

Kentucky Judicial Form Retirement System

JUDICIAL RETIREMENT PLAN LEGISLATORS RETIREMENT PLAN

Donna S. Early
Executive Director

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M E M O R A N D U M

To: Katie Carney, Office of Fiscal Statement Review
From: Donna S. Early, Executive Director
RE: **2020 HB 412 HCS**
AA Statements 1 and 2 of 4
Date: March 2, 2020

The proposals included in **HB 412** would not increase or decrease the benefits or increase or decrease participation in the benefits or negatively change the actuarial accrued liability of the Judicial Retirement Plan (JRP) or the Legislators Retirement Plan (LRP). Therefore, I have not requested any further actuarial analysis by the Plans' independent actuary.

In accordance with KRS 6.350(2)(c), the Judicial Form Retirement System (the agency in charge with the administration of JRP and LRP), certifies the following:

1. There are no individuals affected; however, as of June 30, 2019, there were 607 JRP active members, terminated vested members, retirees and beneficiaries, and 384 LRP active members, terminated vested members, retirees and beneficiaries.
2. There is no change in benefit payments.
3. There is no change to employer costs.
4. There is no change to administrative expenses.

Please let me know if you have any questions.



TEACHERS' RETIREMENT SYSTEM

of the State of Kentucky

GARY L. HARBIN, CPA
Executive Secretary

ROBERT B. BARNES, JD
Deputy Executive Secretary
Operations and General Counsel

J. ERIC WAMPLER, JD
Deputy Executive Secretary
Finance and Administration

March 4, 2020

Katie Carney
Office of Special Projects
Legislative Research Commission
Capitol Annex, Room 39
Frankfort, KY 40601

RE: HB 412 HCS 1 (20 RS BR 1306)
AA Statement 3 of 4

Dear Ms. Carney:

HB 412 HCS 1, an Act relating to duty-related disability benefits and declaring an emergency, in part amends KRS 61.621 to increase the disability benefit payable under that statute from 25% of the member's monthly average pay, to 75% of the member's monthly average pay. HB 412 HCS 1 further provides that in the event of a duty-related disability, payments to the member and dependent child payments shall not exceed 100% of the member's monthly average pay, and that total dependent child benefits shall not exceed 25% of the member's pay while the member is living, and that payments to dependent children shall be divided equally among them.

TRS has examined HB 412 HCS 1 and determined that it could increase retirement benefits for members who suffer a disabling condition from a "duty-related" injury. However, since KRS 61.621 first became effective on June 1, 2000, TRS has had no members suffer a duty-related injury resulting in a disabling condition, and, therefore, no members have qualified for this benefit. TRS has spoken with its actuary and, given this history, HB 412 HCS 1 would have no material impact on the funded liability of the pension fund.

Accordingly, in compliance with KRS 6.350(2)(c), TRS certifies as follows:

1. No members have qualified for disability benefits under this statute since its effective date.
2. The change in benefits would be to increase the disability benefit payable under the statute from 25% of the member's monthly average pay, to 75% of the member's monthly average pay. HB 412 HCS 1 further provides that in the event of a duty-related disability, payments to the member and dependent child payments shall not exceed 100% of the member's monthly average pay, and that



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total dependent child benefits shall not exceed 25% of the member's pay while the member is living, and that payments to dependent children shall be divided equally among them.

3. There is no change in employer costs for TRS.
4. There would be no change in administrative expenses.

Accordingly, TRS has not requested any further actuarial analysis of this bill by its independent actuary.

Please let me know if you have any questions regarding this analysis.

Sincerely,

Robert B. Barnes
Deputy Executive Secretary of Operations and
General Counsel

cc. Christy Young



March 11, 2020

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

**Re: Actuarial Analysis of Proposed Pension Reform Legislation HB 412 HCS and its
Financial Impact on the Kentucky Retirement Systems
AA Statement 4 of 4**

Dear Mr. Eager:

We have reviewed the proposed changes in the pension reform legislation HB 412 HCS and the purpose of this letter is to communicate the actuarial analysis of this legislation on the systems maintained by the Kentucky Retirement Systems (KRS).

