



Kentucky Retirement Systems

Public Pension Oversight Board

August 26, 2019








Economic Assumptions



PENSION + INSURANCE	FY2019	FY2018	FY2019	FY2018	FY2019	FY2018
	INFLATION	2.30%	2.30%	2.30%	2.30%	2.30%
INTEREST	5.25%-Pen 6.25%-Ins	5.25%-Pen 6.25%-Ins	6.25%	6.25%	6.25%	6.25%
PAYROLL GROWTH	0.0%	0.0%	0.0%	0.0%	2.0%	2.0%

Estimated Annual Required Contribution

(in \$ millions)

	FY19 Employer Contributions (Actuals)	FY20 Estimated Employer Contributions	FY21 Estimated Employer Contributions	FY21 vs FY20 % Increase	FY21 Estimated Payment Increase
 KERS Non-Hazardous	\$1,143.6	\$1,143.6	\$1,351.6	18.2%	\$208.0
Contribution Rates	83.43%-Normal 49.47%-Reduced	83.43%-Normal 49.47%-Reduced	89.37%	7.1%	5.94%
 KERS Hazardous	\$60.8	\$60.8	\$61.9	1.8%	\$1.1
Contribution Rates	36.85%	36.85%	37.44%	1.6%	0.59%
 CERS Non-Hazardous	\$551.5	\$617.8	N/A	N/A	N/A
Contribution Rates	21.48%	24.06%	N/A	N/A	N/A
 CERS Hazardous	\$204.9	\$229.6	N/A	N/A	N/A
Contribution Rates	35.34%	39.58%	N/A	N/A	N/A
 SPRS	\$71.3	\$71.3	\$75.1	5.3%	\$3.8
Contribution Rates	146.28%	146.28%	153.96%	5.3%	7.68%
Total Employer Contributions	\$2,032.2	\$2,123.2	N/A	N/A	N/A

- The estimates for FY20 and FY21 are based on FY19 salaries as reported and approved contribution rates. The FY20 contribution rates for KERS and SPRS did not change; therefore, a zero change in contributions is assumed.
- The FY21 contribution rates for CERS were not available at the time of this presentation.



Pension- Investment Update 6/30/19

Net of Fees Rates of Return

	Market Value (in \$millions)	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years
KERS Non-Hazardous	\$2,178.5	5.7%	8.4%	5.3%	8.6%	5.4%	8.1%
<i>Plan Index</i>		6.2%	8.4%	5.6%	8.7%	5.5%	8.1%
KERS Hazardous	\$684.9	5.7%	9.2%	5.8%	8.8%	5.5%	8.2%
<i>Plan Index</i>		6.0%	9.2%	5.7%	8.8%	5.5%	8.2%
CERS Non-Hazardous	\$7,188.7	5.8%	9.4%	5.8%	8.7%	5.5%	8.2%
<i>Plan Index</i>		6.0%	9.2%	5.7%	8.8%	5.5%	8.2%
CERS Hazardous	\$2,414.1	5.8%	9.3%	5.7%	8.9%	5.5%	8.2%
<i>Plan Index</i>		6.0%	9.2%	5.7%	8.8%	5.5%	8.2%
SPRS	\$279.6	5.7%	8.6%	5.1%	8.5%	5.3%	8.1%
<i>Plan Index</i>		6.1%	8.7%	5.5%	8.7%	5.5%	8.1%

