (in Whole \$)

	Normal Retirement	Early Retirement	Disability Retirement	Beneficiary Payments
Fiscal Year 2013				
Average Benefit	\$3,601	\$3,130	\$1,320	\$2,198
Number of Accounts	149	1,126	74	23
Total Monthly Benefits	\$536,481	\$3,524,248	\$97,681	\$50,563
% of Total Monthly Benefits	12.75%	83.73%	2.32%	1.20%
Fiscal Year 2014				
Average Benefit	\$3,621	\$3,197	\$1,346	\$2,196
Number of Accounts	146	1,172	75	23
Total Monthly Benefits	\$528,611	\$3,747,012	\$100,974	\$49,197
% of Total Monthly Benefits	11.94%	84.66%	2.28%	1.11%
Fiscal Year 2015				
Average Benefit	\$3,578	\$3,189	\$1,347	\$2,153
Number of Accounts	150	1,213	75	23
Total Monthly Benefits	\$536,649	\$3,867,971	\$101,018	\$49,524
% of Total Monthly Benefits	11.78%	84.91%	2.22%	1.09%
Fiscal Year 2016				
Average Benefit	\$3,579	\$3,135	\$1,269	\$2,008
Number of Accounts	155	1,277	82	25
Total Monthly Benefits	\$554,743	\$4,002,993	\$104,056	\$50,196
% of Total Monthly Benefits	11.77%	84.95%	2.21%	1.07%
Fiscal Year 2017				
Average Benefit	\$3,611	\$3,135	\$1,278	\$2,008
Number of Accounts	149	1,303	82	25
Total Monthly Benefits	\$538,032	\$4,084,771	\$104,788	\$50,196
% of Total Monthly Benefits	11.26%	85.50%	2.19%	1.05%
Fiscal Year 2018				
Average Benefit	\$3,642	\$3,128	\$1,289	\$2,082
Number of Accounts	153	1,361	83	26
Total Monthly Benefits	\$557,249	\$4,257,579	\$107,019	\$54,127
% of Total Monthly Benefits	11.20%	85.56%	2.15%	1.09%
Fiscal Year 2019				
Average Benefit	\$3,607	\$3,138	\$1,298	\$2,082
Number of Accounts	156	1,401	83	26
Total Monthly Benefits	\$562,630	\$4,395,857	\$107,737	\$54,127
% of Total Monthly Benefits	10.99%	85.85%	2.10%	1.06%
Fiscal Year 2020				
Average Benefit	\$3,628	\$3,154	\$1,339	\$2,137
Number of Accounts	152	1,440	80	26
Total Monthly Benefits	\$551,470	\$4,541,490	\$107,148	\$55,558
% of Total Monthly Benefits	10.49%	86.41%	2.04%	1.06%

Note: This table includes individuals receiving a monthly benefit as of June 30 in the indicated fiscal year. A single member may have multiple accounts which contribute to one pension. This table represents all individuals receiving a benefit including dependent children, Qualified Domestic Relations Order (QDRO) accounts and multiple beneficiary accounts. If a member has died or a disability decision is pending, the monthly benefit amount is reflected as zero until the account status changes.

Analysis of Initial Retirees As of June 30 (in Whole \$)

