



July 22, 2019

Mr. David Eager
Executive Director
Kentucky Retirement Systems
1260 Louisville Road
Frankfort, KY 40601

**Re: Actuarial Analysis of Proposed Pension Legislation HB 2 (Provided July 19, 2019)
(Establish Employer Contribution Rates in State Statute) and its Financial Impact on the
Kentucky Employees Retirement System (KERS)**

**19 SS HB 2
AA Statement 1 of 1**

Dear Mr. Eager:

The purpose of this letter is to provide an actuarial analysis of proposed legislation HB 2 (provided July 19, 2019) as it applies to the Non-Hazardous Kentucky Employees Retirement System (System). For the years beginning July 1, 2019 and ending June 30, 2044, this proposed legislation would prescribe a statutory contribution rate of 49.47% of pay for approximately 118 quasi-governmental agencies (e.g. health districts, regional mental health services, non-P1 agencies, and universities) and maintain the actuarially determined contribution rate for all other employers participating in the System. This legislation will also establish a contribution floor for fiscal years beginning July 1, 2020 and ending June 30, 2044 such that each quasi and non-quasi agency in KERS will make contributions that are not less than the dollar amount they contributed for the 2018/2019 fiscal year. This fiscal impact is the same as we previously communicated regarding BR 11.

Summary of Cost Impact

The proposed legislation has a \$121 million fiscal impact on the KERS Non-Hazardous system (approximately \$11 million annually, payable for 23 years) as a result of maintaining the 49.47% contribution rate for the quasi agencies for the 2019/2020 fiscal year without a corresponding increase in the contribution amount paid by the non-quasi agencies. The proposed legislation will require the quasi agencies to continue contributing the same 49.47% of pay on their payroll (subject to a minimum dollar amount) and a corresponding increase in the contribution effort for the non-quasi agencies beginning with July 1, 2020 such that the total contribution dollars received by the System in future years remains equals the total calculated actuarially determined amount. This means that the contribution requirement for the non-quasi employers will need to increase from 90.29% to 104.07% of pay (pension and insurance) beginning with FY 2021.

Also, the amortization payments for the retiree insurance fund would be redirected to the pension fund in fiscal years beginning in July 1, 2019 through June 30, 2024. The redirection of approximately \$130 million contributions for each of these five years is not projected to materially change the total employer contribution requirement, but will result in a reduction in the contribution rate to the pension fund and a corresponding increase in the contribution rate in the insurance fund.

Requiring the non-quasi agencies to make contributions based on an actuarially determined contribution rate continues to protect the System in the event of unfavorable investment and/or liability experience. Also, the establishment of a minimum dollar contribution requirement for all the agencies (quasi and non-quasi) in KERS will meaningfully reduce the KERS's financial risk of declining covered payroll. Please refer to page 4 for additional explanation and comments.

The attached exhibits provide a projection of the financial status of the System under two scenarios:

1. Active membership remains constant, which results in approximately 2% annual payroll increases over the 30-year projection. This represents experience that is more favorable than the current 0% payroll growth assumption and the experience in recent years. As shown in the exhibits, the actuarially determined contribution rate decreases as a percentage of payroll as payroll increases.
2. Active membership decreases by 2% each year, which results in relatively constant payroll over the 30-year projection. This represents experience that approximately aligns with the current 0% payroll growth assumption. As shown in the exhibits, the actuarially determined contribution rate remains relatively constant as a percentage of covered payroll, and the dollar contribution amounts required to pay for the unfunded liability remain the same as the first scenario.

Both scenarios are consistent with the assumptions used in prior actuarial and fiscal analysis of the System. The use of different payroll growth scenarios provides the stakeholders with an idea of the sensitivity of the future costs due to varying demographic experience. We believe Scenario 2 is more applicable for providing the anticipated long-term contribution effort of the System.

Summary of Proposed Legislation

This proposed legislation establishes the following statutory employer contribution requirements.

Employer Contribution Rates						
Fiscal Years	Pension		Insurance		Total	
	Quasi	Non-Quasi	Quasi	Non-Quasi	Quasi	Non-Quasi
(1)	(2)	(3)	(4)	(5)	(6)	(7)
7/1/19 to 6/30/20	47.26%	81.22%	2.21% ¹	2.21% ¹	49.47%	83.43%
7/1/20 to 6/30/24	47.26% ³	ADEC ²	2.21% ¹	2.21% ¹	49.47%	ADEC ²
7/1/24 to 6/30/44	41.06%	ADEC ²	8.41%	ADEC ²	49.47%	ADEC ²

¹ The employer normal cost rate, but not to exceed 2.21% of pay.

² An actuarially determined contribution (ADEC) rate using a 30-year funding period as of June 30, 2013 (i.e. 24 years remaining as of June 30, 2019) with the non-quasi ADEC adjusted for the portion of the ADEC on quasi payroll not paid by the 49.47% contribution. For the period of July 1, 2020 through June 30, 2024, the unfunded accrued liability amortization contribution for the insurance plan will be paid to the pension plan.

³ 49.47% less the insurance contribution rate.

Additionally, this legislation establishes a minimum dollar contribution requirement for the quasi agencies for fiscal years beginning July 1, 2020 and ending June 30, 2044 that is equal to the dollar amount paid by the agency in fiscal year 2018/2019.

Finally, the proposed legislation will only allow the Board to adjust the assumed rate of return by a maximum of 0.25% per year and requires that the actuary and Board only consider investment return experience over a period greater than 20 years when evaluating historical investment return experience.

GRS Comments on Proposed Legislation

Bifurcating the required contributions for different agencies is a policy decision for the Commonwealth. The financial condition of the System is expected to continue to improve so long as the contributions received from all agencies participating in the System total the actuarially determined contribution amount calculated based on the established funding policy. Other than the \$121 million in lower contributions for fiscal year 2019/2020, this proposed legislation is projected to be materially fiscally neutral to KRS as a whole, meaning the total contribution dollars that the System expects to receive under the current plan and the proposed legislation are materially the same.

Continuing to require the non-quasi agencies to make contributions based on an actuarially determined contribution rate protects the System in the event of unfavorable actuarial experience. Also, the non-quasi agencies will experience lower future contributions if actual investment and liability experience is more favorable than assumed. Given the continual decline in covered payroll the System has experienced, we expect the establishment of a minimum dollar contribution requirement equal to the amount paid for fiscal year 2018/2019 for all participating agencies (quasi and non-quasi) will eliminate the risk of future declining payroll with respect to the quasi agencies since they were already contributing at the 49.47% contribution rate in fiscal year 2018/2019. This provision will also lower the System's exposure to the risk of declining payroll with respect to the non-quasi agencies, but to a lesser extent since the contribution rate for the non-quasi agencies is projected to increase from 83.43% of pay for fiscal year 2018/2019 to over 100% of pay beginning with the 2020/2021 fiscal year. As a result, payroll for a non-quasi agency would have to decrease more significantly for the minimum dollar contribution to apply.

We do not believe the limitations added in regard to the Board's authority to make investment return assumption changes are overly limiting. However, this provision may be problematic if KRS made a significant change to their investment policy that warranted a change in the investment return assumption that was greater than 0.25%.

Due to the shift in contribution effort from the insurance fund to the pension fund from July 1, 2019 to June 30, 2024, the funded ratio of the insurance fund is projected to decrease from 37% as of June 30, 2019 to 24% by June 30, 2024. In reality, the decline in the funded ratio for the insurance funds would likely be greater than shown in the exhibits as the funds would be less likely to actually earn a 6.25% investment return due to the increased liquidity needs to pay benefits. While this provision directs more contributions to the larger and less well funded pension fund, we do not recommend the underfunding of the insurance fund compared to the actuarially determined amount.

Basis of Calculations

GRS based the calculations and analysis in this letter on the member and financial data provided by Kentucky Retirement Systems for use in performing the actuarial valuation as of June 30, 2018. Except where noted otherwise, the projections assume no actuarial gains or losses will occur in the future, and that members will terminate, retire, become disabled, or die as predicted by the actuarial assumptions documented in the June 30, 2018 experience study report (recently adopted by the Board). Our calculations are based upon assumptions regarding future events, which may or may not materialize. Depending on actual plan experience, actual results could deviate significantly from our projections.

Closing

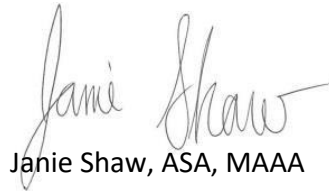
We are not attorneys and we cannot provide a legal opinion regarding the changes in this proposed legislation. Nothing in this letter should be construed as providing legal, investment or tax advice.

Mr. White is an Enrolled Actuary. Both of the undersigned are members of the American Academy of Actuaries and we meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. In addition, both of the undersigned are experienced in performing valuations for large public retirement systems.

Sincerely,



Daniel J. White, FSA, MAAA, EA



Janie Shaw, ASA, MAAA

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Enclosures

Section 1. Comparison of Fiscal Impact

Section 2. Projected Cost of the Retirement and Insurance Funds – Current Plan

Section 3. Projected Cost of the Retirement and Insurance Funds – Proposed Legislation

HB 2

Section 1.