Pension Fund Unfunded Liability

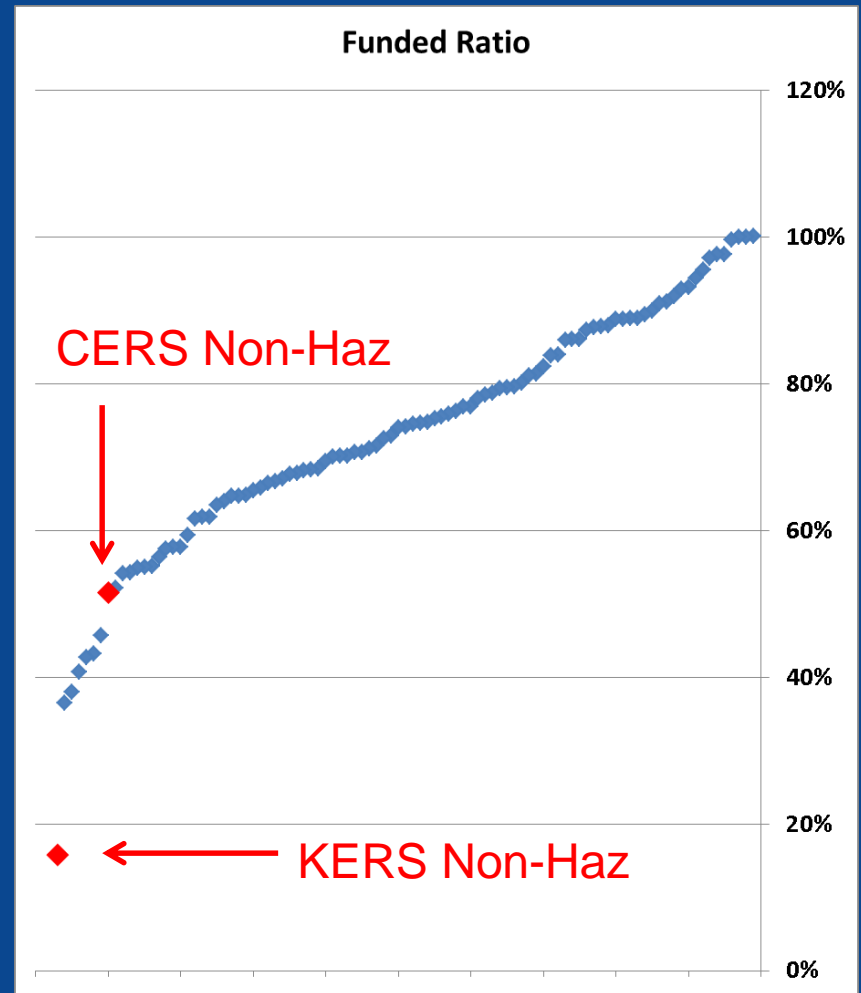
(in \$millions)



	FY2014	FY2015	FY2016	FY2017	FY2018
KERS NON-HAZARDOUS KERS Non-Hazardous	\$9,126.2	\$10,008.7	\$13,332.9	\$13,468.0	\$13,656.0
<i>Funded Ratio</i>	21.0%	19.0%	14.0%	13.6%	12.9%
KERS HAZARDOUS KERS Hazardous	\$289.0	\$338.7	\$493.7	\$514.3	\$512.7
<i>Funded Ratio</i>	64.6%	62.2%	55.0%	54.1%	55.5%
CERS NON-HAZARDOUS CERS Non-Hazardous	\$3,655.4	\$4,265.5	\$5,791.1	\$6,038.6	\$6,241.3
<i>Funded Ratio</i>	62.6%	60.3%	54.0%	52.8%	52.7%
CERS HAZARDOUS CERS Hazardous	\$1,321.2	\$1,516.5	\$2,219.8	\$2,410.7	\$2,470.8
<i>Funded Ratio</i>	59.8%	58.0%	50.0%	48.1%	48.4%
SPRS SPRS	\$438.4	\$485.8	\$682.0	\$705.8	\$721.3
<i>Funded Ratio</i>	35.6%	33.8%	28.0%	27.0%	27.1%