	CERS Non- Hazardous	CERS Hazardous	KERS Non- Hazardous	KERS Hazardous	SPRS
Fiscal Year 2013					
Number of Accounts	3,303	443	1,810	205	59
Average Service Credit (months)	189	202	199	157	234
Average Final Compensation	\$34,292	\$58,516	\$47,168	\$46,456	\$69,325
Average Monthly Benefit	\$938	\$2,196	\$1,275	\$1,250	\$2,893
Average System Payment for Health Insurance	\$259	\$853	\$303	\$433	\$994
Fiscal Year 2014					
Number of Accounts	3,529	430	2,037	245	77
Average Service Credit (months)	182	194	202	165	260
Average Final Compensation	\$33,816	\$57,718	\$46,480	\$46,595	\$70,009
Average Monthly Benefit	\$879	\$2,021	\$1,278	\$1,296	\$3,322
Average System Payment for Health Insurance	\$486	\$1,279	\$534	\$937	\$1,378
Fiscal Year 2015					
Number of Accounts	4,084	496	2,078	191	55
Average Service Credit (months)	188	204	204	164	251
Average Final Compensation	\$34,561	\$59,589	\$47,187	\$47,148	\$67,862
Average Monthly Benefit	\$913	\$2,178	\$1,308	\$1,280	\$3,009
Average System Payment for Health Insurance	\$489	\$1,254	\$549	\$906	\$1,376
Fiscal Year 2016					
Number of Accounts	4,151	522	2,043	205	57
Average Service Credit (months)	190	212	207	160	234
Average Final Compensation	\$34,632	\$58,977	\$47,429	\$44,494	\$65,535
Average Monthly Benefit	\$932	\$2,303	\$1,351	\$1,225	\$2,953
Average System Payment for Health Insurance	\$501	\$1,277	\$558	\$870	\$1,425
Fiscal Year 2017					
Number of Accounts	4,151	544	2,094	191	30
Average Service Credit (months)	191	203	208	146	241
Average Final Compensation	\$34,779	\$58,384	\$46,753	\$47,604	\$68,401
Average Monthly Benefit	\$940	\$2,236	\$1,339	\$1,150	\$2,935
Average System Payment for Health Insurance	\$510	\$1,247	\$558	\$872	\$1,192
Fiscal Year 2018					
Number of Accounts	4,570	696	2,682	328	68
Average Service Credit (months)	195	211	223	167	241
Average Final Compensation	\$37,683	\$65,407	\$48,552	\$51,219	\$71,132
Average Monthly Benefit	\$1,027	\$2,528	\$1,481	\$1,392	\$3,035
Average System Payment for Health Insurance	\$531	\$1,300	\$578	\$1,033	\$1,365
Fiscal Year 2019					
Number of Accounts	4,283	541	1,993	234	63
Average Service Credit (months)	193	198	204	174	254
Average Final Compensation	\$37,412	\$64,646	\$47,824	\$51,901	\$73,795
Average Monthly Benefit	\$997	\$2,366	\$1,355	\$1,532	\$3,341
Average System Payment for Health Insurance	\$513	\$1,231	\$569	\$1,015	\$1,391
Fiscal Year 2020					
Number of Accounts	3,584	580	1,755	195	54
Average Service Credit (months)	189	221	211	150	245
Average Final Compensation	\$36,968	\$67,994	\$47,069	\$51,021	\$78,468
Average Monthly Benefit	\$935	\$2,715	\$1,352	\$1,242	\$3,313
Average System Payment for Health Insurance	\$539	\$1,361	\$579	\$1,013	\$1,404

Note: This table represents all individuals who had an initial retirement date within the fiscal year.

Payment Options Selected by Retired Members As of June 30, 2020 (in Whole \$)

	Basic	Other	Period Certain	Pop Up	Social Security Adjustment	Survivorship	Annuity
CERS Non-Hazardous							
Number of Accounts	30,470	20	9,829	11,343	2,147	16,311	6
Monthly Benefits	\$24,817,503	\$27,457	\$8,623,035	\$13,966,756	\$2,760,044	\$16,486,466	\$880
CERS Hazardous							
Number of Accounts	1,828	33	951	4,278	551	2,977	-
Monthly Benefits	\$3,498,464	\$46,872	\$1,755,191	\$10,808,925	\$862,878	\$6,121,102	\$-
KERS Non-Hazardous							
Number of Accounts	18,762	18	6,275	9,878	3,307	12,273	5
Monthly Benefits	\$27,936,229	\$36,156	\$9,762,283	\$20,075,396	\$5,684,801	\$20,257,504	\$943
KERS Hazardous							
Number of Accounts	1,355	3	499	1,328	290	1,220	1
Monthly Benefits	\$1,482,753	\$4,763	\$594,052	\$1,961,265	\$318,851	\$1,443,407	\$243
SPRS							
Number of Accounts	186	1	132	727	196	456	-
Monthly Benefits	\$531,935	\$3,084	\$379,848	\$2,498,843	\$395,393	\$1,446,563	\$-
KRS Total							
Number of Accounts	52,601	75	17,686	27,554	6,491	33,237	12
Monthly Benefits	\$58,266,884	\$118,332	\$21,114,409	\$49,311,185	\$10,021,967	\$45,755,042	\$2,066

The information in this table represents accounts administered by KRS. A single member may have multiple accounts, which contribute to one pension.

Employer Contribution Rates

In CERS, KERS, and SPRS, both the employee and the employer contribute a percentage of creditable compensation to KRS.

The employee contribution rate is set by state statute. Non-Hazardous employees contribute 5% while Hazardous duty members contribute 8%. Employees hired on or after September 1, 2008, contribute an additional 1% to health insurance.

