COMPREHENSIVE ANNUAL FINANCIAL REPORT

Prepared by the Accounting, Investment and Communications Divisions

2019

For the Fiscal Year Ended June 30, 2019

Kentucky Retirement Systems
A component unit of the Commonwealth of Kentucky

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

TABLE OF CONTENTS

INTRODUCTION

FINANCIAL

REQUIRED SUPPLEMENTARY INFORMATION

INVESTMENTS

ACTUARIAL

STATISTICAL

INTRODUCTION
TABLE OF CONTENTS

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 5, 2019: 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
Interim Executive Director, Office of Operations

Connie Davis, CIA, CGAP, CRMA
Director of Accounting

Letter of Transmittal

December 5, 2019

On behalf of the Board, management, and staff of KRS, it is my honor to present the KRS Comprehensive Annual Financial Report (CAFR) for the Fiscal Year Ended June 30, 2019. This annual report is provided as a resource for understanding the structure and financial status of the Systems.

Here are a few highlights:

Effective and Transparent Management
The Board and staff at KRS 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 most Committee meetings are live streamed and archived on the official KRS Facebook page.

We publish various newsletters targeted at 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 anyone else interested in getting information about KRS or giving us input.

Continuous Improvement
For the first time in 18 years our most financially troubled system, KERS Non-Hazardous, had positive cash flow during fiscal year 2019. We received more in contributions than we paid in benefits and expenses. CERS will likely move into that position shortly as the phase in of higher contributions moves into its second year.

From an administrative and communications standpoint many enhancements were implemented, most notably continuing to improve member mobile access through our website and member self service. House Bill (HB) 490 which passed during the 2019 Regular Session of the General Assembly allows us to use electronic balloting for new Trustees.

We began Town Hall meetings, initially held at Northern Kentucky University, in Elizabethtown for members of the Kentucky Community and Technical College System, and in London for nearly 100 managers of public health departments.

State Auditor's Audit and Special Examination
Every five years KRS is audited by the State Auditor's office, with the most recent audit completed for fiscal year 2018. That audit uncovered only three exceptions compared to 19 in the prior audit. All three exceptions have been addressed.

In August 2019, the Auditor's office concluded a 14-month Special Examination of our compliance with Senate Bill (SB) 2, which was passed in 2017. The audit purported two areas of significant non-compliance, both of which KRS strongly contested. KRS is working with the Public Pension Oversight Board (PPOB) to resolve these disagreements with the Auditor's office while continuing our KRS commitment to transparency.

Legislation
During the 2019 General Assembly seven bills and two resolutions were passed that affected KRS. Most notably, however, the Special Session of the General Assembly in July 2019 produced HB 1. That bill provided four additional 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% and either by a lump sum payment or using installments. Previously HB 351 only provided a lump sum option with a discount rate tied to the 30 year Treasury fund.

The agencies will notify KRS during April 2020 as to whether they choose to stay in the plan and pay the full contribution rate or exit using one of the four exit options.

Letter of Transmittal

Investments
The investment markets and consequently our plans' investment returns were lackluster in fiscal year 2019. KERS Non-Hazardous and SPRS earned 5.73% and 5.71%, respectively, and exceeded their assumed rate of return of 5.25%. On the other hand, all of the other plans earned between 5.61% and 5.81% (except the KERS Non-Hazardous Insurance Plan, which earned 4.95%). As such all eight of those plans failed to earn their assumed rate of return of 6.25%

Funded Statuses
Fiscal year 2019 marked the fourth year in a row that the KERS and SPRS plans received the full Actuarially Determined Contribution (ADC) or more. While the CERS plans established a new ADC that is about 50% above the prior rate, it is being phased in over a four to five year period. As a result, the funded status of those two pension plans declined somewhat.

We are thankful to the Governor and the Legislature for the additional (full) funding.

Cyber Security
KRS takes seriously the mandate to retain the confidentiality of member and employer data. To this end, KRS continued to invest in applications and infrastructure to improve member services and increase staff productivity while maintaining vigilance towards cyber security. During fiscal year 2019, our technology team successfully tested our Disaster Recovery replication technology and improved the efficiency, frequency and monitoring of internal security awareness training. Additionally, we modernized the self-service application to enhance the security and functionality available to our members and retirees. We also continued our efforts to upgrade server operating systems, replace aging storage and end-of-life equipment, and maintain regular software patching.

Looking Forward
By far our most important mandate is to work with the Legislature to assure that KRS gets the required funding. Our actuaries, GRS, project that all of our pension and insurance plans will become fully funded in fiscal year 2043, provided KRS receives the full ADC each year. 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.

Acknowledgments
The preparation of this report has been a collaborative effort of Executive Management and the Accounting, Investments, and Communications Divisions. 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.

Respectfully submitted,

David Eager

David L. Eager
Executive Director

2020 BOARD MEETING SCHEDULE

Regular

February 20

May 21

September 10

November 12

December 3

Annual

April 16

*Dates subject to change.
Please visit our website for updates.
Board meetings and Audit Committee meetings begin at 10 am Eastern; all other Committee meetings begin at 9 am Eastern unless otherwise noted.

COMMITTEE MEETING SCHEDULE

AUDIT	INVESTMENT
February 6	February 4
May 7	May 5
August 27	August 25
November 5	November 4

RETIREE HEALTH PLAN	ADMINISTRATIVE & DISABILITY APPEALS
February 11	Check website for dates and times.
May 12	
September 3	
November 10	

KENTUCKY RETIREMENT SYSTEMS AGENCY STRUCTURE

as of December 5, 2019

17 Member Board of Trustees

Chair
DAVID HARRIS

- 3 elected by CERS
- 2 elected by KERS
- 1 elected by SPRS
- Personnel Secretary
- 10 Trustees appointed by the Governor

Retiree Health Care Committee Chair
DAVID RICH

Disability Appeals and Administrative Appeals Committees Chairs
KEITH PEERCY and **BETTY PENDERGRASS**

Audit Committee Chair
JOHN CHILTON

Investment Committee Chair
DAVID HARRIS

Division Director
Internal Audit
KRISTEN COFFEY

Executive Director
DAVID EAGER

Executive Director
Office of Investments
RICH ROBBEN

Deputy Executive Director
Office of Investments
ANDY KIEHL

Investment Division Directors
Division of Public Equity - **JOE GILBERT**
Division of Private Equity - **ANTHONY CHIU**

Interim Executive Director
Office of Operations
REBECCA ADKINS

Division Director
Human Resources
MARLANE ROBINSON

Executive Director
Office of Legal Services
MARK BLACKWELL

Division Director
Communications
SHAWN SPARKS

Executive Director
Office of Benefits
ERIN SURRATT

Interim Division Director
Enterprise and Technology Services
DOMINIQUE MCKINLEY

Division Director
Employer Reporting, Compliance & Education
D'JUAN SURRATT

Division Director
Accounting
CONNIE DAVIS

Division Director
Procurement & Office Services
JOE C. GILBERT III

Procurement Staff Advisor
CASSANDRA WEISS

General Counsel
Advocacy
KATHY RUPINEN

General Counsel
Non-Advocacy
VACANT

Division Director
Disability & Survivor Benefits
LIZA WELCH

Division Director
Member Services
SHAUNA MILLER

Division Director
Membership Support
KEVIN GAINES

Assistant Director
Retiree Services
STEPHANIE ALDRIDGE

Division Director
Retiree Health Care
CONNIE PETTYJOHN

Division Director
Quality Assurance
WES CROSTHWAITE

CONSULTANTS

Actuarial Services **Gabriel, Roeder, Smith & Co.**	Auditing Services **Dean Dorton Allen Ford, PLLC**
Legal Services **Stoll Keenon Ogden, PLLC** **Reinhart Boerner Van Deuren, SC** **Frost Brown Todd, LLC** **Morris James LLP** **Manatt, Phelps, & Phillips, LLP** **Hirschler Fleischer, P.C.** **Ice Miller, LLP**	Fiduciary Review Counsel **Ice Miller, LLP** Investment Consultant **Wilshire** Master Custodian **BNY Mellon**

See pages 123-127 for additional information regarding Investment Advisors and Schedules of Fees and Expense.

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, 2018

Christopher P. Morrill

Certificate of Achievement

The Government Finance Officers Association (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Kentucky Retirement Systems for its Comprehensive Annual Financial Report (CAFR) for the fiscal year ended June 30, 2018. 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 20th consecutive 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 2019 CAFR will continue to meet the Certificate of Achievement Program's requirements, and we will be submitting it to the GFOA for their consideration.

2019 Total Fiscal Year KRS Pension Benefits Paid by County

County	Payees*	Total	County	Payees*	Total	County	Payees*	Total
Adair	466	$7,615,956	*Grant*	583	$11,073,167	*McLean*	301	$4,376,004
Allen	400	5,421,662	*Graves*	865	13,475,113	*Meade*	442	6,151,662
Anderson	1,376	34,585,340	*Grayson*	731	11,004,559	*Menifee*	209	2,923,704
Ballard	234	3,315,003	*Green*	279	3,815,946	*Mercer*	759	13,675,356
Barren	1,042	15,976,857	*Greenup*	637	8,803,604	*Metcalfe*	304	3,823,947
Bath	379	5,742,217	*Hancock*	218	2,713,445	*Monroe*	263	2,947,277
Bell	653	10,411,102	*Hardin*	2,149	35,500,123	*Montgomery*	631	10,076,080
Boone	1,744	35,467,725	*Harlan*	632	9,593,030	*Morgan*	604	10,254,075
Bourbon	546	9,078,241	*Harrison*	456	6,857,309	*Muhlenberg*	786	9,825,148
Boyd	1,036	17,134,540	*Hart*	316	4,714,129	*Nelson*	1,019	17,304,662
Boyle	876	15,204,119	*Henderson*	1,034	17,322,622	*Nicholas*	203	2,829,240
Bracken	219	2,856,368	*Henry*	915	20,268,277	*Ohio*	620	6,596,294
Breathitt	488	7,628,559	*Hickman*	94	1,757,979	*Oldham*	1,315	27,368,080
Breckinridge	463	6,628,920	*Hopkins*	1,233	18,893,980	*Owen*	528	12,453,409
Bullitt	1,507	27,357,298	*Jackson*	318	4,150,954	*Owsley*	211	3,125,299
Butler	314	4,300,958	*Jefferson*	16,145	350,450,831	*Pendleton*	342	5,704,603
Caldwell	521	7,818,641	*Jessamine*	1,051	18,170,230	*Perry*	776	11,183,660
Calloway	1,059	14,842,976	*Johnson*	618	9,434,569	*Pike*	1,240	18,204,555
Campbell	1,507	28,195,929	*Kenton*	2,239	46,511,532	*Powell*	335	4,492,316
Carlisle	116	1,608,482	*Knott*	437	6,761,023	*Pulaski*	2,201	36,871,366
Carroll	308	4,890,064	*Knox*	599	9,469,444	*Robertson*	67	1,082,520
Carter	772	10,033,593	*LaRue*	351	5,610,616	*Rockcastle*	385	5,219,940
Casey	355	4,488,265	*Laurel*	1,215	20,001,257	*Rowan*	853	14,512,026
Christian	1,525	26,508,883	*Lawrence*	326	3,869,296	*Russell*	555	8,408,197
Clark	826	14,000,179	*Lee*	228	3,229,568	*Scott*	1,230	25,709,661
Clay	575	8,453,754	*Leslie*	256	3,772,293	*Shelby*	1,635	40,847,145
Clinton	252	3,227,953	*Letcher*	586	8,120,178	*Simpson*	278	3,252,681
Crittenden	217	2,800,722	*Lewis*	319	3,971,165	*Spencer*	468	10,119,879
Cumberland	185	2,734,102	*Lincoln*	661	8,343,044	*Taylor*	637	9,081,895
Daviess	2,575	45,974,589	*Livingston*	257	4,322,496	*Todd*	254	3,550,580
Edmonson	234	3,250,714	*Logan*	603	8,302,421	*Trigg*	504	8,188,639
Elliott	174	2,495,828	*Lyon*	354	6,614,781	*Trimble*	274	4,199,739
Estill	398	5,558,653	*Madison*	2,301	38,425,956	*Union*	349	3,960,207
Fayette	5,378	116,208,593	*Magoffin*	351	4,894,117	*Warren*	2,745	48,424,647
Fleming	454	7,796,930	*Marion*	538	7,447,486	*Washington*	324	5,094,643
Floyd	890	13,391,549	*Marshall*	868	12,867,146	*Wayne*	528	7,442,799
Franklin	6,364	197,110,205	*Martin*	273	2,993,692	*Webster*	343	4,355,490
Fulton	184	2,202,014	*Mason*	404	6,595,232	*Whitley*	1,028	14,717,166
Gallatin	121	2,090,458	*McCracken*	1,551	28,075,809	*Wolfe*	327	5,284,546
Garrard	421	$6,192,823	*McCreary*	393	$4,114,583	*Woodford*	1,018	$25,211,376

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 2019, KRS paid over $2 billion to its recipients. The majority, 93.64%, 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 As of June 30, 2019 (In Whole $)

	Payees*	%	Payments
Kentucky	107,429	93.64%	$1,991,764,279
Out of State	8,166	6.36%	135,276,104
Grand Total	**115,595**	**100.00%**	**$2,127,040,383**

**This table represents all payees receiving a monthly payment during the fiscal year.*

BENEFIT TIERS

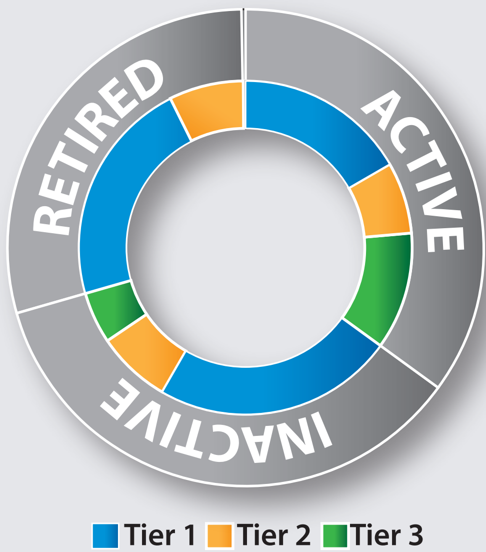
KRS currently administers three different pension benefit tiers within our defined benefit plans. The Hybrid Cash Balance plan was established as a part of Senate Bill 2, which was enacted by the Kentucky General Assembly during the 2013 Regular Session.

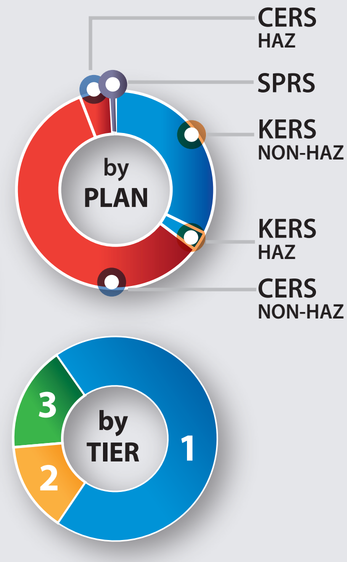
Members participating before September 1, 2008

Members participating on or after September 1, 2008 through December 31, 2013

Members participating on or after January 1, 2014

Totals for All Systems





	ACTIVE	INACTIVE	RETIRED	TOTAL
Tier 1	57,679	86,867	113,822	258,368
Tier 2	24,475	27,529	610	52,614
Tier 3	49,990	25,734	5	75,729
Total	132,144	140,130	114,437	386,711

See comparative totals and more detailed information in the Statistical Section beginning on page 166.

Fiduciary Net Position ($ in Thousands)

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

KERS
135,046 MEMBERS

NON-HAZARDOUS
123,027 MEMBERS

ACTIVE MEMBERSHIP

Tier 1 **17,086** | Tier 2 **6,207** | Tier 3 **10,139**

AVERAGE AGE	AVERAGE ANNUAL SALARY
45.4	$42,665

RETIRED MEMBERSHIP

Tier 1 **42,736** | Tier 2 **137** | Tier 3 **1**

AVERAGE AGE	AVERAGE ANNUAL BENEFIT PAYMENT
69.4	$21,477

HAZARDOUS
12,019 MEMBERS

ACTIVE MEMBERSHIP

Tier 1 **1,264** | Tier 2 **752** | Tier 3 **1,763**

AVERAGE AGE	AVERAGE ANNUAL SALARY
39.8	$40,606

RETIRED MEMBERSHIP

Tier 1 **3,121** | Tier 2 **25** | Tier 3 **0**

AVERAGE AGE	AVERAGE ANNUAL BENEFIT PAYMENT
64.8	$15,705

CERS
248,969 MEMBERS

NON-HAZARDOUS
228,865 MEMBERS

ACTIVE MEMBERSHIP

Tier 1 **34,428** | Tier 2 **15,352** | Tier 3 **34,852**

AVERAGE AGE	AVERAGE ANNUAL SALARY
47.7	$30,941

RETIRED MEMBERSHIP

Tier 1 **58,497** | Tier 2 **435** | Tier 3 **1**

AVERAGE AGE	AVERAGE ANNUAL BENEFIT PAYMENT
70.6	$11,828

HAZARDOUS
20,104 MEMBERS

ACTIVE MEMBERSHIP

Tier 1 **4,441** | Tier 2 **1,967** | Tier 3 **2,994**

AVERAGE AGE	AVERAGE ANNUAL SALARY
38.6	$59,041

RETIRED MEMBERSHIP

Tier 1 **7,985** | Tier 2 **12** | Tier 3 **3**

AVERAGE AGE	AVERAGE ANNUAL BENEFIT PAYMENT
62.0	$27,952

SPRS
2,696 MEMBERS

HAZARDOUS
2,696 MEMBERS

ACTIVE MEMBERSHIP

Tier 1 **460** | Tier 2 **197** | Tier 3 **242**

AVERAGE AGE	AVERAGE ANNUAL SALARY
36.7	$54,079

RETIRED MEMBERSHIP

Tier 1 **1,483** | Tier 2 **1** | Tier 3 **0**

AVERAGE AGE	AVERAGE ANNUAL BENEFIT PAYMENT
63.0	$39,723

ACTIVE MEMBERS
132,144

INACTIVE MEMBERS
140,130

RETIRED MEMBERS
114,437

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
Pension	$2,760,753	$2,578,290	$2,327,782	$1,980,292	$2,092,781	$2,048,890	$2,286,625
Insurance	496,040	646,905	665,639	668,318	781,406	846,762	942,136
Total	**$3,256,793**	**$3,225,195**	**$2,993,421**	**$2,648,610**	**$2,874,187**	**$2,895,652**	**$3,228,761**

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

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
Pension	$5,795,568	$6,528,146	$6,440,800	$6,141,396	$6,739,142	$7,086,322	$7,242,975
Insurance	1,618,960	1,878,711	1,920,946	1,908,550	2,160,553	2,346,767	2,486,458
Total	**$7,414,528**	**$8,406,857**	**$8,361,746**	**$8,049,946**	**$8,899,695**	**$9,433,089**	**$9,729,433**

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

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
Pension	$248,698	$260,974	$247,229	$218,013	$256,383	$268,425	$287,242
Insurance	142,691	164,958	164,714	160,949	178,191	189,994	200,128
Total	**$391,389**	**$425,932**	**$411,943**	**$378,962**	**$434,574**	**$458,419**	**$487,370**

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

FINANCIAL
TABLE OF CONTENTS

DEANDORTON

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 Kentucky Retirement Systems, a component unit of the Commonwealth of Kentucky, as of and for the fiscal year ended June 30, 2019, 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 Kentucky Retirement Systems, a component unit of the Commonwealth of Kentucky, as of June 30, 2019, 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

The financial statements of Kentucky Retirement Systems as of and for the fiscal year ended June 30, 2018 (not presented herein), were audited by other auditors whose report dated November 29, 2018, expressed an unmodified opinion on those statements. In our opinion, the summarized comparative information presented herein as of and for the year ended June 30, 2018, 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 the Money Weighted Rates of Return (on pages 75 to 97) 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 Kentucky Retirement Systems' basic financial statements. The Additional Supporting Schedules (on pages 98 to 101), 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 5, 2019 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 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 Dorton Allen Ford, PLLC

Lexington, Kentucky
December 5, 2019

Management's DISCUSSION & ANALYSIS (Unaudited)

Pension Funds

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

Total Pension Fiduciary Net Position was $12.4 billion at the beginning of the fiscal year and increased by 4.18% to $12.9 billion as of June 30, 2019. The $0.5 billion increase is primarily attributable to positive investment income and higher contributions. The Pension Funds received $76.9 million in General Fund appropriations in fiscal year 2019 compared to $87.6 million in fiscal year 2018.

CONTRIBUTIONS

- Total contributions reported for fiscal year 2019 were $2,037.4 million compared to $1,635.9 million in fiscal year 2018. The major contributor to the increase resulted from Employer Contributions due to the increase in the employer contribution rates. Employer cessation contributions of $10.6 million, health insurance contributions of $21.3 million, and General Fund appropriations of $76.9 million for the KERS and SPRS plans also added to the increase in overall contributions.
- The member health insurance 401(h) contributions totaled $21.3 million for fiscal year 2019 compared to $19.8 million in the prior fiscal year. The increase was due to new active employees in Tier 3.

INVESTMENTS

- The investment portfolio for the Pension Funds reported a net return of 5.83% for fiscal year 2019 compared to 8.57% return for fiscal year 2018.
- The net appreciation in the fair value of investments for fiscal year 2019 was $484.7 million compared to net appreciation of $806.2 million for the previous fiscal year.
- Interest, dividends, and net securities lending income for fiscal year 2019 was $295.6 million compared to $274.9 million in fiscal year 2018. The primary driver of this increase can be attributed to the performance of the Fixed Income and Specialty Credit Portfolios which both outperformed the prior year.
- All investment returns are reported net of fees, including carried interest. Investment expenses totaled $86.3 million for fiscal year 2019 compared to $92.6 million in the prior fiscal year.

DEDUCTIONS

- Pension benefits paid to retirees and beneficiaries for fiscal year 2019 totaled $2,144.1 million compared to $2,062.5 million in fiscal year 2018a 3.95% increase. The increase was due to a 3.29% increase in the number of retirees to 128,464. Refunded contributions paid to former members upon termination of employment for fiscal year 2019 totaled $32.4 million compared to $34.9 million in fiscal year 2018, a 7.21% decrease, as fewer members elected a refund at employment termination.
- KRS' fiscal year 2019 Pension administrative expense totaled $36.4 million compared to $33.0 million in the prior year. The increase was mainly due to the rate increase in employer contributions to the KERS Non-hazardous Pension Plan.

ACTUARIAL

The actuarial value of the total pension liability (TPL) was determined as of June 30, 2019. The discount rate and the assumed rate of return used to measure the TPL was 5.25% for the KERS Non-Hazardous and SPRS Pension plans. A rate of 6.25% was used for the KERS Hazardous and CERS Pension plans. The payroll growth assumptions were 0.00% for the KERS and SPRS Pension plans, and 2.00% for the CERS Pension plans. The assumed inflation factor was 2.30% for all plans. The assumed real rate of return was 3.95% for CERS Hazardous, CERS Non-Hazardous, KERS Hazardous, and 2.95% for KERS Non-Hazardous and the SPRS pension plans.

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 $315.5 million during fiscal year 2019. Total combined net position for the fiscal year was $5,480.6 million. Total contributions and net investment income of $695.7 million offset deductions of $380.2 million which resulted in the net position increase.

CONTRIBUTIONS

- Employer contributions of $387.3 million were received in fiscal year 2019 compared to $321.9 million in fiscal year 2018. Total contributions increased 20.31% primarily due to the increased contribution rate for the KERS Non-hazardous plan and increased employer payroll for the CERS plans.
- The reimbursement of retired/re-employed health insurance for fiscal year 2019 totaled $10.5 million compared to $9.8 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 2019 was $132.7 million compared to $106.6 million in fiscal year 2018. The primary driver of this increase was due to favorable market conditions which resulted in increased income and dividends across all portfolios.
- The investment portfolio reported a net return of 5.67% for the fiscal year, which was lower than fiscal year 2018 net return of 9.05%. The investment return was slightly below the 6.25% assumed rate of return.
- The net appreciation in the fair value of investments for fiscal year 2019 was $196.0 million compared to net appreciation of $366.2 million for the previous fiscal year. This $170.2 million decrease in fiscal year 2019 was due to lower market returns compared to fiscal year 2018.
- Investment expenses totaled $40.4 million for fiscal year 2019 compared to $45.9 million in the prior fiscal year due to lower returns in the fiscal year.

DEDUCTIONS

- Total insurance premiums, plus self-funded reimbursements were $377.9 million for fiscal year 2019. Although fiscal year 2019 insurance premiums were comparable to fiscal year 2018 rates, the number of covered lives increased by approximately 5% year-over-year.
- Insurance administrative expenses for retirees under age 65, increased from $2.1 million in fiscal year 2018 to $2.4 million in fiscal year 2019.

ACTUARIAL

The actuarial value of the total insurance liability was determined as of June 30, 2019. The discount rate and assumed investment rate of return used to measure the total insurance liability was 6.25% for all plans. Assumed payroll growth and inflation was 0% and 2.30% respectively for KERS Non-Hazardous, KERS Hazardous, and SPRS. Assumed payroll growth and inflation for CERS Non-Hazardous and CERS Hazardous was 2.00% and 2.30%, respectively. The assumed real rate of return was 3.95% for KERS Non-Hazardous, KERS Hazardous, SPRS Insurance Plans and 2.95% for the CERS Non-Hazardous and CERS Hazardous Insurance Plans..

Management's DISCUSSION & ANALYSIS (Unaudited)

Using This Financial Report

Because of the long-term nature of a defined benefit pension plan and post-employment healthcare benefit plan, the combining financial statements alone cannot provide sufficient information to properly reflect the Plans' ongoing 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 2019. 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 2019.

The economic assumptions for the Pension and Insurance Funds for fiscal year 2019 are on page 59, the Schedules of Changes in Employers' Total Pension Liability on pages 77-81, the Schedules of the Employer Net Pension Liability on pages 76; the Schedule of Changes in Employers' Total Other Post-Employment Benefits (OPEB) Liability are on pages 88-92; and, the Schedule of the Employers' Net OPEB Liabilities are on page 67-68. 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 83-85, and the Schedules of the Employers' Contributions – OPEB are on pages 94-96These 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 increased $833.9 million in fiscal year 2019, compared to the fiduciary net position for the previous fiscal year. The increase in fiduciary net position for the fiscal year 2019 is primarily attributable to higher contributions, health insurance contributions, employer cessation contributions, positive investment performance, and General Fund appropriations. The analysis focuses on the net position table and changes in fiduciary net position table for KRS' Pension and Insurance Funds.

Fund Activities

The net position of the Pension Funds increased by $518.5 million to $12,934.3 million in fiscal year 2019 compared to $12,415.9 million in fiscal year 2018. 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 $315.5 million to $5,480.6 million in fiscal year 2019 compared to $5,165.2 million in fiscal year 2018. 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		
	2019	2018	2017	2019	2018	2017	2019	2018	2017
Cash & Invest.	$13,133,900	$12,859,431	$12,168,664	$5,622,703	$5,367,071	$4,936,439	$18,756,603	$18,226,502	$17,105,103
Receivables	468,221	349,172	347,620	142,538	148,883	103,747	610,759	498,055	451,367
Equip/Int Assets, net of dep/amort.	2,677	4,437	6,311	-	-	-	2,677	4,437	6,311
Total Assets	**13,604,798**	**13,213,040**	**12,522,595**	**5,765,241**	**5,515,954**	**5,040,186**	**19,370,039**	**18,728,994**	**17,562,781**
Total Liabilities	**(670,466)**	**(797,184)**	**(600,694)**	**(284,602)**	**(350,775)**	**(256,279)**	**(955,068)**	**(1,147,959)**	**(856,973)**
Fiduciary Net Position	**$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**

Pension Fund Activities

Member contributions decreased by $16.2 million. This is primarily due to a decrease in covered payroll in KERS Non-Hazardous, KERS Hazardous, and SPRS, and a decrease in Installment Purchase Service (IPS) contracts for 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 members pay pension contributions of 5.00% of creditable compensation and Hazardous members contribute 8.00% of creditable compensation.