**Comparison of Fiscal Impact
Current Plan vs. Proposed Changes**

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Actuarial Analysis of HB 2: Comparison of Current Plan and Proposed Legislation
Exhibit 1-1
(\$ in Millions)

Proposed Contribution Provisions: Quasi Employers Pay 49.47% & Non-Quasi Employers Pay the Remaining ADEC
Valuation Assumptions: Recently Adopted Experience Study Assumptions (5.25% discount rate and 0% amortization payroll growth)

Projected Experience Scenario #1: Active Headcount Remains Constant (resulting in 2% payroll growth, which is more favorable than valuation assumptions)
& Assets Earn 5.25% Annually (which aligns with valuation assumptions)

Fiscal Year Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Quasi Employer Contribution			Non-Quasi Employer Contribution			Total Employer Contributions		
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
2018	\$ 13,656	\$ 13,656	\$ -	13%	13%	0%	41.06%	41.06%	0.00%	71.03%	71.03%	0.00%	\$ 940	\$ 940	\$ -
2019	14,269	14,269	-	13%	13%	0%	71.03%	47.26%	-23.77%	71.03%	81.22%	10.19%	1,049	1,080	31
2020	14,068	14,037	(31)	14%	14%	0%	78.11%	47.37%	-30.74%	78.11%	100.29%	22.18%	1,166	1,308	142
2021	13,696	13,517	(179)	16%	18%	2%	78.11%	47.47%	-30.64%	78.11%	100.39%	22.28%	1,180	1,326	146
2022	13,306	12,968	(338)	19%	21%	2%	75.55%	47.58%	-27.97%	75.55%	96.49%	20.94%	1,157	1,298	141
2023	12,926	12,425	(501)	21%	24%	3%	75.55%	47.69%	-27.86%	75.55%	96.60%	21.05%	1,174	1,319	145
2024	12,506	11,830	(676)	23%	27%	4%	72.81%	41.06%	-31.75%	72.81%	78.06%	5.25%	1,149	1,092	(57)
2025	12,088	11,435	(653)	26%	30%	4%	72.81%	41.06%	-31.75%	72.81%	78.06%	5.25%	1,168	1,110	(58)
2026	11,626	10,998	(628)	28%	32%	4%	69.96%	41.06%	-28.90%	69.96%	74.51%	4.55%	1,141	1,085	(56)
2027	11,166	10,563	(603)	30%	34%	4%	69.96%	41.06%	-28.90%	69.96%	74.51%	4.55%	1,160	1,103	(57)
2028	10,661	10,084	(577)	33%	37%	4%	67.06%	41.06%	-26.00%	67.06%	70.88%	3.82%	1,132	1,076	(56)
2029	10,156	9,607	(549)	36%	39%	3%	67.06%	41.06%	-26.00%	67.06%	70.88%	3.82%	1,153	1,096	(57)
2030	9,602	9,082	(520)	39%	42%	3%	64.14%	41.06%	-23.08%	64.14%	67.22%	3.08%	1,124	1,068	(56)
2031	9,048	8,559	(489)	42%	45%	3%	64.14%	41.06%	-23.08%	64.14%	67.22%	3.08%	1,147	1,090	(57)
2032	8,440	7,983	(457)	45%	48%	3%	61.14%	41.06%	-20.08%	61.14%	63.46%	2.32%	1,116	1,060	(56)
2033	7,833	7,409	(424)	49%	51%	2%	61.14%	41.06%	-20.08%	61.14%	63.46%	2.32%	1,139	1,083	(56)
2034	7,169	6,781	(388)	52%	55%	3%	58.09%	41.06%	-17.03%	58.09%	59.66%	1.57%	1,106	1,051	(55)
2035	6,504	6,152	(352)	56%	59%	3%	58.09%	41.06%	-17.03%	58.09%	59.66%	1.57%	1,131	1,075	(56)
2036	5,780	5,467	(313)	61%	63%	2%	55.01%	41.06%	-13.95%	55.01%	55.81%	0.80%	1,096	1,042	(54)
2037	5,054	4,781	(273)	65%	67%	2%	55.01%	41.06%	-13.95%	55.01%	55.81%	0.80%	1,123	1,067	(56)
2038	4,263	4,032	(231)	70%	72%	2%	51.75%	41.06%	-10.69%	51.75%	51.75%	0.00%	1,082	1,029	(53)
2039	3,474	3,286	(188)	76%	77%	1%	51.75%	41.06%	-10.69%	51.75%	51.75%	0.00%	1,109	1,054	(55)
2040	2,617	2,476	(141)	81%	82%	1%	48.19%	41.06%	-7.13%	48.19%	47.32%	-0.87%	1,059	1,006	(53)
2041	1,770	1,674	(96)	87%	88%	1%	48.19%	41.06%	-7.13%	48.19%	47.32%	-0.87%	1,084	1,031	(53)
2042	853	807	(46)	94%	94%	0%	42.87%	40.79%	-2.08%	42.87%	40.79%	-2.08%	988	940	(48)
2043	-	-	-	100%	100%	0%	4.26%	4.26%	0.00%	4.26%	4.26%	0.00%	101	101	-
2044	-	-	-	100%	100%	0%	4.23%	4.23%	0.00%	4.23%	4.23%	0.00%	102	102	-
2045	-	-	-	100%	100%	0%	4.21%	4.21%	0.00%	4.21%	4.21%	0.00%	104	104	-
2046	-	-	-	100%	100%	0%	4.19%	4.19%	0.00%	4.19%	4.19%	0.00%	106	106	-
2047	-	-	-	100%	100%	0%	4.17%	4.17%	0.00%	4.17%	4.17%	0.00%	108	108	-

Gabriel Roeder Smith & Company

Kentucky Retirement Systems
KERS Non-Hazardous Insurance Fund
Actuarial Analysis of HB 2: Comparison of Current Plan and Proposed Legislation
Exhibit 1-2
(\$ in Millions)

Proposed Contribution Provisions: Quasi Employers Pay 49.47% & Non-Quasi Employers Pay the Remaining ADEC
Valuation Assumptions: Recently Adopted Experience Study Assumptions (6.25% discount rate and 0% amortization payroll growth)

Projected Experience Scenario #1: Active Headcount Remains Constant (resulting in 2% payroll growth, which is more favorable than valuation assumptions)
& Assets Earn 6.25% Annually (which aligns with valuation assumptions)

Fiscal Year Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Quasi Employer Contribution			Non-Quasi Employer Contribution			Total Employer Contributions		
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
2018	\$ 1,549	\$ 1,549	\$ -	36%	36%	0%	8.41%	8.41%	0.00%	12.40%	12.40%	0.00%	\$ 167	\$ 167	\$ -
2019	1,633	1,633	-	37%	37%	0%	12.40%	2.21%	-10.19%	12.40%	2.21%	-10.19%	182	32	(150)
2020	1,581	1,735	154	41%	35%	-6%	10.90%	2.10%	-8.80%	10.90%	2.10%	-8.80%	162	31	(131)
2021	1,533	1,832	299	44%	33%	-11%	10.90%	2.00%	-8.90%	10.90%	2.00%	-8.90%	164	30	(134)
2022	1,487	1,943	456	47%	31%	-16%	10.31%	1.89%	-8.42%	10.31%	1.89%	-8.42%	158	29	(129)
2023	1,446	2,063	617	49%	28%	-21%	10.31%	1.78%	-8.53%	10.31%	1.78%	-8.53%	160	28	(132)
2024	1,399	2,192	793	52%	24%	-28%	9.72%	8.41%	-1.31%	9.72%	16.13%	6.41%	153	225	72
2025	1,354	2,122	768	54%	28%	-26%	9.72%	8.41%	-1.31%	9.72%	16.13%	6.41%	156	229	73
2026	1,302	2,042	740	56%	31%	-25%	9.13%	8.41%	-0.72%	9.13%	15.07%	5.94%	149	220	71
2027	1,253	1,967	714	58%	34%	-24%	9.13%	8.41%	-0.72%	9.13%	15.07%	5.94%	152	224	72
2028	1,196	1,879	683	60%	38%	-22%	8.55%	8.41%	-0.14%	8.55%	14.09%	5.54%	145	215	70
2029	1,141	1,795	654	62%	41%	-21%	8.55%	8.41%	-0.14%	8.55%	14.09%	5.54%	147	219	72
2030	1,078	1,698	620	65%	44%	-21%	7.97%	8.41%	0.44%	7.97%	13.09%	5.12%	140	210	70
2031	1,018	1,604	586	67%	47%	-20%	7.97%	8.41%	0.44%	7.97%	13.09%	5.12%	143	215	72
2032	949	1,498	549	69%	51%	-18%	7.45%	8.41%	0.96%	7.45%	12.17%	4.72%	136	206	70
2033	883	1,395	512	71%	54%	-17%	7.45%	8.41%	0.96%	7.45%	12.17%	4.72%	139	211	72
2034	808	1,278	470	73%	58%	-15%	6.95%	8.41%	1.46%	6.95%	11.25%	4.30%	133	202	69
2035	735	1,163	428	76%	61%	-15%	6.95%	8.41%	1.46%	6.95%	11.25%	4.30%	136	206	70
2036	653	1,035	382	78%	65%	-13%	6.49%	8.41%	1.92%	6.49%	10.39%	3.90%	130	198	68
2037	573	908	335	81%	70%	-11%	6.49%	8.41%	1.92%	6.49%	10.39%	3.90%	133	203	70
2038	484	768	284	84%	74%	-10%	6.04%	8.41%	2.37%	6.04%	9.51%	3.47%	127	194	67
2039	395	627	232	87%	79%	-8%	6.04%	8.41%	2.37%	6.04%	9.51%	3.47%	130	199	69
2040	297	472	175	90%	84%	-6%	5.57%	8.41%	2.84%	5.57%	8.57%	3.00%	123	188	65
2041	202	320	118	93%	89%	-4%	5.57%	8.41%	2.84%	5.57%	8.57%	3.00%	126	192	66
2042	95	153	58	97%	95%	-2%	4.84%	7.45%	2.61%	4.84%	7.45%	2.61%	112	172	60
2043	-	-	-	100%	100%	0%	0.48%	0.48%	0.00%	0.48%	0.48%	0.00%	11	11	-
2044	-	-	-	100%	100%	0%	0.46%	0.46%	0.00%	0.46%	0.46%	0.00%	11	11	-
2045	-	-	-	100%	100%	0%	0.45%	0.45%	0.00%	0.45%	0.45%	0.00%	11	11	-
2046	-	-	-	100%	100%	0%	0.44%	0.44%	0.00%	0.44%	0.44%	0.00%	11	11	-
2047	-	-	-	100%	100%	0%	0.43%	0.43%	0.00%	0.43%	0.43%	0.00%	11	11	-

Gabriel Roeder Smith & Company

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Actuarial Analysis of HB 2: Comparison of Current Plan and Proposed Legislation
Exhibit 1-3
(\$ in Millions)

Proposed Contribution Provisions: Quasi Employers Pay 49.47% & Non-Quasi Employers Pay the Remaining ADEC
Valuation Assumptions: Recently Adopted Experience Study Assumptions (5.25% discount rate and 0% amortization payroll growth)

