

July 18, 2019

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

Re: Actuarial Analysis of Proposed Pension Reform Legislation BR 30 (cessation window for quasi-governmental agencies) and its Financial Impact on the Kentucky Employees Retirement System (KERS)

**HB 1 GA AA Statement
AA Statement 1 of 1**

Dear Mr. Eager:

The purpose of this letter is to provide an actuarial analysis of proposed legislation BR 30 (as drafted on July 17, 2019 as version 19 SS BR 30) as it applies to the Kentucky Employees Retirement Systems (non-hazardous only). This proposed legislation provides technical updates to 19 SS BR 19 on which we previously provided an actuarial analysis. We have also determined that BR 30 has the same fiscal impact on Kentucky Employees Retirement Systems as BR 19.

Background

HB 265 was enacted during the 2018 legislative session to provide approximately 118 quasi-governmental agencies (e.g. health districts, regional mental health services, non-P1 agencies, and universities) a one-year extension of the 49.47% of pay contribution requirement for the 2018/2019 fiscal year. Collectively, these employers represent approximately 25% of the covered payroll and 20% of the actuarial accrued liability in the KERS Non-Hazardous System.

Absent any further legislation, the contribution requirement for these employers will increase from 49.47% of pay to 83.43% of pay beginning on July 1, 2019. It has been communicated to us that many of these agencies are currently financially stressed and may become insolvent if they remain in the system and are required to contribute the full actuarially determined contribution rate. This proposed legislation will provide these agencies another one-year extension of the 49.47% of pay contribution rate and a one-time window to allow them to cease participation in the System as of June 30, 2020 under alternative cessation provisions.

A fundamental assumption in our calculations and analysis is that each employer will make their required contribution each future year. To the extent there are employers that do not make their contributions for any reason, the contribution effort from the Commonwealth will increase accordingly.

Summary of Cost Impact

The fiscal impact attributable to the continuation of the 49.47% contribution rate for these agencies for fiscal year 2019/2020 is \$121 million. The proposed cessation window provides various options for agencies to elect to cease participation in KERS effective June 30, 2020. Each of these options has a different fiscal impact compared to the current cessation provisions. The table below provides a summary of fiscal impact of each option by agency type.

Table 1. Summary of Cost Relief Compared to Current Cessation Provisions (\$ in millions)

Agency Type	Election Option – Freeze and Payment Type			
	Hard Freeze Lump-Sum	Soft Freeze Lump-Sum	Hard Freeze Installments	Soft Freeze Installments
(1)	(2)	(3)	(4)	(5)
Health Department	\$236	\$119	\$362	\$0
Non-P1 Agency	34	21	14	0
Regional Mental Health	185	107	107	0
Universities	<u>223</u>	<u>123</u>	<u>129</u>	<u>0</u>
Total (by election type)	\$678	\$370	\$612	0

Since the actual cost relief is dependent on the actual employer cessation election, we must make an assumption regarding employer election behavior for the analysis and projections. Based on information we have received from various stakeholders in the System, we have assumed that all employers would elect a hard freeze, where the universities would pay their actuarial cost as a lump sum and all other agencies would pay for their cost in installments, which results in an actuarial cost relief of \$827 million (\$223M + \$362M + \$14M + \$107M + \$121M).

The continuation of the 49.47% contribution rate for these agencies results in \$121 million less in contributions compared to the actuarially determined contribution. If the non-university employers elect a hard freeze with installments, then the present value of their collective cessation installments will be \$322 million less than the actuarial cost for these employers. The remaining difference of \$384 million (\$827M - \$121M - \$322M) is a reduction in the risk transfer payment from the withdrawing employers that would have been otherwise used to protect the remaining employers in the System in the event adverse investment or liability experience occurs. This is significant, as the remaining employers in the System are required to assume the responsibility in all future years of funding the liability attributable to the members of the withdrawing employers after the cessation date, which will include years of unfavorable experience.

Compared to current cessation provisions, this window is projected to result in approximately a 5.5% of pay increase in the actuarially determined contribution rate (i.e. an increase from 78.2% of pay beginning with the fiscal year 2022/2023) for the next 21 years for the remaining participating employers in the System. This is approximately a \$65 million increase in the annual contribution effort for the remaining employers in the System (compared to current cessation provisions).

The table on page 2 provides information so that stakeholders can identify the cost impact under other election behavior assumptions.

Summary of Proposed Legislation

This proposed legislation provides another one-year extension of the contribution rate relief for these quasi-governmental agencies (e.g. mental health, health districts, non-P1 agencies, and universities) and the applicable employer contribution rate will be 49.47% of pay (41.06% retirement and 8.41% insurance) for fiscal year 2019/2020.

Also, this proposed legislation provides a window for these quasi-governmental agencies to voluntarily cease participation in KERS under provisions that are different from those currently in effect in State Statute. The tables below and on the following page provide a summary of the proposed cessation provisions.

Effective cessation date	June 30, 2020
Eligibility	All Quasi Agencies (non-hazardous employees only)
Employer election date	Must submit an election on or after April 1, 2020 but prior to May 1, 2020 to cease participation in the KERS Non-Hazardous System.
Board authority	The Board is unable to deny an employer's election to cease participation in the System.
Date new hire employees earn benefits in alt plan	The employer's effective cessation date of June 30, 2020.
Employer election options	<ol style="list-style-type: none">1. Hard Freeze and pay actuarial cost as a lump-sum payment2. Hard Freeze and pay actuarial cost in installments3. Soft Freeze and pay actuarial cost as a lump-sum payment4. Soft Freeze and pay actuarial cost in installments5. Remain a participating employer in KERS (default option) <p><u>Hard Freeze:</u> No future employees hired after the cessation date will earn benefits in KERS. All employees hired prior to the cessation date become inactive members in KERS as of the cessation date.</p> <p><u>Soft Freeze:</u> No future employees hired after the cessation date will earn benefits in KERS. Employees hired on and after January 1, 2014 will become inactive members as of the cessation date. Employees hired prior to January 1, 2014 will continue to be active members and earn benefits in KERS while employed with the agency after the cessation date.</p>

Discount rate used to determine the actuarial cost	<ol style="list-style-type: none"> 1. 4.50%: Hard Freeze and pay actuarial cost as a lump-sum payment 2. 3.50%: Hard Freeze and pay actuarial cost in installments 3. 3.50%: Soft Freeze and pay actuarial cost as a lump-sum payment 4. 3.00%: Soft Freeze and pay actuarial cost in installments 5. N/A: Remain a participating employer in KERS (default option)
Other actuarial assumptions	Same as those used to prepare the 2019 actuarial valuation.
Interest rate on outstanding principle (only applicable on installment payments)	5.25% for the pension cost 6.25% for the insurance cost
Continuation of general fund appropriations	Employers who are currently receiving general fund appropriations to help pay retirement contributions that elect to cease participation will continue to receive the same level of appropriations to help pay these costs until such time as the employers' full actuarial costs have been paid.
Annual installment payments	<p>There are no annual installments for employers that cease participation and elect to finance the actuarial cost as a lump-sum payment.</p> <p>Beginning in fiscal year 2020/2021 employers that elect to finance the actuarial cost in installments will contribute a dollar amount equal to the greater of: (1) actual contribution paid in fiscal year 2019/2020, or (2) the agency's annualized 60-month average of compensation reported to the System prior to June 30, 2019 multiplied by 49.47%. Contributions will increase by 1.50% each future year. However, the System will increase the annual payments for employers that elect a soft freeze in order for those employers to fully finance their actuarial costs over a period that does not exceed 30 years.</p> <p>Employers that elect a hard freeze will make installments until their actuarial costs are fully financed or up to 30 years at which time no additional payments will be made by the employer.</p>
Capital Pledge	Any employer voluntarily ceasing participation under these provisions is required to pledge security until all costs are paid in full.
Delinquent payments	Active members (if any) of an employer making installments payments that is 90 or more days or more delinquent on payments shall not accrue any additional service or benefits until the employer has satisfied the required payments to the System

Discussion of the Fiscal Impact

The following summarizes the fiscal impact of the key provisions in the proposed legislation:

One-Year Continuation of Contribution Rate for Quasi-Governmental Agencies

If this provision is enacted, the KERS Non-Hazardous System will receive \$121 million less in contributions than expected from these entities in fiscal year 2019/2020. This will result in a 0.7% increase in the actuarially determined contribution rate beginning with the 2020/2021 fiscal year and for the 22 subsequent years (i.e. 23 years in total).

Employer Cessation Options

Table 1 on the second page of this letter provides the cost impact of each cessation option by agency type. The following provides a brief summary regarding the source of the cost.

Hard Freeze and Lump-Sum Payment: There is a fiscal cost to the System if an employer elects to cease participation in the System under this option, because the employer's cessation cost is determined using a 4.50% discount rate in lieu of using a 30-year Treasury rate (we currently assume to be 3.00%) that is currently in Statute.

Soft Freeze and Lump-Sum Payment: Employers electing this option will pay a higher actuarial cost due to the use of a 3.50% discount rate plus the inclusion of the present value of future employer normal cost in their cessation payment. The use of a 3.50% discount rate will result in an actuarial cost that is closer to the current cessation provisions (compared to the use of a 4.50% discount rate), but still provides some cost relief to employers electing this option. Also, there is no delinquency risk to the System since the employers will make a lump-sum payment.