CERS employer contribution rates are set by the KRS Board under Kentucky Revised Statute 61.565 based on an annual actuarial valuation, unless altered by legislation enacted by the Kentucky General Assembly. The CERS employer contribution rates for fiscal year 2008 through 2009 were reduced from the actuarially recommended rate as a result of the passage of House Bill (HB) 1 during the 2008 Extraordinary Session of the Kentucky General Assembly. Also, during its 2009 Regular Session, the Kentucky General Assembly enacted HB 117, which mandated an extension of the phase-in of insurance contribution rates that had been previously approved by the KRS Board in 2006 from five years to 10 years to further mitigate the impact of the application of GASB Statements 43 and 45 on CERS employer contribution rates for health insurance. During the 2018 Regular Session of the Kentucky General Assembly, HB 362 capped CERS employer contribution rate increases up to 12% per year over the prior fiscal year for the period of July 1, 2018 to June 30, 2028. The actual pension and insurance employer contribution rates that were paid are shown below.

Under Kentucky Revised Statute 61.565, KERS and SPRS employer contribution rates are set by the KRS Board based on an annual actuarial valuation. However, KERS and SPRS employer rates are subject to approval by the Kentucky General Assembly through the adoption of the biennial Executive Branch Budget. For fiscal years 2003 through 2014, the Kentucky General Assembly suspended Kentucky Revised Statute 61.565 in the budget in order to provide an employer contribution rate that is less than the amount recommended by the Board's consulting actuary. For fiscal years 2018, 2019, and 2020, the legislature amended the KERS Non Hazardous rate for quasi-government agencies to 49.47%. The table in the Actuarial Section shows the KERS and SPRS employer contribution rates that were actuarial recommended rates in the annual valuation without any adjustments.

Employer Contribution Rates (%) As of June 30								
	2013	2014	2015	2016	2017	2018	2019	2020
CERS Non-Hazardous								
Actual Rate	19.55%	18.89%	17.67%	17.06%	18.68%	19.18%	21.48%	24.06%
CERS Hazardous								
Actual Rate	37.60%	35.70%	34.31%	32.95%	31.06%	31.55%	35.34%	39.58%
KERS Non-Hazardous								
Actual Rate	23.61%	26.79%	38.77%	38.77%	48.59%	49.47%	83.43%	83.43%
KERS Hazardous								
Actual Rate	29.79%	32.21%	26.34%	26.34%	23.82%	23.70%	36.85%	36.85%
SPRS								
Actual Rate	63.67%	71.15%	75.76%	75.76%	89.21%	91.24%	146.28%	146.28%

Note: House Bill 1 passed during the 2019 Special Session, and House Bill 352 passed during the 2020 Regular Session, reduced the employer contribution rate for KERS quasi-governmental agencies, keeping the rate at 49.47% for fiscal years 2019 and 2020. All other KERS Nonhazardous agencies paid the shown contribution rate for fiscal year 2019.

Insurance Contracts

KRS provides medical insurance and other managed care coverage for eligible retired members.

Participation in the insurance program is optional and requires the completion of the proper forms at the time of retirement in order to obtain the insurance coverage. KRS provides access to health insurance coverage through the Kentucky Employees' Health Plan (KEHP) for recipients until they reach age 65 and/or become Medicare eligible. After a retired member becomes eligible for Medicare, coverage is available through a Medicare eligible plan offered by KRS. A retired member's spouse and/or dependents may also be covered on health insurance through KRS.

Insurance Benefits Paid to Retirees & Beneficiaries					
Participating in a KRS Health Insurance Plan As of June 30, 2020 (in Whole \$)					
	CERS Non - Hazardous	CERS Hazardous	KERS Non - Hazardous	KERS Hazardous	SPRS
Number	39,450	8,999	32,401	3,024	1,784
Average Service Credit (Months)	264	278	311	264	321
Average Monthly System Payment for Health Insurance	\$323	\$956	\$360	\$680	\$891
Average Monthly Member Payment for Health Insurance	\$59	\$35	\$58	\$45	\$19
Total Monthly Payment for Health Insurance	\$14,170,086	\$7,300,217	\$12,661,846	\$1,802,607	\$1,253,060

Insurance Contracts by Type As of June 30 (in Whole \$)