Projected Experience Scenario #2: Active Headcount Decreases by 2% Each Year (resulting in 0% payroll growth, which aligns with valuation assumptions)
& Assets Earn 5.25% Annually (which aligns with valuation assumptions)

Fiscal Year Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Quasi Employer Contribution			Non-Quasi Employer Contribution			Total Employer Contributions		
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
2018	\$ 13,656	\$ 13,656	\$ -	13%	13%	0%	41.06%	41.06%	0.00%	71.03%	71.03%	0.00%	\$ 940	\$ 940	\$ -
2019	14,268	14,268	-	13%	13%	0%	71.03%	47.26%	-23.77%	71.03%	81.22%	10.19%	1,035	1,065	30
2020	14,081	14,050	(31)	14%	14%	0%	79.22%	47.37%	-31.85%	79.22%	101.97%	22.75%	1,148	1,289	141
2021	13,725	13,548	(177)	16%	17%	1%	79.22%	47.47%	-31.75%	79.22%	102.07%	22.85%	1,144	1,285	141
2022	13,371	13,040	(331)	18%	20%	2%	79.27%	47.58%	-31.69%	79.27%	102.09%	22.82%	1,140	1,280	140
2023	13,007	12,515	(492)	20%	23%	3%	79.27%	47.69%	-31.58%	79.27%	102.20%	22.93%	1,136	1,278	142
2024	12,623	11,959	(664)	22%	26%	4%	79.27%	41.06%	-38.21%	79.27%	86.22%	6.95%	1,133	1,078	(55)
2025	12,221	11,578	(643)	24%	28%	4%	79.27%	41.06%	-38.21%	79.27%	86.22%	6.95%	1,131	1,076	(55)
2026	11,795	11,175	(620)	27%	31%	4%	79.20%	41.06%	-38.14%	79.20%	86.17%	6.97%	1,127	1,073	(54)
2027	11,348	10,751	(597)	29%	33%	4%	79.20%	41.06%	-38.14%	79.20%	86.17%	6.97%	1,124	1,070	(54)
2028	10,877	10,305	(572)	31%	35%	4%	79.13%	41.06%	-38.07%	79.13%	86.04%	6.91%	1,121	1,066	(55)
2029	10,383	9,837	(546)	34%	37%	3%	79.13%	41.06%	-38.07%	79.13%	86.04%	6.91%	1,119	1,065	(54)
2030	9,862	9,342	(520)	36%	40%	4%	79.03%	41.06%	-37.97%	79.03%	85.89%	6.86%	1,116	1,062	(54)
2031	9,312	8,822	(490)	39%	42%	3%	79.03%	41.06%	-37.97%	79.03%	85.89%	6.86%	1,117	1,062	(55)
2032	8,733	8,273	(460)	42%	45%	3%	78.74%	41.06%	-37.68%	78.74%	85.49%	6.75%	1,113	1,058	(55)
2033	8,124	7,696	(428)	46%	48%	2%	78.74%	41.06%	-37.68%	78.74%	85.49%	6.75%	1,114	1,059	(55)
2034	7,482	7,087	(395)	49%	52%	3%	78.31%	41.06%	-37.25%	78.31%	84.93%	6.62%	1,109	1,054	(55)
2035	6,807	6,449	(358)	53%	55%	2%	78.31%	41.06%	-37.25%	78.31%	84.93%	6.62%	1,111	1,056	(55)
2036	6,095	5,774	(321)	57%	59%	2%	77.76%	41.06%	-36.70%	77.76%	84.24%	6.48%	1,107	1,052	(55)
2037	5,349	5,068	(281)	62%	64%	2%	77.76%	41.06%	-36.70%	77.76%	84.24%	6.48%	1,111	1,056	(55)
2038	4,558	4,317	(241)	67%	69%	2%	76.82%	41.06%	-35.76%	76.82%	83.06%	6.24%	1,104	1,049	(55)
2039	3,732	3,536	(196)	72%	74%	2%	76.82%	41.06%	-35.76%	76.82%	83.06%	6.24%	1,109	1,054	(55)
2040	2,858	2,708	(150)	79%	80%	1%	75.58%	41.06%	-34.52%	75.58%	81.52%	5.94%	1,097	1,042	(55)
2041	1,949	1,847	(102)	85%	86%	1%	75.58%	41.06%	-34.52%	75.58%	81.52%	5.94%	1,102	1,047	(55)
2042	988	936	(52)	92%	93%	1%	73.74%	41.06%	-32.68%	73.74%	79.20%	5.46%	1,079	1,026	(53)
2043	-	-	-	100%	100%	0%	4.31%	4.31%	0.00%	4.31%	4.31%	0.00%	63	63	-
2044	-	-	-	100%	100%	0%	4.27%	4.27%	0.00%	4.27%	4.27%	0.00%	63	63	-
2045	-	-	-	100%	100%	0%	4.24%	4.24%	0.00%	4.24%	4.24%	0.00%	63	63	-
2046	-	-	-	100%	100%	0%	4.21%	4.21%	0.00%	4.21%	4.21%	0.00%	62	62	-
2047	-	-	-	100%	100%	0%	4.18%	4.18%	0.00%	4.18%	4.18%	0.00%	62	62	-

Gabriel Roeder Smith & Company

Kentucky Retirement Systems
KERS Non-Hazardous Insurance Fund
Actuarial Analysis of HB 2: Comparison of Current Plan and Proposed Legislation
Exhibit 1-4
(\$ in Millions)

Proposed Contribution Provisions: Quasi Employers Pay 49.47% & Non-Quasi Employers Pay the Remaining ADEC
Valuation Assumptions: Recently Adopted Experience Study Assumptions (6.25% discount rate and 0% amortization payroll growth)

Projected Experience Scenario #2: Active Headcount Decreases by 2% Each Year (resulting in 0% payroll growth, which aligns with valuation assumptions)
& Assets Earn 6.25% Annually (which aligns with valuation assumptions)

Fiscal Year Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Quasi Employer Contribution			Non-Quasi Employer Contribution			Total Employer Contributions		
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
2018	\$ 1,549	\$ 1,549	\$ -	36%	36%	0%	8.41%	8.41%	0.00%	12.40%	12.40%	0.00%	\$ 167	\$ 167	\$ -
2019	1,633	1,633	-	37%	37%	0%	12.40%	2.21%	-10.19%	12.40%	2.21%	-10.19%	180	32	(148)
2020	1,583	1,736	153	41%	35%	-6%	11.07%	2.10%	-8.97%	11.07%	2.10%	-8.97%	160	30	(130)
2021	1,538	1,833	295	44%	33%	-11%	11.07%	2.00%	-9.07%	11.07%	2.00%	-9.07%	159	29	(130)
2022	1,496	1,945	449	46%	30%	-16%	10.82%	1.89%	-8.93%	10.82%	1.89%	-8.93%	155	27	(128)
2023	1,458	2,067	609	49%	27%	-22%	10.82%	1.78%	-9.04%	10.82%	1.78%	-9.04%	155	25	(130)
2024	1,417	2,197	780	51%	24%	-27%	10.60%	8.41%	-2.19%	10.60%	17.69%	7.09%	151	221	70
2025	1,374	2,132	758	53%	27%	-26%	10.60%	8.41%	-2.19%	10.60%	17.69%	7.09%	151	221	70
2026	1,328	2,061	733	55%	30%	-25%	10.37%	8.41%	-1.96%	10.37%	17.35%	6.98%	148	217	69
2027	1,280	1,987	707	57%	33%	-24%	10.37%	8.41%	-1.96%	10.37%	17.35%	6.98%	147	216	69
2028	1,228	1,909	681	59%	36%	-23%	10.13%	8.41%	-1.72%	10.13%	17.06%	6.93%	144	213	69
2029	1,174	1,826	652	61%	39%	-22%	10.13%	8.41%	-1.72%	10.13%	17.06%	6.93%	144	212	68
2030	1,115	1,737	622	63%	42%	-21%	9.89%	8.41%	-1.48%	9.89%	16.77%	6.88%	140	209	69
2031	1,055	1,645	590	65%	45%	-20%	9.89%	8.41%	-1.48%	9.89%	16.77%	6.88%	140	209	69
2032	991	1,546	555	67%	48%	-19%	9.65%	8.41%	-1.24%	9.65%	16.45%	6.80%	137	206	69
2033	924	1,443	519	69%	51%	-18%	9.65%	8.41%	-1.24%	9.65%	16.45%	6.80%	137	206	69
2034	852	1,332	480	71%	55%	-16%	9.46%	8.41%	-1.05%	9.46%	16.20%	6.74%	134	204	70
2035	777	1,216	439	73%	58%	-15%	9.46%	8.41%	-1.05%	9.46%	16.20%	6.74%	135	204	69
2036	697	1,092	395	76%	62%	-14%	9.28%	8.41%	-0.87%	9.28%	15.94%	6.66%	132	202	70
2037	614	961	347	79%	67%	-12%	9.28%	8.41%	-0.87%	9.28%	15.94%	6.66%	133	203	70
2038	525	822	297	82%	71%	-11%	9.08%	8.41%	-0.67%	9.08%	15.63%	6.55%	131	200	69
2039	431	676	245	85%	76%	-9%	9.08%	8.41%	-0.67%	9.08%	15.63%	6.55%	131	201	70
2040	331	518	187	88%	82%	-6%	8.87%	8.41%	-0.46%	8.87%	15.24%	6.37%	129	198	69
2041	226	355	129	92%	87%	-5%	8.87%	8.41%	-0.46%	8.87%	15.24%	6.37%	130	199	69
2042	115	180	65	96%	94%	-2%	8.60%	8.41%	-0.19%	8.60%	14.69%	6.09%	126	193	67
2043	-	-	-	100%	100%	0%	0.50%	0.50%	0.00%	0.50%	0.50%	0.00%	7	7	-
2044	-	-	-	100%	100%	0%	0.50%	0.50%	0.00%	0.50%	0.50%	0.00%	7	7	-
2045	-	-	-	100%	100%	0%	0.48%	0.48%	0.00%	0.48%	0.48%	0.00%	7	7	-
2046	-	-	-	100%	100%	0%	0.47%	0.47%	0.00%	0.47%	0.47%	0.00%	7	7	-
2047	-	-	-	100%	100%	0%	0.46%	0.46%	0.00%	0.46%	0.46%	0.00%	7	7	-