Comparison of Funded Ratio

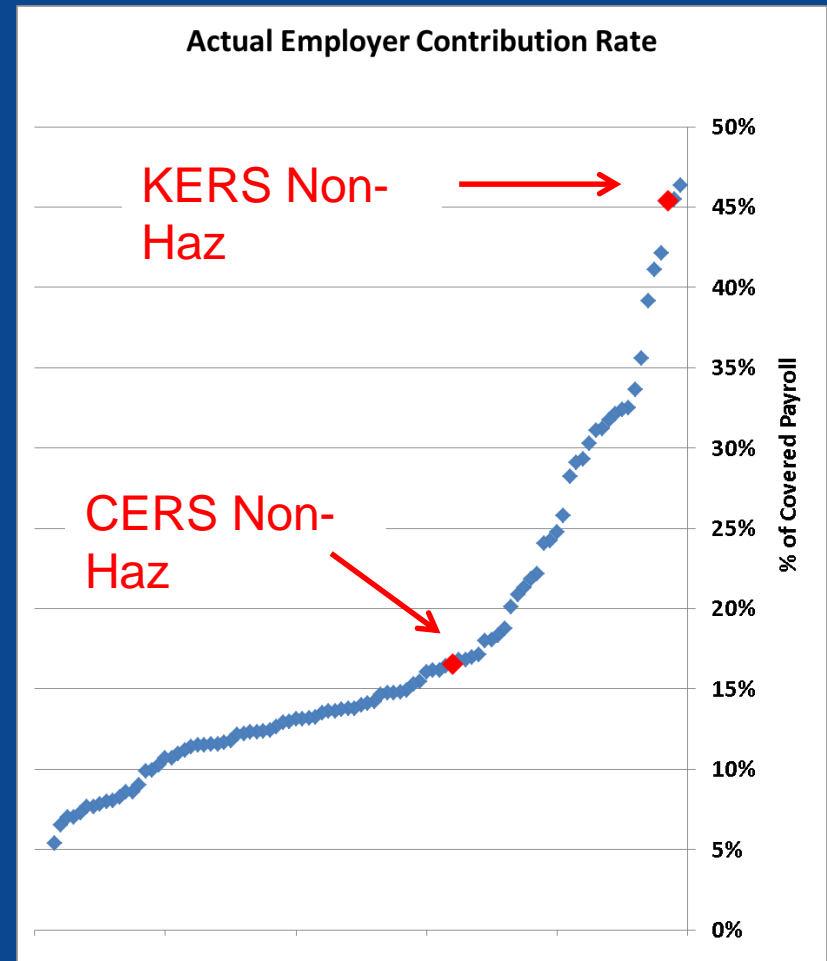
- Comparison of funded ratio to other statewide retirement systems (excluding public safety and firefighter systems).
- Funded ratio percentiles
 - 25th Percentile: 65%
 - 50th Percentile: 74%
 - 75th Percentile: 86%



Source: GRS prepared information from Public Plan Database downloaded in August 2019. N = 97.

Comparison of Employer Contribution Rate

- Comparison of employer contribution rates with other statewide retirement systems.
 - Based on actual contribution rates. Many other retirement systems receive less than an actuarially determined contribution rate.
 - Actuarially determined contribution rates may have different funding periods.
 - Contribution rates shown for KERS and CERS based on those in effect in FY 2018 and exclude the health insurance.
- Contribution rate percentiles
 - 25th Percentile: 12%
 - 50th Percentile: 14%
 - 75th Percentile: 21%



Source: GRS prepared information from Public Plan Database downloaded in August 2019. N = 97.



Estimated Unfunded Accrued Liability Pension Fund




(in \$millions)

	FY2019	FY2020	FY2021	FY2022
KERS NON-HAZARDOUS KERS Non-Hazardous	\$13,571	\$13,325	\$12,967	\$12,585
<i>Funded Ratio</i>	13%	15%	17%	19%
KERS HAZARDOUS KERS Hazardous	510	500	479	461
<i>Funded Ratio</i>	57%	59%	61%	64%
CERS NON-HAZARDOUS CERS Non-Hazardous	6,438	6,470	6,307	6,201
<i>Funded Ratio</i>	52%	53%	55%	57%
CERS HAZARDOUS CERS Hazardous	2,543	2,564	2,523	2,486
<i>Funded Ratio</i>	48%	49%	50%	52%
SPRS SPRS	\$711	\$696	\$675	\$656
<i>Funded Ratio</i>	28%	30%	32%	34%

Note: The projection is based on the results of the June 30, 2018 actuarial valuation. The newly adopted assumptions are not included.