Hard Freeze and Installment Payments: The actuarial cost under this option is based on a 3.50% discount rate, which results in a higher actuarial cost than if the employers paid the cost as a lump sum, but a lower actuarial cost than the current cessation provisions. Employers electing this option will make annual installments until their actuarial cost is fully financed (or up to the maximum 30-year finance period). Based on our analysis, we project that 64 of the 118 eligible employers would not have completely financed their actuarial cost within 30 years under this option. As a result, \$377 million of the \$612 million total cost of this option is attributable to ceasing the employer installments at year 30 (with the other \$235 million in cost relief due to the use of a higher discount rate compared to current cessation provisions).

Soft Freeze and Installment Payments: There is no fiscal cost associated with allowing employers the option of a soft freeze with installment payments because the actuarial cost is based on a 3.00% discount rate and the System will increase the annual payments such that the employers electing this option will fully finance their actuarial cost over a period that does not exceed 30 years. Based on our analysis, approximately 90 of the 118 employers would be required to pay larger installments over a 30-year period (compared to the hard freeze installment option).

GRS Comments on Proposed Legislation

Determination of the Actuarial Cost for an Employer Withdrawing from KERS

The current cessation provisions in State Statute provide a financially fair basis for the System and participating employers on which to determine an actuarial cost for withdrawing employers to exit KERS and are not expected to result in increased fiscal cost or financial risk to the remaining participating employers (and members) in the System. Legislation providing a cessation window with the use of alternative provisions may create a precedent for other participating employers to lobby for the enactment of similar legislation on a temporary or permanent basis. Enactment of any such similar legislation could result in continual increased cost and risk for the remaining participating employers in those Systems.

Installment Payment Option

This legislation provides an option for these eligible employers to finance their actuarial costs by making installments to KRS, which is not an option in the current cessation provisions. Establishing an interest rate that is equal to the assumed rate of return used in the actuarial valuation is expected to be fiscally cost-neutral to the System.

Establishing the payment based on the greater of the fiscal year 2020 pay and a 60-month average of compensation significantly reduces an employer's ability to reduce their required future annual cost by reducing their covered payroll in fiscal year 2019/2020. Also, requiring a larger installment amount for those employers electing a soft freeze will ensure those employers fully finance their actuarial cost which significantly reduces the potential fiscal impact to the System. Compared to the installment payments under the hard freeze option, our analysis indicates that 90 of the 118 employers will be required to pay a larger annual installment if they elect a soft freeze.

Board Required Acceptance of Agency Election

Requiring KRS to become a creditor introduces financial risk to KRS as some of these employers may become financially stressed, resulting in a delinquency or default on their installments before their actuarial costs are fully paid. This is a risk we are unable to quantify as this assessment would require a detailed financial review of each employer's financial statements. However, the proposed legislation provides KRS a remedy action for employers who are 90 or more days delinquent on their monthly installments.

Discussion of Scenarios Provided in Attached Exhibits

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

1. Active membership for the non-quasi agencies 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 for the non-quasi agencies 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.

Since the quasi agencies receive a subsidy in the proposed cessation window, it is unnecessary to make an assumption regarding the future active membership for the quasi agencies in this actuarial analysis.

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.

Basis of Calculations

GRS based the calculations and analysis in this letter on the member and financial data provided by KRS 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 actuarial valuation report. This analysis also does not reflect the fiscal impact due to the Board recently adopting updated actuarial assumptions for first use in preparing the June 30, 2019 actuarial valuation. 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.

The projections in the enclosed exhibits assume these employers will cease participation at June 30, 2020 under both the baseline and proposed fiscal analysis. The baseline analysis assumes the employers withdraw under the current cessation provisions and the proposed analysis assumes all the employers will elect to cease participation under the hard freeze option with the universities paying their actuarial costs as a lump-sum and all the other employers paying their costs with

installments. For the purposes of determining the full actuarial cost of withdrawing employers under the current cessation provisions, we have assumed a discount rate equal to 3.00%.

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 and Mr. Newton are Enrolled Actuaries. All of the undersigned are members of the American Academy of Actuaries and meet all of the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. In addition, all of the undersigned are experienced in performing valuations for large public retirement systems.

Sincerely,



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



Janie Shaw, ASA, MAAA
Consultant



Joseph P. Newton, FSA, MAAA, EA
Pension Market Leader and Actuary

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Enclosures

BR 30

Section 1.

Comparison of Fiscal Impact

**Current Plan (Current Cessation Provisions) vs.
Proposed Changes (Proposed Cessation Window)**

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Actuarial Analysis of BR 30: Comparison of Fiscal Impact
Exhibit 1-1
(\$ in Millions)

Current Plan Assumes All Quasi-Governmental Employers Cease Participation under Existing Cessation Provisions
Proposed Plan Assumes All Quasi-Governmental Employers Cease Participation under Proposed Window

Scenario #1: Active Headcount Remains Constant (resulting in 2% payroll growth, which is more favorable than valuation assumption of 0% payroll growth)
& Assets Earn 5.25% Annually (which aligns with valuation assumptions)

Fiscal Year Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			University Employer Contribution			Other Quasi Employer Contribution			Non-Quasi Employer Contribution			Employer Contribution Rate		
	Current	Proposed	Difference	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)	(17)	(18)	(19)
2018	\$ 13,656	\$ 13,656	\$ -	13%	13%	0%	\$ 53	\$ 53	\$ -	\$ 92	\$ 92	\$ -	\$ 795	\$ 795	\$ -	63.9%	63.9%	0.0%
2019	13,571	13,571	-	13%	13%	0%	92	92	-	161	161	-	805	805	-	71.0%	63.9%	-7.1%
2020	13,067	13,177	110	15%	14%	-1%	959	786	(173)	2,016	102	(1,914)	850	857	7	73.7%	74.3%	0.6%
2021	9,888	12,117	2,229	35%	21%	-14%	-	-	-	-	104	104	865	872	7	73.7%	74.3%	0.6%
2022	9,596	11,829	2,233	37%	22%	-15%	-	-	-	-	105	105	842	895	53	70.5%	74.9%	4.4%
2023	9,318	11,507	2,189	38%	23%	-15%	-	-	-	-	106	106	857	911	54	70.5%	74.9%	4.4%
2024	9,009	11,148	2,139	39%	25%	-14%	-	-	-	-	108	108	833	885	52	67.3%	71.5%	4.2%
2025	8,706	10,794	2,088	41%	26%	-15%	-	-	-	-	108	108	849	902	53	67.3%	71.5%	4.2%
2026	8,369	10,401	2,032	42%	28%	-14%	-	-	-	-	109	109	825	877	52	64.2%	68.2%	4.0%
2027	8,037	10,011	1,974	44%	30%	-14%	-	-	-	-	110	110	840	893	53	64.2%	68.2%	4.0%
2028	7,669	9,579	1,910	46%	32%	-14%	-	-	-	-	111	111	816	868	52	61.1%	65.0%	3.9%
2029	7,305	9,149	1,844	47%	34%	-13%	-	-	-	-	112	112	832	884	52	61.1%	65.0%	3.9%
2030	6,905	8,676	1,771	49%	36%	-13%	-	-	-	-	112	112	807	859	52	58.2%	61.9%	3.7%
2031	6,506	8,203	1,697	51%	39%	-12%	-	-	-	-	112	112	824	877	53	58.2%	61.9%	3.7%
2032	6,069	7,686	1,617	54%	42%	-12%	-	-	-	-	114	114	799	850	51	55.2%	58.8%	3.6%
2033	5,632	7,164	1,532	56%	44%	-12%	-	-	-	-	116	116	816	868	52	55.2%	58.8%	3.6%
2034	5,154	6,594	1,440	59%	48%	-11%	-	-	-	-	117	117	789	840	51	52.3%	55.7%	3.4%
2035	4,677	6,022	1,345	62%	51%	-11%	-	-	-	-	111	111	806	858	52	52.3%	55.7%	3.4%
2036	4,157	5,404	1,247	66%	55%	-11%	-	-	-	-	111	111	780	830	50	49.5%	52.7%	3.2%
2037	3,636	4,783	1,147	69%	60%	-9%	-	-	-	-	104	104	799	851	52	49.5%	52.7%	3.2%
2038	3,067	4,116	1,049	74%	64%	-10%	-	-	-	-	103	103	769	818	49	46.4%	49.4%	3.0%
2039	2,501	3,449	948	78%	70%	-8%	-	-	-	-	104	104	788	839	51	46.4%	49.4%	3.0%
2040	1,885	2,724	839	83%	75%	-8%	-	-	-	-	106	106	751	798	47	43.2%	45.9%	2.7%
2041	1,277	2,002	725	88%	82%	-6%	-	-	-	-	106	106	769	818	49	43.2%	45.9%	2.7%
2042	618	1,222	604	94%	89%	-5%	-	-	-	-	98	98	701	745	44	38.4%	40.8%	2.4%
2043	-	484	484	100%	95%	-5%	-	-	-	-	98	98	59	59	-	3.2%	3.2%	0.0%
2044	-	413	413	100%	96%	-4%	-	-	-	-	94	94	59	59	-	3.1%	3.1%	0.0%
2045	-	342	342	100%	97%	-3%	-	-	-	-	87	87	60	60	-	3.1%	3.1%	0.0%
2046	-	274	274	100%	97%	-3%	-	-	-	-	87	87	61	61	-	3.0%	3.0%	0.0%
2047	-	203	203	100%	98%	-2%	-	-	-	-	84	84	62	62	-	3.0%	3.0%	0.0%

Notes and assumptions:

Comparison of current cessation provisions in State Statute to the proposed provisions in the cessation window.