Gabriel Roeder Smith & Company

HB 2
Section 2.
Projected Cost of the Retirement and Insurance
Current Plan

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Actuarial Analysis of HB 2: Current Plan
Exhibit 2-1
(\$ in Millions)

Contribution Provisions: All Employers Pay the Biannual Actuarially Determined Contribution
Valuation Assumptions: Recently Adopted Experience Study Assumptions (5.25% discount rate and 0% amortization payroll growth)

Projected Experience Scenario #1: Active Headcount Remains Constant (resulting in 2% payroll growth, which is more favorable than valuation assumptions)
& Assets Earn 5.25% Annually (which aligns with valuation assumptions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Quasi Employer Contribution	Non-Quasi Employer Contribution	Total Employer Contribution	Member Contribution	Covered Payroll	Quasi Employer Contribution as % of Covered Payroll	Non-Quasi Employer Contribution as % of Covered Payroll	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
														Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
2018	\$ 15,675	\$ 2,019	\$ 13,656	13%	\$ 145	\$ 795	\$ 940	\$ 74	\$ 1,471	41.06%	71.03%	63.86%	71.03%	\$ 1,014	\$ (994)	\$ 20	\$ 106
2019	16,375	2,106	14,269	13%	251	798	1,049	74	1,477	71.03%	71.03%	71.03%	78.01%	1,123	(1,009)	114	115
2020	16,392	2,324	14,068	14%	279	887	1,166	75	1,493	78.11%	78.11%	78.11%	78.11%	1,241	(1,024)	217	130
2021	16,392	2,696	13,696	16%	282	898	1,180	76	1,511	78.11%	78.11%	78.11%	77.01%	1,256	(1,038)	218	148
2022	16,376	3,070	13,306	19%	277	880	1,157	77	1,531	75.55%	75.55%	75.55%	75.55%	1,234	(1,052)	182	166
2023	16,343	3,417	12,926	21%	281	893	1,174	78	1,554	75.55%	75.55%	75.55%	74.26%	1,252	(1,065)	187	184
2024	16,294	3,788	12,506	23%	275	874	1,149	79	1,578	72.81%	72.81%	72.81%	72.81%	1,228	(1,077)	151	203
2025	16,230	4,142	12,088	26%	279	889	1,168	80	1,604	72.81%	72.81%	72.81%	71.47%	1,248	(1,089)	159	222
2026	16,149	4,523	11,626	28%	273	868	1,141	82	1,631	69.96%	69.96%	69.96%	69.96%	1,223	(1,099)	124	241
2027	16,053	4,887	11,166	30%	278	882	1,160	83	1,659	69.96%	69.96%	69.96%	68.58%	1,243	(1,110)	133	260
2028	15,941	5,280	10,661	33%	271	861	1,132	84	1,688	67.06%	67.06%	67.06%	67.06%	1,216	(1,112)	104	280
2029	15,821	5,665	10,156	36%	276	877	1,153	86	1,719	67.06%	67.06%	67.06%	65.69%	1,239	(1,119)	120	301
2030	15,687	6,085	9,602	39%	269	855	1,124	88	1,752	64.14%	64.14%	64.14%	64.14%	1,212	(1,125)	87	322
2031	15,542	6,494	9,048	42%	274	873	1,147	89	1,788	64.14%	64.14%	64.14%	62.74%	1,236	(1,127)	109	344
2032	15,387	6,947	8,440	45%	267	849	1,116	91	1,825	61.14%	61.14%	61.14%	61.14%	1,207	(1,128)	79	367
2033	15,225	7,392	7,833	49%	273	866	1,139	93	1,864	61.14%	61.14%	61.14%	59.72%	1,232	(1,128)	104	391
2034	15,057	7,888	7,169	52%	265	841	1,106	95	1,904	58.09%	58.09%	58.09%	58.09%	1,201	(1,126)	75	416
2035	14,883	8,379	6,504	56%	270	861	1,131	97	1,947	58.09%	58.09%	58.09%	56.68%	1,228	(1,121)	107	443
2036	14,709	8,929	5,780	61%	262	834	1,096	100	1,993	55.01%	55.01%	55.01%	55.01%	1,196	(1,112)	84	471
2037	14,538	9,484	5,054	65%	269	854	1,123	102	2,041	55.01%	55.01%	55.01%	53.57%	1,225	(1,101)	124	501
2038	14,372	10,109	4,263	70%	259	823	1,082	105	2,092	51.75%	51.75%	51.75%	51.75%	1,187	(1,087)	100	533
2039	14,216	10,742	3,474	76%	265	844	1,109	107	2,144	51.75%	51.75%	51.75%	50.28%	1,216	(1,073)	143	568
2040	14,071	11,454	2,617	81%	253	806	1,059	110	2,197	48.19%	48.19%	48.19%	48.19%	1,169	(1,057)	112	604
2041	13,939	12,169	1,770	87%	259	825	1,084	113	2,250	48.19%	48.19%	48.19%	46.61%	1,197	(1,041)	156	643
2042	13,821	12,968	853	94%	236	752	988	115	2,305	42.87%	42.87%	42.87%	42.87%	1,103	(1,026)	77	683
2043	13,716	13,716	-	100%	24	77	101	118	2,360	4.26%	4.26%	4.26%	4.26%	219	(1,010)	(791)	700
2044	13,627	13,627	-	100%	24	78	102	121	2,416	4.23%	4.23%	4.23%	4.23%	223	(995)	(772)	696
2045	13,554	13,554	-	100%	25	79	104	124	2,472	4.21%	4.21%	4.21%	4.21%	228	(980)	(752)	692
2046	13,496	13,496	-	100%	25	81	106	126	2,530	4.19%	4.19%	4.19%	4.19%	232	(966)	(734)	689
2047	13,456	13,456	-	100%	26	82	108	129	2,589	4.17%	4.17%	4.17%	4.17%	237	(952)	(715)	688

Notes and assumptions:
The projection is based on the results of the June 30, 2018 actuarial valuation and the actuarial assumptions documented in the 2018 Experience Study Report adopted by the Board on April 18, 2019.
The projection assumes that all actuarial assumptions are realized, including the assumed annual asset return of 5.25%.
New active members are assumed to be hired to replace the current active members as they are assumed to terminate employment or retire.

The 63.86% employer contribution rate for FY 2019 is the effective contribution rate after reflecting HB 265 which provided that Regional Mental Health/Mental Retardation Boards, Local and District Health Departments, State Universities, and Community Colleges to contribute a 49.47% of pay contribution rate for FY 2019. Collectively these entities reflect approximately 25% of the covered payroll in the System.

Kentucky Retirement Systems
KERS Non-Hazardous Insurance Fund
Actuarial Analysis of HB 2: Current Plan
Exhibit 2-2
(\$ in Millions)

Contribution Provisions: All Employers Pay the Biannual Actuarially Determined Contribution
Valuation Assumptions: Recently Adopted Experience Study Assumptions (6.25% discount rate and 0% amortization payroll growth)

Projected Experience Scenario #1: Active Headcount Remains Constant (resulting in 2% payroll growth, which is more favorable than valuation assumptions)
& Assets Earn 6.25% Annually (which aligns with valuation assumptions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Quasi Employer Contribution	Non-Quasi Employer Contribution	Total Employer Contribution	Member Contribution	Covered Payroll	Quasi Employer Contribution as % of Covered Payroll	Non-Quasi Employer Contribution as % of Covered Payroll	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
														Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
2018	\$ 2,436	\$ 887	\$ 1,549	36%	\$ 29	\$ 138	\$ 167	\$ 6	\$ 1,461	8.41%	12.40%	11.45%	12.40%	\$ 173	\$ (130)	\$ 43	\$ 57
2019	2,611	978	1,633	37%	44	138	182	6	1,469	12.40%	12.40%	12.40%	11.17%	188	(134)	54	64
2020	2,677	1,096	1,581	41%	39	123	162	7	1,488	10.90%	10.90%	10.90%	10.90%	169	(141)	28	70
2021	2,739	1,206	1,533	44%	39	125	164	8	1,508	10.90%	10.90%	10.90%	10.66%	172	(148)	24	76
2022	2,796	1,309	1,487	47%	38	120	158	9	1,529	10.31%	10.31%	10.31%	10.31%	167	(155)	12	82
2023	2,849	1,403	1,446	49%	38	122	160	9	1,553	10.31%	10.31%	10.31%	10.01%	169	(163)	6	88
2024	2,897	1,498	1,399	52%	37	116	153	10	1,578	9.72%	9.72%	9.72%	9.72%	163	(171)	(8)	93
2025	2,938	1,584	1,354	54%	37	119	156	11	1,605	9.72%	9.72%	9.72%	9.44%	167	(179)	(12)	99
2026	2,973	1,671	1,302	56%	36	113	149	12	1,632	9.13%	9.13%	9.13%	9.13%	161	(187)	(26)	104
2027	3,002	1,749	1,253	58%	36	116	152	13	1,661	9.13%	9.13%	9.13%	8.84%	165	(195)	(30)	108
2028	3,022	1,826	1,196	60%	35	110	145	13	1,691	8.55%	8.55%	8.55%	8.55%	158	(203)	(45)	113
2029	3,035	1,894	1,141	62%	35	112	147	14	1,723	8.55%	8.55%	8.55%	8.27%	161	(210)	(49)	117
2030	3,040	1,962	1,078	65%	33	107	140	15	1,756	7.97%	7.97%	7.97%	7.97%	155	(215)	(60)	121
2031	3,040	2,022	1,018	67%	34	109	143	16	1,792	7.97%	7.97%	7.97%	7.72%	159	(219)	(60)	124
2032	3,035	2,086	949	69%	33	103	136	16	1,829	7.45%	7.45%	7.45%	7.45%	152	(222)	(70)	128
2033	3,028	2,145	883	71%	33	106	139	17	1,868	7.45%	7.45%	7.45%	7.21%	156	(224)	(68)	132
2034	3,017	2,209	808	73%	32	101	133	18	1,909	6.95%	6.95%	6.95%	6.95%	151	(225)	(74)	136
2035	3,005	2,270	735	76%	32	104	136	18	1,952	6.95%	6.95%	6.95%	6.73%	154	(224)	(70)	140
2036	2,993	2,340	653	78%	31	99	130	19	1,998	6.49%	6.49%	6.49%	6.49%	149	(222)	(73)	144
2037	2,983	2,410	573	81%	32	101	133	20	2,046	6.49%	6.49%	6.49%	6.29%	153	(220)	(67)	149
2038	2,976	2,492	484	84%	30	97	127	20	2,097	6.04%	6.04%	6.04%	6.04%	147	(217)	(70)	154
2039	2,971	2,576	395	87%	31	99	130	21	2,149	6.04%	6.04%	6.04%	5.85%	151	(213)	(62)	159
2040	2,970	2,673	297	90%	29	94	123	22	2,202	5.57%	5.57%	5.57%	5.57%	145	(210)	(65)	165
2041	2,974	2,772	202	93%	30	96	126	22	2,256	5.57%	5.57%	5.57%	5.35%	148	(206)	(58)	171
2042	2,981	2,886	95	97%	27	85	112	23	2,310	4.84%	4.84%	4.84%	4.84%	135	(202)	(67)	178
2043	2,994	2,994	-	100%	3	8	11	24	2,366	0.48%	0.48%	0.48%	0.48%	35	(199)	(164)	182
2044	3,011	3,011	-	100%	3	8	11	24	2,421	0.46%	0.46%	0.46%	0.46%	35	(197)	(162)	183
2045	3,033	3,033	-	100%	3	8	11	25	2,478	0.45%	0.45%	0.45%	0.45%	36	(196)	(160)	185
2046	3,057	3,057	-	100%	3	8	11	25	2,536	0.44%	0.44%	0.44%	0.44%	36	(196)	(160)	186
2047	3,083	3,083	-	100%	3	8	11	26	2,595	0.43%	0.43%	0.43%	0.43%	37	(197)	(160)	188