Employer contributions increased by $424.3 million as a result of the increase in the contribution rates for all funds.

Total Pension Funds deductions increased by $82.5 million. The 3.87% increase was primarily driven by the normal increase in retirements across all plans.

Net investment income decreased by $294.5 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 2018, due to less favorable market conditions. KRS overall returned 5.83% for the fiscal year. This slightly underperformed the benchmark of 6.00% and the actuarial assumed rate of return of 6.25% used by CERS and KERS Hazardous, but outperformed the actuarial assumed rate of return of 5.25% used by KERS Non-Hazardous and SPRS.

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

Investment Income - Pension	2019	2018	2017
Increase (decrease) in fair value of investments	$274,265	$(142,280)	$603,703
Investment income net of investment expense	209,294	182,299	251,064
Gain on sale of investments	210,454	948,444	560,380
Net Investment Income	**$694,013**	**$988,463**	**$1,415,147**

Changes in Fiduciary Net Position
For the fiscal year ending June 30, 2019 ($ in Thousands)

	Pension Funds			Insurance Fund			Total		
	2019	2018	2017	2019	2018	2017	2019	2018	2017
Additions:									
Member Cont.	$333,664	$349,844	$334,232	$-	$-	$-	$333,664	$349,844	$334,232
Employer Cont.	1,594,008	1,169,690	1,166,269	387,259	321,888	314,987	1,981,267	1,491,578	1,481,256
Heath Ins. Cont.	21,332	19,849	16,964	-	-	-	21,332	19,849	16,964
Humana Gain Share	-	-	-	7,516	-	-	7,516	-	-
Pension Spiking Cont.	677	8,078	5,156	-	-	-	677	8,078	5,156
Northern Trust Settlement	102	827	-	21	173	-	123	1,000	-
General Fund Appro.	76,944	87,574	98,193	-	-	-	76,944	87,574	98,193
Employer Cessation Cont.	10,643	17	53,215	1,391	-	15,567	12,034	17	68,782
Premiums Rec'd	-	-	-	715	497	548	715	497	548
Retired Re-emp Ins.	-	-	-	10,498	9,837	8,893	10,498	9,837	8,893
Medicare Subsidy	-	-	-	9	16	2	9	16	2
Invest. Inc. (net)	694,013	988,463	1,415,147	288,294	426,842	574,187	982,307	1,415,305	1,989,334
Total Additions	2,731,383	2,624,342	3,089,176	695,703	759,253	914,184	3,427,086	3,383,595	4,003,360
Deductions:									
Benefit payments	2,144,053	2,062,482	1,981,100	-	-	-	2,144,053	2,062,482	1,981,100
Refunds	32,429	34,948	30,696	-	-	-	32,429	34,948	30,696
Administrative Exp.	36,425	32,957	33,109	2,372	2,063	2,202	38,797	35,020	35,311
Healthcare Costs	-	-	-	377,871	375,918	359,388	377,871	375,918	359,388
Capital Projects Exp.	-	-	123	-	-	-	-	-	123
Total Deductions	2,212,907	2,130,387	2,045,028	380,243	377,981	361,590	2,593,150	2,508,368	2,406,618
Increase in Fiduciary Net Position	**$518,476**	**$493,955**	**$1,044,148**	**$315,460**	**$381,272**	**$552,594**	**$833,936**	**$875,227**	**$1,596,742**

Insurance Fund Activities

Employer contributions paid into the Insurance Fund increased by $65.4 million in fiscal year 2019 over the prior fiscal year. This increase was a result of an increase in the employer contribution rate for all funds, and an increase in covered payroll for CERS Non-Hazardous and Hazardous plans.

Net investment income decreased $138.5 million in fiscal year 2019 compared to fiscal year 2018. KRS overall returned 5.67% for the fiscal year. This slightly underperformed the benchmark of 5.89% and the actuarial assumed rate of return of 6.25% used by all of the Insurance Fund Plans.

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

Investment Income - Insurance	2019	2018	2017
Increase in fair value of investments	$112,566	$25,516	$256,937
Investment income net of investment expense	92,338	60,688	93,902
Gain on sale of investments	83,390	340,638	223,348
Net Investment Income	**$288,294**	**$426,842**	**$574,187**

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 76 and Net OPEB Liability on pages 86-68. The asset values stated in the Schedules of Changes in Employers' TPL on pages 77-81 and Total OPEB Liability on pages 88-92 are the actuarial value of assets. 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 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, 2019, actuarial valuation in the Pension Plans increased by $2,153 million for a total unfunded amount of $25,754.7 million in fiscal year 2019, compared to an unfunded amount of $23,602.0 million in fiscal year 2018. In recent years, funding levels for the Pension Funds have decreased significantly due to a number of factors including: the change in assumptions for the 2017 valuations; investment returns that were less than the actuarially assumed rates; lower payroll growth; higher than anticipated retirement rates; and changes in the mortality assumptions for the 2019 actuarial valuation. In addition, KERS Non-Hazardous, KERS Hazardous, and SPRS were funded less than the actuarially determined rate until fiscal year 2015.

The Insurance Plan's unfunded actuarial accrued liability from the June 30, 2019, actuarial valuation for fiscal year 2019, was $3,186.4 million compared to $2,653.9 million for fiscal year 2018. This is an increase in the unfunded actuarial accrued liability of $532.5 million. The increase is primarily due to the change in the mortality assumptions.

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 83-85, and in the Schedules of Contributions - OPEB on pages 94-96. 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, 2019 with Comparative Totals as of June 30, 2018 ($ in Thousands)

ASSETS	KERS Non-Hazardous	KERS Hazardous	CERS Non-Hazardous	CERS Hazardous	SPRS	KRS Total 2019	KRS Total 2018
CASH AND SHORT-TERM INVESTMENTS							
Cash Deposits	$674	$50	$626	$247	$143	$1,740	$790
Short-term Investments	204,981	41,553	251,806	103,445	22,069	623,854	697,651
Total Cash and Short-term Investments	**205,655**	**41,603**	**252,432**	**103,692**	**22,212**	**625,594**	**698,441**
RECEIVABLES							
Accounts Receivable	109,878	4,993	57,879	16,520	8,154	197,424	132,423
Accounts Receivable - Investments	49,827	14,168	150,043	50,111	6,648	270,797	216,662
Accounts Receivable - Alternate Participation	-	-	-	-	-	-	87
Total Receivables	**159,705**	**19,161**	**207,922**	**66,631**	**14,802**	**468,221**	**349,172**
INVESTMENTS, AT FAIR VALUE							
Core Fixed Income	490,019	115,007	1,237,201	406,989	66,746	2,315,962	3,031,051
Public Equities	698,248	262,517	2,822,783	942,817	91,063	4,817,428	5,176,655
Private Equities	201,313	61,610	669,715	228,979	19,159	1,180,776	1,271,907
Specialty Credit	295,212	107,854	1,144,387	378,704	42,544	1,968,701	-
Derivatives	(108)	(48)	(551)	(184)	(21)	(912)	(826)
Absolute Return	40,004	10,437	124,488	39,433	4,209	218,571	702,584
Real Return	163,449	56,411	624,036	212,559	22,434	1,078,889	1,054,096
Opportunistic	19,663	6,096	67,245	22,230	2,429	117,663	-
Real Estate	78,615	25,583	270,036	86,620	10,595	471,449	436,599
Total Investments, at Fair Value	**1,986,415**	**645,467**	**6,959,340**	**2,318,147**	**259,158**	**12,168,527**	**11,672,066**
Securities Lending Collateral Invested	58,078	18,230	191,613	64,393	7,465	339,779	488,924
CAPITAL/INTANGIBLE ASSETS							
Capital Assets	929	91	1,701	153	11	2,885	2,885
Intangible Assets	5,920	494	9,961	827	100	17,302	17,302
Accumulated Depreciation	(884)	(87)	(1,619)	(146)	(11)	(2,747)	(2,648)
Accumulated Amortization	(5,012)	(422)	(8,506)	(722)	(101)	(14,763)	(13,102)
Total Capital Assets	**953**	**76**	**1,537**	**112**	**(1)**	**2,677**	**4,437**
Total Assets	**2,410,806**	**724,537**	**7,612,844**	**2,552,975**	**303,636**	**13,604,798**	**13,213,040**
LIABILITIES							
Accounts Payable	3,363	2,098	5,784	1,384	614	13,243	13,355
Investment Accounts Payable	62,740	16,332	172,472	57,585	8,315	317,444	294,905
Securities Lending Collateral	58,078	18,230	191,613	64,393	7,465	339,779	488,924
Total Liabilities	**124,181**	**36,660**	**369,869**	**123,362**	**16,394**	**670,466**	**797,184**
Total Fiduciary Net Position Restricted for Pension Benefits	**$2,286,625**	**$687,877**	**$7,242,975**	**$2,429,613**	**$287,242**	**$12,934,332**	**$12,415,856**

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, and 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, 2019, with Comparative Totals as of June 30, 2018 ($ in Thousands)

	KERS Non-Hazardous	KERS Hazardous	CERS Non-Hazardous	CERS Hazardous	SPRS	KRS Total 2019	KRS Total 2018
ADDITIONS							
Member Contributions	$93,759	$17,118	$159,064	$58,661	$5,062	$333,664	$349,844
Employer Contributions	948,866	55,229	393,302	137,664	58,947	1,594,008	1,169,690
General Fund Appropriations	75,858	-	-	-	1,086	76,944	87,574
Pension Spiking Contributions	95	29	151	387	15	677	8,078
Northern Trust Settlement	37	4	44	14	3	102	827
Health Insurance Contributions (HB1)	5,963	934	11,801	2,458	176	21,332	19,849
Employer Cessation Contributions	10,643	-	-	-	-	10,643	17
Total Contributions	**1,135,221**	**73,314**	**564,362**	**199,184**	**65,289**	**2,037,370**	**1,635,879**
INVESTMENT INCOME							
From Investing Activities							
Net Appreciation in FV of Investments	82,408	25,279	274,803	92,245	9,983	484,718	806,164
Interest/Dividends	45,566	15,903	168,631	56,881	6,523	293,504	271,338
Total Investing Activities Income	127,974	41,182	443,434	149,126	16,506	778,222	1,077,502
Less: Investment Expense	7,333	2,827	30,717	10,205	1,049	52,131	53,497
Less: Performance Fees	6,044	1,762	19,351	6,354	637	34,148	39,100
Net Income from Investing Activities	114,597	36,593	393,366	132,567	14,820	691,943	984,905
From Securities Lending Activities							
Securities Lending Income	1,531	546	5,908	1,986	219	10,190	8,715
Securities Lending Expense							
Less: Securities Lending Borrower Rebates	1,155	416	4,505	1,512	168	7,756	4,712
Less: Securities Lending Agent Fees	55	19	211	71	8	364	445
Net Income from Securities Lending	321	111	1,192	403	43	2,070	3,558
Total Investment Income	**114,918**	**36,704**	**394,558**	**132,970**	**14,863**	**694,013**	**988,463**
Total Additions	**1,250,139**	**110,018**	**958,920**	**332,154**	**80,152**	**2,731,383**	**2,624,342**
DEDUCTIONS							
Benefit Payments	988,349	69,527	766,221	259,008	60,948	2,144,053	2,062,482
Refunds	12,342	2,684	14,387	2,854	162	32,429	34,948
Administrative Expenses	11,712	1,103	21,659	1,726	225	36,425	32,957
Total Deductions	**1,012,403**	**73,314**	**802,267**	**263,588**	**61,335**	**2,212,907**	**2,130,387**
Net Increase in Fiduciary Net Position	237,736	36,704	156,653	68,566	18,817	518,476	493,955
Total Fiduciary Net Position Restricted for Pension Benefits							
Beginning of Period	**2,048,889**	**651,173**	**7,086,322**	**2,361,047**	**268,425**	**12,415,856**	**11,921,901**
End of Period	**$2,286,625**	**$687,877**	**$7,242,975**	**$2,429,613**	**$287,242**	**$12,934,332**	**$12,415,856**

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, 2019, with Comparative Totals as of June 30, 2018 ($ In Thousands)

ASSETS	KERS Non-Hazardous	KERS Hazardous	CERS Non-Hazardous	CERS Hazardous	SPRS	KRS Total 2019	KRS Total 2018
CASH AND SHORT-TERM INVESTMENTS							
Cash Deposits	$178	$19	$109	$22	$20	$348	$240
Short-term Investments	83,000	18,489	125,262	56,236	10,328	293,315	261,412
Total Cash and Short-term Investments	**83,178**	**18,508**	**125,371**	**56,258**	**10,348**	**293,663**	**261,652**
RECEIVABLES							
Accounts Receivable	16,200	615	14,944	4,655	1,206	37,620	32,190
Investment Accounts Receivable	18,374	10,185	47,335	25,259	3,765	104,918	116,693
Total Receivables	**34,574**	**10,800**	**62,279**	**29,914**	**4,971**	**142,538**	**148,883**
INVESTMENTS, AT FAIR VALUE							
Core Fixed Income	139,164	86,601	388,595	208,210	31,007	853,577	1,150,672
Public Equities	381,085	208,112	956,548	513,811	76,050	2,135,606	2,270,831
Specialty Credit	151,310	81,891	356,523	189,378	29,030	808,132	-
Private Equities	47,822	52,750	283,206	159,634	24,119	567,531	557,549
Derivatives	(59)	(37)	(168)	(91)	(13)	(368)	(339)
Absolute Return	14,126	9,380	40,100	22,467	3,518	89,591	286,309
Real Return	74,619	44,282	212,844	110,769	15,383	457,897	444,101
Opportunistic	9,708	6,035	27,152	14,792	2,228	59,915	-
Real Estate	28,406	20,821	90,370	49,497	7,950	197,044	178,371
Total Investments, at Fair Value	**846,181**	**509,835**	**2,355,170**	**1,268,467**	**189,272**	**5,168,925**	**4,887,494**
Securities Lending Collateral Invested	27,151	15,532	72,695	38,886	5,851	160,115	217,925
Total Assets	**991,084**	**554,675**	**2,615,515**	**1,393,525**	**210,442**	**5,765,241**	**5,515,954**
LIABILITIES							
Accounts Payable	218	9	565	37	2	831	811
Investment Accounts Payable	21,579	12,026	55,797	29,793	4,461	123,656	132,039
Securities Lending Collateral	27,151	15,532	72,695	38,886	5,851	160,115	217,925
Total Liabilities	**48,948**	**27,567**	**129,057**	**68,716**	**10,314**	**284,602**	**350,775**
Total Fiduciary Net Position Restricted for OPEB	**$942,136**	**$527,108**	**$2,486,458**	**$1,324,809**	**$200,128**	**$5,480,639**	**$5,165,179**

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, 2019, with Comparative Totals as of June 30, 2018 ($ In Thousands)	KERS	KERS	CERS	CERS	SPRS	KRS Total	KRS Total
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous		2019	2018
ADDITIONS							
Employer Contributions	$173,576	$3,725	$135,570	$61,106	$13,282	$387,259	$321,888
Medicare Drug Reimbursement	3	-	6	-	-	9	16
Insurance Premiums	184	(19)	616	(53)	(13)	715	497
Humana Gain Share Payment	3,079	213	3,574	506	144	7,516	-
Retired Re-employed Healthcare	3,996	1,245	4,085	1,166	6	10,498	9,837
Northern Trust Settlement	4	2	9	5	1	21	173
Employer Cessation Contributions	1,391	-	-	-	-	1,391	-
Total Contributions	**182,233**	**5,166**	**143,860**	**62,730**	**13,420**	**407,409**	**332,411**
INVESTMENT INCOME							
From Investing Activities							
Net Appreciation in FV of Investments	26,541	19,154	92,027	50,693	7,542	195,957	366,154
Interest/Dividends	21,935	12,789	60,153	32,141	4,789	131,807	105,269
Total Investing Activities Income	48,476	31,943	152,180	82,834	12,331	327,764	471,423
Less: Investment Expense	3,451	2,360	11,272	6,181	927	24,191	27,839
Less: Performance Fees	1,980	1,621	7,614	4,288	670	16,173	18,078
Net Income from Investing Activities	43,045	27,962	133,294	72,365	10,734	287,400	425,506
From Securities Lending Activities							
Securities Lending Income	690	384	1,752	944	143	3,913	3,350
Securities Lending Expense							
Less: Securities Lending Borrower Rebates	506	282	1,278	691	105	2,862	1,813
Less: Securities Lending Agent Fees	27	15	71	38	6	157	201
Net Income from Securities Lending	157	87	403	215	32	894	1,336
Total Investment Income	**43,202**	**28,049**	**133,697**	**72,580**	**10,766**	**288,294**	**426,842**
Total Additions	**225,435**	**33,215**	**277,557**	**135,310**	**24,186**	**695,703**	**759,253**
DEDUCTIONS							
Healthcare Premiums Subsidies	127,221	19,280	133,005	78,190	13,942	371,638	369,122
Administrative Expenses	875	117	877	434	69	2,372	2,063
Self-Funded Healthcare Costs	1,962	94	3,979	149	40	6,224	6,787
Excise Tax Insurance	3	-	6	-	-	9	9
Total Deductions	**130,061**	**19,491**	**137,867**	**78,773**	**14,051**	**380,243**	**377,981**
Net Increase in Fiduciary Net Position	95,374	13,724	139,690	56,537	10,135	315,460	381,272
Total Fiduciary Net Position Restricted for OPEB							
Beginning of Period	**846,762**	**513,384**	**2,346,768**	**1,268,272**	**189,993**	**5,165,179**	**4,783,907**
End of Period	**$942,136**	**$527,108**	**$2,486,458**	**$1,324,809**	**$200,128**	**$5,480,639**	**$5,165,179**

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

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 2019 and 2018 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 2019 and 2018 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 all buys and sells of securities which have not closed, as well as all investment related accruals.

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 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 No. 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 lease; 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. This Statement becomes effective for the fiscal year beginning July 1, 2020. KRS is evaluating the impact of this Statement to the financial report.

GASB *Statement 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 67 and Statement 74, as applicable.

Note B. Plan Descriptions & Contribution Information

KERS Membership Combined As of June 30						
	2019			2018		
Members	**Non-Haz**	**Hazardous**	**Total**	**Non-Haz**	**Hazardous**	**Total**
Retirees and Beneficiaries Receiving Benefits	42,874	3,146	46,020	42,175	3,010	45,185
Inactive Memberships	46,721	5,094	51,815	45,768	4,716	50,484
Active Plan Members	33,432	3,779	37,211	34,845	3,963	38,808
Total	**123,027**	**12,019**	**135,046**	**122,788**	**11,689**	**134,477**
Number of Participating Employers			343			348

CERS Membership Combined As of June 30						
	2019			2018		
Members	**Non-Haz**	**Hazardous**	**Total**	**Non-Haz**	**Hazardous**	**Total**
Retirees and Beneficiaries Receiving Benefits	58,933	8,000	66,933	56,629	7,647	64,276
Inactive Memberships	85,300	2,702	88,002	81,608	2,581	84,189
Active Plan Members	84,632	9,402	94,034	84,435	9,285	93,720
Total	**228,865**	**20,104**	**248,969**	**222,672**	**19,513**	**242,185**
Number of Participating Employers			1,140			1,139

SPRS As of June 30		
Members	**2019**	**2018**
Retirees and Beneficiaries Receiving Benefits	1,484	1,445
Inactive Memberships	313	290
Active Plan Members	899	891
Total	**2,696**	**2,626**
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.

Number of Hospital & Medical Contracts
As of June 30, 2019

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

Number of Hospital & Medical Contracts
As of June 30, 2018

System	Single	Couple/ Family	Parent	Medicare Without Prescription	Medicare With Prescription
KERS Non-Hazardous	8,638	696	460	1,179	21,117
KERS Hazardous	686	478	96	73	1,495
CERS Non-Hazardous	8,802	510	231	2,389	25,476
CERS Hazardous	1,712	2,571	422	119	3,388
SPRS	253	426	74	21	941
Totals	**20,091**	**4,681**	**1,283**	**3,781**	**52,417**

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.

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.

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.

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.

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, 2019 and 2018, 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 Pension Fund (see Kentucky Administrative Regulation (KAR) 105 KAR 1:420 Employer's administrative duties). 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 in the plan contribute a set percentage of their salary each month to their own account. Members contribute 5% (Non-Hazardous) or 8% (Hazardous) of their annual creditable compensation, and an additional 1% to the health insurance fund (401(h) account), which is not credited to the member's account and is not refundable. The employer contribution rate is set annually by the Board based on an actuarial valuation. The employer contributes a set percentage of the member's salary. Each month, when employer contributions are received, an employer pay credit is deposited to the member's account. A member's account is credited with a 4% (Non-Hazardous) or 7.5% (Hazardous) employer pay credit. The employer pay credit represents a portion of the employer contribution.

Contribution Rate Breakdown by System
As of June 30

	Pension				Insurance				Combined Total			
	Employer Contribution Rates		Actuarially Recommended Rates		Employer Contribution Rates		Actuarially Recommended Rates		Employer Contribution Rates		Actuarially Recommended Rates	
System	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
KERS Non-Hazardous *	41.06%		71.03%	41.06%	8.41%	8.41%	12.40%	8.41%	49.47%	49.47%	83.43%	49.47%
KERS Non-Hazardous	71.03%		71.03%	41.06%	12.40%	8.41%	12.40%	8.41%	83.43%	49.47%	83.43%	49.47%
KERS Hazardous	34.39%		34.39%	21.44%	2.46%	2.26%	2.46%	2.26%	36.85%	23.70%	36.85%	23.70%
CERS Non-Hazardous**	16.22%		21.84%	14.48%	5.26%	4.70%	6.21%	4.70%	21.48%	19.18%	28.05%	19.18%
CERS Hazardous**	24.87%		35.69%	22.20%	10.47%	9.35%	12.17%	9.35%	35.34%	31.55%	47.86%	31.55%
SPRS	119.05%	72.47%	119.05%	72.47%	27.23%	18.77%	27.23%	18.77%	146.28%	91.24%	146.28%	91.24%

** 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 Nonhazardous employer contribution rate for fiscal year 2020 (same as fiscal year 2019) for the agencies listed. **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 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, 2018, and credited to each member's account on June 30, 2019.

(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
KERS Non-Hazardous	4.77%	4.00%	0.77%	0.58%	4.58%	$3,004
KERS Hazardous	5.61%	4.00%	1.61%	1.21%	5.21%	980
CERS Non-Hazardous	5.51%	4.00%	1.51%	1.13%	5.13%	6,360
CERS Hazardous	5.79%	4.00%	1.79%	1.34%	5.34%	1,838
SPRS	5.05%	4.00%	1.05%	0.79%	4.79%	$115

Insurance Plan Description

KRS Insurance Fund was established to provide hospital and medical insurance for eligible members receiving benefits from KERS, CERS, and SPRS. The eligible non-Medicare retirees are covered by the Department of Employee Insurance (DEI) plans. KRS submits the premium payments to DEI. The Board contracts with Humana to provide health care benefits to the eligible Medicare retirees through a Medicare Advantage Plan. 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, 2019, insurance premiums withheld from benefit payments for KRS' members were $21.1 million and $1.3 million for KERS Non-Hazardous and Hazardous, respectively; $24.3 million and $2.8 million for CERS Non-Hazardous and Hazardous, respectively; and, $286,479 for SPRS. For fiscal year 2018, insurance premiums withheld from benefit payments for KRS' members were $20.8 million and $1.3 million for KERS Non-Hazardous and Hazardous, respectively; $23.8 million and $2.8 million for CERS Non-Hazardous and Hazardous, respectively; and, $329,330 for SPRS. The Insurance Fund pays the same proportion of hospital and medical insurance premiums for the spouse and dependents of retired hazardous members killed in the line of duty.

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. See the chart below for current values for Dollar Contribution. 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 amount of benefit paid by the Insurance Fund is based on years of service. 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, 2019

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, years of service and respective dollar amount of the benefit per year of service are as follows:

Dollar Contribution for Fiscal Year 2019 For Member participation date on or after July 1, 2003

System	(in Whole $)
KERS Non-Hazardous	$13.38
KERS Hazardous	$20.07
CERS Non-Hazardous	$13.38
CERS Hazardous	$20.07
SPRS	$20.07

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)

KERS - Pension

	2019	2018
Cash	$724	$397
Short-Term Investments	246,534	176,269
Securities Lending Collateral Invested	76,308	99,999
Total	**$323,566**	**$276,665**

CERS - Pension

	2019	2018
Cash	$873	$329
Short-Term Investments	355,251	502,620
Securities Lending Collateral Invested	256,006	379,026
Total	**$612,130**	**$881,975**

SPRS - Pension

	2019	2018
Cash	$143	$64
Short-Term Investments	22,069	18,762
Securities Lending Collateral Invested	7,465	9,899
Total	**$29,677**	**$28,725**

KRS - Insurance Fund

	2019	2018
Cash	$348	$240
Short-Term Investments	293,315	261,412
Securities Lending Collateral Invested	160,115	217,925
Total	**$453,778**	**$479,577**

Note D. Investments

Kentucky Revised Statute 61.650 grants the responsibility for the investment of plan assets to the KRS Board. The Board has established an Investment Committee which 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. 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 inability to invest in long-term investments resulting from cash flow constraints. 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.

Diversifying

Real Estate/Real Return/Absolute Return/Opportunistic 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.

All instruments shall have a maturity at the time of purchase that does not exceed two years. 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.

Investment Expenses

In accordance with GASB Statement Nos. 67 and 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, 2019. 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. As of June 30, 2019, the aggregate fair value of investment derivatives subject to counterparty credit risk was $(0.9) million for the Pension Funds and $(0.4) million for the Insurance Fund.

Derivative Instruments
As of June 30, 2019 ($ in Thousands)

Derivatives (by Type)	Net Appreciation (Depreciation) in Fair Value for the Fiscal year Ended June 30, 2019	Classification	Fair Value	Notional Value
Pension				
Futures	$(13)	Investment	$(13)	$50,973
FX Spots and Forwards	(913)	Investment	(929)	
Commits and Options	-	Investment	30	
Insurance				
Derivatives (by Type)	**Net Appreciation (Depreciation) in Fair Value for the Fiscal year Ended June 30, 2019**	**Classification**	**Fair Value**	**Notional Value**
Futures	$(2)	Investment	$(2)	$21,365
FX Spots and Forwards	(380)	Investment	(380)	
Commits and Options	-	Investment	13	

Note: Commits and Options are recorded on the Financial Statements within the Fixed Income asset class as they are Government Loan Commitments.

Derivatives foreign currency risk is comprised of the above FX Spots and Forwards. The risk associated is due to the potential decline in exchange rates.

FX Spots and Forwards are recorded on the Financial Statements as Payable/Receivables because they represent the foreign exchange for the purchase/sales of securities.