CASH FLOW – Pension Fund
(KERS Non-Haz, KERS Haz & SPRS)
June 30, 2019 (compared to June 30, 2018)
 (\$ in millions)

						
Contributions	FY18	FY19	FY18	FY19	FY18	FY19
<i>Member Contributions</i>	\$110.8	\$99.7	\$18.8	\$18.0	\$5.7	\$5.2
<i>Employer Contributions/Appropriations</i>	689.1	1,035.5	43.7	55.3	46.9	60.0
<i>Northern Trust Settlement</i>	0.3	-	-	-	-	-
<i>Investment Income (Net of Expenses)</i>	34.6	32.5	9.2	11.4	4.0	4.9
Total Cash Inflows	834.8	1,167.7	71.7	84.7	56.6	70.1
<i>Benefit Payments/Refunds</i>	981.0	1,000.7	68.1	72.2	58.8	61.1
<i>Administrative Expenses</i>	10.7	11.7	1.0	1.1	0.2	0.2
Total Cash Outflows	991.7	1,012.4	69.1	73.3	59.0	61.3
NET Cash Flow Before Gains/(Losses)	(156.9)	155.3	2.6	11.4	(2.4)	8.8
<i>Realized Gain/Loss</i>	148.7	35.0	50.2	10.8	17.7	3.9
NET Cash Flow w/ Realized Gains(Losses)	(8.2)	190.3	52.8	22.2	15.3	12.7
<i>Unrealized Gain/(Loss)</i>	(35.7)	47.4	(7.5)	14.5	(3.3)	6.1
Change in Net Position	(43.9)	237.7	45.3	36.7	12.0	18.8
<i>Beginning of Period</i>	\$2,092.8	\$2,048.9	\$605.9	\$651.2	\$256.4	\$268.4
<i>End of Period</i>	\$2,048.9	\$2,286.6	\$651.2	\$687.9	\$268.4	\$287.2

Note: Member contributions include the Health Insurance Contribution (1%) as required by HB1.



**CASH FLOW – Pension Fund
(CERS-Haz and CERS-Haz)
June 30, 2019 (compared to June 30, 2018)
(\$ in millions)**

				
	FY18	FY19	FY18	FY19
Contributions				
<i>Member Contributions</i>	\$171.2	\$170.9	\$63.2	\$61.1
<i>Employer Contributions</i>	358.0	393.4	127.7	138.1
<i>Northern Trust Settlement</i>	0.4	0.0	0.1	0.0
<i>Investment Income (Net of Expenses)</i>	101.2	119.8	33.4	40.7
Contribution Inflow	630.8	684.1	224.4	239.9
<i>Benefit Payments/Refunds</i>	741.2	780.6	248.3	261.9
<i>Administrative Expenses</i>	19.6	21.6	1.5	1.7
Contribution Outflow	760.8	802.2	249.8	263.6
NET Cash Flow Before Gains/(Losses)	(130.0)	(118.1)	(25.4)	(23.7)
<i>Realized Gain/Loss</i>	549.0	120.6	182.8	40.2
NET Cash Flow w/ Realized Gains/(Losses)	419.0	2.5	157.4	16.5
<i>Unrealized Gain/(Loss)</i>	(71.8)	154.1	(24.0)	52.1
Change in Net Position	347.2	156.6	133.4	68.6
<i>Beginning of Period</i>	\$6,739.1	\$7,086.3	\$2,227.7	\$2,361.0
<i>End of Period</i>	\$7,086.3	\$7,242.9	\$2,361.1	\$2,429.6

Note: Member contributions include the Health Insurance Contribution (1%) as required by HB1.



Insurance - Investment Update 6/30/17






Net of Fees Rates of Return

	Market Value (in \$millions)	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years
KERS NON-HAZARDOUS KERS Non-Hazardous	\$926.0	5.0%	8.8%	5.4%	8.7%	4.8%	7.4%
<i>Plan Index</i>		5.9%	9.4%	5.9%	9.4%	5.2%	7.7%
KERS HAZARDOUS KERS Hazardous	\$526.5	5.6%	9.4%	5.9%	9.0%	5.0%	7.5%
<i>Plan Index</i>		5.9%	9.4%	5.9%	9.4%	5.2%	7.7%
CERS NON-HAZARDOUS CERS Non-Hazardous	\$2,472.0	5.7%	9.5%	6.0%	9.0%	5.0%	7.5%
<i>Plan Index</i>		5.9%	9.6%	5.9%	9.5%	5.2%	7.7%
CERS HAZARDOUS CERS Hazardous	\$1,320.2	5.8%	9.6%	6.1%	9.1%	5.0%	7.5%
<i>Plan Index</i>		5.9%	9.3%	5.9%	9.5%	5.2%	7.7%
SPRS SPRS	\$198.9	5.7%	9.5%	6.0%	9.0%	5.0%	7.5%
<i>Plan Index</i>		5.9%	9.3%	5.9%	9.5%	5.2%	7.7%