The 63.9% 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, Community Colleges and any other agency eligible to voluntarily cease participating in the KERS 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 BR 30: Comparison of Fiscal Impact
Exhibit 1-2
(\$ in Millions)

Current Plan Assumes All Quasi-Governmental Employers Cease Participation under Existing Cessation Provisions
Proposed Plan Assumes All Quasi-Governmental Employers Cease Participation under Proposed Window

Scenario #1: Active Headcount Remains Constant (resulting in 2% payroll growth, which is more favorable than valuation assumption of 0% payroll growth)
& Assets Earn 6.25% Annually (which aligns with valuation assumptions)

Fiscal Year Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			University Employer Contribution			Other Quasi Employer Contribution			Non-Quasi Employer Contribution			Employer Contribution Rate		
	Current	Proposed	Difference	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)	(17)	(18)	(19)
2018	\$ 1,549	\$ 1,549	\$ -	36%	36%	0%	\$ 10	\$ 10	\$ -	\$ 19	\$ 19	\$ -	\$ 138	\$ 138	\$ -	11.5%	11.5%	0.0%
2019	1,519	1,519	-	39%	39%	0%	16	16	-	28	28	-	139	139	-	12.4%	11.5%	-0.9%
2020	1,433	1,448	15	43%	43%	0%	195	145	(50)	369	21	(348)	118	119	1	10.3%	10.4%	0.1%
2021	834	1,254	420	68%	51%	-17%	-	-	-	-	21	21	120	121	1	10.3%	10.4%	0.1%
2022	786	1,209	423	70%	54%	-16%	-	-	-	-	22	22	92	104	12	7.7%	8.8%	1.1%
2023	764	1,180	416	71%	55%	-16%	-	-	-	-	22	22	93	106	13	7.7%	8.8%	1.1%
2024	739	1,145	406	72%	57%	-15%	-	-	-	-	22	22	89	101	12	7.2%	8.2%	1.0%
2025	715	1,112	397	73%	58%	-15%	-	-	-	-	22	22	90	103	13	7.2%	8.2%	1.0%
2026	687	1,073	386	74%	60%	-14%	-	-	-	-	22	22	86	98	12	6.7%	7.7%	1.0%
2027	661	1,036	375	75%	61%	-14%	-	-	-	-	22	22	87	100	13	6.7%	7.7%	1.0%
2028	630	993	363	77%	63%	-14%	-	-	-	-	23	23	82	94	12	6.2%	7.1%	0.9%
2029	602	952	350	78%	64%	-14%	-	-	-	-	23	23	84	96	12	6.2%	7.1%	0.9%
2030	569	905	336	79%	66%	-13%	-	-	-	-	23	23	79	91	12	5.7%	6.6%	0.9%
2031	537	858	321	80%	68%	-12%	-	-	-	-	23	23	81	93	12	5.7%	6.6%	0.9%
2032	501	806	305	81%	69%	-12%	-	-	-	-	24	24	76	88	12	5.3%	6.1%	0.8%
2033	467	754	287	82%	71%	-11%	-	-	-	-	24	24	78	90	12	5.3%	6.1%	0.8%
2034	428	696	268	83%	73%	-10%	-	-	-	-	23	23	74	85	11	4.9%	5.7%	0.8%
2035	389	639	250	85%	75%	-10%	-	-	-	-	23	23	76	87	11	4.9%	5.7%	0.8%
2036	347	576	229	86%	77%	-9%	-	-	-	-	23	23	72	84	12	4.6%	5.3%	0.7%
2037	305	513	208	88%	79%	-9%	-	-	-	-	23	23	74	86	12	4.6%	5.3%	0.7%
2038	259	444	185	90%	82%	-8%	-	-	-	-	22	22	71	82	11	4.3%	5.0%	0.7%
2039	212	375	163	91%	85%	-6%	-	-	-	-	21	21	73	84	11	4.3%	5.0%	0.7%
2040	161	301	140	93%	88%	-5%	-	-	-	-	18	18	69	80	11	4.0%	4.6%	0.6%
2041	110	229	119	95%	91%	-4%	-	-	-	-	17	17	71	82	11	4.0%	4.6%	0.6%
2042	54	151	97	98%	94%	-4%	-	-	-	-	17	17	65	75	10	3.6%	4.1%	0.5%
2043	-	75	75	100%	97%	-3%	-	-	-	-	17	17	9	9	-	0.5%	0.5%	0.0%
2044	-	63	63	100%	97%	-3%	-	-	-	-	17	17	9	9	-	0.5%	0.5%	0.0%
2045	-	51	51	100%	98%	-2%	-	-	-	-	14	14	9	9	-	0.5%	0.5%	0.0%
2046	-	41	41	100%	98%	-2%	-	-	-	-	11	11	9	9	-	0.5%	0.5%	0.0%
2047	-	32	32	100%	99%	-1%	-	-	-	-	11	11	9	9	-	0.5%	0.5%	0.0%

Notes and assumptions:

Comparison of current cessation provisions in State Statute to the proposed provisions in the cessation window.

The 11.5% 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, Community Colleges and any other agency eligible to voluntarily cease participating in the KERS 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 BR 30: Comparison of Fiscal Impact
Exhibit 1-3
(\$ in Millions)

Current Plan Assumes All Quasi-Governmental Employers Cease Participation under Existing Cessation Provisions
Proposed Plan Assumes All Quasi-Governmental Employers Cease Participation under Proposed Window

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

Fiscal Year Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			University Employer Contribution			Other Quasi Employer Contribution			Non-Quasi Employer Contribution			Employer Contribution Rate		
	Current	Proposed	Difference	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)	(17)	(18)	(19)
2018	\$ 13,656	\$ 13,656	\$ -	13%	13%	0%	\$ 53	\$ 53	\$ -	\$ 92	\$ 92	\$ -	\$ 795	\$ 795	\$ -	63.9%	63.9%	0.0%
2019	13,570	13,570	-	13%	13%	0%	92	92	-	161	161	-	790	790	-	71.0%	63.9%	-7.1%
2020	13,082	13,190	108	15%	14%	-1%	959	786	(173)	2,016	102	(1,914)	837	843	6	74.8%	75.4%	0.6%
2021	9,915	12,142	2,227	35%	21%	-14%	-	-	-	-	104	104	837	844	7	74.8%	75.4%	0.6%
2022	9,650	11,882	2,232	36%	22%	-14%	-	-	-	-	105	105	830	882	52	74.2%	78.8%	4.6%
2023	9,385	11,573	2,188	37%	23%	-14%	-	-	-	-	106	106	831	882	51	74.2%	78.8%	4.6%
2024	9,102	11,243	2,141	39%	24%	-15%	-	-	-	-	108	108	823	874	51	73.5%	78.1%	4.6%
2025	8,810	10,899	2,089	40%	26%	-14%	-	-	-	-	108	108	823	875	52	73.5%	78.1%	4.6%
2026	8,498	10,534	2,036	41%	27%	-14%	-	-	-	-	109	109	817	868	51	72.9%	77.5%	4.6%
2027	8,174	10,153	1,979	43%	29%	-14%	-	-	-	-	110	110	816	868	52	72.9%	77.5%	4.6%
2028	7,832	9,750	1,918	44%	30%	-14%	-	-	-	-	111	111	810	861	51	72.4%	77.0%	4.6%
2029	7,475	9,326	1,851	46%	32%	-14%	-	-	-	-	112	112	809	861	52	72.4%	77.0%	4.6%
2030	7,096	8,877	1,781	47%	34%	-13%	-	-	-	-	112	112	804	856	52	71.9%	76.5%	4.6%
2031	6,701	8,409	1,708	49%	37%	-12%	-	-	-	-	112	112	805	856	51	71.9%	76.5%	4.6%
2032	6,282	7,911	1,629	52%	39%	-13%	-	-	-	-	114	114	799	851	52	71.4%	76.0%	4.6%
2033	5,844	7,389	1,545	54%	42%	-12%	-	-	-	-	116	116	800	852	52	71.4%	76.0%	4.6%
2034	5,380	6,834	1,454	57%	45%	-12%	-	-	-	-	117	117	794	845	51	70.8%	75.4%	4.6%
2035	4,896	6,254	1,358	59%	48%	-11%	-	-	-	-	111	111	795	846	51	70.8%	75.4%	4.6%
2036	4,384	5,646	1,262	63%	52%	-11%	-	-	-	-	111	111	791	843	52	70.2%	74.8%	4.6%
2037	3,848	5,010	1,162	66%	56%	-10%	-	-	-	-	104	104	794	846	52	70.2%	74.8%	4.6%
2038	3,279	4,342	1,063	71%	61%	-10%	-	-	-	-	103	103	788	839	51	69.3%	73.8%	4.5%
2039	2,686	3,646	960	75%	66%	-9%	-	-	-	-	104	104	792	844	52	69.3%	73.8%	4.5%
2040	2,056	2,907	851	81%	72%	-9%	-	-	-	-	106	106	782	833	51	68.1%	72.5%	4.4%
2041	1,403	2,138	735	86%	79%	-7%	-	-	-	-	106	106	785	836	51	68.1%	72.5%	4.4%
2042	713	1,324	611	93%	87%	-6%	-	-	-	-	98	98	770	820	50	66.6%	70.9%	4.3%
2043	-	492	492	100%	95%	-5%	-	-	-	-	98	98	37	37	-	3.2%	3.2%	0.0%
2044	-	418	418	100%	96%	-4%	-	-	-	-	94	94	37	37	-	3.2%	3.2%	0.0%
2045	-	344	344	100%	96%	-4%	-	-	-	-	87	87	36	36	-	3.1%	3.1%	0.0%
2046	-	275	275	100%	97%	-3%	-	-	-	-	87	87	36	36	-	3.1%	3.1%	0.0%
2047	-	201	201	100%	98%	-2%	-	-	-	-	84	84	35	35	-	3.0%	3.0%	0.0%

Notes and assumptions:

Comparison of current cessation provisions in State Statute to the proposed provisions in the cessation window.