Derivative Instruments Subject to Counterparty Credit Risk
As of June 30, 2019

Pension

Counterparty	Percentage of Net Exposure	S & P Ratings
Derivative Instruments - Pension Fund		
Australia & New Zealand Banking Group Ltd	13.70%	AA-
Bank of New York Mellon Corp	2.97%	A
Canadian Imperial bank of Commerce	10.75%	A+
Citigroup Inc	33.54%	BBB+
Credit Suisse Group AG	0.45%	BBB+
Goldman Sachs Group Inc	5.30%	BBB+
HSBC Holding PLC	0.73%	A
JPMorgan Chase & Co	9.61%	A-
Morgan Stanley	5.09%	BBB+
Royal Bank of Canada	0.26%	AA-
State Street Corp	8.10%	A
UBS Group AG	9.50%	A-
TOTAL	100.00%	

Derivative Instruments Subject to Counterparty Credit Risk
As of June 30, 2019

Insurance

Counterparty	Percentage of Net Exposure	S & P Ratings
Australia & New Zealand Banking Group Ltd	14.31%	AA-
Bank of New York Mellon Corp	3.48%	AA-
Canadian Imperial bank of Commerce	11.00%	A+
Citigroup Inc	35.47%	BBB+
Credit Suisse Group AG	0.43%	BBB+
Goldman Sachs Group Inc	5.41%	BBB+
HSBC Holding PLC	0.64%	A
JPMorgan Chase & Co	10.08%	A-
Morgan Stanley	1.18%	BBB+
Royal Bank of Canada	0.26%	AA-
State Street Corp	8.28%	A
UBS Group AG	9.46%	A-
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). These cash balances are invested daily by the local institution in overnight repurchase agreements which are required by 200 KAR 14:081 to be collateralized at 102% of the principal amount. 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)		
	2019	**2018**
Pension Funds at JPM Chase	$3,620	$2,672
Insurance Fund at JPM Chase	351	247
Clearing Account at JPM Chase	1,420	(1,277)
Excess Benefit Account at JPM Chase	$11	$5

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, 2019, 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)		
	2019	**2018**
Pension Funds Foreign Currency	$1,430,724	$1,518,359
Insurance Fund Foreign Currency	$615,931	$654,401

Pension Fund Securities

Pension Funds Investment Summary As of June 30 ($ in Thousands)		
Type	**2019**	**2018**
Core Fixed Income	$2,315,962	$3,031,051
Public Equities	4,817,428	5,176,655
Private Equities	1,180,776	1,271,907
Specialty Credit	1,968,701	-
Derivatives	(912)	(826)
Absolute Return	218,571	702,584
Real Return	1,078,889	1,054,096
Opportunistic	117,663	-
Real Estate	471,449	436,599
Short-Term Investments	623,854	697,651
Accounts Receivable (Payable), Net	(46,647)	(78,243)
Total	**$12,745,734**	**$12,291,474**
Note: Differences due to rounding.		

Insurance Fund Securities

Insurance Fund Investment Summary As of June 30 ($ in Thousands)		
Type	**2019**	**2018**
Core Fixed Income	$853,577	$1,150,672
Public Equities	2,135,606	2,270,831
Private Equities	567,531	557,549
Specialty Credit	808,132	-
Derivatives	(368)	(339)
Absolute Return	89,591	286,309
Real Return	457,897	444,101
Opportunistic	59,915	-
Real Estate	197,044	178,371
Short-Term Investments	293,315	261,412
Accounts Receivable (Payable), Net	(18,738)	(15,346)
Total	**$5,443,502**	**$5,133,560**
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, 2019, the KRS Pension portfolio had $784.5 million compared to $574.8 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	2019	2018
AAA	$446,486	$67,216
AA+	38,581	8,477
AA	44,001	6,237
AA-	66,260	5,719
A+	106,908	29,667
A	95,168	14,087
A-	184,721	43,933
BBB+	221,198	46,075
BBB	278,917	93,300
BBB-	270,311	74,459
BB+	95,863	88,775
BB	137,041	79,681
BB-	149,966	123,451
B+	114,175	86,570
B	151,094	109,938
B-	89,460	53,235
CCC+	33,269	13,104
CCC	10,642	6,430
CCC-	247	1,760
CC	1,834	4,349
C	858	2,389
D	63	5,073
NR	889,886	1,587,144
Total Credit Risk Debt Securities	**3,426,949**	**2,551,069**
Government Agencies	5,404	24,109
Government Mortgage-Backed Securities	347,456	163,641
Government Issued Commercial Mortgage Backed	20,607	23,560
Government Collateralized Mortgage Obligations	6,507	-
Government Bonds	477,740	268,672
Total	**$4,284,663**	**$3,031,051**

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.

As of June 30, 2019, the KRS Insurance portfolio had $256.2 million compared to $196.7 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	**2019**	**2018**
AAA	$32,110	$33,225
AA+	6,637	7,997
AA	8,965	2,339
AA-	18,548	1,966
A+	34,863	11,564
A	30,251	4,859
A-	62,597	17,084
BBB+	75,670	18,302
BBB	94,683	36,025
BBB-	91,633	27,886
BB+	32,884	29,025
BB	36,169	24,614
BB-	48,903	41,302
B+	40,393	27,240
B	54,768	47,382
B-	29,395	17,479
CCC+	10,441	3,395
CCC	2,565	2,227
CCC-	18	229
CC	592	1,209
C	28	367
D	-	2,198
NR	620,888	627,488
Total Credit Risk Debt	**1,333,001**	**985,402**
Government Agencies	2,054	9,385
Government Mortgage-Backed Securities	7,916	37,949
Government Issued Commercial Mortgage Backed	131,698	8,403
Governement Collateralized Mortgage Obligations	2,517	-
Government Bonds	184,523	109,533
Total	**$1,661,709**	**$1,150,672**

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. In fiscal year 2018, the Fixed Income asset class included both Core Fixed Income and Specialty Credit. For fiscal year 2019, the Investment Committee approved new asset buckets, which separated the aforementioned asset classes. Below are the Pension Fund market values and modified durations for the combined debt securities. The modified duration in fiscal year 2019 was 3.40 compared to 4.04 in fiscal year 2018.

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

TYPE	2019	Weighted Avg Modified Duration	2018	Weighted Avg Modified Duration
Asset Backed Securities	$284,401	1.93	$78,908	4.75
Financial Institutions	490,325	3.24	286,701	1.89
Collateralized Mortgage Obligations	19,358	2.47	18,420	3.37
Commercial Mortgage Backed Securities	296,000	4.40	89,317	4.77
Corporate Bonds - Industrial	1,204,917	4.19	432,634	5.24
Corporate Bonds - Utilities	116,072	4.28	34,929	5.47
Agencies	80,187	3.89	24,109	4.57
Government Bonds - Sovereign Debt	35,785	5.57	14,549	4.57
Mortgage Back Securities Pass-through - Not CMO's	349,584	4.10	165,805	6.49
Local Authorities - Municipal Bonds	23,829	4.46	17,693	3.59
Supranational - Multi-National Bonds	52,361	2.99	25,395	2.78
Treasuries	551,059	5.60	362,778	6.29
Other	780,785	0.22	1,479,813	3.19
Total	**$4,284,663**	**3.40**	**$3,031,051**	**4.04**

Below are the market values and modified durations for the combined debt securities. The modified duration for the Insurance Fund in fiscal year 2019 was 3.25 compared to 3.84 in fiscal year 2018.

KRS Insurance Fund Interest Rate Risk as of June 30,2019

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

TYPE	2019	Weighted Avg Modified Duration	2018	Weighted Avg Modified Duration
Asset Backed Securities	$111,108	1.83	$26,124	5.15
Financial Institutions	178,014	3.24	117,895	1.61
Collateralized Mortgage Obligations	8,670	2.62	6,665	2.90
Commercial Mortgage Backed Securities	129,999	4.42	32,780	4.61
Corporate Bonds - Industrial	434,898	3.98	132,033	5.08
Corporate Bonds - Utilities	42,339	4.18	11,249	5.25
Agencies	28,962	3.94	9,385	4.48
Government Bonds - Sovereign Debt	13,342	5.73	5,620	4.62
Mortgage Back Securities Pass-through - Not CMO's	132,526	4.11	38,757	6.35
Local Authorities - Municipal Bonds	9,033	4.49	7,032	3.64
Supranational - Multi-National Bonds	18,500	2.98	9,637	2.77
Treasuries	213,739	5.65	147,277	6.29
Other	340,576	5.63	606,218	3.13
Total	**$1,661,706**	**3.25**	**$1,150,672**	**3.84**

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)

	2019	2018
Australian Dollar	$50,615	$63,425
Brazilian Real	36,207	28,320
Canadian Dollar	71,115	101,784
Chilean Peso	798	663
Columbian Peso	5,860	2,406
Czech Koruna	1	1
Danish Krone	24,456	28,129
Egyptian Pound	1,174	1,000
Euro	468,834	476,752
Hong Kong Dollar	85,806	71,857
Indian Rupee	13,751	13,994
Indonesian Rupiah	28,497	30,087
Israeli Shekel	9,610	12,757
Japanese Yen	185,616	203,521
Malaysian Ringgit	6,592	14,463
Mexican Peso	(2,901)	13,717
New Zealand Dollar	3,749	13,067
Norwegian Krone	6,418	19,887
Philippine Peso	9,830	7,619
Polish Zloty	-	1
Pound Sterling	207,901	237,829
Russian Ruble	5	-
Singapore Dollar	19,177	29,116
South African Rand	3,363	8,535
South Korean Won	33,190	32,527
Swedish Krona	55,282	30,716
Swiss Franc	72,773	41,116
Taiwan Dollar	16,070	18,946
Thai Bhat	11,570	9,444
Turkish Lira	5,365	6,680
Total Foreign Investment Securities	**1,430,724**	**1,518,359**
U.S. Dollar	11,315,010	10,773,115
Total Investment Securities	**$12,745,734**	**$12,291,474**

Note: Differences due to rounding.

Note: The negative balance in Mexican Peso is due to outstanding Forward Foreign Exchange Contracts

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

	2019	2018
Australian Dollar	$21,721	$26,537
Brazilian Real	15,323	12,392
Canadian Dollar	30,999	44,232
Chilean Peso	319	263
Columbian Peso	2,511	1,055
Danish Krone	10,784	12,202
Egyptian Pound	407	347
Euro	201,301	205,646
Hong Kong Dollar	37,232	30,268
Indian Rupee	5,826	5,911
Indonesian Rupiah	12,021	12,578
Israeli Shekel	4,007	5,461
Japanese Yen	81,435	90,076
Malaysian Ringgit	2,689	6,012
Mexican Peso	(1,207)	5,803
New Zealand Dollar	1,522	5,475
Norwegian Krone	2,863	8,188
Philippine Peso	4,096	2,962
Pound Sterling	89,626	102,368
Russian Ruble	3	-
Singapore Dollar	8,172	12,212
South African Rand	1,482	4,193
South Korean Won	13,794	14,173
Swedish Krona	24,169	13,716
Swiss Franc	31,751	17,715
Taiwan Dollar	6,548	8,115
Thai Bhat	4,704	3,795
Turkish Lira	1,833	2,707
Total Foreign Investment Securities	**615,931**	**654,402**
U.S. Dollar	4,827,571	4,479,158
Total Investment Securities	**$5,443,502**	**$5,133,560**

Note: Differences due to rounding

Note: The negative balance in Mexican Peso is due to outstanding Forward Foreign Exchange Contracts

GASB 72

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 quoted prices for similar assets or liabilities in active or inactive markets, or market-corroborated inputs.

Level 3

Unobservable inputs for an asset or liability, which generally results in a government using the best information available and may include the government's own data.

Net Asset Value (NAV)

The remaining investments not categorized under the fair value hierarchy are shown as 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.

GASB 72 Pension Funds
As of June 30, 2019 ($ in Thousands)

Asset Type	Fair Value	Level 1	Level 2	Level 3
Public Equity				
US Equity	$2,321,940	$2,309,222	$-	$12,718
Non-US Equity	2,538,913	1,426,192	-	1,112,721
Total Public Equity	**4,860,853**	**3,735,414**	**-**	**1,125,439**
Core Fixed Income				
Agencies	6,122	-	6,122	-
Asset-Backed	292,007	-	292,003	4
Bank & Finance	457,216	931	204,756	251,529
Cash & Cash Equivalent	532,401	4,812	458,873	68,716
Collateralized Mortgage	2,957	-	2,957	-
Commercial Mortgage	73,749	-	73,749	-
Healthcare	51,693	-	51,693	-
Insurance	10,865	-	10,865	-
Mortgage-Backed	211,658	-	211,658	-
Municipals	65,980	-	65,980	-
Sovereign Debt	140,072	10,676	129,396	-
US Corporate	823,993	13,585	809,795	613
US Government	841,016	477,740	363,276	-
Total Fixed Income	**3,509,729**	**507,744**	**2,681,123**	**320,862**
Derivatives				
Futures	(942)	(13)	-	(929)
Options	30	-	30	-
Total Derivatives	**(912)**	**(13)**	**30**	**(929)**
Other				
Investment Grade Credit	528,175	-	-	528,175
Private Equity	-	-	-	-
Real Estate	32,743	-	32,743	-
Real Return	1,033,351	822,147	100,614	110,590
Total Other	**1,594,269**	**822,147**	**133,357**	**638,765**
Total Investments at Fair Value	**9,963,938**	**5,065,291**	**2,814,510**	**2,084,137**
Investments Measured at NAV				
Absolute Return	218,572	-	-	
Specialty Credit	587,855	-	-	
Opportunistic	117,663	-	-	
Private Equity	1,180,777	-	-	
Real Estate	630,012	-	-	
Real Return	69,909	-	-	
Total Investments Measured at NAV	**2,804,788**	**-**	**-**	
Total Investments	**$12,768,726**	**$5,065,291**	**$2,814,510**	**$2,084,137**

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:

GASB 72 Pension Funds - Investments at Net Asset Value (NAV)
As of June 30, 2019 ($ in Thousands)

Asset Type	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Absolute Return (1)	$218,572	-	Daily - Quarterly	2 days - 60 Days
Specialty Credit (2)	587,855	73,513	Daily - Quarterly	90 Days
Opportunistic (3)	117,663	-	Annually	
Real Estate (4)	630,012	161,605		
Real Return (5)	69,909	33,559	Daily	30 - 60 Days
Private Equity (6)	1,180,777	603,400		
Total Investments Measured at NAV	**$2,804,788**	**$872,077**		

(1) This type includes 12 hedge fund managers that invest in multiple strategies to diversify risks and reduce volatility. These managers provide both favorable risk-adjusted returns and provide moderate liquidity for the plans.

(2) This type includes 11 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 one opportunistic manager. This strategy is to provide correlation with inflation over time and may include liquid strategies such as inflation swaps, diversified inflation hedging mutual funds, or nominal bonds backed by inflation sensitive assets. This strategy may also include other illiquid strategies such as private equity inflation sensitive companies, hard asset-backed private credit, and structured inflation-linked products.

(4) This type includes 14 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 11 real asset managers that investment in multiple strategies such as infrastructure, real estate, commodities, and natural resources. These managers should provide both favorable risk adjustment returns and help with the hedging of inflation for the broader plan.

(6) This type includes 69 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.

GASB 72 Insurance
As of June 30, 2019 ($ in Thousands)

		Level		
Asset Type	**Fair Value**	**1**	**2**	**3**
Public Equity				
US Equity	$1,034,018	$1,028,605	$-	$5,413
Non-US Equity	1,113,566	619,901	-	493,665
Total Public Equity	**2,147,584**	**1,648,506**	**-**	**499,078**
Core Fixed Income				
Agencies	2,337	-	2,337	-
Asset-Backed	113,815	-	113,813	2
Bank & Finance	196,014	347	78,143	117,524
Cash & Cash Equivalent	270,026	4,526	236,082	29,418
Collateralized Mortgage	1,085	-	1,085	-
Commercial Mortgage	27,845	-	27,845	-
Healthcare	18,760	-	18,760	-
Insurance	4,377	-	4,377	-
Mortgage-Backed	99,578	-	99,578	-
Municipals	24,241	-	24,241	-
Sovereign Debt	56,086	4,018	52,068	-
US Corporate	286,053	5,845	279,954	254
US Government	321,963	184,524	137,439	-
Total Fixed Income	**1,422,180**	**199,260**	**1,075,722**	**147,198**
Derivatives				
Futures	(382)	(2)	-	(380)
Options	13	-	13	-
Total Derivatives	**(369)**	**(2)**	**13**	**(380)**
Other				
Investment Grade Credit	171,574	-	-	171,574
Real Estate	11,308	-	11,308	-
Real Return	429,958	348,053	41,404	40,501
Total Other	**612,840**	**348,053**	**52,712**	**212,075**
Total investments by fair value level	4,182,235	2,195,816	1,128,447	857,971
Investments Measured at NAV				
Absolute Return	89,590	-	-	-
Specialty Credit	250,670	-	-	-
Opportunistic	59,915	-	-	-
Private Equity	567,531	-	-	-
Real Estate	273,047	-	-	-
Real Return	34,056	-	-	-
Total Investments Measured at NAV	**1,274,809**	**-**	**-**	**-**
Total Investments	**5,457,044**	**2,195,816**	**1,128,447**	**857,971**

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:

GASB 72 Insurance Funds - Investments at Net Asset Value (NAV)
As of June 30, 2019 ($ in Thousands)

Asset Type	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Absolute Return [1]	$89,590	-	Daily - Quarterly	2 days - 60 Days
Specialty Credit [2]	250,670	41,337	Daily - Quarterly	90 Days
Opportunistic [3]	59,915	-	Annually	
Real Estate [4]	273,047	65,549		
Real Return [5]	34,056	13,847	Daily	30 - 60 Days
Private Equity [6]	567,531	105,905		
Total Investments Measured at NAV	**$1,274,809**	**$226,638**		

(1) This type includes 12 hedge fund managers that invest in multiple strategies to diversify risks and reduce volatility. These managers provide both favorable risk-adjusted returns and provide moderate liquidity for the plans.

(2) This type includes 11 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 one opportunistic manager. This strategy is to provide correlation with inflation over time and may include liquid strategies such as inflation swaps, diversified inflation hedging mutual funds, or nominal bonds backed by inflation sensitive assets. This strategy may also include other illiquid strategies such as private equity inflation sensitive companies, hard asset-backed private credit, and structured inflation-linked products.

(4) This type includes 14 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 11 real asset managers that investment in multiple strategies such as infrastructure, real estate, commodities, and natural resources. These managers should provide both favorable risk adjustment returns and help with the hedging of inflation for the broader plan.

(6) This type includes 69 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 Plan*s, KRS provides this additional disclosure regarding its money-weighted rate of return for the Pension Fund and Insurance Funds for the periods of June 30, 2018 through June 30, 2019. The money-weighted rate of return is a method of calculating period-by-period returns on the Pension Fund 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 Fund and Insurance Funds' investments, net of the Pension Fund and Insurance Funds' investment expenses, then adjusted for the changing amounts actually invested.

Money - Weighted Rates of Return As of June 30

	KERS Non-Hazardous	KERS Hazardous	CERS Non-Hazardous	CERS Hazardous	SPRS
Pension Funds					
2019	5.73%	5.68%	5.78%	5.80%	5.71%
2018	7.63%	8.69%	8.82%	8.82%	7.68%

	KERS Non-Hazardous	KERS Hazardous	CERS Non-Hazardous	CERS Hazardous	SPRS
Insurance Fund					
2019	4.95%	5.61%	5.73%	5.81%	5.74%
2018	7.95%	8.93%	9.22%	9.35%	9.39%

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, 2019, 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, 2019, the cash collateral received for the securities on loan for the Pension and Insurance Funds was $339.8 million and $160.1 million, respectively. The total collateral received included both cash and non-cash totaling $652.9 million and $302.7 million, respectively. The fair value of the underlying securities was $637.3 million and $295.3 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

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, 2019, 2018, and 2017. Tier 2 and Tier 3 Plan members contributed 6% of creditable compensation for the fiscal years ended June 30, 2019, 2018, and 2017.

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

Payroll and Contributions as of June 30 ($ in Thousands)			
	2019	**2018**	**2017**
Covered Payroll	$13,311	$13,287	$13,945
Required Employer Contributions	11,097	6,570	6,776
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)		
	2019	2018
Equipment, cost	$2,885	$2,885
Less Accumulated Depreciation	(2,747)	(2,648)
Equipment, net	$138	$237

Accumulated depreciation rose to $2.7 million in fiscal year 2019, an increase of $99 thousand over fiscal year 2018.

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 GASB No. 51, 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)		
	2019	2018
Software, Cost	$17,302	$17,302
Less Accumulated Amortization	(14,763)	(13,102)
Intangible Assets, Net	$2,539	$4,200

Accumulated amortization rose to $14.8 million in fiscal year 2019, an increase of $1.7 million over fiscal year 2018.

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, 2019. As a result of the experience study for the five-year period ended June 30, 2018, the actuaries made significant 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. During the 2018 legislative session, the Legislature passed HB 185, which updated the benefit provisions for active members who die in the line of duty. Benefits paid to the spouse of deceased members, or benefits paid to surviving dependent children if the member did not have a surviving spouse, have increased. The total Pension liability as of June 30, 2019, was determined using the updated benefit provisions. 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										
	KERS		KERS		CERS		CERS		SPRS	
	Non-Hazardous		Hazardous		Non-Hazardous		Hazardous			
	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
Assumed Investment Return	5.25%	5.25%	6.25%	6.25%	6.25%	6.25%	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	0.00%	0.00%	0.00%	0.00%	2.00%	2.00%	2.00%	2.00%	0.00%	0.00%

Economic Assumptions - Insurance as of June 30										
	KERS		KERS		CERS		CERS		SPRS	
	Non-Hazardous		Hazardous		Non-Hazardous		Hazardous			
	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
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	0.00%	0.00%	0.00%	0.00%	2.00%	2.00%	2.00%	2.00%	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, 2019
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%	4.30%
Non-US Equity	15.75%	4.80%
Private Equity	7.00%	6.65%
Specialty Credit/High Yield	15.00%	2.60%
Liquidity	**23.50%**	
Core Bonds	20.50%	1.35%
Cash	3.00%	0.20%
Diversifying Strategies	**23.00%**	
Real Estate	5.00%	4.85%
Opportunistic/Absolute Return	3.00%	2.97%
Real Return	15.00%	4.10%
Total	**100.00%**	**3.52%**

Target Asset Allocation - Pension and Insurance
As of June 30, 2019
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%	4.30%
Non-US Equity	18.75%	4.80%
Private Equity	10.00%	6.65%
Specialty Credit/High Yield	15.00%	2.60%
Liquidity	**14.50%**	
Core Bonds	13.50%	1.35%
Cash	1.00%	0.20%
Diversifying Strategies	**23.00%**	
Real Estate	5.00%	4.85%
Opportunistic	3.00%	2.97%
Real Return	15.00%	4.10%
Total	**100.00%**	**3.89%**

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 significant 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 Pplans' Required Supplementary Information (RSI) on pages 76-97 are based on June 30, 2018, actuarial valuations, rolled forward to June 30, 2019. 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, 2019, in accordance with GASB No.67, paragraph 37, and GASB 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, 2018. The TPLtotal pension liability was rolled -forward from the valuation date to the Pplans''s fiscal year ended June 30, 2019, 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

The Board adopted new actuarial assumptions after the June 30, 2018, valuation. These assumptions are documented in the report titled *Kentucky Retirement Systems 2018 Actuarial Experience Study for the Period Ended June 30, 2018.* The TPL for the fiscal year ended June 30, 2019, was determined using the updated assumptions. The actuarially determined contribution rates effective for fiscal year ended June 30, 2019, that are documented in the schedules were calculated as of June 30, 2017. Based on the June 30, 2017, actuarial valuation report, the actuarial methods and assumptions used to calculate these contributions rates are:

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

Plan Provisions

House Bill 1 was passed during the 2019 Special Legislative Session which will allow certain employers in the KERS Non-Hazardous plan to elect to cease participating in KRS as of June 30, 2020. Since each employer's election is unknown at this time and the legislation was enacted after the June 30, 2019, measurement date, no adjustments were made to the TPL to reflect this legislation. There have been no other plan provision changes since June 30, 2018, and therefore, no benefit changes have been reflected in the TPL.

Discount Rate

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

KERS Non-Hazardous	5.25%
KERS Hazardous	6.25%
CERS Non-Hazardous	6.25%
CERS 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''s fiduciary net position and future contributions were projected to be sufficient to finance all the future benefit payments of the current plan members. Therefore, the long-term expected rates of return on Pension Plans' investments werewas applied to all periods of projected benefit payments to determine the TPLtotal pension liability for each plan. The projection of cash flows used to determine the single discount rate assumes that each fund receives the employer required contributions each future year as determined by the current funding policy established in statute, which includes the phase-in provisions from House Bill 362 (passed in 2018) that applies to CERS.

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.

Additional Disclosures

Please see the *Actuarial Valuation Report as of June 30, 2018*, and the *2018 Actuarial Experience Study for the Period Ended June 30, 2018* for additional information on 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 ended June 30, 2019.

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, 2019. 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 shown in these reports were based on an actuarial valuation date of June 30, 2018. The total OPEB liability was rolled -forward from the valuation date to the plan's fiscal year ended June 30, 2019, using generally accepted actuarial principles.

Assumptions

The Board adopted new actuarial assumptions after the June 30, 2018, valuation. These assumptions are documented in the report titled *Kentucky Retirement Systems 2018 Actuarial Experience Study for the Period Ended June 30, 2018.* The total OPEB liability as of June 30, 2019 is determined using these updated assumptions.

The actuarially determined contribution rates effective for fiscal year ended 2019 that are documented in the schedules were calculated as of June 30, 2017. Based on the June 30, 2017, actuarial valuation report, 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 - 3.55% to 15.55% for KERS Non-hazardous, 3.55% to 19.55% for KERS Hazardous, 3.30% to 11.55% for CERS Non-hazardous, 3.05% to 18.55% for CERS Hazardous, 3.05% to 15.55% for SPRS, varies by service.
- Payroll Growth - 0.00% for KERS Non-hazardous, KERS Hazardous, and SPRS, 2.00% for CERS Non-hazardous and CERS Hazardous.
- 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 7.25% on January 1, 2019, and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years.
    - 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

Plan Provisions

House Bill 1 passed during the 2019 Special Legislative Session and allows certain employers in the KERS Non-Hazardous plan to elect to cease participating in KRS as of June 30, 2020. Since each employer's election is unknown at this time and the legislation will be enacted after the June 30, 2019, measurement date, there were no adjustments made to the total OPEB liability to reflect this legislation. There have been no other plan provision changes since June 30, 2018, and therefore, no benefit changes have been reflected in the total OPEB liability.

Implicit Employer Subsidy for non-Medicare retirees

KRS pays fully -insured premiums for the Kentucky Health Plan. The premiums 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 74 requires that the liability associated with this implicit subsidy be included in the calculation of the total OPEB liability.

Discount Rates

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

KERS Non-Hazardous	5.73%
KERS Hazardous	5.66%
CERS Non-Hazardous	5.68%
CERS Hazardous	5.69%
SPRS	5.76%

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 3.13%, as reported in Fidelity Index's *20-Year Municipal GO AA Index* as of June 28, 2019. Based on the stated assumptions and the projection of cash flows as of each fiscal year ended, the plan's insurance 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 Pplan investments was applied to all periods of the projected benefit payments paid from the retirement plan. However, the cost associated with the implicit subsidy will not be paid out of the Pplan'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 assumes that the funds receive the required employer contributions each future year, as determined by the current funding policy established in Statute as last amended by House Bill 362 (passed in 2018) that applies to CERS.

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.

Additional Disclosures[1]

Please see the "*Actuarial Valuation Report as of June 30, 2018* "and the "*2018 Actuarial Experience Study for the Period Ended June 30, 2018"* for additional information on 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 ended June 30, 2019.