Insurance Fund Unfunded Liability

(in \$millions)

	FY2014	FY2015	FY2016	FY2017	FY2018
 KERS Non-Hazardous	\$1,605.5	\$1,718.7	\$2,001.6	\$1,859.6	\$1,548.4
<i>Funded Ratio</i>	27.9%	28.8%	29.0%	30.7%	36.4%
 KERS Hazardous	(\$22.4)	(\$76.7)	(\$47.6)	(\$74.0)	(\$118.0)
<i>Funded Ratio</i>	105.6%	120.4%	111.0%	117.6%	130.0%
 CERS Non-Hazardous	\$785.7	\$910.4	\$1,304.3	\$1,127.8	\$721.2
<i>Funded Ratio</i>	70.0%	68.7%	63.0%	66.4%	76.7%
 CERS Hazardous	\$496.1	\$416.3	\$680.4	\$591.7	\$427.7
<i>Funded Ratio</i>	66.8%	72.3%	64.0%	66.9%	74.6%
 SPRS	\$78.7	\$87.1	\$117.6	\$96.2	\$74.6
<i>Funded Ratio</i>	66.4%	65.8%	61.0%	65.2%	71.6%





CASH FLOW – Insurance Fund
(KERS Non-Haz, KERS Haz & SPRS)
June 30, 2019 (compared to June 30, 2018)
 (\$ in millions)

						
	FY18	FY19	FY18	FY19	FY18	FY19
Contributions						
<i>Employer Contributions</i>	\$132.4	\$174.9	\$4.3	\$3.7	\$9.4	\$13.3
<i>Insurance Premiums</i>	0.2	3.3	-	0.2	-	0.1
<i>Retired Reemployed Healthcare</i>	4.1	4.0	1.0	1.2	-	-
<i>Northern Trust Settlement</i>	-	-	-	-	-	-
<i>Investment Income (Net of Expenses)</i>	11.4	16.7	6.1	8.9	2.1	3.2
Contribution Inflow	148.1	198.9	11.4	14.0	11.5	16.6
<i>Healthcare Premiums</i>	131.9	129.1	18.8	19.3	13.9	14.0
<i>Administrative Expenses</i>	0.8	0.9	0.1	0.1	0.1	0.0
Contribution Outflow	132.7	130.0	18.9	19.4	14.0	14.0
NET Cash Flow Before Gains/(Losses)	15.4	68.9	(7.5)	(5.4)	(2.5)	2.6
<i>Realized Gain/Loss</i>	53.8	10.1	33.7	8.1	12.9	3.3
NET Cash Flow w/ Realized Gains/(Losses)	69.2	79.0	26.0	2.7	10.4	5.9
<i>Unrealized Gain/(Loss)</i>	(3.9)	16.4	2.7	11.1	1.4	4.2
Change in Net Position	65.3	95.4	28.9	13.8	11.8	10.1
<i>Beginning of Period</i>	\$781.4	\$846.7	\$484.4	\$513.3	\$178.2	\$190.0
<i>Ending of Period</i>	\$846.7	\$942.1	\$513.3	\$527.1	\$190.0	\$200.1