Notes and assumptions:

The projection is based on the results of the June 30, 2018 actuarial valuation and the actuarial assumptions documented in the 2018 Experience Study Report adopted by the Board on April 18, 2019.

The projection assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.25%.

New active members are assumed to be hired to replace the current active members as they are assumed to terminate employment or retire.

The 11.45% employer contribution rate for FY 2019 is the effective contribution rate after reflecting HB 265 which provided that Regional Mental Health/Mental Retardation

Boards, Local and District Health Departments, State Universities, and Community Colleges to contribute a 49.47% of pay contribution rate for FY 2019. Collectively these entities reflect approximately 25% of the covered payroll in the System.

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Actuarial Analysis of HB 2: Current Plan
Exhibit 2-3
(\$ in Millions)

Contribution Provisions: All Employers Pay the Biannual Actuarially Determined Contribution
Valuation Assumptions: Recently Adopted Experience Study Assumptions (5.25% discount rate and 0% amortization payroll growth)

Projected Experience Scenario #2: Active Headcount Decreases by 2% Each Year (resulting in 0% payroll growth, which aligns with valuation assumptions)
& Assets Earn 5.25% Annually (which aligns with valuation assumptions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Quasi Employer Contribution	Non-Quasi Employer Contribution	Total Employer Contribution	Member Contribution	Covered Payroll	Quasi Employer Contribution as % of Covered Payroll	Non-Quasi Employer Contribution as % of Covered Payroll	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
														Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
2018	\$ 15,675	\$ 2,019	\$ 13,656	13%	\$ 145	\$ 795	\$ 940	\$ 74	\$ 1,471	41.06%	71.03%	63.86%	71.03%	\$ 1,014	\$ (994)	\$ 20	\$ 106
2019	16,374	2,106	14,268	13%	247	788	1,035	73	1,456	71.03%	71.03%	71.03%	78.01%	1,108	(1,009)	99	114
2020	16,389	2,308	14,081	14%	275	873	1,148	72	1,450	79.22%	79.22%	79.22%	79.22%	1,220	(1,023)	197	128
2021	16,385	2,660	13,725	16%	274	870	1,144	72	1,443	79.22%	79.22%	79.22%	79.35%	1,216	(1,037)	179	145
2022	16,363	2,992	13,371	18%	273	867	1,140	72	1,438	79.27%	79.27%	79.27%	79.27%	1,212	(1,050)	162	161
2023	16,322	3,315	13,007	20%	272	864	1,136	72	1,433	79.27%	79.27%	79.27%	79.27%	1,208	(1,063)	145	178
2024	16,261	3,638	12,623	22%	271	862	1,133	71	1,430	79.27%	79.27%	79.27%	79.27%	1,204	(1,074)	130	194
2025	16,183	3,962	12,221	24%	270	861	1,131	71	1,426	79.27%	79.27%	79.27%	79.25%	1,202	(1,085)	117	211
2026	16,085	4,290	11,795	27%	270	857	1,127	71	1,423	79.20%	79.20%	79.20%	79.20%	1,198	(1,096)	102	228
2027	15,968	4,620	11,348	29%	269	855	1,124	71	1,419	79.20%	79.20%	79.20%	79.16%	1,195	(1,106)	89	245
2028	15,832	4,955	10,877	31%	268	853	1,121	71	1,416	79.13%	79.13%	79.13%	79.13%	1,192	(1,107)	85	262
2029	15,685	5,302	10,383	34%	268	851	1,119	71	1,414	79.13%	79.13%	79.13%	79.10%	1,190	(1,114)	76	280
2030	15,519	5,657	9,862	36%	267	849	1,116	71	1,413	79.03%	79.03%	79.03%	79.03%	1,187	(1,119)	68	299
2031	15,337	6,025	9,312	39%	267	850	1,117	71	1,413	79.03%	79.03%	79.03%	78.93%	1,188	(1,121)	67	318
2032	15,142	6,409	8,733	42%	266	847	1,113	71	1,413	78.74%	78.74%	78.74%	78.74%	1,184	(1,121)	63	338
2033	14,934	6,810	8,124	46%	266	848	1,114	71	1,414	78.74%	78.74%	78.74%	78.55%	1,185	(1,120)	65	359
2034	14,715	7,233	7,482	49%	265	844	1,109	71	1,416	78.31%	78.31%	78.31%	78.31%	1,180	(1,117)	63	381
2035	14,485	7,678	6,807	53%	266	845	1,111	71	1,418	78.31%	78.31%	78.31%	78.09%	1,182	(1,111)	71	405
2036	14,249	8,154	6,095	57%	265	842	1,107	71	1,423	77.76%	77.76%	77.76%	77.76%	1,178	(1,101)	77	430
2037	14,010	8,661	5,349	62%	266	845	1,111	71	1,429	77.76%	77.76%	77.76%	77.38%	1,182	(1,088)	94	457
2038	13,770	9,212	4,558	67%	264	840	1,104	72	1,436	76.82%	76.82%	76.82%	76.82%	1,176	(1,073)	103	486
2039	13,533	9,801	3,732	72%	265	844	1,109	72	1,444	76.82%	76.82%	76.82%	76.31%	1,181	(1,057)	124	518
2040	13,301	10,443	2,858	79%	262	835	1,097	73	1,451	75.58%	75.58%	75.58%	75.58%	1,170	(1,040)	130	552
2041	13,073	11,124	1,949	85%	264	838	1,102	73	1,458	75.58%	75.58%	75.58%	75.03%	1,175	(1,022)	153	588
2042	12,852	11,864	988	92%	258	821	1,079	73	1,464	73.74%	73.74%	73.74%	73.74%	1,152	(1,005)	147	627
2043	12,637	12,637	-	100%	15	48	63	73	1,469	4.31%	4.31%	4.31%	4.31%	136	(987)	(851)	641
2044	12,429	12,429	-	100%	15	48	63	74	1,473	4.27%	4.27%	4.27%	4.27%	137	(969)	(832)	631
2045	12,228	12,228	-	100%	15	48	63	74	1,478	4.24%	4.24%	4.24%	4.24%	137	(952)	(815)	621
2046	12,035	12,035	-	100%	15	47	62	74	1,481	4.21%	4.21%	4.21%	4.21%	136	(934)	(798)	611
2047	11,849	11,849	-	100%	15	47	62	74	1,485	4.18%	4.18%	4.18%	4.18%	136	(916)	(780)	601

Notes and assumptions:

The projection is based on the results of the June 30, 2018 actuarial valuation and the actuarial assumptions documented in the 2018 Experience Study Report adopted by the Board on April 18, 2019.

The projection assumes that all actuarial assumptions are realized, including the assumed annual asset return of 5.25%.

New active members are assumed to be hired to replace the current active members as they are assumed to terminate employment or retire, but the total active membership population is assumed to decrease by 2% each future year.

The 63.86% employer contribution rate for FY 2019 is the effective contribution rate after reflecting HB 265 which provided that Regional Mental Health/Mental Retardation

Boards, Local and District Health Departments, State Universities, and Community Colleges to contribute a 49.47% of pay contribution rate for FY 2019. Collectively these entities reflect approximately 25% of the covered payroll in the System.