The 63.9% 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, Community Colleges and any other agency eligible to voluntarily cease participating in the KERS 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 BR 30: Comparison of Fiscal Impact
Exhibit 1-4
(\$ in Millions)

Current Plan Assumes All Quasi-Governmental Employers Cease Participation under Existing Cessation Provisions
Proposed Plan Assumes All Quasi-Governmental Employers Cease Participation under Proposed Window

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

Fiscal Year Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			University Employer Contribution			Other Quasi Employer Contribution			Non-Quasi Employer Contribution			Employer Contribution Rate		
	Current	Proposed	Difference	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)	(17)	(18)	(19)
2018	\$ 1,549	\$ 1,549	\$ -	36%	36%	0%	\$ 10	\$ 10	\$ -	\$ 19	\$ 19	\$ -	\$ 138	\$ 138	\$ -	11.5%	11.5%	0.0%
2019	1,519	1,519	-	39%	39%	0%	16	16	-	28	28	-	139	139	-	12.4%	11.5%	-0.9%
2020	1,435	1,449	14	43%	43%	0%	195	145	(50)	369	21	(348)	116	117	1	10.5%	10.5%	0.0%
2021	838	1,258	420	67%	51%	-16%	-	-	-	-	21	21	116	117	1	10.5%	10.5%	0.0%
2022	792	1,215	423	70%	53%	-17%	-	-	-	-	22	22	90	102	12	8.1%	9.2%	1.1%
2023	772	1,187	415	71%	55%	-16%	-	-	-	-	22	22	90	102	12	8.1%	9.2%	1.1%
2024	748	1,155	407	72%	56%	-16%	-	-	-	-	22	22	87	98	11	7.8%	8.9%	1.1%
2025	726	1,123	397	73%	58%	-15%	-	-	-	-	22	22	87	98	11	7.8%	8.9%	1.1%
2026	701	1,088	387	74%	59%	-15%	-	-	-	-	22	22	83	95	12	7.5%	8.6%	1.1%
2027	675	1,052	377	75%	61%	-14%	-	-	-	-	22	22	83	95	12	7.5%	8.6%	1.1%
2028	647	1,012	365	76%	62%	-14%	-	-	-	-	23	23	80	92	12	7.2%	8.3%	1.1%
2029	618	970	352	77%	63%	-14%	-	-	-	-	23	23	80	92	12	7.2%	8.3%	1.1%
2030	587	925	338	78%	65%	-13%	-	-	-	-	23	23	76	88	12	6.9%	7.9%	1.0%
2031	555	879	324	79%	66%	-13%	-	-	-	-	23	23	77	88	11	6.9%	7.9%	1.0%
2032	520	828	308	80%	68%	-12%	-	-	-	-	24	24	74	85	11	6.6%	7.7%	1.1%
2033	485	776	291	81%	70%	-11%	-	-	-	-	24	24	74	85	11	6.6%	7.7%	1.1%
2034	448	720	272	82%	71%	-11%	-	-	-	-	23	23	71	83	12	6.4%	7.5%	1.1%
2035	409	662	253	84%	73%	-11%	-	-	-	-	23	23	72	83	11	6.4%	7.5%	1.1%
2036	367	600	233	85%	75%	-10%	-	-	-	-	23	23	70	82	12	6.2%	7.3%	1.1%
2037	322	534	212	87%	78%	-9%	-	-	-	-	23	23	70	82	12	6.2%	7.3%	1.1%
2038	276	465	189	88%	80%	-8%	-	-	-	-	22	22	69	80	11	6.1%	7.1%	1.0%
2039	227	393	166	90%	83%	-7%	-	-	-	-	21	21	69	81	12	6.1%	7.1%	1.0%
2040	175	318	143	92%	86%	-6%	-	-	-	-	18	18	67	79	12	5.9%	7.0%	1.1%
2041	120	241	121	95%	89%	-6%	-	-	-	-	17	17	68	80	12	5.9%	7.0%	1.1%
2042	61	160	99	97%	93%	-4%	-	-	-	-	17	17	66	77	11	5.7%	6.7%	1.0%
2043	-	76	76	100%	97%	-3%	-	-	-	-	17	17	3	3	-	0.3%	0.3%	0.0%
2044	-	63	63	100%	97%	-3%	-	-	-	-	17	17	3	3	-	0.2%	0.2%	0.0%
2045	-	50	50	100%	98%	-2%	-	-	-	-	14	14	3	3	-	0.2%	0.2%	0.0%
2046	-	39	39	100%	98%	-2%	-	-	-	-	11	11	2	2	-	0.2%	0.2%	0.0%
2047	-	29	29	100%	99%	-1%	-	-	-	-	11	11	2	2	-	0.2%	0.2%	0.0%

Notes and assumptions:

Comparison of current cessation provisions in State Statute to the proposed provisions in the cessation window.

The 11.5% 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, Community Colleges and any other agency eligible to voluntarily cease participating in the KERS contribute a 49.47% of pay contribution rate for FY 2019. Collectively these entities reflect approximately 25% of the covered payroll in the System.

BR 30

Section 2.

**Projected Cost of the Retirement and Insurance
Current Plan
(Current Cessation Provisions)**

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Actuarial Analysis of BR 30: Current Plan
Exhibit 2-1
(\$ in Millions)

Current Plan Assumes All Quasi-Governmental Employers Cease Participation under Existing Cessation Provisions

Scenario #1: Active Headcount Remains Constant (resulting in 2% payroll growth, which is more favorable than valuation assumption of 0% payroll growth)
& 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)	University Employer Contribution	Other Quasi Employer Contribution	Non-Quasi Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarially 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)
2018	\$ 15,675	\$ 2,019	\$ 13,656	13%	\$ 53	\$ 92	\$ 795	\$ 74	\$ 1,471	63.86%	71.03%	\$ 1,014	\$ (993)	\$ 21	\$ 106
2019	15,677	2,106	13,571	13%	92	161	805	74	1,490	71.03%	74.54%	1,132	(1,007)	125	115
2020	15,404	2,337	13,067	15%	959	2,016	850	58	1,153	73.71%	73.71%	3,883	(1,046)	2,837	199
2021	15,287	5,399	9,888	35%	-	-	865	59	1,174	73.71%	72.36%	924	(1,051)	(127)	281
2022	15,156	5,560	9,596	37%	-	-	842	60	1,194	70.50%	70.50%	902	(1,057)	(155)	288
2023	15,011	5,693	9,318	38%	-	-	857	61	1,216	70.50%	68.92%	918	(1,062)	(144)	295
2024	14,853	5,844	9,009	39%	-	-	833	62	1,238	67.26%	67.26%	895	(1,066)	(171)	302
2025	14,681	5,975	8,706	41%	-	-	849	63	1,262	67.26%	65.77%	912	(1,069)	(157)	310
2026	14,496	6,127	8,369	42%	-	-	825	64	1,286	64.15%	64.15%	889	(1,072)	(183)	317
2027	14,298	6,261	8,037	44%	-	-	840	65	1,310	64.15%	62.69%	905	(1,074)	(169)	324
2028	14,086	6,417	7,669	46%	-	-	816	67	1,335	61.13%	61.13%	883	(1,071)	(188)	332
2029	13,866	6,561	7,305	47%	-	-	832	68	1,360	61.13%	59.73%	900	(1,070)	(170)	340
2030	13,635	6,730	6,905	49%	-	-	807	69	1,388	58.17%	58.17%	876	(1,067)	(191)	348
2031	13,394	6,888	6,506	51%	-	-	824	71	1,417	58.17%	56.80%	895	(1,062)	(167)	357
2032	13,146	7,077	6,069	54%	-	-	799	72	1,446	55.24%	55.24%	871	(1,056)	(185)	367
2033	12,891	7,259	5,632	56%	-	-	816	74	1,477	55.24%	53.88%	890	(1,049)	(159)	377
2034	12,631	7,477	5,154	59%	-	-	789	75	1,508	52.32%	52.32%	864	(1,040)	(176)	388
2035	12,367	7,690	4,677	62%	-	-	806	77	1,541	52.32%	51.01%	883	(1,028)	(145)	400
2036	12,101	7,944	4,157	66%	-	-	780	79	1,577	49.47%	49.47%	859	(1,013)	(154)	413
2037	11,839	8,203	3,636	69%	-	-	799	81	1,616	49.47%	48.12%	880	(995)	(115)	428
2038	11,584	8,517	3,067	74%	-	-	769	83	1,656	46.42%	46.42%	852	(974)	(122)	444
2039	11,339	8,838	2,501	78%	-	-	788	85	1,697	46.42%	45.07%	873	(953)	(80)	462
2040	11,105	9,220	1,885	83%	-	-	751	87	1,739	43.15%	43.15%	838	(931)	(93)	482
2041	10,884	9,607	1,277	88%	-	-	769	89	1,781	43.15%	41.74%	858	(910)	(52)	503
2042	10,676	10,058	618	94%	-	-	701	91	1,824	38.42%	38.42%	792	(889)	(97)	526
2043	10,481	10,481	-	100%	-	-	59	93	1,867	3.16%	3.16%	152	(868)	(716)	532
2044	10,301	10,301	-	100%	-	-	59	96	1,910	3.11%	3.11%	155	(848)	(693)	523
2045	10,134	10,134	-	100%	-	-	60	98	1,954	3.08%	3.08%	158	(828)	(670)	514
2046	9,982	9,982	-	100%	-	-	61	100	1,999	3.04%	3.04%	161	(809)	(648)	507
2047	9,845	9,845	-	100%	-	-	62	102	2,045	3.02%	3.02%	164	(790)	(626)	500

Notes and assumptions:

All eligible employers (university and quasi-governmental employers) are assumed to cease participating from the system effective June 30, 2020 under the current cessation provisions.