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

Sensitivity to the NPL to Changes in the Discount Rate Fiscal Year 2019
As of June 30, 2019 ($ in Thousands)

	KERS	KERS	CERS	CERS	SPRS
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous	
	Current 5.25%	Current 6.25%	Current 6.25%	Current 6.25%	Current 5.25%
1% Decrease	$16,190,148	$704,415	$8,796,344	$3,453,489	$883,455
Current Discount Rate	14,123,002	546,294	7,033,045	2,762,295	748,835
1% Increase	$12,414,694	$416,396	$5,563,352	$2,195,616	$638,835

Sensitivity of the Net OPEB Liability to Changes in the Discount Rate and Healthcare Trend Rate
As of June 30, 2019 ($ in Thousands)

	KERS	KERS	CERS	CERS	SPRS
	Non-Hazardous	Hazardous	Non-Hazardous	Hazardous	
	Single 5.73%	Single 5.66%	Single 5.68%	Single 5.69%	Single 5.76%
Sensitivity of the Net OPEB Liability to Changes in the Discount Rate					
1% Decrease	$2,646,823	$45,103	$2,253,128	$1,032,253	$154,358
Single Discount Rate	2,222,896	(26,849)	1,681,955	739,860	111,347
1% Increase	$1,873,916	$(85,062)	$1,211,347	$502,521	$76,376
Sensitivity of the Net OPEB Liability to Changes in the Current Healthcare Cost Trend Rate of 3.62%					
1% Decrease	$1,888,500	$(78,110)	$1,250,878	$514,806	$77,068
Current Healthcare Cost Trend Rate	2,222,896	(26,849)	1,681,955	739,860	111,347
1% Increase	$2,627,402	$35,527	$2,204,686	$1,014,414	$153,056

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

	2019	2018
Total Pension Liability (TPL)	$16,356,674	$15,608,221
Plan Fiduciary Net Position	2,233,672	2,004,446
Net Pension Liability	$14,123,002	$13,603,775
Ratio of Plan Fiduciary Net Position to TPL	13.66%	12.84%
Covered Payroll (1)	$1,485,854	$1,509,955
Net Pension Liability as a Percentage of Covered Employee Payroll	950.50%	900.94%

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

	2019	2018
Total Pension Liability (TPL)	$1,227,226	$1,150,610
Plan Fiduciary Net Position	680,932	645,485
Net Pension Liability	$546,294	$505,125
Ratio of Plan Fiduciary Net Position to TPL	55.49%	56.10%
Covered Payroll (1)	$160,600	$152,936
Net Pension Liability as a Percentage of Covered Employee Payroll	340.16%	330.29%

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

	2019	2018
Total Pension Liability (TPL)	$14,192,966	$13,109,268
Plan Fiduciary Net Position	7,159,921	7,018,963
Net Pension Liability	$7,033,045	$6,090,305
Ratio of Plan Fiduciary Net Position to TPL	50.45%	53.54%
Covered Payroll (1)	$2,424,796	$2,454,927
Net Pension Liability as a Percentage of Covered Employee Payroll	290.05%	248.08%

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

	2019	2018
Total Pension Liability (TPL)	$5,176,003	$4,766,794
Plan Fiduciary Net Position	2,413,708	2,348,337
Net Pension Liability	$2,762,295	$2,418,457
Ratio of Plan Fiduciary Net Position to TPL	46.63%	49.26%
Covered Employee Payroll (1)	$553,541	$562,853
Net Pension Liability as a Percentage of Covered Employee Payroll	499.02%	429.68%

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

	2019	2018
Total Pension Liability (TPL)	$1,035,000	$969,622
Plan Fiduciary Net Position	286,165	267,572
Net Pension Liability	$748,835	$702,050
Ratio of Plan Fiduciary Net Position to TPL	27.65%	27.60%
Covered Payroll (1)	$49,515	$50,346
Net Pension Liability as a Percentage of Covered Employee Payroll	1512.34%	1394.45%

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

Development of Single Discount Rate
As of June 30

	KERS Non-Hazardous	KERS Hazardous	CERS Non-Hazardous	CERS Hazardous	SPRS
2019					
Single Discount Rate	5.73%	5.66%	5.68%	5.69%	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%
2018					
Single Discount Rate	5.86%	5.88%	5.85%	5.97%	6.02%
Long-Term Expected Rate of Return	6.25%	6.25%	6.25%	6.25%	6.25%
Long-Term Municipal Bond Rate	3.62%	3.62%	3.62%	3.62%	3.62%

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, 2019 (or as of June 30, 2018).

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
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%

(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
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%

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

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
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%

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
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%

1Based 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
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%

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

Note N. Pension Legislation

Background - 2018 Regular Session update

During the 2018 Regular Session of the General Assembly, Senate Bill 151 was passed changing retirement eligibility and benefits with various effective dates for active, inactive, and future members of KRS. The Attorney General, the Kentucky Education Association, and the Kentucky State Fraternal Order of Police filed a lawsuit regarding Senate Bill 151 asking the court to declare the new law unconstitutional and unenforceable. On June 20, 2018, Franklin Circuit Judge Shepherd ruled that Senate Bill 151 is unenforceable because the legislative process violated certain provisions of the Kentucky Constitution. On December 13, 2018, the Supreme Court of Kentucky affirmed the decision of the Franklin Circuit Court in the case of Bevin v. Commonwealth of Kentucky (Case No. 2018-SC-00419-TG and Case No. 2018-SC-000421-TG), declaring Senate Bill 151 void and of no effect as unconstitutional.

2019 Regular Session

Seven Bills passed during the 2019 Regular Session that will have an impact on KRS.

1. **House Bill 80** allows electronic balloting for Trustee elections, so members will soon have the option to vote online.
2. **House Bill 489** requires our investment staff and investment consultants to comply with certain federal statutes, rules, and regulations applicable to investment managers.
3. **House Bill 419** changes reemployment after retirement law. A key component of the bill says retired members who return to work with a participating agency twelve (12) months after their initial retirement date no longer have to notify KRS, which should greatly reduce the number of applications requiring review by our legal team.
4. **House Bill 55** voids the retirement of an elected official participating in KRS who retires and is elected to the same office within twelve (12) months of retiring.
5. **House Bill 381** allows postsecondary institutions to employ retired police officers who meet certain eligibility requirements.
6. **Senate Bill 162** exempts employers from paying contributions on a retiree employed as a school security officer.
7. **Senate Bill 1** exempts employers from paying contributions on a retiree employed as a Special Law Enforcement Officer.

Senate Resolution 206 and Senate Resolution 207 individually confirmed the reappointments of John Chilton and David Harris to the KRS Board. Their terms expire on June 17, 2022.

July 2019 Special Session Results in Passage of House Bill 1

On July 18, 2019 Kentucky Governor Matt Bevin called a Special Session of the Kentucky General Assembly in order to address "... *the extraordinary need for immediate legislative relief for crucial quasi-governmental employers, allowing them the option of ceasing participation in the Kentucky Retirement Systems under certain conditions.*" Without legislative action, the employer contribution requirement for these employers would have increased from 49.47% of pay to 83.43% of pay beginning July 1, 2019 (due to reporting timelines, the agencies' first payment under the new rate would have been due on August 10, 2019).

The Special Session convened July 19, 2019 and adjourned July 24, 2019 with the passage of House Bill 1. Because the bill had an emergency clause, it took effect immediately upon the Governor's signature.

House Bill 1 has two key provisions:

1. Sets the employer contribution rate at 49.47%, retroactive to July 1, 2019 for fiscal year 2020, for KERS quasi-governmental agencies.
2. Establishes a one-time voluntary cessation window (April 1, 2020 through April 30, 2020) for KERS quasi-governmental agencies.

Note O. Litigation

City of Fort Wright

In June 2014, the City of Fort Wright, a participating employer 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 City of Fort Wright 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 its Notice of Appeal in this action on October 15, 2018. The Appeal is currently being briefed.

On September 2, 2015, a CERS member filed a complaint that is substantially similar in terms of allegation 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 the Kentucky Employees Retirement System (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 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 law. The certified question of law has been 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 the KERS are based on a statutory obligation.

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 acting adversely in its interests and 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. Defendants were cited for breach of statutory, fiduciary, and other duties; claims against all defendants for civil conspiracy; 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 seek 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, where it is currently pending.

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 alleges 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.

Northern Trust Settlement

In 2014, KRS filed litigation against Northern Trust disputing fees charged by Northern Trust to KRS when Northern Trust was acting as KRS' securities lending agent from September 2007 until approximately December 2011. KRS alleged Northern Trust overcharged them by approximately $3.5 million. In December 2017, KRS reached a settlement agreement with Northern Trust where in Northern Trust agreed to pay KRS a lump sum payment of $1,000,000. In addition, Northern Trust agreed to waive asset management fees for asset management services for KRS at a rate of $125,000 per quarter, not to exceed $1,000,000 in total fee waivers. In exchange, KRS agreed to dismiss this action with prejudice. Both parties also agreed to release all claims arising from this action.

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 excusing WKU from its obligations to pay contributions to the KERS Fund. This matter is currently still in litigation. No substantive decisions have been issued on the merits of the case. The exact nature and scope of the relief sought is still unclear; therefore, no provision has been made in the combined financial statements.

Note P. Reciprocity Agreement

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

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

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, 2019 and 2018, the reimbursement totaled $10.5 million and $9.8 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. For the fiscal years ended June 30, 2019 and 2018, the contribution totaled $21.3 million and $19.8 million, respectively.

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, 2019. 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 May 16, 2013, and expires June 30, 2023. 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, 2023, are:

FY 2019 - $735,425

FY 2020 - $748,295

FY 2021 - $761,390

FY 2022 - $774,714

FY 2023 - $788,272

Note S. Reduction of Receivables

Employers in the KERS and SPRS plans reported two weeks of June 2018 wages at the beginning of the 2019 fiscal year. Based on START programming, these wages had the 2019 increased Annual Required Contribution (ARC) rate applied. The Commonwealth's approved budget guidelines paid contributions at the fiscal year 2018 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, 2019, as noted in the chart. This adjustment was also made in previous years and will be required if KERS and SPRS ARC rates increase annually.

Reduction of Receivables
As of June 30 ($ in Thousands)

	2019	2018
KERS Non-Hazardous	$15,947	$428
KERS Hazardous	921	-
SPRS	1,134	43
TOTAL	**$18,002**	**$471**

Note T. Prisma Daniel Boone Fund Adjustment

On April 9, 2019, KRS received notification from Prisma Daniel Boone Fund informing KRS that it had established contingency reserves to cover current and future advancement and indemnification obligations arising from the Mayberry Action (see Note O for details of Mayberry Case). At that time, KRS was advised that KRS Daniel Boone Fund Pension and Insurance assets were segregated from KRS accounts and moved to these reserve accounts. The last investor statement provided by Prisma Daniel Boone Fund was for the month ended February 28, 2019, and reported a balance of $96.8 million for the Pension Funds and $40.2 million for the Insurance Fund. The investor statements received for the month ended March 31, 2019, reported zero balances as the funds had been moved to the contingency reserves. KRS has received no investor statements reporting the values for the Pension Funds and Insurance Fund for the periods following February 28, 2019. KRS contacted Prisma Daniel Boone Fund on many occasions requesting statements of the funds held in these reserves, but Prisma provided no such accounting for or documentation of the funds. KRS thus continues to carry the balance as reported on February 28, 2019. On September 27, 2019, Prisma Daniel Boone Fund provided an audit confirmation to KRS' auditors that showed a balance of $96.4 million for the Pension Funds and $40.0 million for the Insurance Fund, a decline in assets of $463,407 for the Pension Funds and $192,491 for the Insurance Fund, as of June 30, 2019. Due to the delay in receiving this information and the immateriality of the decline in asset value, the adjustments to reduce the value of the assets were made in fiscal year 2020.

Note U. Subsequent Events

Management has evaluated the period June 30, 2019 to December 5, 2019, (the date the combining financial statements were available to be issued) for items requiring recognition or disclosure in the combining financial statements.

REQUIRED
SUPPLEMENTARY INFORMATION
INCLUDING GASB 67 AND 74

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

	2019	2018	2017	2016	2015	2014
Total Pension Liability (TPL)	$16,356,674	$15,608,221	$15,445,206	$13,379,781	$12,359,673	$11,550,110
Plan Fiduciary Net Position	2,233,672	2,004,446	2,056,870	1,980,292	2,327,783	2,578,291
Net Pension Liability	$14,123,002	$13,603,775	$13,388,336	$11,399,489	$10,031,890	$8,971,819
Ratio of Plan Fiduciary Net Position to TPL	13.66%	12.84%	13.32%	14.80%	18.83%	22.32%
Covered Payroll [(1)]	$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	950.50%	900.94%	835.52%	698.92%	649.64%	568.74%

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

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

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

	2019	2018	2017	2016	2015	2014
Total Pension Liability (TPL)	$14,192,966	$13,109,268	$12,540,545	$11,065,013	$10,740,325	$9,772,522
Plan Fiduciary Net Position	7,159,921	7,018,963	6,687,237	6,141,395	6,440,800	6,528,146
Net Pension Liability	$7,033,045	$6,090,305	$5,853,308	$4,923,618	$4,299,525	$3,244,376
Ratio of Plan Fiduciary Net Position to TPL	50.45%	53.54%	53.32%	55.50%	59.97%	66.80%
Covered Payroll [(1)]	$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	290.05%	248.08%	246.32%	203.69%	187.20%	142.78%

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

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

Schedule of Employers' NPL - SPRS Pension Funds
As of June 30 ($ in Thousands)

	2019	2018	2017	2016	2015	2014
Total Pension Liability (TPL)	$1,035,000	$969,622	$943,271	$795,421	$734,156	$681,118
Plan Fiduciary Net Position	286,165	267,572	255,737	218,012	247,228	260,974
Net Pension Liability	$748,835	$702,050	$687,534	$577,409	$486,928	$420,144
Ratio of Plan Fiduciary Net Position to TPL	27.65%	27.60%	27.11%	27.41%	33.68%	38.32%
Covered Payroll [(1)]	$49,515	$50,346	$54,065	$46,685	$45,765	$44,616
Net Pension Liability as a Percentage of Covered Payroll	1512.34%	1394.45%	1271.68%	1236.82%	1063.97%	941.69%

(1) Based on derived compensation using the provided employer contribution information for fiscal years 2018 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 - KERS Non-Hazardous
As of June 30 ($ in Thousands)

Total Pension Liability (TPL)	2019	2018	2017	2016	2015	2014
Service Cost	$184,988	$195,681	$143,858	$139,631	$143,847	$133,361
Interest	793,163	785,123	870,725	891,897	859,509	853,653
Benefit Changes	-	9,624	-	-	-	-
Difference between Expected and Actual Experience	70,529	153,565	(134,379)	-	30,958	-
Changes of Assumptions	700,464	-	2,145,530	923,999	694,592	-
Benefit Payments	(1,000,691)	(980,978)	(960,309)	(935,419)	(919,343)	(903,564)
Net Change in TPL	**748,453**	**163,015**	**2,065,425**	**1,020,108**	**809,563**	**83,450**
TPL – Beginning	**15,608,221**	**15,445,206**	**13,379,781**	**12,359,673**	**11,550,110**	**11,466,660**
TPL – Ending (a)	**$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	$1,035,462	$689,143	$757,121	$513,084	$521,691	$296,836
Contributions – Member (2)	93,759	104,972	100,543	106,494	104,606	97,487
Net Investment Income (2)	(12,342)	144,881	220,985	(20,663)	44,570	337,922
Retirement Benefit	(988,349)	(967,375)	(948,490)	(923,288)	(905,791)	(889,937)
Administrative Expense	112,371	(10,692)	(10,957)	(10,989)	(10,474)	(11,145)
Refunds of Contributions	(11,712)	(13,603)	(11,819)	(12,130)	(13,552)	(13,627)
Other (4)	37	301	(30,805)	-	8,442	-
Net Change in Fiduciary Net Position	229,226	(52,373)	76,578	(347,491)	(250,508)	(182,463)
Plan Fiduciary Net Position – Beginning	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)	2,233,672	2,004,446	2,056,870	1,980,292	2,327,783	2,578,291
Net Pension Liability – Ending (a) – (b)	**$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	13.66%	12.84%	13.32%	14.80%	18.83%	22.32%
Covered Payroll (3)	$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	**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) Northern Trust Settlement for fiscal year 2018.

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)	2019	2018	2017	2016	2015	2014
Service Cost	$27,117	$28,641	$21,081	$20,751	$18,729	$16,880
Interest	69,657	66,536	66,589	64,851	61,005	59,594
Benefit Changes	-	705	-	-	-	-
Difference between Expected and Actual Experience	1,395	24,215	26,902	-	6,067	-
Changes of Assumptions	50,658	-	127,878	-	52,165	-
Benefit Payments	(72,211)	(68,117)	(63,337)	(61,518)	(59,383)	(57,151)
Net Change in TPL	**76,616**	**51,980**	**179,113**	**24,084**	**78,583**	**19,323**
TPL – Beginning	**1,150,610**	**1,098,630**	**919,517**	**895,433**	**816,850**	**797,527**
TPL – Ending (a)	**$1,227,226**	**$1,150,610**	**$1,098,630**	**$919,517**	**$895,433**	**$816,850**
Plan Fiduciary Net Position [(1)]						
Contributions – Employer	$55,259	$43,661	$52,974	$23,759	$28,536	$11,670
Contributions - Member [(2)]	17,118	17,891	17,524	15,739	13,207	12,546
Net Investment Income	36,380	51,467	70,994	(1,653)	8,701	80,724
Retirement Benefit	(69,527)	(65,616)	(61,231)	(59,306)	(56,773)	(54,320)
Administrative Expense	(1,103)	(975)	(919)	(916)	(844)	(897)
Refunds of Contributions	(2,684)	(2,501)	(2,106)	(2,211)	(2,610)	(2,830)
Other [(4)]	4	33	(3,586)	-	767	-
Net Change in Plan Fiduciary Net Position	35,447	43,960	73,650	(24,588)	(9,016)	46,893
Plan Fiduciary Net Position – Beginning	645,485	601,529	527,879	552,468	561,484	514,591
Prior Year Adjustment		(4)	-	-	-	-
Fiduciary Net Position – Ending (b)	680,932	645,485	601,529	527,879	552,468	561,484
Net Pension Liability – Ending (a) – (b)	**$546,294**	**$505,125**	**$497,101**	**$391,638**	**$342,965**	**$255,366**
Plan Fiduciary Net Position as a Percentage	55.49%	56.10%	54.75%	57.41%	61.70%	68.74%
Covered Payroll [(3)]	$160,600	$152,936	$178,511	$158,828	$128,680	$129,076
Net Pension Liability as a Percentage of Covered Payroll	**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) Northern Trust Settlement for fiscal year 2018.

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 Non-Hazardous
As of June 30 ($ in Thousands)

Total Pension Liability (TPL)	2019	2018	2017	2016	2015	**2014**
Service Cost	$254,643	$254,169	$193,082	$209,100	$207,400	$192,482
Interest	794,935	760,622	803,555	780,587	733,002	710,526
Benefit Changes	-	15,708	-	-	-	-
Difference between Expected and Actual Experience	87,377	279,401	(208,014)	-	49,966	-
Changes of Assumptions	727,351	-	1,388,800	-	606,293	-
Benefit Payments	(780,608)	(741,177)	(701,891)	(665,000)	(628,858)	(597,136)
Net Change in TPL	**1,083,698**	**568,723**	**1,475,532**	**324,687**	**967,803**	**305,872**
TPL – Beginning	**13,109,268**	**12,540,545**	**11,065,013**	**10,740,325**	**9,772,522**	**9,466,650**
TPL – Ending (a)	**$14,192,966**	**$13,109,268**	**$12,540,545**	**$11,065,012**	**$10,740,325**	**$9,772,522**
Plan Fiduciary Net Position (1)						
Contributions – Employer	$393,453	$358,017	$333,554	$284,105	$298,565	$324,231
Contributions – Member (2)	159,064	160,370	150,715	141,674	140,311	128,568
Net Investment Income (2)	390,664	573,829	825,900	(40,800)	110,568	895,530
Retirement Benefit	(766,221)	(726,569)	(687,461)	(651,246)	(615,335)	(582,850)
Administrative Expense	(21,659)	(19,592)	(19,609)	(19,385)	(18,212)	(18,615)
Refunds of Contributions	(14,387)	(14,608)	(14,430)	(13,753)	(13,523)	(14,286)
Other (4)	44	361	(42,827)	-	10,280	-
Net Change in Plan Fiduciary Net Position	140,958	331,808	545,843	(299,405)	(87,346)	732,578
Plan Fiduciary Net Position - Beginning	7,018,963	6,687,237	6,141,395	6,440,800	6,528,146	5,795,568
Prior Year Adjustment	-	(82)	-	-	-	-
Plan Fiduciary Net Position – Ending (b)	7,159,921	7,018,963	6,687,237	6,141,395	6,440,800	6,528,146
Net Pension Liability – Ending (a) – (b)	**$7,033,045**	**$6,090,305**	**$5,853,308**	**$4,923,618**	**$4,299,525**	**$3,244,376**
Plan Fiduciary Net Position as a Percentage	50.45%	53.54%	53.32%	55.50%	59.97%	66.80%
Covered Payroll (3)	$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	**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) Northern Trust Settlement for fiscal year 2018.

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)	2019	2018	2017	2016	2015	2014
Service Cost	$77,426	$81,103	$58,343	$66,249	$71,934	$66,761
Interest	289,741	270,694	270,860	262,886	247,008	238,665
Benefit Changes	-	2,172	-	-	-	-
Difference between Expected and Actual Experience	27,364	205,882	92,588	-	41,935	-
Changes of Assumptions	276,541	-	536,667	-	166,849	-
Benefit Payments	(261,863)	(248,332)	(229,299)	(216,327)	(203,244)	(192,299)
Net Change in TPL	**409,209**	**311,519**	**729,159**	**112,807**	**324,482**	**113,127**
TPL – Beginning	**4,766,794**	**4,455,275**	**3,726,115**	**3,613,308**	**3,288,826**	**3,175,699**
TPL – Ending (a)	**$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	138,053	127,660	115,947	105,713	108,071	115,240
Contributions – Member [2]	58,661	61,089	60,101	52,972	47,692	43,722
Net Investment Income [2]	132,232	191,324	270,473	(9,020)	37,104	288,490
Retirement Benefit	(259,009)	(244,118)	(226,984)	(213,448)	(200,134)	(189,635)
Administrative Expense	(1,726)	(1,504)	(1,421)	(1,366)	(1,288)	(1,721)
Refunds of Contributions	(2,854)	(4,214)	(2,315)	(2,879)	(3,111)	(2,664)
Other [4]	14	111	(7,979)	-	2,865	-
Net Change in Plan Fiduciary Net Position	65,371	130,348	207,822	(68,028)	(8,801)	253,432
Plan Fiduciary Net Position – Beginning	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)	2,413,708	2,348,337	2,217,996	2,010,174	2,078,202	2,087,002
Net Pension Liability – Ending (a) – (b)	**$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	46.63%	49.26%	49.78%	53.95%	57.52%	63.46%
Covered Payroll [3]	$553,541	$562,853	$526,559	$526,334	$483,641	$479,164
Net Pension Liability as a Percentage of Covered Payroll	**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) Northern Trust Settlement for fiscal year 2018.

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 TPL - SPRS
As of June 30 ($ in Thousands)

Total Pension Liability (TPL)	2019	2018	2017	2016	2015	2014
Service Cost	$11,726	$11,890	$8,297	$8,402	$7,695	$7,142
Interest	49,301	47,978	51,769	52,951	50,661	50,391
Benefit Changes	-	184	-	-	-	-
Difference between Expected and Actual Experience	20,952	25,126	8,143	-	9,331	-
Changes of Assumptions	44,510	-	136,601	56,191	40,201	-
Benefit Payments	(61,111)	(58,827)	(56,960)	(56,279)	(54,850)	(53,239)
Net Change in TPL	**65,378**	**26,351**	**147,850**	**61,265**	**53,038**	**4,294**
TPL - Beginning	**969,622**	**943,271**	**795,421**	**734,156**	**681,118**	**676,824**
TPL – Ending (a)	**$1,035,000**	**$969,622**	**$943,271**	**$795,421**	**$734,156**	**$681,118**
Plan Fiduciary Net Position [(1)]						
Contributions – Employer	$60,048	$46,877	$63,239	$25,822	$31,990	$20,279
Contributions - Member [(2)]	5,062	5,522	5,348	5,263	5,244	5,075
Net Investment Income [(2)]	14,816	18,437	26,795	(3,843)	3,426	40,374
Retirement Benefit	(60,949)	(58,805)	(56,934)	(56,268)	(54,765)	(53,026)
Administrative Expense	(225)	(194)	(181)	(178)	(201)	(215)
Refunds of Contributions	(162)	(22)	(26)	(11)	(85)	(213)
Other [(4)]	3	21	(517)	-	645	-
Net Change in Plan Fiduciary Net Position	18,593	11,836	37,724	(29,215)	(13,746)	12,274
Plan Fiduciary Net Position – Beginning	267,572	255,737	218,012	247,228	260,974	248,700
Prior Year Adjustment	-	(1)	-	-	-	-
Plan Fiduciary Net Position – Ending (b)	286,165	267,572	255,737	218,012	247,228	260,974
Net Pension Liability – Ending (a) – (b)	**$748,835**	**$702,050**	**$687,534**	**$577,409**	**$486,928**	**$420,144**
Plan Fiduciary Net Position as a Percentage	27.65%	27.60%	27.11%	27.41%	33.68%	38.32%
Covered Payroll [(3)]	$49,515	$50,346	$54,065	$46,685	$45,765	$44,616
Net Pension Liability as a Percentage of Covered Payroll	**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) Northern Trust Settlement for fiscal year 2018.

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 ended 2019 that are documented in the schedule on the following pages, were calculated as of June 30, 2017. Based on the June 30, 2017, actuarial valuation report, the actuarial methods and assumptions used to calculate these contribution rates are below:

Notes to Schedule of Employer's Contribution

Item	KERS Non-Hazardous	KERS Hazardous	CERS Non-Hazardous	CERS Hazardous	SPRS
Determined by the Actuarial Valuation as of:	June 30, 2017	June 30, 2017	June 30, 2017	June 30, 2017	June 30, 2017
Actuarial Cost Method:	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal
Asset Valuation Method:	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay
Amortization Period:	26 Years, Closed	26 Years, Closed	26 Years, Closed	26 Years, Closed	26 Years, Closed
Investment Return:	5.25%	6.25%	6.25%	6.25%	5.25%
Inflation:	2.30%	2.30%	2.30%	2.30%	2.30%
Salary Increase:	3.55% to 15.55%, varies by service	3.55% to 19.55%, varies by service	3.30% to 11.55%, varies by service	3.05% to 18.55%, 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	N/A	N/A	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

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
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%
2010	$348,495	$144,051	$204,444	$1,815,146	7.94%

(1) Actuarially determined contribution rate for fiscal year ended 2019 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
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%
2010	$17,815	$17,658	$157	$143,558	12.30%

(1) Actuarially determined contribution rate for fiscal year ended 2019 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 - 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
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%
2010	$186,724	$207,076	$(20,352)	$2,236,855	9.26%

(1) Actuarially determined contribution rate for fiscal year ended 2019 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 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
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%
2010	$76,391	$82,887	$(6,496)	$466,549	17.77%

(1) Actuarially determined contribution rate for fiscal year ended 2019 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 - 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
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%
2010	$18,765	$9,489	$9,276	$51,507	18.42%

(1) Actuarially determined contribution rate for fiscal year ended 2019 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 - 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
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
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 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
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
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 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
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	57.10%	$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 - KERS Non-Hazardous Plan
As of June 30 ($ in Thousands)

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

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

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

(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 Hazardous Plan
As of June 30 ($ in Thousands)

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

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

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

(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 - CERS Non-Hazardous Plan
As of June 30 ($ in Thousands)

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

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

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

(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 - CERS Hazardous Plan
As of June 30 ($ in Thousands)

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

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

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

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

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

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

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

(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.

The actuarially determined contribution rates effective for fiscal year ending 2018 that are documented in the schedules on the previous pages are calculated as of June 30, 2017. Based on 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' OPEB Contributions

Item	KERS Non-Hazardous	KERS Hazardous	CERS Non-Hazardous	CERS Hazardous	SPRS
Determined by the Actuarial Valuation as of:	June 30, 2017	June 30, 2017	June 30, 2017	June 30, 2017	June 30, 2017
Actuarial Cost Method:	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal	Entry Age Normal
Asset Valuation Method:	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized	20 % of the difference between the market value of assets and the expected actuarial value of assets is recognized
Amortization Method:	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay	Level Percent of Pay
Amortization Period:	26 Years, Closed	26 Years, Closed	26 Years, Closed	26 Years, Closed	26 Years, Closed
Payroll Growth Rate:	0.00%	0.00%	2.00%	2.00%	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:	3.55% to 15.55%, varies by service	3.55% to 19.55%, varies by service	3.30% to 11.55%, varies by service	3.05% to 18.55%, 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 7.25% at January 1, 2019 and gradually decreasing to an ultimate trend rate of 4.05% over a period of 13 years.	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.	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.	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.	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.
Post-65	Initial trend starting at 5.10% at January 1, 2019 and gradually decreasing to an ultimat trend rate fo 4.05% over a period of 11 years.	Initial trend starting at 5.10% at January 1, 2019 and gradually decreasing to an ultimat trend rate fo 4.05% over a period of 11 years.	Initial trend starting at 5.10% at January 1, 2019 and gradually decreasing to an ultimat trend rate fo 4.05% over a period of 11 years.	Initial trend starting at 5.10% at January 1, 2019 and gradually decreasing to an ultimat trend rate fo 4.05% over a period of 11 years.	Initial trend starting at 5.10% at January 1, 2019 and gradually decreasing to an ultimat trend rate fo 4.05% over a period of 11 years.
Phase-In provision	N/A	N/A	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

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

1	2	3		4	
Fiscal Year Ending	Actuarially Determined Contribution	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contributions as a Percentage of Covered Payroll
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%
2010	$376,556	$102,528	$274,028	$1,815,146	5.65%

(1) Data for years prior to 2018 are 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 2019 are based on the contribution rate calculated with the June 30, 2017, actuarial valuation.