**CASH FLOW – Insurance Fund
(CERS Non-Haz and CERS-Haz)
June 30, 2019 (compared to June 30, 2018)
(in \$millions)**

				
	FY18	FY19	FY18	FY19
Contributions				
<i>Employer Contributions</i>	\$120.8	\$135.5	\$55.0	\$61.1
<i>Insurance Premiums</i>	0.6	4.2	(0.2)	0.4
<i>Retired Reemployed Healthcare</i>	3.8	4.1	1.0	1.2
<i>Northern Trust Settlement</i>	0.1	-	-	-
<i>Investment Income (Net of Expenses)</i>	26.8	41.7	14.2	21.9
Contribution Inflow	152.1	185.5	70.0	84.6
<i>Healthcare Premiums</i>	135.9	137.0	75.4	78.4
<i>Administrative Expenses</i>	0.7	0.9	0.4	0.4
Contribution Outflow	136.6	137.9	75.8	78.8
NET Cash Flow Before Gains/(Losses)	15.5	47.6	5.8	5.8
<i>Realized Gain/Loss</i>	155.1	39.8	85.1	22.1
NET Cash Flow w/ Realized Gains/(Losses)	170.6	87.4	79.3	27.9
<i>Unrealized Gain/(Loss)</i>	15.6	52.2	9.7	28.6
Change in Net Position	186.2	139.6	\$89.0	56.5
<i>Beginning of Period</i>	\$2,160.6	\$2,346.8	\$1,179.3	\$1,268.3
<i>End of Period</i>	\$2,346.8	\$2,486.4	\$1,268.3	\$1,324.8



Outstanding Invoice by Type

Invoice Type	6/30/2019	3/31/2019	Change
<i>Averaging Refund to Employer</i>	(\$807,064)	(\$1,916,127)	-58%
<i>Employer Free Military and Decompression Service</i>	309,057	492,496	-37%
<i>Expense Allowance</i>	36,023	36,237	-1%
<i>Expiring Post Pending Invoice</i>	5,677	(5,540)	202%
<i>Health Insurance Reimbursement</i>	1,585,316	1,724,440	-8%
<i>IPS Employer Refund</i>	(11,319)	(16,836)	-33%
<i>Master Commissioner Employer (ANOC)</i>	211,311	211,118	0%
<i>Member Pension Spiking Refund</i>	(11,054)	(10,923)	1%
<i>Monthly Reporting Invoice</i>	1,109,514	1,021,404	9%
<i>Omitted Employer</i>	795,475	700,891	13%
<i>Penalty – Monthly Reporting</i>	341,353	354,331	-4%
<i>Pension Spiking</i>	2,432,879	2,883,962	-16%
<i>Personnel Adjustment</i>	(181,364)	(54,925)	230%
<i>Refunded Member Contributions Due</i>	347	344	1%
<i>Reinstatement</i>	185,107	377,511	-51%
<i>Standard Sick Leave</i>	6,921,910	8,472,809	-18%
TOTAL	\$12,923,168	\$14,271,191	-9%



Top 10 Outstanding Invoices by Employer

Invoice Type	6/30/2019	3/31/2019	Change
<i>Kentucky State Police</i>	\$5,419,131	\$5,966,047	-9%
<i>Kentucky Personnel Cabinet</i>	813,677	795,256	2%
<i>Department of Highways</i>	611,544	354,239	73%
<i>Kenton County Airport Board</i>	405,389	407,597	-1%
<i>City of Covington</i>	350,871	503,289	-30%
<i>New Vista of the Bluegrass, Inc</i>	293,039	306,285	-4%
<i>Kentucky Community and Technical College System</i>	283,975	282,975	0%
<i>Judicial Department AOC</i>	251,340	294,290	-15%
<i>Kentucky River Regional Jail</i>	230,995	90,977	154%
<i>City of Villa Hills</i>	212,533	212,533	0%
TOTAL	\$9,545,504	\$9,886,488	-3%



Kentucky State Police



Invoice Type	Invoice	Unpaid	Average Age
<i>Employer Free Military and Decompression Service</i>	\$140,490	\$140,490	523 days
<i>Expiring Post Pending Invoice</i>	(2,691)	(2,691)	281 days
<i>Health Insurance Reimbursement</i>	297,142	297,142	255 days
<i>IPS Employer Refund</i>	(1,690)	(1,690)	543 days
<i>Member Pension Spiking Refund</i>	(1,411)	(1,411)	169 days
<i>Monthly Reporting Invoice</i>	911	911	888 days
<i>Pension Spiking</i>	121,923	49,903	655 days
<i>Personnel Adjustment</i>	(8,492)	(8,492)	345 days
<i>Standard Sick Leave</i>	5,053,718	5,053,718	338 days
TOTAL	\$5,599,900	\$5,527,880	354 days
	Payments Rec'd		
<i>Fiscal Year 2017-2018</i>	\$3,107,970		
<i>Fiscal Year 2018-2019</i>	9,480,065		
<i>Fiscal Year 2019-2020</i>	\$627,663		