The university and quasi-governmental employer contributions shown for FY 20/21 reflect the cessation payments made by these employers.

Except where noted above, the projection is based on the results of the June 30, 2018 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 5.25%.

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

The total active population is assumed to remain flat through the entire projection.

The contribution rate established in the Commonwealth's biennial budget is based on the calculated actuarially determined contribution rate.

The 63.86% 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, Community Colleges and any other agency eligible to voluntarily cease participating in the KERS

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 BR 30: Current Plan
Exhibit 2-2
(\$ in Millions)

Current Plan Assumes All Quasi-Governmental Employers Cease Participation under Existing Cessation Provisions

Scenario #1: Active Headcount Remains Constant (resulting in 2% payroll growth, which is more favorable than valuation assumption of 0% payroll growth)
& 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)	University Employer Contribution	Other Quasi Employer Contribution	Non-Quasi Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarially Determined Contribution Rate	Annual Cash Flow Analysis			
												Member and Employer Contributions	Benefit Payments and Expenses	Net Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
2018	\$ 2,436	\$ 887	\$ 1,549	36%	\$ 10	\$ 19	\$ 138	\$ 6	\$ 1,461	11.45%	12.40%	\$ 173	\$ (130)	\$ 43	\$ 57
2019	2,497	978	1,519	39%	16	28	139	7	1,480	12.40%	10.65%	190	(134)	56	64
2020	2,530	1,097	1,433	43%	195	369	118	6	1,145	10.28%	10.28%	688	(145)	543	86
2021	2,570	1,736	834	68%	-	-	120	6	1,165	10.28%	8.26%	126	(156)	(30)	108
2022	2,602	1,816	786	70%	-	-	92	7	1,186	7.74%	7.74%	99	(162)	(63)	112
2023	2,629	1,865	764	71%	-	-	93	7	1,208	7.74%	7.49%	100	(168)	(68)	114
2024	2,651	1,912	739	72%	-	-	89	8	1,230	7.21%	7.21%	97	(173)	(76)	117
2025	2,668	1,953	715	73%	-	-	90	8	1,253	7.21%	6.97%	98	(179)	(81)	120
2026	2,680	1,993	687	74%	-	-	86	9	1,277	6.71%	6.71%	95	(184)	(89)	122
2027	2,686	2,025	661	75%	-	-	87	10	1,301	6.71%	6.47%	97	(190)	(93)	124
2028	2,686	2,056	630	77%	-	-	82	10	1,326	6.21%	6.21%	92	(196)	(104)	125
2029	2,680	2,078	602	78%	-	-	84	11	1,352	6.21%	5.97%	95	(201)	(106)	127
2030	2,668	2,099	569	79%	-	-	79	12	1,379	5.72%	5.72%	91	(204)	(113)	128
2031	2,650	2,113	537	80%	-	-	81	12	1,408	5.72%	5.51%	93	(206)	(113)	129
2032	2,629	2,128	501	81%	-	-	76	13	1,437	5.29%	5.29%	89	(208)	(119)	129
2033	2,605	2,138	467	82%	-	-	78	13	1,468	5.29%	5.12%	91	(209)	(118)	130
2034	2,578	2,150	428	83%	-	-	74	14	1,500	4.93%	4.93%	88	(209)	(121)	131
2035	2,549	2,160	389	85%	-	-	76	15	1,532	4.93%	4.77%	91	(207)	(116)	131
2036	2,521	2,174	347	86%	-	-	72	15	1,568	4.60%	4.60%	87	(204)	(117)	132
2037	2,494	2,189	305	88%	-	-	74	16	1,607	4.60%	4.46%	90	(201)	(111)	133
2038	2,470	2,211	259	90%	-	-	71	16	1,647	4.30%	4.30%	87	(197)	(110)	135
2039	2,448	2,236	212	91%	-	-	73	17	1,688	4.30%	4.17%	90	(193)	(103)	137
2040	2,430	2,269	161	93%	-	-	69	17	1,730	3.99%	3.99%	86	(188)	(102)	139
2041	2,415	2,305	110	95%	-	-	71	18	1,772	3.99%	3.88%	89	(184)	(95)	141
2042	2,405	2,351	54	98%	-	-	65	18	1,814	3.59%	3.59%	83	(179)	(96)	144
2043	2,399	2,399	-	100%	-	-	9	19	1,857	0.49%	0.49%	28	(175)	(147)	145
2044	2,398	2,398	-	100%	-	-	9	19	1,900	0.48%	0.48%	28	(172)	(144)	145
2045	2,400	2,400	-	100%	-	-	9	19	1,944	0.47%	0.47%	28	(170)	(142)	145
2046	2,406	2,406	-	100%	-	-	9	20	1,989	0.46%	0.46%	29	(169)	(140)	146
2047	2,413	2,413	-	100%	-	-	9	20	2,035	0.45%	0.45%	29	(168)	(139)	146

Notes and assumptions:

All eligible employers (university and quasi-governmental employers) are assumed to cease participating from the system effective June 30, 2020 under the current cessation provisions.

The university and quasi employer-governmental contributions shown for FY 20/21 reflect the cessation payments made by these employers.

Except where noted above, the projection is based on the results of the June 30, 2018 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.25%.

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

The total active population is assumed to remain flat through the entire projection.

The contribution rate established in the Commonwealth's biennial budget is based on the calculated actuarially determined contribution rate.

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, Community Colleges and any other agency eligible to voluntarily cease participating in the KERS

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 BR 30: Current Plan
Exhibit 2-3
(\$ in Millions)

Current Plan Assumes All Quasi-Governmental Employers Cease Participation under Existing Cessation Provisions

Scenario #2: Active Headcount Decreases by 2% Each Year (resulting in 0% payroll growth, which aligns with current 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)	University Employer Contribution	Other Quasi Employer Contribution	Non-Quasi Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarially 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)
2018	\$ 15,675	\$ 2,019	\$ 13,656	13%	\$ 53	\$ 92	\$ 795	\$ 74	\$ 1,471	63.86%	71.03%	\$ 1,014	\$ (993)	\$ 21	\$ 106
2019	15,676	2,106	13,570	13%	92	161	790	73	1,468	71.03%	74.54%	1,116	(1,007)	109	115
2020	15,402	2,320	13,082	15%	959	2,016	837	56	1,118	74.84%	74.84%	3,868	(1,045)	2,823	198
2021	15,281	5,366	9,915	35%	-	-	837	56	1,119	74.84%	74.73%	893	(1,050)	(157)	278
2022	15,146	5,496	9,650	36%	-	-	830	56	1,119	74.17%	74.17%	886	(1,056)	(170)	284
2023	14,995	5,610	9,385	37%	-	-	831	56	1,120	74.17%	73.80%	887	(1,060)	(173)	290
2024	14,828	5,726	9,102	39%	-	-	823	56	1,120	73.46%	73.46%	879	(1,064)	(185)	296
2025	14,646	5,836	8,810	40%	-	-	823	56	1,120	73.46%	73.18%	879	(1,067)	(188)	301
2026	14,448	5,950	8,498	41%	-	-	817	56	1,121	72.88%	72.88%	873	(1,069)	(196)	307
2027	14,235	6,061	8,174	43%	-	-	816	56	1,120	72.88%	72.60%	872	(1,071)	(199)	313
2028	14,007	6,175	7,832	44%	-	-	810	56	1,119	72.35%	72.35%	866	(1,067)	(201)	319
2029	13,767	6,292	7,475	46%	-	-	809	56	1,119	72.35%	72.13%	865	(1,066)	(201)	325
2030	13,512	6,416	7,096	47%	-	-	804	56	1,119	71.89%	71.89%	860	(1,063)	(203)	332
2031	13,246	6,545	6,701	49%	-	-	805	56	1,120	71.89%	71.67%	861	(1,058)	(197)	338
2032	12,968	6,686	6,282	52%	-	-	799	56	1,120	71.36%	71.36%	855	(1,051)	(196)	346
2033	12,681	6,837	5,844	54%	-	-	800	56	1,121	71.36%	71.10%	856	(1,043)	(187)	354
2034	12,384	7,004	5,380	57%	-	-	794	56	1,122	70.78%	70.78%	850	(1,033)	(183)	363
2035	12,080	7,184	4,896	59%	-	-	795	56	1,123	70.78%	70.53%	851	(1,021)	(170)	373
2036	11,770	7,386	4,384	63%	-	-	791	56	1,126	70.23%	70.23%	847	(1,005)	(158)	384
2037	11,460	7,612	3,848	66%	-	-	794	57	1,131	70.23%	69.84%	851	(986)	(135)	396
2038	11,152	7,873	3,279	71%	-	-	788	57	1,137	69.29%	69.29%	845	(964)	(119)	410
2039	10,850	8,164	2,686	75%	-	-	792	57	1,143	69.29%	68.79%	849	(942)	(93)	426
2040	10,554	8,498	2,056	81%	-	-	782	57	1,148	68.08%	68.08%	839	(919)	(80)	444
2041	10,265	8,862	1,403	86%	-	-	785	58	1,152	68.08%	67.60%	843	(896)	(53)	464
2042	9,985	9,272	713	93%	-	-	770	58	1,156	66.57%	66.57%	828	(873)	(45)	486
2043	9,713	9,713	-	100%	-	-	37	58	1,159	3.22%	3.22%	95	(851)	(756)	490
2044	9,449	9,449	-	100%	-	-	37	58	1,162	3.16%	3.16%	95	(828)	(733)	477
2045	9,193	9,193	-	100%	-	-	36	58	1,164	3.10%	3.10%	94	(806)	(712)	464
2046	8,947	8,947	-	100%	-	-	36	58	1,167	3.05%	3.05%	94	(784)	(690)	451
2047	8,709	8,709	-	100%	-	-	35	58	1,169	3.01%	3.01%	93	(763)	(670)	439