Summary of Fiscal Impact

The proposed legislation increases the disability benefits for members who become “totally and permanently disabled” as a result of a duty-related incident. The impact of the proposed legislation on the employer contribution requirements are shown in the table below.

Increase in Actuarially Determined Contribution Requirements

Plan	Retirement Fund	Insurance Fund	Retirement and Insurance	Increase in Annual Contribution ¹
KERS Non-Hazardous	0.03%	<0.01%	0.03%	\$431,000
KERS Hazardous	0.01%	<0.01%	0.01%	15,000
CERS Non-Hazardous	0.04%	0.01%	0.05%	1,261,000
CERS Hazardous	0.04%	0.07%	0.11%	615,000
SPRS	0.04%	0.08%	0.12%	57,000

¹Based on estimated FY 19/20 payroll. Future annual increases in contributions will depend on payroll experience.

The majority of the increase in the employer contribution requirement represents an ultimate increase in the cost of the plan (i.e. an increase in the normal cost) and is therefore payable indefinitely so long as there are active members accruing benefits in the Fund. Note, there is no projected increase in employer contributions for FY 20/21 – FY 21/22 for the CERS Non-Hazardous Fund and for FY 20/21 – FY 22/23 for the CERS Hazardous Fund due to the contribution phase-in provisions

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currently in effect. However, an increase in employer contributions due to the proposed legislation is expected once allowed by the phase-in provisions.

This legislation would also increase disability retirement benefits for four KERS Non-Hazardous disabled retirees and the annual distribution of benefits for these retirees would increase from \$35,000 to \$75,000 per year (\$10,000 increase in average annual benefit). Similarly, there will also be an increase in disability retirement benefits for 17 CERS Non-Hazardous disabled retirees and the total annual distribution for these retirees will increase from \$167,000 to \$310,000 per year (\$8,500 increase in average annual benefit). This is an approximate \$450,000 and \$1,500,000 increase in the actuarial accrued liability for the KERS Non-Hazardous and CERS Non-Hazardous Systems, respectively.

Section 1 of the enclosed exhibits provides a 30-year projection of the fiscal impact of the proposed legislation on the unfunded actuarial accrued liability, the funded ratio, and the employer contributions of all the retirement and insurance funds maintained by KRS. Section 2 of the enclosed exhibits provides a 30-year projection of the funds under the current plan provisions and section 3 of the enclosed exhibits provides a 30-year projection of the funds under the proposed plan provisions.

Comments on Proposed Legislation

Current duty-related disability benefits provide members a minimum benefit equal to 25% of the member's monthly final rate of pay plus 10% of the member's monthly final rate of pay for each dependent child (with the total dependent child benefit not to exceed 40% of the member's monthly final rate of pay). In order to be eligible for this benefit, non-hazardous members must become "totally or permanently disabled" and the injury must be a result of a duty-related injury. Hazardous members must either: (1) become "totally or permanently disabled" or (2) become disabled from a hazardous duty position and the injury must be a result of a duty-related injury.

The proposed legislation increases the minimum benefit to be equal to 75% of the member's monthly average pay plus 10% of the member's monthly average pay for each dependent child (with the total benefit payable to both the member and dependent children while the member is alive not to exceed 100% of the member's monthly pay). The insurance premium for the member, the member's spouse, and the member's dependent children shall also be paid in full by the System. In order to receive this benefit, the member must be both "totally or permanently disabled" and the injury must be a result of a duty-related injury (regardless of whether the member is in a non-hazardous or hazardous position).

Comments on Fiscal Analysis

Currently, the Actuarial Valuation makes an assumption for the percentage of future disability incidences that are deemed to qualify for the current duty-related disability benefits. Because the current provisions already require "total and permanent" disability for non-hazardous members,



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the analysis assumes all future non-hazardous duty-related disabilities will qualify for the proposed benefit provisions.