Kentucky Retirement Systems
KERS Non-Hazardous Insurance Fund
Actuarial Analysis of HB 2: Current Plan
Exhibit 2-4
(\$ in Millions)

Contribution Provisions: All Employers Pay the Biannual Actuarially Determined Contribution
Valuation Assumptions: Recently Adopted Experience Study Assumptions (6.25% discount rate and 0% amortization payroll growth)

Projected Experience Scenario #2: Active Headcount Decreases by 2% Each Year (resulting in 0% payroll growth, which aligns with valuation assumptions)
& Assets Earn 6.25% Annually (which aligns with valuation assumptions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Quasi Employer Contribution	Non-Quasi Employer Contribution	Total Employer Contribution	Member Contribution	Covered Payroll	Quasi Employer Contribution as % of Covered Payroll	Non-Quasi Employer Contribution as % of Covered Payroll	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
														Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
2018	\$ 2,436	\$ 887	\$ 1,549	36%	\$ 29	\$ 138	\$ 167	\$ 6	\$ 1,461	8.41%	12.40%	11.45%	12.40%	\$ 173	\$ (130)	\$ 43	\$ 57
2019	2,611	978	1,633	37%	43	137	180	6	1,449	12.40%	12.40%	12.40%	11.17%	186	(134)	52	64
2020	2,677	1,094	1,583	41%	38	122	160	7	1,444	11.07%	11.07%	11.07%	11.07%	167	(141)	26	70
2021	2,738	1,200	1,538	44%	38	121	159	7	1,440	11.07%	11.07%	11.07%	10.98%	166	(148)	18	76
2022	2,794	1,298	1,496	46%	37	118	155	8	1,435	10.82%	10.82%	10.82%	10.82%	163	(155)	8	81
2023	2,845	1,387	1,458	49%	37	118	155	8	1,432	10.82%	10.82%	10.82%	10.71%	163	(163)	0	87
2024	2,891	1,474	1,417	51%	36	115	151	9	1,429	10.60%	10.60%	10.60%	10.60%	160	(171)	(11)	92
2025	2,930	1,556	1,374	53%	36	115	151	9	1,427	10.60%	10.60%	10.60%	10.50%	160	(178)	(18)	97
2026	2,962	1,634	1,328	55%	35	113	148	10	1,424	10.37%	10.37%	10.37%	10.37%	158	(187)	(29)	101
2027	2,986	1,706	1,280	57%	35	112	147	10	1,421	10.37%	10.37%	10.37%	10.26%	157	(195)	(38)	105
2028	3,002	1,774	1,228	59%	34	110	144	11	1,418	10.13%	10.13%	10.13%	10.13%	155	(203)	(48)	109
2029	3,009	1,835	1,174	61%	34	110	144	11	1,417	10.13%	10.13%	10.13%	10.01%	155	(210)	(55)	113
2030	3,008	1,893	1,115	63%	33	107	140	11	1,416	9.89%	9.89%	9.89%	9.89%	151	(215)	(64)	116
2031	3,001	1,946	1,055	65%	33	107	140	12	1,416	9.89%	9.89%	9.89%	9.77%	152	(219)	(67)	119
2032	2,989	1,998	991	67%	33	104	137	12	1,416	9.65%	9.65%	9.65%	9.65%	149	(221)	(72)	123
2033	2,972	2,048	924	69%	33	104	137	13	1,418	9.65%	9.65%	9.65%	9.55%	150	(224)	(74)	126
2034	2,951	2,099	852	71%	32	102	134	13	1,419	9.46%	9.46%	9.46%	9.46%	147	(225)	(78)	129
2035	2,928	2,151	777	73%	32	103	135	13	1,422	9.46%	9.46%	9.46%	9.38%	148	(224)	(76)	132
2036	2,904	2,207	697	76%	32	100	132	13	1,427	9.28%	9.28%	9.28%	9.28%	145	(222)	(77)	136
2037	2,880	2,266	614	79%	32	101	133	14	1,433	9.28%	9.28%	9.28%	9.19%	147	(219)	(72)	139
2038	2,858	2,333	525	82%	31	100	131	14	1,440	9.08%	9.08%	9.08%	9.08%	145	(216)	(71)	144
2039	2,837	2,406	431	85%	31	100	131	14	1,447	9.08%	9.08%	9.08%	9.00%	145	(212)	(67)	148
2040	2,818	2,487	331	88%	31	98	129	14	1,454	8.87%	8.87%	8.87%	8.87%	143	(208)	(65)	153
2041	2,802	2,576	226	92%	31	99	130	14	1,460	8.87%	8.87%	8.87%	8.80%	144	(205)	(61)	159
2042	2,789	2,674	115	96%	30	96	126	15	1,466	8.60%	8.60%	8.60%	8.60%	141	(201)	(60)	165
2043	2,779	2,779	-	100%	2	5	7	15	1,472	0.50%	0.50%	0.50%	0.50%	22	(197)	(175)	168
2044	2,771	2,771	-	100%	2	5	7	15	1,476	0.50%	0.50%	0.50%	0.50%	22	(195)	(173)	168
2045	2,766	2,766	-	100%	2	5	7	15	1,481	0.48%	0.48%	0.48%	0.48%	22	(193)	(171)	168
2046	2,762	2,762	-	100%	2	5	7	15	1,485	0.47%	0.47%	0.47%	0.47%	22	(193)	(171)	167
2047	2,758	2,758	-	100%	2	5	7	15	1,489	0.46%	0.46%	0.46%	0.46%	22	(193)	(171)	167

Notes and assumptions:

The projection is based on the results of the June 30, 2018 actuarial valuation and the actuarial assumptions documented in the 2018 Experience Study Report adopted by the Board on April 18, 2019.

The projection assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.25%.

New active members are assumed to be hired to replace the current active members as they are assumed to terminate employment or retire, but the total active membership population is assumed to decrease by 2% each future year.

The 11.45% employer contribution rate for FY 2019 is the effective contribution rate after reflecting HB 265 which provided that Regional Mental Health/Mental Retardation

Boards, Local and District Health Departments, State Universities, and Community Colleges to contribute a 49.47% of pay contribution rate for FY 2019. Collectively these entities reflect approximately 25% of the covered payroll in the System.

HB 2

Section 3.

**Projected Cost of the Retirement and Insurance
Proposed Legislation**

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Actuarial Analysis of HB 2: Proposed Legislation
Exhibit 3-1
(\$ in Millions)

Proposed Contribution Provisions: Quasi Employers Pay 49.47% & Non-Quasi Employers Pay the Remaining ADEC
Valuation Assumptions: Recently Adopted Experience Study Assumptions (5.25% discount rate and 0% amortization payroll growth)

Projected Experience Scenario #1: Active Headcount Remains Constant (resulting in 2% payroll growth, which is more favorable than valuation assumptions)
& Assets Earn 5.25% Annually (which aligns with valuation assumptions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Quasi Employer Contribution	Non-Quasi Employer Contribution	Total Employer Contribution	Member Contribution	Covered Payroll	Quasi Employer Contribution as % of Covered Payroll	Non-Quasi Employer Contribution as % of Covered Payroll	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
														Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
2018	\$ 15,675	\$ 2,019	\$ 13,656	13%	\$ 145	\$ 795	\$ 940	\$ 74	\$ 1,471	41.06%	71.03%	63.86%	71.03%	\$ 1,014	\$ (994)	\$ 20	\$ 106
2019	16,375	2,106	14,269	13%	167	913	1,080	74	1,477	47.26%	81.22%	73.10%	78.01%	1,154	(1,009)	145	116
2020	16,392	2,355	14,037	14%	169	1,139	1,308	75	1,493	47.37%	100.29%	87.63%	77.95%	1,383	(1,024)	359	135
2021	16,392	2,875	13,517	18%	172	1,154	1,326	76	1,511	47.47%	100.39%	87.73%	76.08%	1,402	(1,038)	364	161
2022	16,376	3,408	12,968	21%	174	1,124	1,298	77	1,531	47.58%	96.49%	84.79%	73.79%	1,375	(1,052)	323	187
2023	16,343	3,918	12,425	24%	177	1,142	1,319	78	1,554	47.69%	96.60%	84.90%	71.62%	1,397	(1,065)	332	214
2024	16,294	4,464	11,830	27%	155	937	1,092	79	1,578	41.06%	78.06%	69.21%	69.21%	1,171	(1,077)	94	237
2025	16,230	4,795	11,435	30%	158	952	1,110	80	1,604	41.06%	78.06%	69.21%	67.95%	1,190	(1,089)	101	254
2026	16,149	5,151	10,998	32%	160	925	1,085	82	1,631	41.06%	74.51%	66.51%	66.51%	1,167	(1,099)	68	272
2027	16,053	5,490	10,563	34%	163	940	1,103	83	1,659	41.06%	74.51%	66.51%	65.19%	1,186	(1,110)	76	290
2028	15,941	5,857	10,084	37%	166	910	1,076	84	1,688	41.06%	70.88%	63.75%	63.75%	1,160	(1,112)	48	309
2029	15,821	6,214	9,607	39%	169	927	1,096	86	1,719	41.06%	70.88%	63.75%	62.44%	1,182	(1,119)	63	328
2030	15,687	6,605	9,082	42%	172	896	1,068	88	1,752	41.06%	67.22%	60.96%	60.96%	1,156	(1,125)	31	348
2031	15,542	6,983	8,559	45%	176	914	1,090	89	1,788	41.06%	67.22%	60.96%	59.63%	1,179	(1,127)	52	368
2032	15,387	7,404	7,983	48%	179	881	1,060	91	1,825	41.06%	63.46%	58.10%	58.10%	1,151	(1,128)	23	389
2033	15,225	7,816	7,409	51%	183	900	1,083	93	1,864	41.06%	63.46%	58.10%	56.76%	1,176	(1,128)	48	412
2034	15,057	8,276	6,781	55%	187	864	1,051	95	1,904	41.06%	59.66%	55.21%	55.21%	1,146	(1,126)	20	435
2035	14,883	8,731	6,152	59%	191	884	1,075	97	1,947	41.06%	59.66%	55.21%	53.87%	1,172	(1,121)	51	460
2036	14,709	9,242	5,467	63%	196	846	1,042	100	1,993	41.06%	55.81%	52.28%	52.28%	1,142	(1,112)	30	486
2037	14,538	9,757	4,781	67%	200	867	1,067	102	2,041	41.06%	55.81%	52.28%	50.91%	1,169	(1,101)	68	514
2038	14,372	10,340	4,032	72%	205	824	1,029	105	2,092	41.06%	51.75%	49.19%	49.19%	1,134	(1,087)	47	544
2039	14,216	10,930	3,286	77%	211	843	1,054	107	2,144	41.06%	51.75%	49.19%	47.79%	1,161	(1,073)	88	576
2040	14,071	11,595	2,476	82%	216	790	1,006	110	2,197	41.06%	47.32%	45.82%	45.82%	1,116	(1,057)	59	610
2041	13,939	12,265	1,674	88%	221	810	1,031	113	2,250	41.06%	47.32%	45.82%	44.32%	1,144	(1,041)	103	647
2042	13,821	13,014	807	94%	225	715	940	115	2,305	40.79%	40.79%	40.79%	40.79%	1,055	(1,026)	29	684
2043	13,716	13,716	-	100%	24	77	101	118	2,360	4.26%	4.26%	4.26%	4.26%	219	(1,010)	(791)	700
2044	13,627	13,627	-	100%	24	78	102	121	2,416	4.23%	4.23%	4.23%	4.23%	223	(995)	(772)	696
2045	13,554	13,554	-	100%	25	79	104	124	2,472	4.21%	4.21%	4.21%	4.21%	228	(980)	(752)	692
2046	13,496	13,496	-	100%	25	81	106	126	2,530	4.19%	4.19%	4.19%	4.19%	232	(966)	(734)	689
2047	13,456	13,456	-	100%	26	82	108	129	2,589	4.17%	4.17%	4.17%	4.17%	237	(952)	(715)	688

Notes and assumptions:

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Boards, Local and District Health Departments, State Universities, and Community Colleges to contribute a 49.47% of pay contribution rate for FY 2019. Collectively these entities reflect approximately 25% of the covered payroll in the System.