CERS Non-Hazardous	2013	2014	2015	2016	2017	2018	2019	2020
KEHP Parent Plus	340	278	242	235	222	231	214	210
KEHP Couple/Family	857	546	473	465	462	510	530	519
KEHP Single	7,652	7,843	8,098	8,164	8,313	8,802	8,912	8,751
Medicare without Prescription	2,707	2,583	2,531	2,499	2,462	2,389	2,278	2,183
Medicare with Prescription	18,824	20,200	21,520	23,007	24,247	25,476	26,848	27,786
CERS Hazardous	2013	2014	2015	2016	2017	2018	2019	2020
KEHP Parent Plus	400	432	456	378	395	422	430	425
KEHP Couple/Family	2,155	2,184	2,255	2,321	2,387	2,571	2,648	2,816
KEHP Single	1,425	1,447	1,500	1,595	1,645	1,712	1,746	1,731
Medicare without Prescription	79	89	107	114	125	119	121	116
Medicare with Prescription	2,324	2,510	2,697	2,969	3,205	3,388	3,658	3,911
KERS Non-Hazardous	2013	2014	2015	2016	2017	2018	2019	2020
KEHP Parent Plus	618	506	452	441	411	460	441	433
KEHP Couple/Family	1,276	797	714	656	663	696	700	666
KEHP Single	9,364	9,491	9,251	8,876	8,627	8,638	8,304	7,942
Medicare without Prescription	1,474	1,370	1,303	1,286	1,229	1,179	1,141	1,089
Medicare with Prescription	16,834	17,738	18,577	19,447	20,215	21,117	21,713	22,271
KERS Hazardous	2013	2014	2015	2016	2017	2018	2019	2020
KEHP Parent Plus	106	110	110	97	88	96	103	112
KEHP Couple/Family	451	448	448	439	432	478	493	491
KEHP Single	625	647	656	663	667	686	699	677
Medicare without Prescription	60	56	62	66	72	73	83	82
Medicare with Prescription	985	1,104	1,177	1,302	1,401	1,495	1,584	1,662
SPRS	2013	2014	2015	2016	2017	2018	2019	2020
KEHP Parent Plus	76	78	81	77	79	74	77	85
KEHP Couple/Family	421	444	441	355	420	426	454	459
KEHP Single	283	263	265	246	251	253	224	226
Medicare without Prescription	20	20	16	18	17	21	16	16
Medicare with Prescription	682	712	777	850	897	941	975	998
KRS Total	2013	2014	2015	2016	2017	2018	2019	2020
KEHP Parent Plus	1,540	1,404	1,341	1,228	1,195	1,283	1,265	1,265
KEHP Couple/Family	5,160	4,419	4,331	4,328	4,364	4,681	4,825	4,951
KEHP Single	19,349	19,691	19,770	19,544	19,503	20,091	19,885	19,327
Medicare without Prescription	4,340	4,118	4,019	3,983	3,905	3,781	3,639	3,486
Medicare with Prescription	39,649	42,264	44,748	47,575	49,965	52,417	54,778	56,628

Acronym Glossary for Kentucky Retirement Systems As of December 3, 2020

Phrase	Acronym
Annual Required Contribution	ARC
Board of Trustees	Board
Comprehensive Annual Financial Report	CAFR
Centers for Disease Control and Prevention	CDC
Commonwealth of Kentucky	Commonwealth
Continuity of Operations Plan	COOP
Consumer Price Index	CPI
Department of Employee Insurance	DEI
Emerging Market Debt	EMD
Executive Order	EO
Exchange Traded Funds	ETFs
Fiscal Year	FY
Generally Accepted Accounting Principles	GAAP
Governmental Accounting Standards Board	GASB
Gabriel, Roeder, Smith & Co.	GRS
House Bill	HB
Investment Management Agreement	IMA
Investment Policy Statement	IPS
Internal Revenue Service	IRS
Information Technology	IT
Kentucky Administrative Regulations	KAR
Kentucky Employees' Health Plan	KEHP
Kentucky Public Pensions Authority	KPPA
Kohlberg, Kravis, Roberts	KKR
Kentucky Retirement Systems	KRS
Net Asset Value	NAV
Net OPEB Liability	NOL
Net Pension Liability	NPL
Not Rated	NR
Other post-employment benefits	OPEB
Pacific Alternative Asset Management Company	PAAMCO
Public Pension Oversight Board	PPOB
Perimeter Park West	PPW
Qualified Domestic Relations Order	QDRO
Required Supplementary Information	RSI
Senate Bill	SB
Senate Resolution	SR
Strategic Technology Advancements for the Retirement of Tomorrow	START
Short Term Investment Funds	STIFs
Treasury Inflation Protected Securities	TIPS
Total Pension Liability	TPL
Teachers' Retirement System	TRS
Unfunded Actuarial Accrued Liability	UAAL
Unfunded Accrued Liability	UAL
Unrelated Business Income	UBI
Work from Home	WFH
Western Kentucky University	WKU



Kentucky Retirement Systems

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(502) 696-8800 or (800) 928-4646



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