On the other hand, not all hazardous duty-related disability benefits are required to be due to a “total and permanent” injury, so future members will still be eligible to receive a disability benefit under the current provisions if the injury is deemed to be a result of a duty-related incident but not a “total and permanent” disability. Therefore, the analysis must make an additional assumption for the hazardous plans as to the percentage of duty-related disabilities that qualify as a “total and permanent” injury.

Based on data compiled for the June 30, 2018 KRS Experience Study, there were 67 duty-related disabilities over the five-year period ending June 30, 2018. Additionally, according to data provided by KRS for this analysis, there were 12 disabilities classified as “total and permanent” over the last 10 years, or approximately 10% of all duty-related disabilities.

Duty-Related Disability Incidence Assumptions

Plan	Current Assumption for Percentage of Disabilities that Qualify for Duty-Related Disability Benefits	Percentage of Duty-Related Disabilities Assumed to Qualify as “Total and Permanent” under Proposed Legislation
KERS Non-Hazardous	2%	100%
KERS Hazardous	10%	10%
CERS Non-Hazardous	2%	100%
CERS Hazardous	50%	10%
SPRS	70%	10%

Comments on Fiscal Impact

The impact on the actuarial accrued liability across all Funds was relatively minor with the majority of the impact on employer contribution rates being due to increases in the normal cost rate (or the cost of the next year’s accrual of benefits). This increase in the employer contribution requirement represents an ultimate increase in the cost of the plan and is expected to be payable indefinitely so long as there are active members accruing benefits in the Fund.

The proposed legislation had the largest impact on the CERS Hazardous and the SPRS Funds as these funds are assumed to have the highest incidence of future duty-related disabilities for their active populations.



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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, 2019. The projections assume no actuarial gains or losses will occur in the future, and that members will terminate, retire, become disabled, or die as anticipated by the actuarial assumptions used to perform the June 30, 2019 actuarial valuation. The analysis and projections were performed without regard to HB 1 that was enacted during the 2019 special session as individual employer elections regarding their future cessation from participating in KERS is unknown at this time. Additionally, the projections assume that the changes are effective June 30, 2019, the date of the last actuarial valuation.

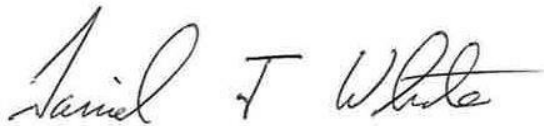
Our calculations are based upon assumptions regarding future events, which may or may not materialize. Depending on actual plan experience, actual results could deviate significantly from our projections.

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, 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



HB 412 HCS

Section 1.