Kentucky Retirement Systems
KERS Non-Hazardous Insurance Fund
Actuarial Analysis of HB 2: Proposed Legislation
Exhibit 3-2
(\$ in Millions)

Proposed Contribution Provisions: Quasi Employers Pay 49.47% & Non-Quasi Employers Pay the Remaining ADEC
Valuation Assumptions: Recently Adopted Experience Study Assumptions (6.25% discount rate and 0% amortization payroll growth)

Projected Experience Scenario #1: Active Headcount Remains Constant (resulting in 2% payroll growth, which is more favorable than valuation assumptions)
& Assets Earn 6.25% Annually (which aligns with valuation assumptions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Quasi Employer Contribution	Non-Quasi Employer Contribution	Total Employer Contribution	Member Contribution	Covered Payroll	Quasi Employer Contribution as % of Covered Payroll	Non-Quasi Employer Contribution as % of Covered Payroll	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
														Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
2018	\$ 2,436	\$ 887	\$ 1,549	36%	\$ 29	\$ 138	\$ 167	\$ 6	\$ 1,461	8.41%	12.40%	11.45%	12.40%	\$ 173	\$ (130)	\$ 43	\$ 57
2019	2,611	978	1,633	37%	8	24	32	6	1,469	2.21%	2.21%	2.21%	11.17%	38	(134)	(96)	59
2020	2,677	942	1,735	35%	7	24	31	7	1,488	2.10%	2.10%	2.10%	11.78%	38	(141)	(103)	57
2021	2,739	907	1,832	33%	7	23	30	8	1,508	2.00%	2.00%	2.00%	12.34%	38	(148)	(110)	53
2022	2,796	853	1,943	31%	7	22	29	9	1,529	1.89%	1.89%	1.89%	12.89%	38	(155)	(117)	50
2023	2,849	786	2,063	28%	7	21	28	9	1,553	1.78%	1.78%	1.78%	13.53%	37	(163)	(126)	45
2024	2,897	705	2,192	24%	32	193	225	10	1,578	8.41%	16.13%	14.28%	14.28%	235	(171)	64	46
2025	2,938	816	2,122	28%	32	197	229	11	1,605	8.41%	16.13%	14.28%	13.89%	240	(179)	61	53
2026	2,973	931	2,042	31%	33	187	220	12	1,632	8.41%	15.07%	13.48%	13.48%	232	(187)	45	60
2027	3,002	1,035	1,967	34%	33	191	224	13	1,661	8.41%	15.07%	13.48%	13.11%	237	(195)	42	66
2028	3,022	1,143	1,879	38%	34	181	215	13	1,691	8.41%	14.09%	12.73%	12.73%	228	(203)	25	72
2029	3,035	1,240	1,795	41%	35	184	219	14	1,723	8.41%	14.09%	12.73%	12.37%	233	(210)	23	78
2030	3,040	1,342	1,698	44%	35	175	210	15	1,756	8.41%	13.09%	11.97%	11.97%	225	(215)	10	84
2031	3,040	1,436	1,604	47%	36	179	215	16	1,792	8.41%	13.09%	11.97%	11.63%	231	(219)	12	90
2032	3,035	1,537	1,498	51%	37	169	206	16	1,829	8.41%	12.17%	11.27%	11.27%	222	(222)	-	96
2033	3,028	1,633	1,395	54%	38	173	211	17	1,868	8.41%	12.17%	11.27%	10.93%	228	(224)	4	102
2034	3,017	1,739	1,278	58%	38	164	202	18	1,909	8.41%	11.25%	10.57%	10.57%	220	(225)	(5)	109
2035	3,005	1,842	1,163	61%	39	167	206	18	1,952	8.41%	11.25%	10.57%	10.27%	224	(224)	-	115
2036	2,993	1,958	1,035	65%	40	158	198	19	1,998	8.41%	10.39%	9.92%	9.92%	217	(222)	(5)	122
2037	2,983	2,075	908	70%	41	162	203	20	2,046	8.41%	10.39%	9.92%	9.63%	223	(220)	3	130
2038	2,976	2,208	768	74%	42	152	194	20	2,097	8.41%	9.51%	9.25%	9.25%	214	(217)	(3)	138
2039	2,971	2,344	627	79%	43	156	199	21	2,149	8.41%	9.51%	9.25%	8.96%	220	(213)	7	147
2040	2,970	2,498	472	84%	44	144	188	22	2,202	8.41%	8.57%	8.53%	8.53%	210	(210)	-	156
2041	2,974	2,654	320	89%	45	147	192	22	2,256	8.41%	8.57%	8.53%	8.21%	214	(206)	8	166
2042	2,981	2,828	153	95%	41	131	172	23	2,310	7.45%	7.45%	7.45%	7.45%	195	(202)	(7)	177
2043	2,994	2,994	-	100%	3	8	11	24	2,366	0.48%	0.48%	0.48%	0.48%	35	(199)	(164)	182
2044	3,011	3,011	-	100%	3	8	11	24	2,421	0.46%	0.46%	0.46%	0.46%	35	(197)	(162)	183
2045	3,033	3,033	-	100%	3	8	11	25	2,478	0.45%	0.45%	0.45%	0.45%	36	(196)	(160)	185
2046	3,057	3,057	-	100%	3	8	11	25	2,536	0.44%	0.44%	0.44%	0.44%	36	(196)	(160)	186
2047	3,083	3,083	-	100%	3	8	11	26	2,595	0.43%	0.43%	0.43%	0.43%	37	(197)	(160)	188

Notes and assumptions:

The projection is based on the results of the June 30, 2018 actuarial valuation and the actuarial assumptions documented in the 2018 Experience Study Report adopted by the Board on April 18, 2019.

The projection assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.25%.

New active members are assumed to be hired to replace the current active members as they are assumed to terminate employment or retire.

The 11.45% employer contribution rate for FY 2018 is the effective contribution rate after reflecting HB 265 which provided that Regional Mental Health/Mental Retardation

Boards, Local and District Health Departments, State Universities, and Community Colleges to contribute a 49.47% of pay contribution rate for FY 2019. Collectively these entities reflect approximately 25% of the covered payroll in the System.

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Actuarial Analysis of HB 2: Proposed Legislation
Exhibit 3-3
(\$ in Millions)

Proposed Contribution Provisions: Quasi Employers Pay 49.47% & Non-Quasi Employers Pay the Remaining ADEC
Valuation Assumptions: Recently Adopted Experience Study Assumptions (5.25% discount rate and 0% amortization payroll growth)