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

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

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

1	2	3		4	
Fiscal Year Ending	Actuarially Determined Contribution	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contributions as a Percentage of Covered Payroll
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%
2010	$35,045	$22,241	$12,804	$143,558	15.49%

(1) Data for years prior to 2018 are 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 2019 are based on the contribution rate calculated with the June 30, 2017, actuarial valuation.

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

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

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

1	2	3		4	
Fiscal Year Ending	Actuarially Determined Contribution	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contributions as a Percentage of Covered Payroll
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%
2010	$266,331	$175,764	$90,567	$2,236,855	7.86%

(1) Data for years prior to 2018 are 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 2019 are based on the contribution rate calculated with the June 30, 2017, actuarial valuation.

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

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

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

1	2	3		4	
Fiscal Year Ending	Actuarially Determined Contribution	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contributions as a Percentage of Covered Payroll
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%
2010	$129,227	$84,536	$44,691	$466,549	18.12%

(1) Data for years prior to 2018 are 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 2019 are based on the contribution rate calculated with the June 30, 2017, actuarial valuation.

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

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

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

1	2	3		4	
Fiscal Year Ending	Actuarially Determined Contribution	Total Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll	Actual Contributions as a Percentage of Covered Payroll
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%
2010	$30,302	$8,643	$21,659	$51,507	16.78%

(1) Data for years prior to 2018 are 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 2019 are based on the contribution rate calculated with the June 30, 2017, actuarial valuation.

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

(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 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, 2019, as calculated by the custodian bank, BNY Mellon:

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

Report on Internal Control

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

	2019	2018
Personnel		
Salaries and Per Diem	$14,098	$13,926
Pension, Insurance Related Benefits	13,789	9,744
Unemployment Compensation	8	-
Tuition Assistance	17	16
Total Personnel	**27,912**	**23,686**
Contractual		
Actuarial Services	642	453
Audit Services	259	169
Healthcare	(390)	963
Legal Counsel	1,306	1,107
Medical Review Services	247	279
Miscellaneous	92	69
Total Contractual	**2,156**	**3,039**
Communication		
Printing	99	309
Telephone	127	120
Postage	321	257
Travel	78	59
Total Communication	**625**	**746**
Internal Audit		
Travel/Conferences	-	1
Total Internal Audit	**-**	**1**
Investments-Pension Funds		
Travel/Conferences	20	21
Dues/Subscriptions	3	9
Legal	195	157
Total Investments	**$218**	**$187**

Schedule of Administrative Expenses (cont...)

	2019	2018
Rentals		
Office Space	$788	$754
Equipment	90	70
Total Rentals	**878**	**824**
Information Technology		
Software	2,476	1,932
Total Information Technology	**2,476**	**1,932**
Miscellaneous		
Utilities	207	204
Supplies	108	81
Insurance	-	345
Dues & Subscriptions	49	31
Maintenance	16	1
Other	22	6
Total Miscellaneous	**402**	**667**
Depreciation/Amortization	1,759	1,874
Total Pension Fund Administrative Expense	**36,425**	**32,957**
Healthcare Fees	2,372	2,063
Total Insurance Fund Administrative Expense	**2,372**	**2,063**
Total Administrative Expenses	**$38,797**	**$35,020**

Note: Insurance Admin expenses are $0 this year due to KRS self funding the liability insurance obligation.

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

	2019	2018
PENSION FUNDS		
Security Lending Fees		
Borrower (Income) Rebates	$7,756	$4,712
Lending Agent Fees	364	445
Total Security Lending	**8,120**	**5,157**
Contractual Services		
Investment Management	50,319	50,813
Security Custody	1,229	1,299
Investment Consultant	583	1,385
Performance Fees	34,148	39,100
Total Contractual Services	**86,279**	**92,597**
INSURANCE FUND		
Security Lending Fees		
Borrower (Income) Rebates	2,862	1,813
Lending Agent Fees	157	201
Total Security Lending	**3,019**	**2,014**
Contractual Services		
Investment Management	23,114	26,425
Security Custody	832	846
Investment Consultant	245	568
Performance Fees	16,173	18,078
Total Contractual Services	**40,364**	**45,917**
Total Investment Expenses	**$137,782**	**$145,685**

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

	2019	2018
Actuarial Services	$642	$453
Medical Review Services	247	279
Audit Services	259	169
Legal Counsel	1,501	1,264
Healthcare	(390)	963
Miscellaneous	92	69
Total	**$2,351**	**$3,196**

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 Kentucky Retirement Systems (KRS) as of and for the fiscal year ended June 30, 2019, 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 5, 2019.

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 5, 2019

KENTUCKY RETIREMENT SYSTEMS

Schedule of Findings

Year ended June 30, 2019

Section I. SUMMARY OF AUDITOR'S RESULTS

Type of report the auditor issued on whether the financial statements audited were prepared in accordance with GAAP: ***Unmodified***

Internal control over financial reporting:

Material weaknesses identified?	**No**
Significant deficiencies identified?	**None Reported**
Noncompliance material to financial statements noted?	**No**

Section II. FINANCIAL STATEMENT FINDINGS

None

INVESTMENTS
TABLE OF CONTENTS

Wilshire

MEMORANDUM

To: Kentucky Retirement Systems

From: Wilshire Associates

Subject: 2018-19 Fiscal Year Investment Portfolio CAFR Letter

Date: October 18, 2019

Economic Review

The fiscal year ended June 30, 2019 was marked by several reversals, from Fed policy to some key economic indicators. Economic data started strong, as Q3 2018 GDP growth was 3.5% coming off the heels of the largest increase in real GDP in four years at 4.2% during the second quarter. The U.S. made positive strides on trade with a preliminary, renegotiated trade deal with the European Commission and a finalized deal with South Korea. The Federal Open Market Committee (FOMC) decided to increase its overnight rate by 25 basis points in September while Fed chair Jerome Powell said it was a "particularly bright moment" for the U.S. economy.

The tide began to turn in Q4 2018, as consumer sentiment and the ISM Purchasing Manager's Index both declined. Concerns of an economic slowdown weighed on stock prices as did fears that additional rate increases by the Federal Reserve could weaken future prospects for economic growth. Despite these worries, the FOMC again increased its overnight rate by 25 basis points in December, but adjusted downward their forecast for future rates.

Markets largely recovered in Q1 2019, as concerns about global growth were dwarfed by the Fed's updated forecast for no rate increases in 2019 and a looser stance on unwinding quantitative easing enacted during the recovery. Several developments led to a yield curve with two key characteristics – an inverted portion from short-term to 3-year yields and almost no difference between short-term and 10-year yields. The Fed's move towards a more dovish stance on monetary policy, a weak report on the European economy and a drop in U.S. retail sales contributed to yields moving lower.

After three years of steady increases in the federal funds rate, the Fed ended Q2 at a pivotal moment. The FOMC left the rate unchanged in the first half of 2019 and forecasted no changes for the second half of the year. The open market, however, was far more aggressive on monetary policy and expected two or three 0.25% reductions.

Capital Markets Review

U.S. Equity

The U.S. stock market, as measured by the Wilshire 5000 Index, was up 7.3% for the third quarter of 2018, the strongest quarter in nearly five years. This was in stark contrast to the selloff that took place in Q4, which saw stocks fall -14.3%. This marked the worst quarter for U.S. equities since 2011 and made 2018 the first down calendar year since the credit crisis sell-off of 2008.

U.S. equities recovered quickly in the first half of 2019, rebounding 18.7% which was the strongest first half-year for U.S. equities in 24 years. Most of the returns were generated in Q1, with stocks up 14.1%, the strongest quarterly returns since a decade prior. Market volatility remained elevated in early 2019 as trade concerns and a possible global economic slowdown continued to sway the markets. Equity prices were also responding to actions and statements by the Federal Reserve, which softened its monetary policy during the second quarter.

Non-U.S. Equity

Equity markets outside of the U.S. produced mixed results and trailed the U.S. equity market in Q3 2018. Trade tensions weighed heavily on foreign markets while political turmoil in Italy was cause for concern just as the quarter ended. Emerging markets continued to underperform and entered a technical bear market during the quarter, down -20% since late January.

International equity markets also suffered during Q4, although they generally outperformed U.S. equity. While the EU began 2018 in sound economic condition, growth declined steadily while gains in unemployment stalled and industrial production reversed course.

Non-U.S. markets enjoyed a strong start to 2019, but economic concerns remained. In Q1 there were signs of an economic slowdown in Europe, but by far the biggest unknown was the result of the U.K.'s Brexit. A draft proposal to exit the European Union (EU), agreed upon by Prime Minister Theresa May and EU officials, but was again rejected by the U.K. Parliament. While the final exit date had been delayed, concerns carried into Q2 (and beyond) and a failure to reach an agreement on a transition period would mean significant uncertainty for markets.

Indicators out of Europe remained gloomy in Q2, as data showed the manufacturing sector in Germany had weakened. News out of Japan was also troubling as consumption and capital spending showed little or no growth. Trade negotiations between the U.S. and China, the world's two largest economies, continued with both countries maintaining firm stances before the G20.

Fixed Income

The U.S. Treasury yield curve rose across all maturities and the bellwether 10-year Treasury yield ended Q3 2018 at 3.05%. In the three quarters to follow, the 10-year fell 37 basis points, 28 basis points, and a further 41 basis points to end at an even 2.00% as of June 30, 2019. Credit spreads on investment grade and high yield fixed income generally widened over the fiscal year, but remained below long-term averages.

Falling rates have led longer-dated maturities to be one of the best performing asset classes over the fiscal year, with the Bloomberg Barclays Long Term Treasury Index rising 12.3% in that period. The Bloomberg Barclays Aggregate Index was up 7.9% for the year ended June 30, 2019, while global equities returned 5.7% (as measured by the MSCI All Country World Index).

Real Assets

Real estate produced strong returns for the fiscal year ended June 30, 2019, with the Wilshire Global RESI gaining 9.9%. Real estate securities experienced modest returns in the first and last quarter of this timeframe, but outperformed equities in the volatile downturn of Q4 and during the recovery in Q1, which was the best quarter for the asset class in several years.

Commodity results were negative for the year, with the Bloomberg Commodity Index posting a -6.8% return for the twelve months ended June 30, 2019. Q4 returns were a main driver of these results, as crude oil fell -38.0% to $45.41 per barrel. In Q1 crude oil rose 32.4% to $60.14 per barrel but natural gas prices were down -9.5% and declined a further -13.3% in Q2, ending the quarter at $2.31 per million BTUs.

MLP returns were positive in Q3, up 6.6%, but fell victim to the broad sell-off in Q4 and declined -17.3%. Like many other risk assets, MLPs rebounded during the first quarter of 2019 and finished up 16.8%. After a nearly flat return for Q2, MLPs ended the fiscal year up 3.1%.

Asset Allocation Review

The Board approved changes to the Plans' target asset allocation at the June 7th, 2018 meeting, which maintain the probability of achieving the assumed rates of return while improving the liquidity profile of the portfolios. In addition, the new asset allocation policy for the significantly underfunded KERS Non-Hazardous and SPRS plans also decreases expected volatility and sensitivity to economic growth cycles. The new asset allocation targets align with the actuarial assumed rate of returns previously approved by the Board approved: 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.

Assets are divided between three distinct buckets: growth, liquidity, and diversifying. This represents a slight change from previous asset allocations, which grouped by asset type (equity vs. fixed income) instead of risk type (growth oriented vs. safety oriented). This new distinction lead to high yield/credit-oriented fixed income to be counted with public and private equity allocations. Subsequently, the growth allocation target was reduced for all plans, with a corresponding increase to core fixed income to bolster the safety/liquidity bucket.

Pension Review

The KRS Pension Plan Composite ("Pension Plan") ended the fiscal year with assets of $12.7 billion as of June 30, 2019, up from $12.3 billion on June 30, 2018. The Pension Plan returned 5.83% net of fees for the year, underperforming the KRS Allocation Index (6.01%) and KRS IPS Benchmark (6.59%) in that time. The plan ranked in the 55th percentile of the TUCS Public Plan Total Return Universe, gross of fees, for the fiscal year. The KERS and SPRS plans outperformed their 5.25% assumed rate of return for the year ended 6/30/2018, 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 $5.4 billion as of June 30, 2019, up from $5.1 billion on June 30, 2018. The Insurance Plan returned 5.65% net of fees for the year, underperforming the KRS Allocation Index (5.89%) and KRS IPS Benchmark (6.51%) in that time. The plan ranked in the 57th percentile of the TUCS Public Plan Total Return Universe, gross of fees, for the fiscal year. In addition, all of the plans underperformed their 6.25% assumed rate of return for the year ended 6/30/2018.

Investment Committee Initiatives

Continued Restructuring of Absolute Return Investments

On May 7, 2018, KRS issued a redemption notice to Prisma indicating KRS' desire to liquidate the last fund-of-funds investment. KRS received redemptions of $290.7 million dollars for the Pension Funds and $120.7 million for the Insurance Fund from Prisma in Fiscal Year 2019. The Pension Funds and Insurance Fund also received an additional $180.8 million and $69.8 million, respectively, from other managers. During the fiscal year, KRS fully redeemed ten absolute return accounts. Overall hedge fund investments at KRS have been reduced from a high of $1.6 billion in January 2016 to $308.2 million as of June 30, 2019, a reduction of 81.28%.

Asset Allocation

The Investment Committee approved new asset allocations for each system with an effective date of July 1, 2018. The Investment team started to transition to the new allocation policy and set a target date of October 1, 2018, for full implementation. However, all plans remained underweight in the Diversifying strategies allocation and overweight in the Liquidity allocation as staff needed to find suitable investments in the Real Return asset class for which to reinvest the liquidated Absolute allocation investments.

Senate Bill 2

Pursuant to Senate Bill 2 (SB2), which was signed into law on March 10, 2017, KRS created a Manager Onboarding Policy intended to increase transparency. SB2 requires that KRS disclose, "…all contracts or offering documents for services, goods, or property purchased or utilized by the system." This policy delineates the most efficient way to process these contracts for trustees and employees and ensures KRS fulfills all institutional and statutory requirements as governed by the Commonwealth and the KRS Board.

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

In a continued effort to create greater efficiencies in the public equity allocation, staff and consultants worked together to study how KRS can most effectively access different segments of the market. The team completed this exercise with an eye towards efficient market access and efficient allocation of fee dollars. The goal was to spend fee dollars where the chances of outperforming the market were greatest, and conserve, if not eliminate, fees in those areas where it is more difficult to add excess value. Although U.S. equity markets are viewed as efficient, there are still pockets of inefficiencies that can be exploited, especially as one moves down the capitalization structure. Non-U.S. developed markets are less efficient than their U.S. counterparts and emerging markets are even more inefficient.

The KRS U.S. Equity portfolio has a passive tilt demonstrated by the large and midcap portions of the allocation. Therefore, KRS sought a strategy that would produce excess returns for higher conviction all cap and small/micro-cap investments. KRS staff also advocated for a greater degree of active management in the Non-U.S. Equity portfolio as that space is less efficient, particularly in the emerging market segment.

Investment Activity

- IFM US Infrastructure Debt Fund 1 (Real Return) -- The Investment Committee approved an investment of up to $100 million in the Fund at the June 27, 2018 meeting. The commitment is subject to KRS being no more than 15% of the overall amount raised by the fund.
- Lord Abbett (Core Fixed Income) – At the same meeting, the Investment Committee approved an allocation of $750 million to Lord Abbett for a short-duration Core Fixed Income mandate.
- Investment staff conducted U.S. Equity rebalancing trades with net inflows of $100 million in Pension and $49.5 million in Insurance. The moves were primarily in large and mid-cap spaces.
- In Public Equity, KRS exited its U.S. Mid-Cap value strategy and redeployed funds into the Internal S&P 500 and Internal Factor Based Portfolios.
- NISA (Core Fixed Income) – During June, staff sent an additional deposit of $527 million ($391 million Pension/$136 million Insurance) to our existing NISA Core Fixed Income portfolio.
- Shenkman (US Bank Loans) – In May staff made an additional deposit of $60 million ($35 million Pension/$25 million Insurance) to our existing Bank Loan portfolios.
- Tortoise Capital (Real Return MLPs) – In May staff made an additional deposit of $100 million ($75 million Pension/$25 million Insurance) to our existing MLP manager.

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 an 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, 2019 ($ in Thousands)

	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/	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%	15.60%	16.90%	9.00%	14.00%	22.30%	8.10%	3.60%	2.70%	7.80%
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%	18.90%	20.80%	9.30%	16.20%	16.90%	2.70%	3.70%	2.60%	8.90%

Insurance Board Policy vs. Actual Asset Allocation
As of June 30, 2019 ($ in Thousands)

	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%	19.02%	20.53%	10.43%	15.22%	15.50%	4.38%	3.62%	2.75%	8.55%

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 an immediate rebalancing to within its allocation ranges if an asset class exceeds or falls outside its allowable range as defined in the IPS. As the previous charts depict, there were several asset classes that were significantly out of range; however, this was a result of rebalancing, e.g. this fiscal year the Investment Committee instructed staff to focus funding on Fixed Income rather than Absolute Returns.

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 comprised 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 2019 Results

For the fiscal year ended June 30, 2019, KRS Pension Funds in total earned a net return of 5.83%, underperforming its benchmark return of 6.00%. KRS Insurance Fund in total for that period earned a return net of fees of 5.67% compared to the benchmark of 5.89%.

Net Returns By Plan: Pension Fund As of June 30, 2019 ($ 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
KERS	$2,178,483	17.09%	5.73%	6.20%	8.40%	8.40%	5.31%	5.56%	0.58%	8.59%	8.69%	8.98%	9.11%
KERS HAZ	684,855	5.38%	5.68%	6.00%	9.22%	9.22%	5.78%	5.72%	1.21%	8.84%	8.81%	9.05%	9.15%
CERS	7,188,717	56.40%	5.78%	6.00%	9.40%	9.24%	5.83%	5.72%	1.13%	8.86%	8.81%	9.05%	9.15%
CERS HAZ	2,414,117	18.94%	5.80%	6.00%	9.38%	9.23%	5.86%	5.71%	1.34%	8.87%	8.81%	9.06%	9.15%
SPRS	279,560	2.19%	5.71%	6.08%	8.58%	8.69%	5.14%	5.47%	0.79%	8.51%	8.68%	8.96%	9.11%
Total	**$12,745,732**	**100.00%**	**5.83%**	**6.00%**	**9.24%**	**9.02%**	**5.76%**	**5.85%**		**8.82%**	**8.84%**	**9.04%**	**9.15%**

Net Returns By Plan: Insurance Fund As of June 30, 2019 ($ in Thousands)

Plan	Market Value	% of Total	1 Year		3 Years		5 Years		10 Years		Inception	
			KRS	Index	KRS	Index	KRS	Index	KRS	Index	KRS	Index
KERS	$925,974	17.01%	4.95%	5.93%	8.84%	9.37%	5.41%	5.85%	8.65%	9.40%	7.31%	7.73%
KERS HAZ	526,483	9.68%	5.61%	5.93%	9.37%	9.38%	5.85%	5.91%	8.95%	9.44%	7.41%	7.74%
CERS	2,471,971	45.41%	5.73%	5.91%	9.49%	9.34%	5.99%	5.93%	9.01%	9.45%	7.43%	7.74%
CERS HAZ	1,320,169	24.25%	5.81%	5.91%	9.56%	9.34%	6.06%	5.93%	9.05%	9.45%	7.44%	7.74%
SPRS	198,903	3.65%	5.74%	5.91%	9.54%	9.33%	6.02%	5.94%	9.03%	9.45%	7.43%	7.74%
Total	**$5,443,500**	**100.00%**	**5.67%**	**5.89%**	**9.43%**	**9.27%**	**5.92%**	**6.14%**	**8.97%**	**9.52%**	**7.41%**	**7.76%**

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, 2019

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%
Bloomberg Barclay's US High Yield	High Yield/Specialty Credit	7.00%	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%
HFRI Diversified FOF	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	10.00%	10.00%	10.00%
Russell 3000 Quarter Lagged + 300 bps	Private Equity > 5 years	10.00%	10.00%	10.00%
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 shows theoretical annual returns for the Pension Funds since June 30, 2010, during which period returns ranged from a minimum of -0.52% in 2016 to a maximum of 18.96% in 2011. As previously noted, 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. The chart below displays the differences among the annualized total net return of 5.83%, the annualized benchmark return of 6.00%, and the actuarially assumed rates of return of 5.25% and 6.25%. The chart below indicates that with a beginning balance of $1,000 in fiscal year 2011, the total Pension Fund would have earned $2,018 at 5.83% compared to $1,846 at 5.25% and $1,895 at 6.25%. The annualized benchmark would have returned $2,070 at 6.00%.

Pension Fund Growth
As of June 30 (in Whole $)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total Fund Return	15.81%	18.96%	0.14%	10.82%	15.55%	2.01%	-0.52%	13.47%	8.57%	5.83%
Performance BM	13.16%	20.34%	0.90%	11.21%	14.91%	3.13%	-0.19%	13.28%	7.91%	6.00%
Actuarial Assumed ROR CERS, CERS-H, and KERS-H	7.75%	7.75%	7.75%	7.75%	7.75%	7.75%	7.50%	7.50%	6.25%	6.25%
Actuarial Assumed ROR KERS and SPRS	7.75%	7.75%	7.75%	7.75%	7.75%	7.75%	7.50%	6.75%	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
Performance Benchmark	1,000	1,203	1,214	1,350	1,552	1,600	1,597	1,809	1,952	2,070
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
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

The chart below shows theoretical annual returns for the Insurance Fund since June 30, 2010, where returns range from a minimum of -1.71% in 2012 to a maximum of 23.47% in 2011. As of June 30, 2019, the Insurance Fund portfolios earned 5.67% versus the annualized benchmark return of 5.89%. The chart below indicates that with a beginning balance of $1,000 in fiscal year 2011, the Insurance Fund would have earned $2,047compared to the actuarially assumed rate of return of $1,895 and the annualized benchmark return of $2,208 over the 10-year period.

Insurance Fund
As of June 30 (in Whole $)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total Fund Return	15.46%	23.47%	-1.71%	10.11%	14.89%	1.86%	-0.09%	13.72%	9.05%	5.67%
Performance BM	13.07%	26.93%	0.58%	11.05%	15.03%	3.79%	0.03%	13.55%	8.48%	5.89%
Actuarial Assumed ROR	7.75%	7.75%	7.75%	7.75%	7.75%	7.75%	7.50%	7.50%	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
Performance Benchmark	1,000	1,269	1,277	1,418	1,631	1,693	1,693	1,923	2,086	2,208
Actuarial Assumed ROR	$1,000	$1,078	$1,161	$1,251	$1,348	$1,452	$1,561	$1,678	$1,783	$1,895

U.S. Equity

For the fiscal year ended June 30, 2019, the KRS Pension Funds' U.S. Equity portfolio posted a return of 7.72% versus the benchmark return of 8.98%. The KRS Insurance U.S. Equity portfolio posted a return of 7.74% compared to the benchmark return of 8.98%. The portfolios' underperformance can be primarily attributed having a value tilt, as large cap stocks significantly outperformed as did stocks with a growth. Since inception, performance has remained sound. The Pension Fund's Public Equity portfolio has generated an annualized return of 11.26% throughout its duration against the benchmark's annualized return of 11.32%. The Insurance Fund has returned 9.67% since inception, while the benchmark returned 9.59%.

Return on U.S. Equity
As of June 30, 2019

	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	Apr-84	7.72%	13.33%	9.38%	13.99%	11.26%
Performance Benchmark		8.98%	14.02%	10.19%	14.70%	11.32%
KRS Insurance	Jul-92	7.74%	13.34%	9.62%	13.98%	9.67%
Performance Benchmark		8.98%	14.02%	10.19%	14.60%	9.59%

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

2019 Top 10 U.S. Equity Holdings
Pension Funds
As of June 30, 2019 ($ in Thousands)

Company	Shares	Market Value
MICROSOFT CORP	408,444	$54,175
APPLE INC	244,453	48,382
AMAZON.COM INC	23,390	44,292
BERKSHIRE HATHAWAY INC	150,995	32,188
FACEBOOK INC	144,110	27,813
JPMORGAN CHASE & CO	206,770	23,117
VISA INC	120,030	20,831
ALPHABET INC-CL A	18,132	19,633
ALPHABET INC-CL C	17,974	19,428
COMCAST CORP	445,652	18,842
Total	**1,779,950**	**$308,701**

2019 Top 10 U.S. Equity Holdings
Insurance Fund
As of June 30, 2019 ($ in Thousands)

Company	Shares	Market Value
MICROSOFT CORP	182,740	$24,480
APPLE INC	109,335	21,639
AMAZON.COM INC	10,462	19,811
BERKSHIRE HATHAWAY INC	67,742	14,440
FACEBOOK INC	64,437	12,436
JPMORGAN CHASE & CO	92,618	10,355
VISA INC	53,624	9,306
ALPHABET INC-CL A	8,105	8,776
ALPHABET INC-CL C	8,041	8,692
COMCAST CORP	199,821	8,448
Total	**796,925**	**$138,383**

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, 2019, the KRS Pension Funds' Non-U.S. Equity portfolio returned 1.10%, compared to its benchmark of 0.26%. The KRS Insurance Non-U.S. Equity portfolio returned 0.94% versus its benchmark of 0.26% during the same period. Geo-political issues along with global growth concerns have weighed on international markets for some time. The relative outperformance of the KRS portfolios can be attributed to good stock selection within the active mandates. Since inception, the Insurance Non-U.S. Equity portfolios have outperformed the benchmark; however, the Pension portfolios have trailed the benchmark by 0.21% .

Return on Non-U.S. Equity
As of June 30, 2019

	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	Jul-00	1.10%	10.45%	3.44%	7.04%	3.15%
Performance Benchmark		0.26%	9.36%	2.36%	6.94%	3.36%
KRS Insurance	Apr-00	0.94%	10.37%	3.32%	6.71%	3.13%
Performance Benchmark		0.26%	9.36%	2.36%	6.76%	2.56%

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

2019 Top 10 Non-U.S. Equity Holdings
Pension Funds
As of June 30, 2019 ($ in Thousands)

Company	Shares	Market Value
MFB NT COLLECTIVE NT	3,433,932	$55,029
DIAGO PLC	543,449	19,345
AIA GROUP LTD	2,179,200	18,092
NOVARTIS AG	211,600	18,039
CSL LTD	128,670	16,772
MFB NT COLLECTIVE EMERGING	581,596	14,565
KBC GROUP NV	212,720	13,783
SYMRISE AG	183,280	13,514
HDFC BANK LTD	129,650	13,430
UMICORE SA	320,030	12,753
Total	**7,924,127**	**$195,322**

2019 Top 10 Non-U.S. Equity Holdings
Insurance Fund
As of June 30, 2019 ($ in Thousands)

Company	Shares	Market Value
DIAGO PLC	238,443	$8,488
AIA GROUP LTD	955,400	7,932
NOVARTIS AG	92,863	7,917
CSL LTD	56,630	7,382
KBC GROUP NV	93,400	6,052
HDFC BANK LTD	57,300	5,936
SYMRISE AG	79,590	5,868
UMICORE SA	138,630	5,524
LONDOND STOCK EXCHANGE	99,470	5,146
PAN PACIFIC INTERNATIONAL	80,000	4,973
Total	**1,891,726**	**$65,218**

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, 2019, the KRS Pension Funds' Fixed Income portfolio returned 7.09% versus the Bloomberg Barclays U.S. Aggregate Bond Index return of 7.87%. The KRS Insurance Fixed Income portfolio posted a 7.07% rate of return, which underperformed the Bloomberg Barclays U.S. Aggregate Bond Index by 0.80%. Over the five-year period, the Pension Funds outperformed the benchmark while the Insurance Fund lagged behind the benchmark by 0.35%.