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

Kentucky Retirement Systems
Exhibit 1-1
KERS Non-Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Comparison of Current Plan and Proposed Legislation (\$ in
Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	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)
2019	\$ 14,260	\$ 14,261	\$ 1	13%	13%	0%	\$ 924	\$ 924	\$ -	64.3%	64.3%	0.0%
2020	14,192	14,193	1	14%	14%	0%	1,156	1,157	1	81.0%	81.0%	0.0%
2021	13,840	13,841	1	16%	16%	0%	1,151	1,152	1	81.0%	81.0%	0.0%
2022	13,490	13,491	1	18%	18%	0%	1,150	1,151	1	81.2%	81.2%	0.0%
2023	13,127	13,128	1	20%	20%	0%	1,147	1,147	-	81.2%	81.2%	0.0%
2024	12,746	12,748	2	22%	22%	0%	1,144	1,145	1	81.2%	81.3%	0.1%
2025	12,345	12,346	1	24%	24%	0%	1,142	1,142	-	81.2%	81.3%	0.1%
2026	11,922	11,922	-	27%	27%	0%	1,139	1,139	-	81.2%	81.2%	0.0%
2027	11,476	11,477	1	29%	29%	0%	1,136	1,137	1	81.2%	81.2%	0.0%
2028	11,007	11,007	-	31%	31%	0%	1,134	1,134	-	81.2%	81.2%	0.0%
2029	10,512	10,513	1	34%	34%	0%	1,132	1,133	1	81.2%	81.2%	0.0%
2030	9,991	9,992	1	36%	36%	0%	1,130	1,131	1	81.2%	81.2%	0.0%
2031	9,442	9,442	-	39%	39%	0%	1,130	1,131	1	81.2%	81.2%	0.0%
2032	8,861	8,861	-	42%	42%	0%	1,128	1,129	1	81.0%	81.0%	0.0%
2033	8,250	8,251	1	46%	46%	0%	1,129	1,129	-	81.0%	81.0%	0.0%
2034	7,605	7,606	1	49%	49%	0%	1,126	1,126	-	80.7%	80.8%	0.1%
2035	6,926	6,928	2	53%	53%	0%	1,128	1,128	-	80.7%	80.8%	0.1%
2036	6,210	6,210	-	57%	57%	0%	1,126	1,126	-	80.4%	80.4%	0.0%
2037	5,457	5,457	-	62%	62%	0%	1,130	1,131	1	80.4%	80.4%	0.0%
2038	4,657	4,658	1	67%	67%	0%	1,126	1,126	-	79.7%	79.7%	0.0%
2039	3,821	3,822	1	72%	72%	0%	1,131	1,132	1	79.7%	79.7%	0.0%
2040	2,934	2,935	1	78%	78%	0%	1,123	1,123	-	78.7%	78.8%	0.1%
2041	2,009	2,009	-	85%	85%	0%	1,128	1,128	-	78.7%	78.8%	0.1%
2042	1,031	1,030	(1)	92%	92%	0%	1,118	1,119	1	77.8%	77.8%	0.0%
2043	-	-	-	100%	100%	0%	64	64	-	4.4%	4.5%	0.1%
2044	-	-	-	100%	100%	0%	64	64	-	4.4%	4.4%	0.0%
2045	-	-	-	100%	100%	0%	63	64	1	4.4%	4.4%	0.0%
2046	-	-	-	100%	100%	0%	63	63	-	4.3%	4.4%	0.1%
2047	-	-	-	100%	100%	0%	63	63	-	4.3%	4.3%	0.0%
2048	-	-	-	100%	100%	0%	63	63	-	4.3%	4.3%	0.0%