Notes and assumptions:

All eligible employers (university and quasi-governmental employers) are assumed to cease participating from the system effective June 30, 2020 under the current cessation provisions.

The university and quasi-governmental employer contributions shown for FY 20/21 reflect the cessation payments made by these employers.

Except where noted above, the projection is based on the results of the June 30, 2018 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 5.25%.

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

The total active population is assumed to decrease 2% annually through the entire projection.

The contribution rate established in the Commonwealth's biennial budget is based on the calculated actuarially determined contribution rate.

The 63.86% 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, Community Colleges and any other agency eligible to voluntarily cease participating in the KERS

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 BR 30: Current Plan
Exhibit 2-4
(\$ in Millions)

Current Plan Assumes All Quasi-Governmental Employers Cease Participation under Existing Cessation Provisions

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

Fiscal Year Beginning July 1, (1)	Actuarial Accrued Liability (2)	Actuarial Value of Assets (3)	Unfunded Actuarial Accrued Liability (4)	Funded Ratio (3) / (2) (5)	University Employer Contribution (6)	Other Quasi Employer Contribution (7)	Non-Quasi Employer Contribution (8)	Member Contribution (9)	Covered Payroll (10)	Employer Contribution as % of Covered Payroll (11)	Employer Actuarially Determined Contribution Rate (12)	Annual Cash Flow Analysis			
												Member and Employer Contributions (13)	Benefit Payments and Expenses (14)	Net Cash Flow (15)	Investment Income (16)
2018	\$ 2,436	\$ 887	\$ 1,549	36%	\$ 10	\$ 19	\$ 138	\$ 6	\$ 1,461	11.45%	12.40%	\$ 173	\$ (130)	\$ 43	\$ 57
2019	2,497	978	1,519	39%	16	28	139	6	1,458	12.40%	10.65%	189	(134)	55	64
2020	2,529	1,094	1,435	43%	195	369	116	6	1,110	10.45%	10.45%	686	(145)	541	86
2021	2,569	1,731	838	67%	-	-	116	6	1,111	10.45%	8.49%	122	(156)	(34)	107
2022	2,599	1,807	792	70%	-	-	90	7	1,111	8.09%	8.09%	97	(162)	(65)	111
2023	2,625	1,853	772	71%	-	-	90	7	1,112	8.09%	7.94%	97	(167)	(70)	114
2024	2,645	1,897	748	72%	-	-	87	8	1,112	7.78%	7.78%	95	(173)	(78)	116
2025	2,660	1,934	726	73%	-	-	87	8	1,113	7.78%	7.65%	95	(178)	(83)	118
2026	2,669	1,968	701	74%	-	-	83	9	1,113	7.50%	7.50%	92	(184)	(92)	120
2027	2,672	1,997	675	75%	-	-	83	9	1,112	7.50%	7.35%	92	(190)	(98)	122
2028	2,668	2,021	647	76%	-	-	80	10	1,112	7.19%	7.19%	90	(195)	(105)	123
2029	2,657	2,039	618	77%	-	-	80	10	1,111	7.19%	7.04%	90	(200)	(110)	124
2030	2,639	2,052	587	78%	-	-	76	11	1,111	6.88%	6.88%	87	(204)	(117)	125
2031	2,615	2,060	555	79%	-	-	77	11	1,112	6.88%	6.74%	88	(206)	(118)	125
2032	2,587	2,067	520	80%	-	-	74	12	1,113	6.61%	6.61%	86	(208)	(122)	125
2033	2,555	2,070	485	81%	-	-	74	12	1,114	6.61%	6.51%	86	(209)	(123)	126
2034	2,520	2,072	448	82%	-	-	71	12	1,115	6.41%	6.41%	83	(209)	(126)	126
2035	2,482	2,073	409	84%	-	-	72	13	1,116	6.41%	6.32%	85	(207)	(122)	126
2036	2,443	2,076	367	85%	-	-	70	13	1,120	6.23%	6.23%	83	(204)	(121)	126
2037	2,404	2,082	322	87%	-	-	70	13	1,125	6.23%	6.16%	83	(200)	(117)	126
2038	2,367	2,091	276	88%	-	-	69	14	1,130	6.07%	6.07%	83	(196)	(113)	127
2039	2,331	2,104	227	90%	-	-	69	14	1,136	6.07%	5.99%	83	(192)	(109)	128
2040	2,298	2,123	175	92%	-	-	67	14	1,141	5.91%	5.91%	81	(187)	(106)	129
2041	2,267	2,147	120	95%	-	-	68	14	1,146	5.91%	5.84%	82	(183)	(101)	131
2042	2,239	2,178	61	97%	-	-	66	14	1,150	5.73%	5.73%	80	(178)	(98)	133
2043	2,214	2,214	-	100%	-	-	3	15	1,153	0.26%	0.26%	18	(173)	(155)	133
2044	2,192	2,192	-	100%	-	-	3	15	1,156	0.24%	0.24%	18	(170)	(152)	132
2045	2,172	2,172	-	100%	-	-	3	15	1,158	0.22%	0.22%	18	(167)	(149)	131
2046	2,153	2,153	-	100%	-	-	2	15	1,161	0.21%	0.21%	17	(165)	(148)	130
2047	2,135	2,135	-	100%	-	-	2	15	1,163	0.19%	0.19%	17	(164)	(147)	129

Notes and assumptions:

All eligible employers (university and quasi-governmental employers) are assumed to cease participating from the system effective June 30, 2020 under the current cessation provisions.

The university and quasi employer-governmental contributions shown for FY 20/21 reflect the cessation payments made by these employers.

Except where noted above, the projection is based on the results of the June 30, 2018 actuarial valuation and assumes that all actuarial assumptions are realized, including the assumed annual asset return of 6.25%.

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

The total active population is assumed to decrease 2% annually through the entire projection.

The contribution rate established in the Commonwealth's biennial budget is based on the calculated actuarially determined contribution rate.

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, Community Colleges and any other agency eligible to voluntarily cease participating in the KERS

contribute a 49.47% of pay contribution rate for FY 2019. Collectively these entities reflect approximately 25% of the covered payroll in the System.

BR 30

Section 3.

**Projected Cost of the Retirement and Insurance
Proposed Legislation
(Proposed Cessation Provisions)**

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Actuarial Analysis of BR 30: Proposed Plan
Exhibit 3-1
(\$ in Millions)

Proposed Plan Assumes All Quasi-Governmental Employers Cease Participation under Proposed Window