Return on Core Fixed Income
As of June 30, 2019

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	7/1/2013	7.09%	2.34%	2.97%	N/A	3.30%
Performance Benchmark	7/1/2013	7.87%	2.31%	2.95%	N/A	3.18%
KRS Insurance	7/1/2013	7.07%	2.33%	2.60%	N/A	2.96%
Performance Benchmark	7/1/2013	7.87%	2.31%	2.95%	N/A	3.18%

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

2019 Top 10 Core Fixed Income Holdings
Pension Funds
As of June 30, 2019 ($ in Thousands)

Issuer	Par Value/ Shares	Base Market Value
BNYM-M DB SL INT CREDIT BIF	1,332,807	$ 528,175
U S TREASURY NOTE	385,019,000	392,254
COMMIT TO PUR FNMA SF MTG	41,435,000	42,480
U S TREASURY BOND	33,460,000	37,946
EB TEMP INV FD	33,461,202	33,461
COMMIT TO PUR GNMA II JUMBOS	20,165,000	20,720
BANK OF AMERICAN CORP	14,382,000	14,846
CAPITAL ONE MULTI-ASSET A4 A4	10,942,000	10,927
CITGROUP INC	9,783,000	10,143
FNMA POOL #0CA2054	8,921,181	9,378
Total	**558,901,190**	**$1,100,330**

Top 10 Core Fixed Income Holdings
Insurance Fund
As of June 30, 2019 ($ in Thousands)

Issuer	Par Value/ Shares	Base Market Value
BNYM-M DB SL INT CREDIT BIF	432,954	$ 171,574
U S TREASURY NOTE	146,527,000	149,144
COMMIT TO PUR FNMA SF MTG	15,070,000	15,450
U S TREASURY BOND	13,440,000	15,334
EB TEMP INV FD	10,594,040	10,594
COMMIT TO PUR GNMA II JUMBOS	7,335,000	7,537
BANK OF AMERICAN CORP	5,481,000	5,658
FNMA POOL #0BJ2545	5,252,468	5,301
U S TREASURY BILL	4,545,000	4,526
FNMA POOL #0CA2054	4,065,868	4,274
Total	**212,743,330**	**$ 389,392**

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, 2019, the KRS Pension Funds' Specialty Credit portfolio returned 6.81% versus the benchmark return of 5.72%. The KRS Insurance Specialty Credit portfolio posted a 6.69% rate of return, versus the benchmark return of 5.72%.

Return on Specialty Credit
As of June 30, 2019

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	7/1/2017	6.81%	N/A	N/A	N/A	6.35%
Performance Benchmark	7/1/2017	5.72%	N/A	N/A	N/A	4.60%
KRS Insurance	7/1/2017	6.69%	N/A	N/A	N/A	6.02%
Performance Benchmark	7/1/2017	5.72%	N/A	N/A	N/A	4.60%

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

2019 Top 10 Specailty Credit
Pension Funds
As of June 30, 2019 ($ in Thousands)

Issuer	Par Value/ Shares	Base Market Value
INDONESIA TREASURY BOND		$13,873
CSC HOLDINGS LLC 144A	12,258	12,139
HCA INC	10,937	10,903
IRELAND GOVERNMENT BONDS REGS	7,100	9,471
BRAZIL NOTAS DO TESOURO NACION	34,695	9,370
MEXICO CITY AIRPORT TRUST	10,035	8,847
INTERNATIONAL BANK FOR RECONST	3,289	7,297
NORWAY GOVERNMENT BOND	57,580	6,885
CSC HOLDINGS LLC	6,901	6,573
MALAYSIA GOVERNMENT BOND	27,545	6,561
Total	**$208,687,340**	**$91,920**

Top 10 Specailty Credit
Insurance Funds
As of June 30, 2019 ($ in Thousands)

Issuer	Par Value/ Shares	Base Market Value
INDONESIA TREASURY BOND	$85,542	$5,651
IRELAND GOVERNMENT BONDS REGS	3,350	4,469
BRAZIL NOTAS DO TESOURO NACION	14,995	3,692
MEXICO CITY AIRPORT TRUST	4,185	3,456
HCA INC	3,447	3,191
CSC HOLDINGS LLC	3,206	3,124
INTERNATIONAL BANK FOR RECONST	1,295,463	2,985
NORWAY GOVERNMENT BOND	24,945	2,923
COMM 2014-CCRE20 M CR20 E 144A	3,735	2,692
MALAYSIA GOVERNMENT BOND	11,313	2,583
Total	**$1,450,181**	**$34,766**

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, 2019, the KRS Pension Funds' Opportunistic portfolio returned 10.62% versus the S&P LSTA Leveraged Loan Index return of 3.97%. The KRS Insurance Opportunistic portfolio posted a 10.62% rate of return, which outperformed the index by 3.97%.

Return on Opportunistic						
As of June 30, 2019						
Portfolio	**Inception Date**	**Fiscal Year**	**3-Year**	**5-Year**	**10-Year**	**Inception**
KRS Pension	7/1/2018	10.62%	N/A	N/A	N/A	10.62%
Performance Benchmark	6/1/2018	3.97%	N/A	N/A	N/A	3.77%
KRS Insurance	7/1/2018	10.62%	N/A	N/A	N/A	10.62%
Performance Benchmark	6/1/2018	3.97%	N/A	N/A	N/A	3.77%
Note: Pension and Insurance benchmark is S&P LSTA Leveraged Loan Index.						

Private Equity

For the fiscal year ended June 30, 2019, the KRS Pension Funds' Private Equity portfolio posted a return of 11.50%, while the Insurance Private Equity portfolio returned 10.88%. 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, 2019, the Pension and Insurance Funds' Private Equity portfolios returned 10.73% and 13.39%, respectively. Over the past 10 years, the Pension Fund trailed its benchmark by 1.46% but still produced a 13.91% return. The Insurance Fund's 15.61% return was below its benchmark of 16.82%. Since inception in 2002, the Pension portfolio's 11.19% return is above its benchmark by 0.68%, while the Insurance portfolio's 10.29% return has slightly lagged its benchmark return of 10.74%.

Return on Private Equity						
As of June 30, 2019						
Portfolio	**Inception Date**	**Fiscal Year**	**3-Year**	**5-Year**	**10-Year**	**Inception**
KRS Pension	Oct-90	11.50%	12.92%	10.73%	13.91%	11.19%
Performance Benchmark		11.50%	12.92%	10.73%	15.37%	10.51%
KRS Insurance	Jul-01	10.88%	13.95%	13.39%	15.61%	10.29%
Performance Benchmark		10.88%	13.95%	13.39%	16.82%	10.74%
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, 2019, the KRS Pension Funds' Real Estate portfolio saw returns of 8.81%. exceeding its benchmark return of 6.55%. The KRS Insurance Real Estate portfolio also surpassed the benchmark, returning 8.97% compared to 6.55%. For the five years ending June 30, 2019, both the Pension and Insurance Fund portfolios outperformed the benchmarks return by .20% and .43% respectively.

Return on Real Estate						
As of June 30, 2019						
Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	Jul-84	8.81%	9.96%	9.38%	9.24%	6.18%
Performance Benchmark		6.55%	7.01%	9.18%	7.73%	6.46%
KRS Insurance	May-09	8.97%	10.18%	9.61%	9.36%	9.20%
Performance Benchmark		6.55%	7.01%	9.18%	7.73%	6.03%
Note: Pension and Insurance benchmark is NCREIF ODCE						

Real Return

For the fiscal year ended June 30, 2019, the KRS Pension Funds' Real Return portfolio returned 5.02% versus its benchmark return of 5.02%. The KRS Insurance Real Return portfolio posted a return of 4.91%, while the benchmark returned 4.91% for the period. Over the past three years, the Pension and Insurance Real Return portfolios have outperformed their respective benchmarks by 1.70% and 1.38%.

Return on Real Return						
As of June 30, 2019						
Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	Jul-11	5.02%	4.81%	2.25%		3.87%
Performance Benchmark		5.02%	3.11%	1.60%		2.83%
KRS Insurance	Jul-11	4.91%	4.44%	2.14%		3.61%
Performance Benchmark		4.91%	3.06%	1.70%		2.88%
Note: Pension and Insurance benchmark is Custom - Allocation Specific.						

Absolute Return

For the fiscal year ended June 30, 2019, the KRS Pension and Insurance Funds' Absolute Return portfolios returned -0.54% and -0.48%, respectively, versus a benchmark return of 2.10%. 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 around 0.60%. The portfolio was originally comprised of three fund-of-funds, with several underlying funds eventually becoming direct investments by KRS. As of June 30, 2019, the portfolios consist of only direct relationships.

Return on Absolute Return
As of June 30, 2019 ($ in Thousands)

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	Apr-10	-0.54%	3.42%	1.81%		3.63%
Performance Benchmark		2.10%	4.21%	2.55%		2.97%
KRS Insurance	Apr-10	-0.48%	3.42%	1.84%		3.58%
Performance Benchmark		2.10%	4.21%	2.55%		2.97%

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

2019 Top 10 Alternative Assets
Pension Funds
As of June 30, 2019 ($ in Thousands)

Issuer	Sub Asset Class	Market Value
PIMCO ALL ASSET	REAL RET	$345,838
ARROWMARK FUND I	OPP	117,663
DANIEL BOONE LLC	ABS RET	96,840
STOCKBRIDGE FUND LP	REAL EST	88,014
PROLOGIS	REAL EST	82,979
HARRISON STREET	REAL EST	81,454
HORSLEY BRIDGE V	PVT EQ	74,147
BAY HILLS EMERGING PARTNERS II	PVT EQ	65,737
BAY HILLS EMERGING PARTNERS III	PVT EQ	58,151
DAG VENTURES IV LP	PVT EQ	57,001
Total		**$1,067,824**

2019 Top 10 Alternative Assets
Insurance Fund
As of June 30, 2019 ($ in Thousands)

Issuer	Sub Asset Class	Market Value
PIMCO ALL ASSET	REAL RET	$140,976
ARROWMARK FUND I	OPP	59,915
SECONDARY OPP FUND III LP	PVT EQ	55,494
BAY HILLS EMERGING PARTNERS III	PVT EQ	49,742
KAYNE ANDERSON ENER FD VII LPS	PVT EQ	42,217
STOCKBRIDGE FUND LP	REAL EST	40,407
DANIEL BOONE LLC	ABS RET	40,226
HARRISON STREET	REAL RET	36,981
BLACKSTONE VI	PVT EQ	35,236
PROLOGIS	REAL EST	32,840
Total		**$534,034**

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, 2019, the KRS Pension Funds' Cash portfolio returned 2.37%, outpacing its benchmark, the FTSE Treasury Bill - 3 Month by 0.07%. The KRS Insurance Cash portfolio also outperformed the index, posting a return of 2.32% 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, 2019, the Pension Funds portfolio have outperformed their custom benchmark by 0.33% on an annualized basis. Since its inception, the portfolio has exceeded its benchmark by 0.45% per year. The Insurance portfolio has also done very well, exceeding its benchmark return over the five-year and since inception periods by 0.16% and 0.13%, respectively.

Return on Cash
As of June 30, 2019

Portfolio	Inception Date	Fiscal Year	3-Year	5-Year	10-Year	Inception
KRS Pension	Jan-88	2.37%	1.75%	1.17%	0.88%	3.56%
Performance Benchmark		2.30%	1.36%	0.84%	0.46%	3.11%
KRS Insurance	Jul-92	2.32%	1.50%	1.00%	0.64%	2.63%
Performance Benchmark		2.30%	1.36%	0.84%	0.46%	2.50%

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, 2019.

Investment Advisors & Assets Under Management
As of June 30, 2019 ($ in Thousands)

Advisor	Assets Under Management
American Century Investments	$505,870
AMERRA Capital Management	97,881
Arcano Capital	27,974
ARES Capital	33,862
Arrowmark	177,578
Baring Real Estate	53,852
Bay Hills Emerging Partners	259,880
Black Diamond Capital Management	57,848
BlackRock ACWI Ex-US	1,495,933
Blackstone Capital Partners	96,665
Boston Company	903
BNY IG Credit Unit	699,750
BNY Mellon Accruals	(548)
BSP Private Credit	82,584
BTG Pactual	34,815
Cash Accounts	709,783
Cerberus	130,539
CM Growth Capital Partners	8,229
Columbia Asset Management	450,890
Columbia Capital	4,252
Credit Suisse	11,724
Crestview Partners	82,463
CVC Capital Partners	40,423
DAG Ventures	124,148
DB Secondary Opportunities	73,992
DCM	13,054
DivcoWest	4,549
Essex Woodland	14,644
Franklin Templeton	364,882
Fundamental Partners	55,331
Gotham Neutral Strategies	18,272

Investment Advisors & Assets Under Management
As of June 30, 2019 ($ in Thousands)

Advisor	Assets Under Management
Governor's Lane	30,370
Green Equity Investors	146,614
Greenfield Acquisition Partners	31,850
GTCR Golder Rauner	154
H&F Spock	7,007
H/2 Credit Partners	116,480
Harrison Street	118,435
Harvest Partners	57,847
Hellman & Friedman	1,613
H.I.G Capital	51,812
Horsley Bridge International	82,705
Institutional Venture Partners	7,596
Internally Managed Accounts	1,355,003
Invesco	8
Kayne Anderson	85,220
KCP Capital	7,669
Keyhaven Capital Partners	30,178
Lazard Asset Management	663,312
Levine Leichtman	82,544
Liquidalts H20 Force	23,984
Loomis, Sayles & Company	785,979
Lord Abbett	784,211
LSV Asset Management	561,273
Lubert-Adler	72,097
Luxor Capital	2,221
Magnetar Capital	47,074
Manulife Financial	665,889
Marathon Bluegrass	486,141
Matlin Patterson	15,770
Merit Capital Partners	763
Mesa West	118,087
MHR Insitituional Advisors	1,500
Mill Road Capital	10,441
Myriad Opportunities	61,672
New Mountain Partners	80,134
NISA Investment Advisors	861,016
Non-US Transition	1,782
Northern Trust Global Investments	344,927
Nuveen Real Asset	309,069
Oak Hill Partners	16,694

Investment Advisors & Assets Under Management
As of June 30, 2019 ($ in Thousands)

Advisor	Assets Under Management
Oaktree Capital Management	161
Oberland Capital	5,221
Pacific Alternative Asset Management Company	209
Patron Capital	19,574
Perimeter Park	7,300
PIMCO	486,815
Pine River Capital	367
Prisma Capital	137,066
Prologis	115,819
River Road Asset Management	229,982
Riverside Capital	46,003
Rubenstein Capital	24,550
S&P 500	1,645,367
Shenkman Capital	357,531
SRS Partners	11,730
Stockbridge	129,298
Strategic Value Special Fund	16,767
Sun Capital Partners	299
Taurus Mining Finance	36,946
Technology Crossover Ventures	554
Tenaska Power	864
Tortoise Capital	199,034
Tricadia Select	4,918
Triton Fund	26,524
VantagePoint Capital Partners	10,849
Vista Equity Partners	98,454
Walton Street	36,714
Warburg Pincus	19,845
Waterfall Investment	290,394
Wayzata Investment Partners	11,602
Westfield Capital	220,055
White Oak	139,261
Total	**$18,189,236**

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

External Investment Expense - Pension Funds Asset Class/Type Breakdown
As of June 30, 2019 ($ 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	$-	$11	$-	$-	$1	$-	$-	$-	$4	$-	$16
Securities Lending Fee Rebate	3,305	339	1,074	674	-	-	-	-	2,364	-	7,756
Investment Advisory Fees	2,050	6,541	1,794	4,712	6,627	4,580	2,457	-	11,171	-	39,932
Performance/ Incentive Fees	-	-	-	1,205	15,674	9,886	617	828	5,938	-	34,148
Securities Lending Fees	111	71	33	78	-	-	-	-	71	-	364
Taxes and Insurance	-	-	-	(12)	(7)	-	-	-	-	-	(19)
Administration	188	-	-	-	-	-	-	-	-	1,327	1,515
Miscellaneous	-	15	-	1,321	4,530	2,561	-	80	338	-	8,845
Commission on Future Contracts	2	-	18	1	-	-	-	-	9	-	30
Consultant Fees	-	-	-	-	-	-	-	-	-	583	583
Custodial Fees	-	-	-	-	-	-	-	-	-	1,229	1,229
	$5,656	**$6,977**	**$2,919**	**$7,979**	**$26,825**	**$17,027**	**$3,074**	**$908**	**$19,895**	**$3,139**	**$94,399**

External Investment Expense - Insurance Fund Asset Class/Type Breakdown
As of June 30, 2019 ($ 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	$-	$4	$-	$-	$-	$-	$-	$-	$2	$-	$ 6
Securities Lending Fee Rebate	1,345	157	438	139	-	-	-	-	783	-	2,862
Investment Advisory Fees	851	2,864	717	2,103	4,165	2,079	997	-	4,552	-	18,327
Performance/ Incentive Fees	-	-	-	536	8,549	3,978	259	421	2,430	-	16,173
Securities Lending Fees	47	33	13	42	-	-	-	-	22	-	157
Administration	83	-	-	-	-	-	-	-	-	445	528
Miscellaneous	-	7	-	513	2,634	869	-	41	172	-	4,236
Taxes and Insurance	-	-	-	(4)	9	-	-	-	-	-	5
Commission on Future Contracts	1	-	7	-	-	-	-	-	3	-	11
Consultant Fees	-	-	-	-	-	-	-	-	-	245	245
Custodial Fees	-	-	-	-	-	-	-	-	-	832	832
	$2,327	**$3,065**	**$1,175**	**$3,329**	**$15,357**	**$6,926**	**$1,256**	**$462**	**$7,964**	**$1,522**	**$43,383**

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
As of June 30, 2019 ($ in Thousands)

Expense	Fees Paid	Share of Assets
Portfolio Management		
Pension Funds	$84,467	61.31%
Insurance Fund	39,287	28.51%
Securities Lending		
Pension Funds	8,120	5.89%
Insurance Fund	3,019	2.19%
Custody		
Pension Funds	1,229	0.89%
Insurance Fund	832	0.61%
Consultant		
Pension Funds	583	0.42%
Insurance Fund	245	0.18%
Total Pension Funds	**94,399**	**68.51%**
Total Insurance Fund	**43,383**	**31.49%**
Total Expenses	**$137,782**	**100.00%**

Schedule of Commissions Paid (Whole $)
As of June 30, 2019

Assets	Total Shares	Commissions Paid	Price per Share
U.S. Equities	43,941,143	$679,574	0.02
Non U.S. Equities	137,484,103	922,898	0.01
Total	**181,425,246**	**$1,602,472**	**0.01**

Fair Values By Plan - Pension
As of June 30, 2019 ($ in Thousands)

	KERS Non-Hazardous		KERS-Hazardous		CERS Non-Hazardous		CERS-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								
Public Equity	**$707,585**	**32.48%**	**$266,053**	**38.85%**	**$2,861,185**	**39.80%**	**$955,668**	**39.59%**
US Equity	340,961	15.65%	128,202	18.72%	1,358,977	18.90%	453,577	18.79%
Non-US Equity	366,624	16.83%	137,851	20.13%	1,502,208	20.90%	502,091	20.80%
Core Fixed Income	483,245	22.18%	113,606	16.59%	1,222,213	17.00%	401,988	16.65%
Specialty Credit	300,025	13.77%	110,143	16.08%	1,168,735	16.26%	386,806	16.02%
Opportunistic	19,663	0.90%	6,096	0.89%	67,245	0.94%	22,230	0.92%
Real Return	167,958	7.71%	57,800	8.44%	639,350	8.89%	217,833	9.02%
Private Equity	201,313	9.24%	61,641	9.00%	670,062	9.32%	229,098	9.49%
Real Estate	78,819	3.62%	25,624	3.74%	270,501	3.76%	86,768	3.59%
Absolute Return	40,004	1.84%	10,437	1.52%	124,488	1.73%	39,433	1.63%
Cash	179,871	8.26%	33,456	4.89%	164,938	2.30%	74,294	3.09%
TOTAL PORTFOLIO	**$2,178,483**		**$684,856**		**$7,188,717**		**$2,414,118**	

Insurance

	KERS Non-Hazardous		KERS-Hazardous		CERS Non-Hazardous		CERS-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								
Public Equity	**$384,227**	**41.50%**	**$209,833**	**39.86%**	**$964,333**	**39.01%**	**$517,999**	**39.24%**
US Equity	184,509	19.93%	99,069	18.82%	465,619	18.84%	249,222	18.88%
Non-US Equity	199,718	21.57%	110,764	21.04%	498,714	20.17%	268,777	20.36%
Core Fixed Income	137,562	14.86%	85,652	16.27%	384,235	15.54%	205,862	15.59%
Specialty Credit	155,263	16.77%	83,940	15.94%	365,577	14.79%	194,136	14.71%
Opportunistic	9,708	1.05%	6,035	1.15%	27,152	1.10%	14,792	1.12%
Real Return	75,871	8.19%	44,986	8.54%	216,246	8.75%	112,522	8.52%
Private Equity	47,822	5.16%	52,774	10.02%	283,383	11.46%	159,729	12.10%
Real Estate	28,406	3.07%	20,821	3.95%	90,370	3.66%	49,497	3.75%
Absolute Return	14,126	1.53%	9,380	1.78%	40,100	1.62%	22,467	1.70%
Cash	72,991	7.87%	13,062	2.49%	100,574	4.07%	43,165	3.27%
TOTAL PORTFOLIO	**$925,976**		**$526,483**		**$2,471,970**		**$1,320,169**	

Fair Values By Plan - Pension
As of June 30, 2019 ($ in Thousands)

	SPRS		Total	
	Fair Value (FV)	% of Total FV	Fair Value (FV)	% of Total FV
Assets				
Public Equity	**$92,304**	**33.00%**	**$4,882,795**	**38.31%**
US Equity	43,876	15.68%	2,325,593	18.25%
Non-US Equity	48,428	17.32%	2,557,202	20.06%
Core Fixed Income	65,859	23.56%	2,286,911	17.94%
Specialty Credit	43,500	15.56%	2,009,209	15.76%
Opportunistic	2,429	0.87%	117,663	0.92%
Real Return	22,973	8.22%	1,105,914	8.68%
Private Equity	19,169	6.86%	1,181,283	9.27%
Real Estate	10,615	3.80%	472,327	3.71%
Absolute Return	4,209	1.51%	218,571	1.71%
Cash	18,502	6.62%	471,061	3.70%
TOTAL PORTFOLIO	**$279,560**		**$12,745,734**	

Insurance

	SPRS INS		Total	
	Fair Value (FV)	% of Total FV	Fair Value (FV)	% of Total FV
Assets				
Public Equity	**$76,666**	**38.54%**	**$2,153,058**	**39.55%**
US Equity	37,273	18.74%	1,035,692	19.02%
Non-US Equity	39,393	19.80%	1,117,366	20.53%
Core Fixed Income	30,654	15.41%	843,965	15.50%
Specialty Credit	29,748	14.96%	828,664	15.22%
Opportunistic	2,229	1.12%	59,916	1.10%
Real Return	15,620	7.85%	465,245	8.55%
Private Equity	24,133	12.13%	567,841	10.43%
Real Estate	7,950	4.00%	197,044	3.62%
Absolute Return	3,518	1.77%	89,591	1.65%
Cash	8,386	4.22%	238,178	4.38%
TOTAL PORTFOLIO	**$198,904**		**$5,443,502**	

ACTUARIAL

TABLE OF CONTENTS

Certification of Actuarial Results

Re: Certification for the Actuarial Results as of June 30, 2019.

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, 2019) was used by the Board of Trustees to certify the KERS and SPRS employer contribution rates for the biennial period beginning July 1, 2020, and ending June 30, 2022. The Board of Trustees uses this actuarial valuation (as of June 30, 2019) to certify the employer contribution rates for CERS for the fiscal year beginning July 1, 2020, and ending June 30, 2021.

FINANCING OBJECTIVES AND FUNDING POLICY

For each retirement system, KRS administers both a pension and insurance fund to provide for monthly retirement allowances and retiree health insurance benefits respectively. The total employer contribution rate is comprised of a contribution to each respective fund.

The contribution rate for each fund consists of a normal cost rate (which pays the current year's cost) and an amortization rate to finance the existing unfunded actuarial accrued liability (UAAL). In accordance with state statute, the amortization period is a closed 30-year funding period beginning with the June 30, 2013, actuarial valuation, which results in the use of a closed 24-year funding period in the calculation of the contribution rates for the June 30, 2019, actuarial valuation. 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 adjust the calculated rates before certifying them, in order to reflect this 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, 2019, the funded ratios for the pension and health insurance funds are as follows:

Funding Level
As of June 30

	2019		2018		2017		2016	
System	Pension Fund	Insurance Fund	Pension Fund	Insurance Fund	Pension Fund	Insurance Fund	Pension Fund	Insurance Fund
KERS Non-Hazardous	13.4%	36.3%	12.9%	36.4%	13.6%	30.7%	16.0%	30.3%
KERS Hazardous	54.8%	123.1%	55.5%	130.0%	54.1%	117.6%	59.7%	125.3%
CERS Non-Hazardous	49.1%	70.7%	52.7%	76.7%	52.8%	66.4%	59.0%	69.6%
CERS Hazardous	45.3%	75.8%	48.4%	74.6%	48.1%	66.9%	57.7%	72.9%
SPRS	27.0%	71.3%	27.1%	71.6%	27.0%	65.2%	30.3%	67.2%

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 use in the June 30, 2019 actuarial valuation. The principle updated assumptions include:

- Change in the rates of salary increases for individuals.
- New post-retirement mortality assumption based on KRS retiree experience and the inclusion of an explicit assumption for future improvement in mortality.
- Updated mortality assumptions for members during employment and for disabled retirees.
- Change in the rates of retirements.
- Change in the rates that an active member is assumed to become an inactive member in the System prior to retirement.
- Updated rates of disability incidence.

The experience study included a review of several economic assumptions which included the rate of inflation, the investment return assumption, and the payroll growth assumption. However, those assumptions remain unchanged from the prior actuarial valuation.

The assumed increase in future health care costs, or trend assumption, is reviewed on an annual basis and was updated (i.e. increased) since the June 30, 2018 valuation to better reflect more current expectations relating to anticipated future increases in the medical costs for post-age 65 retirees.

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.

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 July 30, 2019, by the KRS staff. The staff also supplied asset information as of June 30, 2019. 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 the Systems.

CERTIFICATION

We certify that the information presented herein is accurate and fairly portrays the actuarial position of the Retirement Systems as of June 30, 2019. 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.

Joseph P. Newton, FSA, MAAA, EA
Senior Consultant

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

Janie Shaw, ASA, MAAA
Consultant

Summary of Actuarial Assumptions

The results of the actuarial valuation are based on 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, 2019, valuation are based on the most recent actuarial experience study for the five-year period ended June 30, 2018, submitted, and adopted by the Board on April 18, 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, 2017, valuation, the amortization of any unfunded actuarial accrued liability is established using a level percent of pay amortization method and a 0.00% payroll growth assumption for the KERS and SPRS Retirement Systems and a 2.00% payroll growth assumption for the CERS Retirement System. The amortization period was reestablished as a closed 30 year period beginning with the June 30, 2013, actuarial valuation. The amortization period will decrease by one each year in the future and there are 24 years remaining as of June 30, 2019.