Projected Experience Scenario #2: Active Headcount Decreases by 2% Each Year (resulting in 0% payroll growth, which aligns with valuation assumptions)
& Assets Earn 5.25% Annually (which aligns with valuation assumptions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Quasi Employer Contribution	Non-Quasi Employer Contribution	Total Employer Contribution	Member Contribution	Covered Payroll	Quasi Employer Contribution as % of Covered Payroll	Non-Quasi Employer Contribution as % of Covered Payroll	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
														Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
2018	\$ 15,675	\$ 2,019	\$ 13,656	13%	\$ 145	\$ 795	\$ 940	\$ 74	\$ 1,471	41.06%	71.03%	63.86%	71.03%	\$ 1,014	\$ (994)	\$ 20	\$ 106
2019	16,374	2,106	14,268	13%	166	899	1,065	73	1,456	47.26%	81.22%	73.10%	78.01%	1,138	(1,009)	129	115
2020	16,389	2,339	14,050	14%	167	1,122	1,289	72	1,450	47.37%	101.97%	88.91%	79.06%	1,361	(1,023)	338	133
2021	16,385	2,837	13,548	17%	167	1,118	1,285	72	1,443	47.47%	102.07%	89.01%	78.41%	1,357	(1,037)	320	158
2022	16,363	3,323	13,040	20%	168	1,112	1,280	72	1,438	47.58%	102.09%	89.05%	77.46%	1,352	(1,050)	302	182
2023	16,322	3,807	12,515	23%	168	1,110	1,278	72	1,433	47.69%	102.20%	89.16%	76.51%	1,350	(1,063)	287	207
2024	16,261	4,302	11,959	26%	145	933	1,078	71	1,430	41.06%	86.22%	75.42%	75.42%	1,149	(1,074)	75	228
2025	16,183	4,605	11,578	28%	145	931	1,076	71	1,426	41.06%	86.22%	75.42%	75.43%	1,147	(1,085)	62	243
2026	16,085	4,910	11,175	31%	145	928	1,073	71	1,423	41.06%	86.17%	75.38%	75.38%	1,144	(1,096)	48	259
2027	15,968	5,217	10,751	33%	145	925	1,070	71	1,419	41.06%	86.17%	75.38%	75.32%	1,141	(1,106)	35	275
2028	15,832	5,527	10,305	35%	145	921	1,066	71	1,416	41.06%	86.04%	75.28%	75.28%	1,137	(1,107)	30	291
2029	15,685	5,848	9,837	37%	146	919	1,065	71	1,414	41.06%	86.04%	75.28%	75.24%	1,136	(1,114)	22	308
2030	15,519	6,177	9,342	40%	146	916	1,062	71	1,413	41.06%	85.89%	75.17%	75.17%	1,133	(1,119)	14	325
2031	15,337	6,515	8,822	42%	146	916	1,062	71	1,413	41.06%	85.89%	75.17%	75.06%	1,133	(1,121)	12	342
2032	15,142	6,869	8,273	45%	146	912	1,058	71	1,413	41.06%	85.49%	74.86%	74.86%	1,129	(1,121)	8	361
2033	14,934	7,238	7,696	48%	145	914	1,059	71	1,414	41.06%	85.49%	74.86%	74.68%	1,130	(1,120)	10	380
2034	14,715	7,628	7,087	52%	145	909	1,054	71	1,416	41.06%	84.93%	74.44%	74.44%	1,125	(1,117)	8	401
2035	14,485	8,036	6,449	55%	145	911	1,056	71	1,418	41.06%	84.93%	74.44%	74.23%	1,127	(1,111)	16	422
2036	14,249	8,475	5,774	59%	145	907	1,052	71	1,423	41.06%	84.24%	73.91%	73.91%	1,123	(1,101)	22	446
2037	14,010	8,942	5,068	64%	145	911	1,056	71	1,429	41.06%	84.24%	73.91%	73.55%	1,127	(1,088)	39	471
2038	13,770	9,453	4,317	69%	145	904	1,049	72	1,436	41.06%	83.06%	73.01%	73.01%	1,121	(1,073)	48	498
2039	13,533	9,997	3,536	74%	145	909	1,054	72	1,444	41.06%	83.06%	73.01%	72.53%	1,126	(1,057)	69	527
2040	13,301	10,593	2,708	80%	145	897	1,042	73	1,451	41.06%	81.52%	71.84%	71.84%	1,115	(1,040)	75	558
2041	13,073	11,226	1,847	86%	145	902	1,047	73	1,458	41.06%	81.52%	71.84%	71.31%	1,120	(1,022)	98	592
2042	12,852	11,916	936	93%	144	882	1,026	73	1,464	41.06%	79.20%	70.08%	70.08%	1,099	(1,005)	94	628
2043	12,637	12,637	-	100%	15	48	63	73	1,469	4.31%	4.31%	4.31%	4.31%	136	(987)	(851)	641
2044	12,429	12,429	-	100%	15	48	63	74	1,473	4.27%	4.27%	4.27%	4.27%	137	(969)	(832)	631
2045	12,228	12,228	-	100%	15	48	63	74	1,478	4.24%	4.24%	4.24%	4.24%	137	(952)	(815)	621
2046	12,035	12,035	-	100%	15	47	62	74	1,481	4.21%	4.21%	4.21%	4.21%	136	(934)	(798)	611
2047	11,849	11,849	-	100%	15	47	62	74	1,485	4.18%	4.18%	4.18%	4.18%	136	(916)	(780)	601

Notes and assumptions:

The projection is based on the results of the June 30, 2018 actuarial valuation and the actuarial assumptions documented in the 2018 Experience Study Report adopted by the Board on April 18, 2019.

The projection assumes that all actuarial assumptions are realized, including the assumed annual asset return of 5.25%.

New active members are assumed to be hired to replace the current active members as they are assumed to terminate employment or retire, but the total active membership population is assumed to decrease by 2% each future year.

The 63.86% employer contribution rate for FY 2019 is the effective contribution rate after reflecting HB 265 which provided that Regional Mental Health/Mental Retardation

Boards, Local and District Health Departments, State Universities, and Community Colleges to contribute a 49.47% of pay contribution rate for FY 2019. Collectively these entities reflect approximately 25% of the covered payroll in the System.

Kentucky Retirement Systems
KERS Non-Hazardous Insurance Fund
Actuarial Analysis of HB 2: Proposed Legislation
Exhibit 3-4
(\$ in Millions)

Proposed Contribution Provisions: Quasi Employers Pay 49.47% & Non-Quasi Employers Pay the Remaining ADEC
Valuation Assumptions: Recently Adopted Experience Study Assumptions (6.25% discount rate and 0% amortization payroll growth)

Projected Experience Scenario #2: Active Headcount Decreases by 2% Each Year (resulting in 0% payroll growth, which aligns with valuation assumptions)
& Assets Earn 6.25% Annually (which aligns with valuation assumptions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Quasi Employer Contribution	Non-Quasi Employer Contribution	Total Employer Contribution	Member Contribution	Covered Payroll	Quasi Employer Contribution as % of Covered Payroll	Non-Quasi Employer Contribution as % of Covered Payroll	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
														Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
2018	\$ 2,436	\$ 887	\$ 1,549	36%	\$ 29	\$ 138	\$ 167	\$ 6	\$ 1,461	8.41%	12.40%	11.45%	12.40%	\$ 173	\$ (130)	\$ 43	\$ 57
2019	2,611	978	1,633	37%	8	24	32	6	1,449	2.21%	2.21%	2.21%	11.17%	38	(134)	(96)	59
2020	2,677	941	1,736	35%	7	23	30	7	1,444	2.10%	2.10%	2.10%	11.95%	37	(141)	(104)	56
2021	2,738	905	1,833	33%	7	22	29	7	1,440	2.00%	2.00%	2.00%	12.69%	36	(148)	(112)	53
2022	2,794	849	1,945	30%	6	21	27	8	1,435	1.89%	1.89%	1.89%	13.48%	35	(155)	(120)	49
2023	2,845	778	2,067	27%	6	19	25	8	1,432	1.78%	1.78%	1.78%	14.40%	33	(163)	(130)	45
2024	2,891	694	2,197	24%	29	192	221	9	1,429	8.41%	17.69%	15.47%	15.47%	230	(171)	59	45
2025	2,930	798	2,132	27%	29	192	221	9	1,427	8.41%	17.69%	15.47%	15.33%	230	(178)	52	52
2026	2,962	901	2,061	30%	29	188	217	10	1,424	8.41%	17.35%	15.21%	15.21%	227	(187)	40	58
2027	2,986	999	1,987	33%	29	187	216	10	1,421	8.41%	17.35%	15.21%	15.11%	226	(195)	31	63
2028	3,002	1,093	1,909	36%	29	184	213	11	1,418	8.41%	17.06%	14.99%	14.99%	224	(203)	21	69
2029	3,009	1,183	1,826	39%	28	184	212	11	1,417	8.41%	17.06%	14.99%	14.89%	223	(210)	13	74
2030	3,008	1,271	1,737	42%	28	181	209	11	1,416	8.41%	16.77%	14.77%	14.77%	220	(215)	5	80
2031	3,001	1,356	1,645	45%	28	181	209	12	1,416	8.41%	16.77%	14.77%	14.66%	221	(219)	2	85
2032	2,989	1,443	1,546	48%	28	178	206	12	1,416	8.41%	16.45%	14.53%	14.53%	218	(221)	(3)	90
2033	2,972	1,529	1,443	51%	29	177	206	13	1,418	8.41%	16.45%	14.53%	14.44%	219	(224)	(5)	95
2034	2,951	1,619	1,332	55%	29	175	204	13	1,419	8.41%	16.20%	14.34%	14.34%	217	(225)	(8)	101
2035	2,928	1,712	1,216	58%	29	175	204	13	1,422	8.41%	16.20%	14.34%	14.25%	217	(224)	(7)	107
2036	2,904	1,812	1,092	62%	29	173	202	13	1,427	8.41%	15.94%	14.14%	14.14%	215	(222)	(7)	113
2037	2,880	1,919	961	67%	29	174	203	14	1,433	8.41%	15.94%	14.14%	14.03%	217	(219)	(2)	120
2038	2,858	2,036	822	71%	29	171	200	14	1,440	8.41%	15.63%	13.90%	13.90%	214	(216)	(2)	127
2039	2,837	2,161	676	76%	29	172	201	14	1,447	8.41%	15.63%	13.90%	13.79%	215	(212)	3	135
2040	2,818	2,300	518	82%	29	169	198	14	1,454	8.41%	15.24%	13.61%	13.61%	212	(208)	4	144
2041	2,802	2,447	355	87%	29	170	199	14	1,460	8.41%	15.24%	13.61%	13.49%	213	(205)	8	153
2042	2,789	2,609	180	94%	30	163	193	15	1,466	8.41%	14.69%	13.19%	13.19%	208	(201)	7	163
2043	2,779	2,779	-	100%	2	5	7	15	1,472	0.50%	0.50%	0.50%	0.50%	22	(197)	(175)	168
2044	2,771	2,771	-	100%	2	5	7	15	1,476	0.50%	0.50%	0.50%	0.50%	22	(195)	(173)	168
2045	2,766	2,766	-	100%	2	5	7	15	1,481	0.48%	0.48%	0.48%	0.48%	22	(193)	(171)	168
2046	2,762	2,762	-	100%	2	5	7	15	1,485	0.47%	0.47%	0.47%	0.47%	22	(193)	(171)	167
2047	2,758	2,758	-	100%	2	5	7	15	1,489	0.46%	0.46%	0.46%	0.46%	22	(193)	(171)	167

Notes and assumptions:

The projection is based on the results of the June 30, 2018 actuarial valuation and the actuarial assumptions documented in the 2018 Experience Study Report adopted by the Board on April 18, 2019.

The projection assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.25%.

New active members are assumed to be hired to replace the current active members as they are assumed to terminate employment or retire, but the total active membership population is assumed to decrease by 2% each future year.

The 11.45% employer contribution rate for FY 2018 is the effective contribution rate after reflecting HB 265 which provided that Regional Mental Health/Mental Retardation

Boards, Local and District Health Departments, State Universities, and Community Colleges to contribute a 49.47% of pay contribution rate for FY 2019. Collectively these entities reflect approximately 25% of the covered payroll in the System.