Scenario #1: Active Headcount Remains Constant (resulting in 2% payroll growth, which is more favorable than valuation assumption of 0% payroll growth)
& 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)	University Employer Contribution	Other Quasi Employer Contribution	Non-Quasi Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarially 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)
2018	\$ 15,675	\$ 2,019	\$ 13,656	13%	\$ 53	\$ 92	\$ 795	\$ 74	\$ 1,471	63.86%	71.03%	\$ 1,014	\$ (993)	\$ 21	\$ 106
2019	15,677	2,106	13,571	13%	92	161	805	74	1,490	63.86%	74.54%	1,132	(1,007)	125	112
2020	15,404	2,227	13,177	14%	786	102	857	58	1,153	74.27%	74.27%	1,803	(1,046)	757	139
2021	15,287	3,170	12,117	21%	-	104	872	59	1,174	74.27%	76.55%	1,035	(1,051)	(16)	166
2022	15,156	3,327	11,829	22%	-	105	895	60	1,194	74.90%	74.90%	1,060	(1,057)	3	175
2023	15,011	3,504	11,507	23%	-	106	911	61	1,216	74.90%	73.23%	1,078	(1,062)	16	184
2024	14,853	3,705	11,148	25%	-	108	885	62	1,238	71.49%	71.49%	1,055	(1,066)	(11)	194
2025	14,681	3,887	10,794	26%	-	108	902	63	1,262	71.49%	69.91%	1,073	(1,069)	4	204
2026	14,496	4,095	10,401	28%	-	109	877	64	1,286	68.20%	68.20%	1,050	(1,072)	(22)	214
2027	14,298	4,287	10,011	30%	-	110	893	65	1,310	68.20%	66.65%	1,068	(1,074)	(6)	225
2028	14,086	4,507	9,579	32%	-	111	868	67	1,335	65.01%	65.01%	1,046	(1,071)	(25)	236
2029	13,866	4,717	9,149	34%	-	112	884	68	1,360	65.01%	63.52%	1,064	(1,070)	(6)	247
2030	13,635	4,959	8,676	36%	-	112	859	69	1,388	61.88%	61.88%	1,040	(1,067)	(27)	260
2031	13,394	5,191	8,203	39%	-	112	877	71	1,417	61.88%	60.43%	1,060	(1,062)	(2)	272
2032	13,146	5,460	7,686	42%	-	114	850	72	1,446	58.78%	58.78%	1,036	(1,056)	(20)	286
2033	12,891	5,727	7,164	44%	-	116	868	74	1,477	58.78%	57.33%	1,058	(1,049)	9	301
2034	12,631	6,037	6,594	48%	-	117	840	75	1,508	55.67%	55.67%	1,032	(1,040)	(8)	317
2035	12,367	6,345	6,022	51%	-	111	858	77	1,541	55.67%	54.29%	1,046	(1,028)	18	334
2036	12,101	6,697	5,404	55%	-	111	830	79	1,577	52.65%	52.65%	1,020	(1,013)	7	352
2037	11,839	7,056	4,783	60%	-	104	851	81	1,616	52.65%	51.21%	1,036	(995)	41	371
2038	11,584	7,468	4,116	64%	-	103	818	83	1,656	49.40%	49.40%	1,004	(974)	30	393
2039	11,339	7,890	3,449	70%	-	104	839	85	1,697	49.40%	47.95%	1,028	(953)	75	416
2040	11,105	8,381	2,724	75%	-	106	798	87	1,739	45.90%	45.90%	991	(931)	60	442
2041	10,884	8,882	2,002	82%	-	106	818	89	1,781	45.90%	44.38%	1,013	(910)	103	469
2042	10,676	9,454	1,222	89%	-	98	745	91	1,824	40.82%	40.82%	934	(889)	45	498
2043	10,481	9,997	484	95%	-	98	59	93	1,867	3.16%	3.16%	250	(868)	(618)	509
2044	10,301	9,888	413	96%	-	94	59	96	1,910	3.11%	3.11%	249	(848)	(599)	503
2045	10,134	9,792	342	97%	-	87	60	98	1,954	3.08%	3.08%	245	(828)	(583)	499
2046	9,982	9,708	274	97%	-	87	61	100	1,999	3.04%	3.04%	248	(809)	(561)	495
2047	9,845	9,642	203	98%	-	84	62	102	2,045	3.02%	3.02%	248	(790)	(542)	492

Notes and assumptions:

All eligible employers (university and quasi-governmental employers) are assumed to cease participating from the system effective June 30, 2020 under the proposed cessation provisions.

The university and quasi-governmental employer contributions shown for FY 20/21 reflect the cessation payments made by these employers.

All university employers are assumed to withdraw from the system under the hard freeze option with a 4.50% discount rate on the cessation liability and a lump sum payment.

All other quasi-governmental employers are assumed to withdraw from the system under the hard freeze option with a 3.50% discount rate on the cessation liability and installments.

Quasi-governmental employers are assumed to contribute 41.06% of payroll in each year prior to their cessation date of June 30, 2020.

Kentucky Retirement Systems
KERS Non-Hazardous Insurance Fund
Actuarial Analysis of BR 30: Proposed Plan
Exhibit 3-2
(\$ in Millions)

Proposed Plan Assumes All Quasi-Governmental Employers Cease Participation under Proposed Window

Scenario #1: Active Headcount Remains Constant (resulting in 2% payroll growth, which is more favorable than valuation assumption of 0% payroll growth)
& 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)	University Employer Contribution	Other Quasi Employer Contribution	Non-Quasi Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
												Member and Employer Contributions	Benefit Payments and Expenses	Net Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
2018	\$ 2,436	\$ 887	\$ 1,549	36%	\$ 10	\$ 19	\$ 138	\$ 6	\$ 1,461	11.45%	12.40%	\$ 173	\$ (130)	\$ 43	\$ 57
2019	2,497	978	1,519	39%	16	28	139	7	1,480	11.45%	10.65%	190	(134)	56	63
2020	2,530	1,082	1,448	43%	145	21	119	6	1,145	10.37%	10.37%	291	(145)	146	73
2021	2,570	1,316	1,254	51%	-	21	121	6	1,165	10.37%	9.23%	148	(156)	(8)	82
2022	2,602	1,393	1,209	54%	-	22	104	7	1,186	8.76%	8.76%	133	(162)	(29)	86
2023	2,629	1,449	1,180	55%	-	22	106	7	1,208	8.76%	8.48%	135	(168)	(33)	90
2024	2,651	1,506	1,145	57%	-	22	101	8	1,230	8.19%	8.19%	131	(173)	(42)	93
2025	2,668	1,556	1,112	58%	-	22	103	8	1,253	8.19%	7.93%	133	(179)	(46)	96
2026	2,680	1,607	1,073	60%	-	22	98	9	1,277	7.65%	7.65%	129	(184)	(55)	99
2027	2,686	1,650	1,036	61%	-	22	100	10	1,301	7.65%	7.38%	132	(190)	(58)	101
2028	2,686	1,693	993	63%	-	23	94	10	1,326	7.11%	7.11%	127	(196)	(69)	104
2029	2,680	1,728	952	64%	-	23	96	11	1,352	7.11%	6.85%	130	(201)	(71)	106
2030	2,668	1,763	905	66%	-	23	91	12	1,379	6.57%	6.57%	126	(204)	(78)	108
2031	2,650	1,792	858	68%	-	23	93	12	1,408	6.57%	6.34%	128	(206)	(78)	110
2032	2,629	1,823	806	69%	-	24	88	13	1,437	6.11%	6.11%	125	(208)	(83)	111
2033	2,605	1,851	754	71%	-	24	90	13	1,468	6.11%	5.91%	127	(209)	(82)	113
2034	2,578	1,882	696	73%	-	23	85	14	1,500	5.70%	5.70%	122	(209)	(87)	115
2035	2,549	1,910	639	75%	-	23	87	15	1,532	5.70%	5.52%	125	(207)	(82)	117
2036	2,521	1,945	576	77%	-	23	84	15	1,568	5.33%	5.33%	122	(204)	(82)	119
2037	2,494	1,981	513	79%	-	23	86	16	1,607	5.33%	5.16%	125	(201)	(76)	121
2038	2,470	2,026	444	82%	-	22	82	16	1,647	4.97%	4.97%	120	(197)	(77)	124
2039	2,448	2,073	375	85%	-	21	84	17	1,688	4.97%	4.83%	122	(193)	(71)	127
2040	2,430	2,129	301	88%	-	18	80	17	1,730	4.62%	4.62%	115	(188)	(73)	131
2041	2,415	2,186	229	91%	-	17	82	18	1,772	4.62%	4.49%	117	(184)	(67)	135
2042	2,405	2,254	151	94%	-	17	75	18	1,814	4.14%	4.14%	110	(179)	(69)	139
2043	2,399	2,324	75	97%	-	17	9	19	1,857	0.49%	0.49%	45	(175)	(130)	141
2044	2,398	2,335	63	97%	-	17	9	19	1,900	0.48%	0.48%	45	(172)	(127)	142
2045	2,400	2,349	51	98%	-	14	9	19	1,944	0.47%	0.47%	42	(170)	(128)	143
2046	2,406	2,365	41	98%	-	11	9	20	1,989	0.46%	0.46%	40	(169)	(129)	144
2047	2,413	2,381	32	99%	-	11	9	20	2,035	0.45%	0.45%	40	(168)	(128)	145

Notes and assumptions:

All eligible employers (university and quasi-governmental employers) are assumed to cease participating from the system effective June 30, 2020 under the proposed cessation provisions.

The university and quasi-governmental employer contributions shown for FY 20/21 reflect the cessation payments made by these employers.

All university employers are assumed to withdraw from the system under the hard freeze option with a 4.50% discount rate on the cessation liability and a lump sum payment.

All other quasi-governmental employers are assumed to withdraw from the system under the hard freeze option with a 3.50% discount rate on the cessation liability and installments.

Quasi employers are assumed to contribute 8.41% of payroll in each year prior to their cessation date of June 30, 2020.