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, 2017, valuation, the amortization of any unfunded actuarial accrued liability is established using a level percent of pay amortization method and a 0.00% payroll growth assumption for the KERS and SPRS Retirement Systems and a 2.00% payroll growth assumption for the CERS Retirement System. The amortization period was reestablished as a closed 30 year period beginning with the June 30, 2013, actuarial valuation. The amortization period will decrease by one each year in the future and there are 24 years remaining as of June 30, 2019.

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.

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

7. Medical Inflation Rate Assumption:

The costs for retiree medical premiums are assumed to increase according to the assumptions provided in Table 2. This assumption was adopted in 2019.

Table 2: Medical Inflation Rate Assumption (See footnotes 1 and 2)

January (1)	Non-Medicare Plans	Medicare Plans	Dollar Contribution (2)
2021	6.25%	5.50%	1.50%
2022	6.25%	5.40%	1.50%
2023	6.25%	5.30%	1.50%
2024	6.00%	5.20%	1.50%
2025	5.80%	5.10%	1.50%
2026	5.60%	5.00%	1.50%
2027	5.40%	4.90%	1.50%
2028	5.20%	4.80%	1.50%
2029	5.00%	4.70%	1.50%
2030	4.80%	4.60%	1.50%
2031	4.60%	4.50%	1.50%
2032	4.40%	4.40%	1.50%
2033	4.20%	4.30%	1.50%
2034	4.05%	4.20%	1.50%
2035+	4.05%	4.05%	1.50%

(1) All increases are assumed to occur on January 1. The 2020 premiums were known at the time of the valuation and were incorporated into the liability measurement.

(2) Applies to members participating on or after July 1, 2003.

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

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

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

Table 3: Retirement Rate Assumptions (See footnotes 1 - 7)

	Non-Hazardous								Hazardous										
	KERS Normal Retirement		KERS Early Retirement(1)		CERS Normal Retirement		CERS Early Retirement(4)			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)	CERS Members Participating before 9/1/2008(5)	CERS Members Participating between 9/1/208 and 1/1/2014(3)	CERS Members Participating after 1/1/2014(3)	SPRS Members Participating before 9/1/2008(6)	SPRS Members Participating between 9/1/2008 and 1/1/2014(7)	SPRS Members participating after 1/1/2014(7)
Age	Male	Female	Male	Female	Male	Female	Male	Female	Service	Age 55-61	Age 62+								
Under 45	20.00%	33.00%			35.00%	27.00%			5	10.00%	35.00%			17.00%					
45	21.00%	33.00%			35.00%	27.00%			6	10.00%	35.00%			17.00%					
46	22.00%	33.00%			35.00%	27.00%			7	10.00%	35.00%			17.00%					
47	23.00%	33.00%			35.00%	27.00%			8	10.00%	35.00%			17.00%					
48	24.00%	33.00%			35.00%	27.00%			9	10.00%	35.00%			17.00%					
49	25.00%	33.00%			35.00%	27.00%			10	10.00%	35.00%			17.00%					
50	26.00%	33.00%			30.00%	27.00%			11	10.00%	35.00%			17.00%					
51	27.00%	33.00%			30.00%	27.00%			12	10.00%	35.00%			17.00%					
52	28.00%	33.00%			30.00%	27.00%			13	10.00%	35.00%			17.00%					
53	29.00%	33.00%			30.00%	27.00%			14	10.00%	35.00%			17.00%					
54	30.00%	33.00%			30.00%	27.00%			15	10.00%	35.00%			17.00%					
55	30.00%	33.00%	5.00%	5.00%	30.00%	27.00%	4.00%	5.00%	16	10.00%	35.00%			17.00%					
56	30.00%	33.00%	5.00%	5.00%	30.00%	27.00%	4.00%	5.00%	17	10.00%	35.00%			17.00%					
57	30.00%	33.00%	5.00%	5.00%	30.00%	27.00%	4.00%	5.00%	18	10.00%	35.00%			17.00%					
58	30.00%	33.00%	5.00%	5.00%	30.00%	27.00%	4.00%	5.00%	19	10.00%	35.00%			17.00%					
59	30.00%	33.00%	5.00%	5.00%	30.00%	27.00%	4.00%	5.00%	20	50.00%	50.00%			30.00%			22.00%		
60	30.00%	33.00%	5.00%	8.00%	30.00%	27.00%	4.00%	8.00%	21	32.00%	32.00%			22.50%			22.00%		
61	30.00%	33.00%	8.00%	9.00%	30.00%	27.00%	4.00%	9.00%	22	32.00%	32.00%			18.00%			22.00%		
62	35.00%	35.00%	15.00%	20.00%	30.00%	40.00%	15.00%	20.00%	23	32.00%	32.00%			21.00%			28.00%		
63	30.00%	33.00%	15.00%	18.00%	30.00%	35.00%	15.00%	18.00%	24	32.00%	32.00%			24.00%			28.00%		
64	30.00%	33.00%	15.00%	16.00%	30.00%	30.00%	15.00%	16.00%	25	32.00%	32.00%	25.60%	16.00%	27.00%	21.60%	16.00%	28.00%	17.60%	16.00%
65	30.00%	33.00%			30.00%	30.00%			26	32.00%	32.00%	25.60%	16.00%	30.00%	24.00%	16.00%	28.00%	17.60%	16.00%
66	30.00%	33.00%			30.00%	27.00%			27	32.00%	32.00%	25.60%	16.00%	33.00%	26.40%	16.00%	28.00%	17.60%	16.00%
67	30.00%	33.00%			30.00%	27.00%			28	32.00%	32.00%	25.60%	16.00%	36.00%	28.80%	16.00%	44.00%	22.40%	16.00%
68	30.00%	33.00%			30.00%	27.00%			29	32.00%	32.00%	25.60%	16.00%	39.00%	31.20%	16.00%	44.00%	22.40%	16.00%
69	30.00%	33.00%			30.00%	27.00%			30+	32.00%	32.00%	25.60%	100.00%	39.00%	31.20%	100.00%	44.00%	22.40%	100.00%
70	30.00%	33.00%			30.00%	27.00%			31								58.00%	22.40%	
71	30.00%	33.00%			30.00%	27.00%			32								58.00%	22.40%	
72	30.00%	33.00%			30.00%	27.00%			33								58.00%	35.20%	
73	30.00%	33.00%			30.00%	27.00%			34								58.00%	35.20%	
74	30.00%	33.00%			30.00%	27.00%			35								58.00%	35.20%	
75									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 KERS retirement is12% for male members and 14% for female members with 25-26 years of service.

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

(3) The annual rate of KERS/CERS/SPRS retirement is 100% at age 60.

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

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

(6) The annual rate of SPRS retirement is 100% at age 55.

(7) The annual rate of CERS/SPRS retirement is 100% at age 60.

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.

The following table 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. The following table 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

	Active Member Mortality - Non Hazardous		Active Member Mortality - Hazardous		Retired Member Mortality		Disabled Member Mortality	
Age	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%

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. These assumptions were adopted in 2019.

Table 5: Selected Rates of Termination Prior to Retirement

Years of Service	KERS Non-Hazardous	KERS Hazardous	Years of Service	CERS Non-Hazardous	CERS Hazardous	Years of Service	SPRS
1	20.00%	25.00%	1	20.00%	20.00%	1	15.00%
2	16.45%	19.68%	2	15.58%	9.11%	2	4.82%
3	13.39%	15.12%	3	12.48%	7.24%	3	3.76%
4	11.61%	12.45%	4	10.66%	6.14%	4	3.15%
5	10.34%	10.56%	5	9.37%	5.37%	5	2.71%
6	9.35%	9.09%	6	8.37%	4.76%	6	2.37%
7	8.55%	7.89%	7	7.56%	4.27%	7	2.09%
8	7.87%	6.87%	8	6.87%	3.85%	8	1.86%
9	7.28%	5.99%	9	6.27%	3.49%	9	1.66%
10	6.76%	5.22%	10	5.74%	3.18%	10	1.48%
11	6.30%	4.53%	11	5.27%	2.89%	11	1.32%
12	5.88%	3.90%	12	4.84%	2.63%	12	1.17%
13	5.49%	3.33%	13	4.45%	2.40%	13	1.04%
14	5.14%	2.80%	14	4.09%	2.18%	14	0.92%
15	4.81%	2.31%	15	3.76%	1.98%	15	0.80%

13. Assumption Changes Since Prior Valuation: As a result of the 2018 experience study, the salary increase assumptions, retirement rate assumptions, mortality assumptions, withdrawal rates, and rates of disablement were updated for the 2019 actuarial valuation.

The medical trend assumption was also updated for the 2019 actuarial valuation as a result of an annual review of this particular assumption.

14. 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

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

Summary of Actuarial Valuation Results

	KERS Non-Hazardous	KERS Hazardous	CERS Non-Hazardous	CERS Hazardous	SPRS
Recommended Contribution Rate (Fiscal Year 2019-2020)					
Pension Fund Contribution	80.98%	38.71%	26.21%	46.31%	136.12%
Insurance Fund Contribution	12.03%	0.00%	5.78%	10.47%	20.85%
Recommended Employer Contribution (1)	93.01%	38.71%	31.99%	56.78%	156.97%

Funded Status as of Valuation Date As of June 30, 2019 (in Whole $)

	KERS Non-Hazardous	KERS Hazardous	CERS Non-Hazardous	CERS Hazardous	SPRS
Pension Fund					
Actuarial Liability	$16,466,427,022	$1,226,194,844	$14,356,113,761	$5,245,364,702	$1,045,317,668
Actuarial Value of Assets	2,206,279,835	671,647,194	7,049,526,916	2,375,106,268	282,162,043
Unfunded Liability on Actuarial Value of Assets	14,260,147,187	554,547,650	7,306,586,845	2,870,258,434	763,155,625
Funding Ratio on Actuarial Value of Assets	13.40%	54.77%	49.10%	45.28%	26.99%
Market Value of Assets	2,233,671,656	680,932,449	7,159,921,492	2,413,707,764	286,165,095
Unfunded Liability on Market Value of Assets	$14,232,755,366	$545,262,395	$7,196,192,269	$2,831,656,938	$759,152,573
Funding Ratio on Market Value of Assets	13.57%	55.53%	49.87%	46.02%	27.38%
Insurance Fund					
Actuarial Liability	$2,733,065,479	$426,704,754	$3,567,946,559	$1,732,879,194	$276,809,220
Actuarial Value of Assets	991,426,599	525,314,509	2,523,248,929	1,313,658,522	197,394,638
Unfunded Liability on Actuarial Value of Assets	1,741,638,880	(98,609,755)	1,044,697,630	419,220,672	79,414,582
Funding Ratio on Actuarial Value of Assets	36.28%	123.11%	70.72%	75.81%	71.31%
Market Value of Assets	995,088,799	534,052,943	2,569,511,355	1,340,713,985	201,205,711
Unfunded Liability on Market Value of Assets	$1,737,976,680	$(107,348,189)	$998,435,204	$392,165,209	$75,603,509
Funding Ratio on Market Value of Assets	36.41%	125.16%	72.02%	77.37%	72.69%
Member Data (See Footnotes)					
Number of Active Members	33,696	3,705	81,506	9,474	883
Total Annual Payroll (Active Members)(1)	$1,437,647,279	$150,445,806	$2,521,860,154	$559,352,588	$47,752,039
Average Annual Pay (Active Members)(2)	$42,665	$40,606	$30,941	$59,041	$54,079
Number of Retired Members & Beneficiaries	47,410	4,537	64,539	10,023	1,647
Average Annual Retirement Allowance(2)	$20,433	$14,883	$11,576	$25,822	$37,282
Number of Vested Inactive Members	31,544	2,178	50,768	1,782	289
Number of Inactive Members Due a Refund	20,370	4,070	40,775	1,640	268

(1) The fiscal year 2021 contribution rates for the KERS and SPRS systems will require budgeting during the 2020 legislative session. Contribution rates for CERS systems limited to a 12% increase in certified contribution rates from the prior fiscal year in accordance with House Bill 362 (2018 legislative session).

(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, 2019.

(3) Member data in the 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 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 2010 through 2019 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
6/30/2010	2011-2012	4.23%	20.07%	24.30%	16.41%	40.71%
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%	72.99%	80.98%	12.03%	93.01%

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
6/30/2010	2011-2012	7.19%	6.92%	14.11%	19.73%	33.84%
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%	29.50%	38.71%	0.00%	38.71%

(1) 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 2019 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. House Bill 265 passed during the 2018 legislative session which reduced the FY 2019 employer contribution rate to 49.47% for Regional Mental Health/Mental Retardation Boards, Local District Health Departments, State Universities, Community Colleges and any other agencies eligible for voluntarily cease participating in the KERS Non-Hazardous fund.

(2) HB 1, passed during the 2019 Special Legislative Session, continued the reduced rate of 49.47% for all quasi agencies.

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 2010 through 2019 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
6/30/2010	2011-2012	4.72%	6.98%	11.70%	9.59%	21.29%
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%	19.58%	26.21%	5.78%	31.99%

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
6/30/2010	2011-2012	7.31%	10.60%	17.91%	23.74%	41.65%
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%	34.95%	46.31%	10.47%	56.78%

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 2017 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 fund. In 2008 this recommendation was changed to a ten-year phase-in from the initial starting date. House Bill 362 passed during the 2018 legislative session which limited the CERS employer contribution rate increase to 12% per year over the prior fiscal year for the period of July 1, 2018 to June 30, 2028.

SPRS Funds

The contribution rates for SPRS shown in the below tables are the full funding rates presented by the actuary in the 2010 through 2019 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
6/30/2010	2011-2012	7.75%	32.05%	39.80%	54.83%	94.63%
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%	116.73%	136.12%	20.85%	156.97%

(1) The contribution rates for SPRS shown in the above table are the full funding rates presented by the actuary in the 2012 through 2019 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)

KERS (Non-Hazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2010	$11,004,795	$4,210,216	$3,503,007	$6,794,580	$6,794,580	38.26%	31.83%
6/30/2011	11,182,142	3,726,986	3,538,878	7,455,156	7,643,264	33.33%	31.70%
6/30/2012	11,361,048	3,101,317	2,980,402	8,259,731	8,380,647	27.30%	26.20%
6/30/2013	11,386,602	2,636,123	2,747,428	8,750,479	8,639,174	23.15%	24.10%
6/30/2014	11,550,110	2,423,957	2,560,420	9,126,154	8,989,691	20.99%	22.20%
6/30/2015	12,359,673	2,350,990	2,307,858	10,008,683	10,051,815	19.02%	18.70%
6/30/2016	13,224,698	2,112,286	1,953,422	11,112,412	11,271,276	15.97%	14.80%
6/30/2017	15,591,641	2,123,623	2,056,870	13,468,018	13,534,771	13.62%	13.20%
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%

KERS (Non-Hazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2010	$4,466,136	$471,342	$371,002	$3,994,794	$4,095,134	10.55%	8.31%
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	1,859,578	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%

KERS (Hazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2010	$688,149	$502,729	$443,512	$185,420	$244,638	73.06%	64.45%
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%

KERS (Hazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liabilities		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2010	$493,298	$314,427	$271,396	$178,870	$221,902	63.74%	55.02%
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%

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
6/30/2010	$8,459,022	$5,546,857	$4,819,934	$2,912,165	$3,639,089	65.57%	56.98%
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%

CERS (Non-Hazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2010	$3,158,340	$1,293,039	$1,096,582	$1,865,302	$2,061,758	40.94%	34.72%
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%

CERS (Hazardous Pension Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2010	$2,672,152	$1,749,464	$1,506,787	$922,688	$1,165,364	65.47%	56.39%
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%

CERS (Hazardous Insurance Fund)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2010	$1,674,703	$692,770	$586,827	$981,933	$1,087,876	41.37%	35.04%
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%	79.07%
6/30/2019	$1,732,879	$1,313,659	$1,340,714	$419,221	$392,165	75.81%	77.37%

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
6/30/2010	$612,445	$304,577	$264,944	$307,868	$347,501	49.73%	43.26%
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%

SPRS (Insurance)

Valuation Date	Actuarial Liability	Value of Assets		Unfunded Actuarial Liability		Funding Level	
		Actuarial	Market	Actuarial	Market	Actuarial	Market
6/30/2010	$434,960	$121,175	$104,527	$313,785	$330,434	27.86%	24.03%
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%

(1) Valuation Balance Sheets give the basis for determining the percentage rates for contributions to be made by employers.

Solvency Test
As of June 30 ($ in Thousands)

KERS (Non-Hazardous Pension Fund)

Valuation Date	Actuarial Liabilities (1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets (1)	(2)	(3)
6/30/2010	$869,484	$8,329,758	$1,805,553	$4,210,216	100.00%	40.10%	0.00%
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	$3,072,177	$2,206,279	100.00%	10.60%	0.00%

KERS (Non-Hazardous Insurance Fund)

Valuation Date	Actuarial Liabilities (1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets (1)	(2)	(3)
6/30/2010	$-	$2,744,534	$1,721,602	$471,342	100.00%	17.20%	0.00%
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%

KERS (Hazardous Pension Fund)

Valuation Date	Actuarial Liabilities (1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets (1)	(2)	(3)
6/30/2010	$88,511	$441,657	$157,981	$502,729	100.00%	93.80%	0.00%
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%

KERS (Hazardous Insurance Fund)

Valuation Date	Actuarial Liabilities (1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets (1)	(2)	(3)
6/30/2010	$-	$268,511	$224,787	$314,427	100.00%	100.00%	20.40%
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	$-	$282,069	$144,635	$525,315	100.00%	100.00%	100.00%

Solvency Test
As of June 30 ($ in Thousands)
CERS (Non-Hazardous Pension Fund)

Valuation Date	Actuarial Liabilities (1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets (1)	(2)	(3)
6/30/2010	$1,063,747	$4,890,659	$2,504,616	$5,546,857	100.00%	91.70%	0.00%
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%

CERS (Non-Hazardous Insurance Fund)

Valuation Date	Actuarial Liabilities (1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets (1)	(2)	(3)
6/30/2010	$-	$1,526,533	$1,631,807	$1,293,039	100.00%	84.70%	0.00%
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%

CERS (Hazardous Pension Fund)

Valuation Date	Actuarial Liabilities (1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets (1)	(2)	(3)
6/30/2010	$369,613	$1,622,684	$679,855	$1,749,464	100.00%	85.00%	0.00%
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%

CERS (Hazardous Insurance Fund)

Valuation Date	Actuarial Liabilities (1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets (1)	(2)	(3)
6/30/2010	$-	$814,300	$860,403	$692,770	100.00%	85.10%	0.00%
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%

Solvency Test
As of June 30 ($ in Thousands)

SPRS (Pension Fund)

Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
	Actuarial Liabilities						
					(1)	(2)	(3)
6/30/2010	$42,012	$475,893	$94,541	$304,577	100.00%	55.20%	0.00%
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%

SPRS (Insurance Fund)

Valuation Date	(1) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Portion)	Actuarial Value of Assets	% of Actuarial Liabilities Covered by Actuarial Assets		
	Actuarial Liabilities						
					(1)	(2)	(3)
6/30/2010	$-	$253,581	$181,380	$121,175	100.00%	47.80%	0.00%
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%

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)

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
6/30/2010	334	47,090	$1,815,146	$39	1.20%	43.4	9.0
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	39	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

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
6/30/2010	18	4,291	$143,558	$33	0.70%	41.4	7.0
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

(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 a CERS and is reported in two membership categories).

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
6/30/2010	1,102	84,681	$2,236,855	$26	1.30%	46.6	8.8
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

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
6/30/2010	282	9,562	$466,549	$49	1.40%	38.8	9.2
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

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
6/30/2010	1	961	$51,507	$54	-1.90%	37.2	10.6
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

[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 a CERS and is reported in two membership categories).

Summary of Retired Member Valuation Data
As of June 30 ($ in Thousands)

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
6/30/2010	1,162	1,100	37,945	N/A	N/A	$801,882	-1.31%	$21
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

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
6/30/2010	282	95	2,835	N/A	N/A	$41,115	6.25%	$15
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

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(2) 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).

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
6/30/2010	2,565	1,283	41,038	N/A	N/A	$452,614	2.85%	$11
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	57,374	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

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
6/30/2010	423	163	6,068	N/A	N/A	$146,917	5.03%	$24
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	12,430	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	226,681	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	$2,959	$258,813	5.35%	$26

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
6/30/2010	54	15	1,223	N/A	N/A	$45,516	2.80%	$37
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	1,045	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

(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.

(2) 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 Non-Hazardous Plans

Plan Funding

State statute requires active members to contribute 5% of creditable compensation. 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 Kentucky Revised Statute 61.565 and Kentucky Revised Statute 61.702. 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

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.	Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program).
	KERS 2.00% 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.	

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.

Tier 2: Members whose participation began on or after 9/1/2008 but before 1/1/2014

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.	Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program)

*Service	Multiplier
10 years or less	1.10%
10-20 years	1.30%
20-26 years	1.50%
26-30 years	1.75%

Tier 3: Members whose participation began on or after 1/1/2014
(A - B) = C X 75% = D then B + D = Interest ($ in Thousands)

System	A 5-Year Geometric Average Return	B Less Guarantee Rate of 4%	C Upside Sharing Interest	D Upside Sharing Interest X 75% = Upside Gain	Interest Rate Earned (4% + Upside)	Total Interest Credited to Member Accounts
KERS Non-Hazardous	4.77%	4.00%	0.77%	0.58%	4.58%	$3,004
KERS Hazardous	5.61%	4.00%	1.61%	1.21%	5.21%	980
CERS Non-Hazardous	5.51%	4.00%	1.51%	1.13%	5.13%	6,360
CERS Hazardous	5.79%	4.00%	1.79%	1.34%	5.34%	1,838
SPRS	5.05%	4.00%	1.05%	0.79%	4.79%	$115

Note: Please see Plan Provisions for additional details on Tier 3.

Summary of Benefit Provisions KERS & CERS Non-Hazardous Plan

Post-Retirement Death Benefits

The choice of payment option selected by the member at the time of retirement will determine the monthly benefits provided to the beneficiary upon the retired member's death.

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 August 1, 2004, may retire on account of disability provided the member has at least 60 months of service credit and is not eligible for an unreduced benefit. Additional service credit may be added for computation of benefits under the benefit formula.

Members participating on or after August 1, 2004, but before January 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 the member's monthly final rate of pay or the amount calculated under the Benefit Formula based upon actual service.

Members participating on or after January 1, 2014, may retire on account of disability provided the member has at least 60 months of service credit. The hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from KRS 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. 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 55 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 plan is over 100% funded or (ii) the Legislature appropriates sufficient funds to pay the increased liability for the COLAs.

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 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%.

Benefit Changes since the Prior Valuation

During the 2018 legislative session, House Bill 185 was enacted, which provided increased pension and insurance benefits for the beneficiaries of active members who die in the line of duty.

Summary of Benefit Provisions KERS Hazardous, CERS Hazardous & SPRS Plans

Plan Funding

State statute requires active members to contribute 8% of creditable compensation. 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 KRS, as required by Kentucky Revised Statutes 61.565 and 61.702. KERS rates are subject to state budget approval.

Membership Eligibility

All regular full-time hazardous duty positions approved by the Board that average 100 or more hours of work per month over a fiscal or calendar year.

Retirement Eligibility for Hazardous		
Age	**Years of Service**	**Allowance Reduction**
Tier 1 Members Whose Participation Began Before 9/1/2008		
55	1 month	None
Any	20	None
50	15	6.5% per year for first five years, and 4.5% for next five years before age 55 or 20 years of service.
Tier 2 Members Whose Participation Began On or After 9/1/2008 but before 1/1/2014		
60	5	None
Any	25	None
50	15	6.5% per year for first five years, and 4.5% for next five years before age 60 or 25 years of service.
Tier 3 Members Whose Participation Began On or After 1/1/2014		
60	5	None
Any	25	None

Benefit Formula for 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.	KERS 2.49% if: CERS 2.50% if: SPRS 2.50% if:	Member begins participating before 9/1/2008.	Includes earned service, purchased service, prior service, and sick leave service (if the member's employer participates in an approved sick leave program.

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**
	KERS, CERS & SPRS increasing percent based on service at retirement*			
	*Service	Multiplier		
	10 years or less	1.30%		
	10-20 years	1.50%		
	20-25 years	2.25%		
Average of the three highest complete years of compensation.	25+ years	2.50%	Member begins participating on or after 9/1/2008 but before 1/1/2014.	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 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.

Summary of Benefit Provisions KERS Hazardous, CERS Hazardous & SPRS Plans - Tier 3

Post-Retirement Death Benefits

The choice of payment option selected by the member at the time of retirement will determine the monthly benefits provided to the beneficiary upon the retired member's death.

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 August 1, 2004, may retire on account of disability provided the member has at least 60 months of service credit and is not eligible for an unreduced benefit. Additional service credit may be added for computation of benefits under the benefit formula.

Members participating on or after August 1, 2004, but before January 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 25% of the member's monthly final rate of pay or the amount calculated under the Benefit Formula based upon actual service.

Members participating on or after January 1, 2014, may retire on account of disability provided the member has at least 60 months of service credit. The hypothetical account which includes member contributions, employer contributions and interest credits can be withdrawn from KRS as a lump sum or an annuity equal to the greater of 25% 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. 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 55 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 COLAs.

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 $15 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 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%.

Benefit Changes since the Prior Valuation

During the 2018 legislative session, House Bill 185 was enacted, which provided increased pension and insurance benefits for active members who die in the line of duty.

Membership Eligibility

All regular full-time hazardous duty positions approved by the Board that average 100 or more hours of work per month over a fiscal or calendar year.

STATISTICAL

TABLE OF CONTENTS

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.

KERS Non-Hazardous Membership As of June 30, 2019

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

KERS Hazardous Membership As of June 30, 2019

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

CERS Non-Hazardous Membership As of June 30, 2019

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

CERS Hazardous Membership As of June 30, 2019

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

SPRS Membership As of June 30, 2019

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

Kentucky Retirement Systems Membership Totals As of June 30, 2019

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

Principal Participating Employers in KERS As of June 30, 2019

Participating Employer	Rank	Covered Employees	% of Total System
Department for Community Based Services	1	4,339	11.41%
Department of Corrections	2	3,717	9.78%
Department of Highways	3	3,605	9.48%
Judicial Department Administrative Office of the Courts	4	1,435	3.77%
Department of Juvenile Justice	5	1,175	3.09%
Kentucky State Police	6	912	2.40%
Department Of Veterans Affairs	7	892	2.35%
Unified Prosecutorial System	8	892	2.35%
New Vista Of The Bluegrass, Inc	9	861	2.26%
Department of Revenue	10	797	2.10%
All Others		19,393	51.01%
Total		**38,018**	**100.00%**

Schedule of Participating Employers in KERS As of June 30, 2019

Agency Classification	Number of Agencies	Number of Employees
County Attorneys	61	269
Health Departments	60	2,269
Master Commissioner	33	67
Non-P1 State Agencies	35	788
Other Retirement Systems	1	25
P1 State Agencies	134	29,475
Regional Mental Health Units	12	2,138
Universities	7	2,987
Total	**343**	**38,018**

Total Employees By Tier Levels

Tier 1	**18,854**
Tier 2	**7,082**
Tier 3	**12,082**

Principal Participating Employers in CERS As of June 30, 2019

Participating Employer	Rank	Covered Employees	% of Total System
Jefferson County Board of Education	1	6,339	6.69%
Louisville Jefferson County Metro Government	2	5,112	5.39%
Fayette County Board of Education	3	1,995	2.11%
Lexington Fayette Urban County Government	4	1,766	1.86%
Judicial Department Administrative Office of the Courts	5	1,690	1.78%
Boone County Board of Education	6	1,185	1.25%
Bullitt County Board of Education	7	1,144	1.21%
Hardin County Board of Education	8	1,112	1.17%
Oldham County Board of Education	9	959	1.01%
Madison County Board of Education	10	958	1.01%
All Others		72,511	76.52%
Total		**94,771**	**100.00%**

Schedule of Participating Employers in CERS As of June 30, 2019

Agency Classification	Number of Agencies	Number of Employees
Airport Boards	5	528
Ambulance Services	19	445
Area Development Districts	14	640
Boards of Education	173	48,933
Cities	221	10,316
Community Action Agencies	21	2,635
Conservation Districts	49	59
County Attorneys	81	620
County Clerks	16	605
Development Authorities	6	10
Fire Departments	35	936
Fiscal Courts	118	11,141
Hospitals & Clinics (incl. Dental)	1	359
Housing Authorities	42	425
Jailers	2	79
Libraries	85	1,286
Other Retirement Systems	2	3
P1 State Agencies	4	1,691
Parks and Recreation	7	58
Planning Commissions	16	205
Police Departments	2	15
Riverport Authorities	5	69
Sanitation Districts	9	351
Sheriff Departments	12	758
Special Districts & Boards	50	1,486
Tourist Commissions	23	189
Urban Government Agencies	2	6,878
Utility Boards	120	4,051
Total	**1,140**	**94,771**

Total Employees By Tier Levels

Tier 1	**39,470**
Tier 2	**17,365**
Tier 3	**37,936**

Schedule of Participating Employers in SPRS As of June 30, 2019

Kentucky State Police - Uniformed Police Officers	**1**	**932**

Total Employees By Tier Levels

Tier 1	**463**
Tier 2	**208**
Tier 3	**261**

Average Monthly Benefit by Length of Service in KERS As of June 30, 2019 (in Whole $)

Service Credit Range	KERS Non-Hazardous Number of Accounts	KERS Non-Hazardous Average Monthly Benefit	KERS Hazardous Number of Accounts	KERS Hazardous Average Monthly Benefit
Under 5 years	6,211	$173.91	841	$202.44
5 or more but less than 10	6,084	433.48	853	574.94
10 or more but less than 15	5,594	719.91	782	1,030.75
15 or more but less than 20	4,779	1,060.91	698	1,539.20
20 or more but less than 25	5,102	1,407.91	1,117	2,025.22
25 or more but less than 30	12,854	2,296.57	207	2,859.94
30 or more but less than 35	6,712	3,241.38	59	3,688.32
35 or more	2,550	4,565.84	6	4,230.57
Total	**49,886**	**$1,662.13**	**4,563**	**$1,235.65**

Average Monthly Benefit by Length of Service in CERS As of June 30, 2019 (in Whole $)

Service Credit Range	CERS Non-Hazardous Number of Accounts	CERS Non-Hazardous Average Monthly Benefit	CERS Hazardous Number of Accounts	CERS Hazardous Average Monthly Benefit
Under 5 years	9,221	$163.47	1,156	$392.85
5 or more but less than 10	11,313	339.67	1,117	701.83
10 or more but less than 15	11,327	541.91	1,029	1,253.77
15 or more but less than 20	9,392	806.55	1,021	1,796.36
20 or more but less than 25	10,776	1,008.31	3,844	2,554.80
25 or more but less than 30	12,344	1,917.41	1,458	3,550.65
30 or more but less than 35	2,981	2,692.07	420	4,277.51
35 or more	792	3,730.67	88	5,290.93
Total	**68,146**	**$947.63**	**10,133**	**$2,133.82**

Average Monthly Benefit by Length of Service in SPRS As of June 30, 2019 (in Whole $)

Service Credit Range	Number of Accounts	Average Monthly Benefit
Under 5 years	137	$547.95
5 or more but less than 10	57	937.32
10 or more but less than 15	63	1,410.22
15 or more but less than 20	114	2,081.51
20 or more but less than 25	506	2,691.85
25 or more but less than 30	491	3,670.44
30 or more but less than 35	238	4,753.84
35 or more	60	6,167.45
Total	**1,666**	**$3,073.44**

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 - KERS
As of June 30 ($ in Thousands)

	Non-Hazardous			Hazardous		
Fiscal Year	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	437,880	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

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

	Non-Hazardous			Hazardous		
Fiscal Year	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

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

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

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 - KERS Non-Hazardous Pension Fund
As of June 30 ($ in Thousands)

Additions	2012	2013	2014	2015	2016	2017	2018	2019
Members' Contributions	$96,418	$96,744	$92,941	$100,424	$101,677	$100,544	$104,972	$93,759
Employers' Contributions	211,071	280,874	296,836	520,949	512,670	644,803	619,988	948,866
General Fund Appropriations	-	-	-	-	-	58,193	67,574	75,858
Health Insurance Contributions (HB1)	5,337	3,344	4,546	4,181	4,817	5,156	5,786	5,963
Employer Cessation	-	-	-	-	-	53,215	17	10,643
Net Investment Income (Loss)	9,789	303,011	337,174	44,094	(20,662)	220,985	147,577	114,918
Bank of America Settlement	-	-	-	8,442	-	-	-	-
Northern Trust Settlement	-	-	-	-	-	-	301	37
Pension Spiking	-	-	-	743	414	909	1,564	95
Total Additions	**322,615**	**683,973**	**732,246**	**679,308**	**598,916**	**1,083,805**	**947,779**	**1,250,139**
Deductions								
Benefit Payments	858,151	873,906	889,937	905,790	923,288	948,489	967,374	988,349
Refunds	12,004	12,907	13,627	13,552	12,130	11,819	13,603	12,342
Administrative Expenses	8,776	10,719	11,145	10,474	10,807	10,974	10,692	11,712
Capital Project Expenses	8	-	-	-	181	34	-	-
Total Deductions	**878,939**	**897,532**	**914,709**	**929,816**	**946,406**	**971,316**	**991,669**	**1,012,403**
Net Increase (Decrease) in Fiduciary Net Position	**$(556,324)**	**$(213,559)**	**$(182,463)**	**$(250,508)**	**$(347,490)**	**$112,489**	**$(43,890)**	**$237,736**

KERS Non-Hazardous Insurance Fund

Additions	2012	2013	2014	2015	2016	2017	2018	2019
Employers' Contributions	$146,844	$162,191	$164,176	$132,208	$131,935	$133,024	$132,364	$173,576
Net Investment Income (Loss)	(4,803)	40,661	96,578	8,690	(3,904)	90,915	61,331	43,202
Retired Re-employed (HB1)	-	-	-	3,732	3,880	3,765	4,055	3,996
Member Drug Reimbursement	7,865	4,846	8	-	-	1	5	3
Premiums Received from Retirees	15,666	14,294	918	272	240	248	216	184
Humana Gain Share Payment	-	-	-	-	-	-	-	3,079
Employer Cessations	-	-	-	-	-	15,567	-	1,391
Northern Trust Settlement	-	-	-	-	-	-	32	4
Total Additions	**165,563**	**221,992**	**264,273**	**144,902**	**132,151**	**243,520**	**198,003**	**225,435**
Deductions								
Health Insurance Premiums	163,841	140,157	112,671	125,272	126,550	127,648	130,069	127,221
Administrative Expenses	5,203	4,285	736	893	818	861	760	875
Self-Funded Healthcare Costs	-	-	-	-	-	1,920	1,819	1,962
Excise Tax Insurance	-	-	-	-	-	3	3	3
Total Deductions	**169,044**	**144,442**	**113,407**	**126,168**	**129,469**	**130,432**	**132,651**	**130,061**
Net Increase (Decrease) in Fiduciary Net Position	**$(3,481)**	**$77,550**	**$150,865**	**$18,734**	**$2,679**	**$113,088**	**$65,352**	**$95,374**

Changes in Fiduciary Net Position - KERS Hazardous Pension Fund

As of June 30 ($ in Thousands)

Additions	2012	2013	2014	2015	2016	2017	2018	2019
Members' Contributions	$11,602	$11,467	$11,995	$12,670	$15,055	$17,523	$17,891	$17,118
Employers' Contributions	17,367	27,334	11,670	28,374	23,690	37,630	32,790	55,229
General Fund Appropriations	-	-	-	-	-	15,000	10,000	-
Health Insurance Contributions (HB1)	629	402	551	537	684	811	909	934
Net Investment Income (Loss)	(10,286)	51,497	80,549	8,572	(1,652)	70,893	51,848	36,704
Bank of America Settlement	-	-	-	767	-	-	-	-
Northern Trust Settlement	-	-	-	-	-	-	33	4
Pension Spiking	-	-	-	162	70	344	871	29
Total Additions	**19,312**	**90,700**	**104,941**	**51,211**	**37,847**	**142,301**	**114,342**	**110,018**
Deductions								
Benefit Payments	48,424	48,855	54,320	56,774	59,306	61,231	65,616	69,527
Refunds	2,543	2,762	2,830	2,609	2,211	2,106	2,501	2,684
Administrative Expenses	877	733	897	844	903	919	975	1,103
Capital Project Expenses	-	-	-	-	15	4	-	-
Total Deductions	**51,844**	**52,350**	**58,048**	**60,277**	**62,435**	**64,260**	**69,092**	**73,314**
Net Increase (Decrease) in Fiduciary Net Position	**$(32,532)**	**$38,350**	**$46,892**	**$(9,016)**	**$(24,588)**	**$78,041**	**$45,250**	**$36,704**

KERS Hazardous Insurance Fund

Additions	2012	2013	2014	2015	2016	2017	2018	2019
Employers' Contributions	$23,984	$25,144	$23,336	$14,173	$15,929	$4,688	$4,302	$3,725
Net Investment Income (Loss)	60	32,887	52,082	7,793	(882)	59,188	42,567	28,049
Retired Re-employed (HB1)	-	-	-	709	837	932	986	1,245
Member Drug Reimbursement	351	243	-	-	-	-	-	-
Premiums Received from Retirees	876	895	37	14	(13)	(51)	(50)	(19)
Humana Gain Share	-	-	-	-	-	-	-	213
Northern Trust Settlement	-	-	-	-	-	-	18	2
Total Additions	**25,271**	**59,169**	**76,126**	**22,689**	**15,871**	**64,757**	**47,823**	**33,215**
Deductions								
Health Insurance Premiums	13,941	16,837	15,405	17,000	17,490	17,562	18,697	19,280
Administrative Expenses	335	179	78	101	97	105	104	117
Self-Funded Healthcare Costs	-	-	-	-	-	45	79	94
Excise Tax Insurance	-	-	-	-	-	-	-	-
Total Deductions	**14,276**	**17,016**	**15,482**	**17,101**	**17,587**	**17,712**	**18,880**	**19,491**
Net Increase (Decrease) in Fiduciary Net Position	**$10,995**	**$42,153**	**$60,642**	**$5,588**	**$(1,716)**	**$47,045**	**$28,943**	**$13,724**

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
Members' Contributions	$119,123	$120,777	$122,459	$133,637	$133,987	$150,714	$160,370	$159,064
Employers' Contributions	270,664	294,914	324,231	297,714	282,767	331,493	355,473	393,302
Health Insurance Contributions (HB1)	5,101	4,659	6,109	6,674	7,687	9,158	10,826	11,801
Net Investment Income (Loss)	(3,349)	579,161	893,386	110,569	(40,799)	825,901	578,377	394,558
Bank of America Settlement	-	-	-	10,280	-	-	-	-
Northern Trust Settlement	-	-	-	-	-	-	361	44
Pension Spiking	-	-	-	850	1,339	2,061	2,544	151
Total Additions	**391,539**	**999,511**	**1,348,330**	**559,724**	**384,981**	**1,319,327**	**1,107,951**	**958,920**
Deductions								
Benefit Payments	524,385	553,204	582,850	615,335	651,247	687,460	726,568	766,221
Refunds	-	13,306	14,286	13,524	13,754	14,430	14,608	14,387
Administrative Expenses	16,740	17,743	18,615	18,212	19,078	19,614	19,592	21,659
Capital Project Expenses	9	-	-	-	307	77	-	-
Total Deductions	**553,899**	**584,253**	**615,751**	**647,071**	**684,385**	**721,581**	**760,768**	**802,267**
Net Increase (Decrease) in Fiduciary Net Position	**$(162,360)**	**$415,258**	**$732,579**	**$(87,347)**	**$(299,404)**	**$597,746**	**$347,183**	**$156,653**

CERS Non-Hazardous Insurance Fund

Additions	2012	2013	2014	2015	2016	2017	2018	2019
Employers' Contributions	$164,297	$158,212	$121,161	$115,836	$108,269	$117,310	$120,798	$135,570
Net Investment Income (Loss)	(32,992)	147,194	231,743	36,731	(1,422)	259,586	197,520	133,697
Retired Re-employed (HB1)	-	-	-	3,608	3,567	3,402	3,821	4,085
Member Drug Reimbursement	8,443	5,360	6	-	-	1	11	6
Premiums Received from Retirees	17,493	16,293	1,449	582	629	707	637	616
Humana Gain Share	-	-	-	-	-	-	-	3,574
Northern Trust Settlement	-	-	-	-	-	-	75	9
Total Additions	**157,241**	**327,059**	**357,064**	**156,757**	**111,043**	**121,420**	**322,862**	**277,557**
Deductions								
Health Insurance Premiums	141,694	132,489	96,804	113,734	122,713	124,573	131,631	133,005
Administrative Expenses	5,545	4,431	508	782	726	789	761	877
Self-Funded Healthcare Costs	-	-	-	-	-	3,635	4,248	3,979
Excise Tax Insurance	-	-	-	-	-	6	6	6
Total Deductions	**147,239**	**136,920**	**97,312**	**114,522**	**123,439**	**129,003**	**136,646**	**137,867**
Net Increase (Decrease) in Fiduciary Net Position	**$10,002**	**$190,139**	**$259,751**	**$42,235**	**$(12,396)**	**$252,003**	**$186,216**	**$139,690**

Changes in Fiduciary Net Position - CERS Hazardous Pension Fund

As of June 30 ($ in Thousands)

Additions	2012	2013	2014	2015	2016	2017	2018	2019
Members' Contributions	$41,797	$42,863	$42,631	$46,609	$51,554	$60,102	$61,089	$58,661
Employers' Contributions	77,311	120,140	115,240	107,515	104,952	114,315	124,953	137,664
Health Insurance Contributions (HB1)	811	734	1,091	1,084	1,418	1,708	2,173	2,458
Net Investment Income (Loss)	(24,724)	181,171	287,816	37,104	(9,021)	270,473	192,174	132,970
Bank of America Settlement	-	-	-	2,865	-	-	-	-
Northern Trust Settlement	-	-	-	-	-	-	111	14
Pension Spiking	-	-	-	557	762	1,632	2,707	387
Total Additions	**95,195**	**344,908**	**447,452**	**195,734**	**149,665**	**177,757**	**383,207**	**332,154**
Deductions								
Benefit Payments	169,352	179,696	189,635	200,134	213,448	226,985	244,119	259,008
Refunds	3,516	3,158	2,664	3,111	2,879	2,315	4,214	2,854
Administrative Expenses	1,319	1,202	1,721	1,289	1,337	1,421	1,504	1,726
Capital Project Expenses	-	-	-	-	26	7	-	-
Total Deductions	**174,187**	**184,056**	**194,020**	**204,534**	**217,690**	**230,728**	**249,837**	**263,588**
Net Increase (Decrease) in Fiduciary Net Position	**$(79,992)**	**$160,852**	**$253,431**	**$(8,800)**	**$(68,025)**	**$217,502**	**$133,370**	**$68,566**

CERS Hazardous Insurance Fund

Additions	2012	2013	2014	2015	2016	2017	2018	2019
Employers' Contributions	$90,204	$84,962	$74,265	$71,008	$66,575	$50,743	$55,027	$61,106
Net Investment Income (Loss)	(16,127)	79,885	124,952	20,283	1,102	142,744	109,004	72,580
Retired Re-employed (HB1)	-	-	-	770	862	794	975	1,166
Member Drug Reimbursement	871	562	-	-	-	-	-	-
Premiums Received from Retirees	695	657	32	10	(106)	(301)	(265)	(53)
Humana Gain Share	-	-	-	-	-	-	-	506
Northern Trust Settlement	-	-	-	-	-	-	40	5
Total Additions	**75,643**	**166,066**	**200,101**	**92,071**	**68,615**	**51,236**	**164,781**	**135,310**
Deductions								
Health Insurance Premiums	50,155	59,941	60,843	65,553	68,518	70,407	74,844	78,190
Administrative Expenses	688	679	275	339	480	381	376	434
Self-Funded Healthcare Costs	-	-	-	-	-	160	603	149
Excise Tax Insurance	-	-	-	-	-	-	-	-
Total Deductions	**50,843**	**60,620**	**61,117**	**65,894**	**68,998**	**70,948**	**75,823**	**78,773**
Net Increase (Decrease) in Fiduciary Net Position	**$24,800**	**$105,446**	**$138,983**	**$26,177**	**$(383)**	**$123,216**	**$88,958**	**$56,537**

Changes in Fiduciary Net Position - SPRS Pension Fund
As of June 30 ($ in Thousands)

Additions	2012	2013	2014	2015	2016	2017	2018	2019
Members' Contributions	$5,154	$4,495	$5,005	$5,150	$5,149	$5,349	$5,522	$5,062
Employers' Contributions	15,040	18,501	20,279	31,444	25,723	38,028	36,486	58,947
General Fund Appropriations	-	-	-	-	-	-	10,000	1,086
Health Insurance Contributions (HB1)	46	48	70	94	113	131	155	176
Net Investment Income (Loss)	43	25,954	40,291	3,427	(3,841)	26,756	18,487	14,863
Bank of America Settlement	-	-	-	646	-	-	-	-
Northern Trust Settlement	-	-	-	-	-	-	21	3
Pension Spiking	-	-	-	546	99	210	392	15
Total Additions	**20,283**	**48,998**	**65,729**	**41,307**	**27,243**	**68,718**	**71,063**	**80,152**
Deductions								
Benefit Payments	48,867	50,559	53,026	54,766	56,268	56,935	58,805	60,948
Refunds	149	31	214	85	11	26	22	162
Administrative Expenses	73	184	215	201	176	181	194	225
Capital Project Expenses	-	-	-	-	4	1	-	-
Total Deductions	**49,089**	**50,774**	**53,454**	**55,052**	**56,459**	**57,143**	**59,021**	**61,335**
Net Increase (Decrease) in Fiduciary Net Position	**$(28,806)**	**$(1,776)**	**$12,276**	**$(13,745)**	**$(29,216)**	**$38,370**	**$12,042**	**$18,817**

SPRS Insurance Fund

Additions	2012	2013	2014	2015	2016	2017	2018	2019
Employers' Contributions	$10,810	$16,829	$14,498	$10,379	$10,228	$9,222	$9,397	$13,282
Net Investment Income (Loss)	(1,458)	12,993	20,458	2,921	(48)	21,570	16,420	10,766
Retired Re-employed (HB1)	-	-	-	3	9	-	-	6
Member Drug Reimbursement	279	178	-	-	-	-	-	-
Premiums Received from Retirees	20	23	11	1	(29)	(55)	(41)	(13)
Humana Gain Share	-	-	-	-	-	-	-	144
Northern Trust Settlement	-	-	-	-	-	-	8	1
Total Additions	**9,651**	**30,023**	**35,012**	**13,304**	**10,160**	**9,167**	**25,784**	**24,186**
Deductions								
Health Insurance Premiums	10,791	12,546	12,688	13,483	13,836	13,405	13,881	13,942
Administrative Expenses	201	184	58	65	89	66	62	69
Self-Funded Healthcare Costs	-	-	-	-	-	24	38	40
Excise Tax Insurance	-	-	-	-	-	-	-	-
Total Deductions	**10,992**	**12,730**	**12,745**	**13,548**	**13,925**	**13,495**	**13,981**	**14,051**
Net Increase (Decrease) in Fiduciary Net Position	**$(1,341)**	**$17,293**	**$22,267**	**$(244)**	**$(3,765)**	**$17,242**	**$11,803**	**$10,135**

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	1014
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%

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%

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 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%

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%

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 - 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%

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 $)

	KERS Non-Hazardous	KERS Hazardous	CERS Non-Hazardous	CERS Hazardous	SPRS
Fiscal Year 2013					
Number of Accounts	1,810	205	3,303	443	59
Average Service Credit (months)	199	157	189	202	234
Average Final Compensation	$47,168	$46,456	$34,292	$58,516	$69,325
Average Monthly Benefit	$1,275	$1,250	$938	$2,196	$2,893
Average System Payment for Health Insurance	$303	$433	$259	$853	$994
Fiscal Year 2014					
Number of Accounts	2,037	245	3,529	430	77
Average Service Credit (months)	202	165	182	194	260
Average Final Compensation	$46,480	$46,595	$33,816	$57,718	$70,009
Average Monthly Benefit	$1,278	$1,296	$879	$2,021	$3,322
Average System Payment for Health Insurance	$534	$937	$486	$1,279	$1,378
Fiscal Year 2015					
Number of Accounts	2,078	191	4,084	496	55
Average Service Credit (months)	204	164	188	204	251
Average Final Compensation	$47,187	$47,148	$34,561	$59,589	$67,862
Average Monthly Benefit	$1,308	$1,280	$913	$2,178	$3,009
Average System Payment for Health Insurance	$549	$906	$489	$1,254	$1,376
Fiscal Year 2016					
Number of Accounts	2,043	205	4,151	522	57
Average Service Credit (months)	207	160	190	212	234
Average Final Compensation	$47,429	$44,494	$34,632	$58,977	$65,535
Average Monthly Benefit	$1,351	$1,225	$932	$2,303	$2,953
Average System Payment for Health Insurance	$558	$870	$501	$1,277	$1,425
Fiscal Year 2017					
Number of Accounts	2,094	191	4,151	544	30
Average Service Credit (months)	208	146	191	203	241
Average Final Compensation	$46,753	$47,604	$34,779	$58,384	$68,401
Average Monthly Benefit	$1,339	$1,150	$940	$2,236	$2,935
Average System Payment for Health Insurance	$558	$872	$510	$1,247	$1,192
Fiscal Year 2018					
Number of Accounts	2,682	328	4,570	696	68
Average Service Credit (months)	223	167	195	211	241
Average Final Compensation	$48,552	$51,219	$37,683	$65,407	$71,132
Average Monthly Benefit	$1,481	$1,392	$1,027	$2,528	$3,035
Average System Payment for Health Insurance	$578	$1,033	$531	$1,300	$1,365
Fiscal Year 2019					
Number of Accounts	1,993	234	4,283	541	63
Average Service Credit (months)	204	174	193	198	254
Average Final Compensation	$47,824	$51,901	$37,412	$64,646	$73,795
Average Monthly Benefit	$1,355	$1,532	$997	$2,366	$3,341
Average System Payment for Health Insurance	$569	$1,015	$513	$1,231	$1,391

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, 2019 (in Whole $)

	Basic	Lump Sum	Other	Period Certain	Pop Up	Social Security Adjustment	Survivorship	Annuity
KERS Non-Hazardous								
Number of Accounts	17,461	2,062	14	6,181	9,704	3,323	11,140	1
Monthly Benefits	$26,492,891	$2,427,330	$28,594	$9,626,501	$19,803,230	$5,718,215	$18,820,067	$211
KERS Hazardous								
Number of Accounts	1,211	238	3	496	1,279	287	1,049	-
Monthly Benefits	$1,352,777	$245,376	$3,747	$580,769	$1,888,879	$324,849	$1,241,863	$-
CERS Non-Hazardous								
Number of Accounts	28,030	3,095	20	9,543	10,992	2,150	14,315	1
Monthly Benefits	$23,006,621	$2,089,435	$21,376	$8,334,836	$13,551,476	$2,779,667	$14,793,615	$147
CERS Hazardous								
Number of Accounts	1,628	458	36	906	4,049	546	2,510	-
Monthly Benefits	$3,123,519	$731,580	$45,697	$1,607,823	$10,044,965	$850,757	$5,217,614	$-
SPRS								
Number of Accounts	181	22	1	132	696	199	435	-
Monthly Benefits	$518,100	$51,466	$3,084	$352,375	$2,408,470	$403,344	$1,383,513	$-
KRS Total								
Number of Accounts	48,511	5,875	74	17,258	26,720	6,505	29,449	2
Monthly Benefits	$54,493,908	$5,545,187	$102,498	$20,502,304	$47,697,020	$10,076,832	$41,456,672	$358

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 KERS, CERS, 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.

Under Kentucky Revised Statute 61.565, KERS and SPRS employer contribution rates are set by the KRS Board of Trustees 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. 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.

The CERS employer contribution rates are also 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.

Employer Contribution Rates (%) As of June 30

	2013	2014	2015	2016	2017	2018	2019
KERS Non-Hazardous							
Actual Rate	23.61%	26.79%	38.77%	38.77%	48.59%	49.47%	83.43%
KERS Hazardous							
Actual Rate	29.79%	32.21%	26.34%	26.34%	23.82%	23.70%	36.85%
CERS Non-Hazardous							
Actual Rate	19.55%	18.89%	17.67%	17.06%	18.68%	19.18%	21.48%
CERS Hazardous							
Actual Rate	37.60%	35.70%	34.31%	32.95%	31.06%	31.55%	35.34%
SPRS							
Actual Rate	63.67%	71.15%	75.76%	75.76%	89.21%	91.24%	146.28%

Note: House Bill 1 passed during the 2019 special legislative session reduced the employer contribution rate for KERS quasi-governmental agencies, keeping the rate at 49.47% effective July 1, 2019. 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, 2019 (in Whole $)

	KERS Non - Hazardous	KERS Hazardous	CERS Non - Hazardous	CERS Hazardous	SPRS
Number	32,299	2,962	38,782	8,603	1,746
Average Service Credit (Months)	311	264	263	279	323
Average Monthly System Payment for Health Insurance	$365	$685	$325	$949	$885
Average Monthly Member Payment for Health Insurance	$59	$45	$60	$34	$16
Total Monthly Payment for Health Insurance	$12,809,370	$1,780,784	$14,020,704	$6,910,261	$1,219,082

Insurance Contracts by Type As of June 30 (in Whole $)

KERS Non-Hazardous	2013	2014	2015	2016	2017	2018	2019
KEHP Parent Plus	618	506	452	441	411	460	441
KEHP Couple/Family	1,276	797	714	656	663	696	700
KEHP Single	9,364	9,491	9,251	8,876	8,627	8,638	8,304
Medicare without Prescription	1,474	1,370	1,303	1,286	1,229	1,179	1,141
Medicare with Prescription	16,834	17,738	18,577	19,447	20,215	21,117	21,713
KERS Hazardous	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
KEHP Parent Plus	106	110	110	97	88	96	103
KEHP Couple/Family	451	448	448	439	432	478	493
KEHP Single	625	647	656	663	667	686	699
Medicare without Prescription	60	56	62	66	72	73	83
Medicare with Prescription	985	1,104	1,177	1,302	1,401	1,495	1,584
CERS Non-Hazardous	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
KEHP Parent Plus	340	278	242	235	222	231	214
KEHP Couple/Family	857	546	473	465	462	510	530
KEHP Single	7,652	7,843	8,098	8,164	8,313	8,802	8,912
Medicare without Prescription	2,707	2,583	2,531	2,499	2,462	2,389	2,278
Medicare with Prescription	18,824	20,200	21,520	23,007	24,247	25,476	26,848
CERS Hazardous	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
KEHP Parent Plus	400	432	456	378	395	422	430
KEHP Couple/Family	2,155	2,184	2,255	2,321	2,387	2,571	2,648
KEHP Single	1,425	1,447	1,500	1,595	1,645	1,712	1,746
Medicare without Prescription	79	89	107	114	125	119	121
Medicare with Prescription	2,324	2,510	2,697	2,969	3,205	3,388	3,658
SPRS	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
KEHP Parent Plus	76	78	81	77	79	74	77
KEHP Couple/Family	421	444	441	355	420	426	454
KEHP Single	283	263	265	246	251	253	224
Medicare without Prescription	20	20	16	18	17	21	16
Medicare with Prescription	682	712	777	850	897	941	975
KRS Total	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
KEHP Parent Plus	1,540	1,404	1,341	1,228	1,195	1,283	1,265
KEHP Couple/Family	5,160	4,419	4,331	4,328	4,364	4,681	4,825
KEHP Single	19,349	19,691	19,770	19,544	19,503	20,091	19,885
Medicare without Prescription	4,340	4,118	4,019	3,983	3,905	3,781	3,639
Medicare with Prescription	39,649	42,264	44,748	47,575	49,965	52,417	54,778

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