Kentucky Retirement Systems
KERS Non-Hazardous Retirement Fund
Actuarial Analysis of BR 30: Proposed Plan
Exhibit 3-3
(\$ in Millions)

Proposed Plan Assumes All Quasi-Governmental Employers Cease Participation under Proposed Window

Scenario #2: Active Headcount Decreases by 2% Each Year (resulting in 0% payroll growth, which aligns with current 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)	University Employer Contribution	Other Quasi Employer Contribution	Non-Quasi Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarially 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)
2018	\$ 15,675	\$ 2,019	\$ 13,656	13%	\$ 53	\$ 92	\$ 795	\$ 74	\$ 1,471	63.86%	71.03%	\$ 1,014	\$ (993)	\$ 21	\$ 106
2019	15,676	2,106	13,570	13%	92	161	790	73	1,468	63.86%	74.54%	1,116	(1,007)	109	112
2020	15,402	2,212	13,190	14%	786	102	843	56	1,118	75.40%	75.40%	1,787	(1,045)	742	138
2021	15,281	3,139	12,142	21%	-	104	844	56	1,119	75.40%	79.04%	1,004	(1,050)	(46)	164
2022	15,146	3,264	11,882	22%	-	105	882	56	1,119	78.78%	78.78%	1,043	(1,056)	(13)	171
2023	14,995	3,422	11,573	23%	-	106	882	56	1,120	78.78%	78.41%	1,044	(1,060)	(16)	179
2024	14,828	3,585	11,243	24%	-	108	874	56	1,120	78.06%	78.06%	1,038	(1,064)	(26)	188
2025	14,646	3,747	10,899	26%	-	108	875	56	1,120	78.06%	77.78%	1,039	(1,067)	(28)	196
2026	14,448	3,914	10,534	27%	-	109	868	56	1,121	77.47%	77.47%	1,033	(1,069)	(36)	205
2027	14,235	4,082	10,153	29%	-	110	868	56	1,120	77.47%	77.20%	1,034	(1,071)	(37)	213
2028	14,007	4,257	9,750	30%	-	111	861	56	1,119	76.95%	76.95%	1,028	(1,067)	(39)	222
2029	13,767	4,441	9,326	32%	-	112	861	56	1,119	76.95%	76.73%	1,029	(1,066)	(37)	232
2030	13,512	4,635	8,877	34%	-	112	856	56	1,119	76.50%	76.50%	1,024	(1,063)	(39)	242
2031	13,246	4,837	8,409	37%	-	112	856	56	1,120	76.50%	76.27%	1,024	(1,058)	(34)	253
2032	12,968	5,057	7,911	39%	-	114	851	56	1,120	75.95%	75.95%	1,021	(1,051)	(30)	265
2033	12,681	5,292	7,389	42%	-	116	852	56	1,121	75.95%	75.69%	1,024	(1,043)	(19)	277
2034	12,384	5,550	6,834	45%	-	117	845	56	1,122	75.36%	75.36%	1,018	(1,033)	(15)	291
2035	12,080	5,826	6,254	48%	-	111	846	56	1,123	75.36%	75.12%	1,013	(1,021)	(8)	306
2036	11,770	6,124	5,646	52%	-	111	843	56	1,126	74.81%	74.81%	1,010	(1,005)	5	322
2037	11,460	6,450	5,010	56%	-	104	846	57	1,131	74.81%	74.41%	1,007	(986)	21	339
2038	11,152	6,810	4,342	61%	-	103	839	57	1,137	73.83%	73.83%	999	(964)	35	358
2039	10,850	7,204	3,646	66%	-	104	844	57	1,143	73.83%	73.29%	1,005	(942)	63	380
2040	10,554	7,647	2,907	72%	-	106	833	57	1,148	72.54%	72.54%	996	(919)	77	403
2041	10,265	8,127	2,138	79%	-	106	836	58	1,152	72.54%	72.02%	1,000	(896)	104	429
2042	9,985	8,661	1,324	87%	-	98	820	58	1,156	70.90%	70.90%	976	(873)	103	457
2043	9,713	9,221	492	95%	-	98	37	58	1,159	3.22%	3.22%	193	(851)	(658)	467
2044	9,449	9,031	418	96%	-	94	37	58	1,162	3.16%	3.16%	189	(828)	(639)	457
2045	9,193	8,849	344	96%	-	87	36	58	1,164	3.10%	3.10%	181	(806)	(625)	448
2046	8,947	8,672	275	97%	-	87	36	58	1,167	3.05%	3.05%	181	(784)	(603)	439
2047	8,709	8,508	201	98%	-	84	35	58	1,169	3.01%	3.01%	177	(763)	(586)	431

Notes and assumptions:

All eligible employers (university and quasi-governmental employers) are assumed to cease participating from the system effective June 30, 2020 under the proposed cessation provisions.

The university and quasi-governmental employer contributions shown for FY 20/21 reflect the cessation payments made by these employers.

All university employers are assumed to withdraw from the system under the hard freeze option with a 4.50% discount rate on the cessation liability and a lump sum payment.

All other quasi-governmental employers are assumed to withdraw from the system under the hard freeze option with a 3.50% discount rate on the cessation liability and installments.

Quasi-governmental employers are assumed to contribute 41.06% of payroll in each year prior to their cessation date of June 30, 2020.

Kentucky Retirement Systems
KERS Non-Hazardous Insurance Fund
Actuarial Analysis of BR 30: Proposed Plan
Exhibit 3-4
(\$ in Millions)

Proposed Plan Assumes All Quasi-Governmental Employers Cease Participation under Proposed Window

Scenario #2: Active Headcount Decreases by 2% Each Year (resulting in 0% payroll growth, which aligns with current 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)	University Employer Contribution	Other Quasi Employer Contribution	Non-Quasi Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
												Member and Employer Contributions	Benefit Payments and Expenses	Net Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
2018	\$ 2,436	\$ 887	\$ 1,549	36%	\$ 10	\$ 19	\$ 138	\$ 6	\$ 1,461	11.45%	12.40%	\$ 173	\$ (130)	\$ 43	\$ 57
2019	2,497	978	1,519	39%	16	28	139	6	1,458	11.45%	10.65%	189	(134)	55	63
2020	2,529	1,080	1,449	43%	145	21	117	6	1,110	10.53%	10.53%	289	(145)	144	73
2021	2,569	1,311	1,258	51%	-	21	117	6	1,111	10.53%	9.49%	144	(156)	(12)	82
2022	2,599	1,384	1,215	53%	-	22	102	7	1,111	9.17%	9.17%	131	(162)	(31)	85
2023	2,625	1,438	1,187	55%	-	22	102	7	1,112	9.17%	9.00%	131	(167)	(36)	89
2024	2,645	1,490	1,155	56%	-	22	98	8	1,112	8.85%	8.85%	128	(173)	(45)	92
2025	2,660	1,537	1,123	58%	-	22	98	8	1,113	8.85%	8.72%	128	(178)	(50)	94
2026	2,669	1,581	1,088	59%	-	22	95	9	1,113	8.56%	8.56%	126	(184)	(58)	97
2027	2,672	1,620	1,052	61%	-	22	95	9	1,112	8.56%	8.41%	126	(190)	(64)	99
2028	2,668	1,656	1,012	62%	-	23	92	10	1,112	8.26%	8.26%	125	(195)	(70)	101
2029	2,657	1,687	970	63%	-	23	92	10	1,111	8.26%	8.10%	125	(200)	(75)	103
2030	2,639	1,714	925	65%	-	23	88	11	1,111	7.94%	7.94%	122	(204)	(82)	105
2031	2,615	1,736	879	66%	-	23	88	11	1,112	7.94%	7.80%	122	(206)	(84)	106
2032	2,587	1,759	828	68%	-	24	85	12	1,113	7.67%	7.67%	121	(208)	(87)	107
2033	2,555	1,779	776	70%	-	24	85	12	1,114	7.67%	7.57%	121	(209)	(88)	108
2034	2,520	1,800	720	71%	-	23	83	12	1,115	7.46%	7.46%	118	(209)	(91)	110
2035	2,482	1,820	662	73%	-	23	83	13	1,116	7.46%	7.38%	119	(207)	(88)	111
2036	2,443	1,843	600	75%	-	23	82	13	1,120	7.29%	7.29%	118	(204)	(86)	113
2037	2,404	1,870	534	78%	-	23	82	13	1,125	7.29%	7.21%	118	(200)	(82)	114
2038	2,367	1,902	465	80%	-	22	80	14	1,130	7.11%	7.11%	116	(196)	(80)	116
2039	2,331	1,938	393	83%	-	21	81	14	1,136	7.11%	7.03%	116	(192)	(76)	119
2040	2,298	1,980	318	86%	-	18	79	14	1,141	6.95%	6.95%	111	(187)	(76)	121
2041	2,267	2,026	241	89%	-	17	80	14	1,146	6.95%	6.87%	111	(183)	(72)	124
2042	2,239	2,079	160	93%	-	17	77	14	1,150	6.73%	6.73%	108	(178)	(70)	128
2043	2,214	2,138	76	97%	-	17	3	15	1,153	0.26%	0.26%	35	(173)	(138)	129
2044	2,192	2,129	63	97%	-	17	3	15	1,156	0.24%	0.24%	35	(170)	(135)	129
2045	2,172	2,122	50	98%	-	14	3	15	1,158	0.22%	0.22%	32	(167)	(135)	128
2046	2,153	2,114	39	98%	-	11	2	15	1,161	0.21%	0.21%	28	(165)	(137)	128
2047	2,135	2,106	29	99%	-	11	2	15	1,163	0.19%	0.19%	28	(164)	(136)	127

Notes and assumptions:

All eligible employers (university and quasi-governmental employers) are assumed to cease participating from the system effective June 30, 2020 under the proposed cessation provisions.

The university and quasi-governmental employer contributions shown for FY 20/21 reflect the cessation payments made by these employers.

All university employers are assumed to withdraw from the system under the hard freeze option with a 4.50% discount rate on the cessation liability and a lump sum payment.

All other quasi-governmental employers are assumed to withdraw from the system under the hard freeze option with a 3.50% discount rate on the cessation liability and installments.

Quasi employers are assumed to contribute 8.41% of payroll in each year prior to their cessation date of June 30, 2020.