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Kentucky Retirement Systems Exhibit 1-2
KERS Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Comparison of Current Plan and Proposed Legislation (\$ in
Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	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)
2019	\$ 554	\$ 554	\$ -	55%	55%	0%	\$ 52	\$ 52	\$ -	34.4%	34.4%	0.0%
2020	552	552	-	56%	56%	0%	58	58	-	38.7%	38.7%	0.0%
2021	532	532	-	58%	58%	0%	59	59	-	38.7%	38.7%	0.0%
2022	517	517	-	60%	60%	0%	57	57	-	37.3%	37.3%	0.0%
2023	506	506	-	62%	62%	0%	57	57	-	37.3%	37.3%	0.0%
2024	493	493	-	64%	64%	0%	56	56	-	36.4%	36.5%	0.1%
2025	479	479	-	65%	65%	0%	56	56	-	36.4%	36.5%	0.1%
2026	464	464	-	67%	67%	0%	56	56	-	35.8%	35.8%	0.0%
2027	450	449	(1)	68%	68%	0%	56	56	-	35.8%	35.8%	0.0%
2028	433	433	-	70%	70%	0%	55	55	-	35.2%	35.2%	0.0%
2029	415	416	1	71%	71%	0%	56	56	-	35.2%	35.2%	0.0%
2030	397	397	-	73%	73%	0%	55	55	-	34.6%	34.6%	0.0%
2031	376	377	1	75%	75%	0%	56	56	-	34.6%	34.6%	0.0%
2032	355	355	-	76%	76%	0%	55	55	-	33.9%	34.0%	0.1%
2033	333	332	(1)	78%	78%	0%	56	56	-	33.9%	34.0%	0.1%
2034	308	308	-	80%	80%	0%	56	56	-	33.3%	33.3%	0.0%
2035	282	282	-	82%	82%	0%	56	56	-	33.3%	33.3%	0.0%
2036	254	254	-	84%	84%	0%	56	56	-	32.7%	32.8%	0.1%
2037	225	225	-	86%	86%	0%	56	56	-	32.7%	32.8%	0.1%
2038	194	193	(1)	88%	88%	0%	56	56	-	32.4%	32.4%	0.0%
2039	161	160	(1)	90%	90%	0%	56	56	-	32.4%	32.4%	0.0%
2040	125	125	-	93%	93%	0%	56	56	-	32.2%	32.2%	0.0%
2041	87	87	-	95%	95%	0%	56	56	-	32.2%	32.2%	0.0%
2042	46	47	1	97%	97%	0%	57	57	-	32.9%	32.9%	0.0%
2043	-	-	-	100%	100%	0%	10	10	-	5.9%	5.9%	0.0%
2044	-	-	-	100%	100%	0%	10	10	-	5.8%	5.9%	0.1%
2045	-	-	-	100%	100%	0%	10	10	-	5.8%	5.8%	0.0%
2046	-	-	-	100%	100%	0%	10	10	-	5.8%	5.8%	0.0%
2047	-	-	-	100%	100%	0%	10	10	-	5.8%	5.8%	0.0%
2048	-	-	-	100%	100%	0%	10	10	-	5.8%	5.8%	0.0%

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Kentucky Retirement Systems
Exhibit 1-3
CERS Non-Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Comparison of Current Plan and Proposed Legislation (\$
in Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	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)
2019	\$ 7,306	\$ 7,308	\$ 2	49%	49%	0%	\$ 487	\$ 487	\$ -	19.3%	19.3%	0.0%
2020	7,445	7,447	2	49%	49%	0%	558	558	-	21.6%	21.6%	0.0%
2021	7,410	7,413	3	51%	51%	0%	648	648	-	24.6%	24.6%	0.0%
2022	7,357	7,362	5	52%	52%	0%	692	693	1	25.7%	25.7%	0.0%
2023	7,288	7,293	5	54%	54%	0%	697	699	2	25.4%	25.4%	0.0%
2024	7,198	7,203	5	55%	55%	0%	707	708	1	25.2%	25.2%	0.0%
2025	7,091	7,095	4	57%	57%	0%	716	717	1	25.0%	25.0%	0.0%
2026	6,965	6,971	6	58%	58%	0%	725	726	1	24.8%	24.8%	0.0%
2027	6,820	6,825	5	60%	60%	0%	735	737	2	24.6%	24.7%	0.1%
2028	6,654	6,660	6	61%	61%	0%	746	748	2	24.5%	24.6%	0.1%
2029	6,466	6,470	4	63%	63%	0%	758	759	1	24.4%	24.4%	0.0%
2030	6,253	6,257	4	64%	64%	0%	770	772	2	24.3%	24.3%	0.0%
2031	6,014	6,017	3	66%	66%	0%	784	785	1	24.2%	24.2%	0.0%
2032	5,744	5,748	4	68%	68%	0%	798	799	1	24.1%	24.1%	0.0%
2033	5,444	5,448	4	70%	70%	0%	813	815	2	24.0%	24.0%	0.0%
2034	5,111	5,114	3	72%	72%	0%	829	830	1	23.9%	24.0%	0.1%
2035	4,742	4,745	3	74%	74%	0%	845	847	2	23.8%	23.9%	0.1%
2036	4,334	4,337	3	77%	77%	0%	864	866	2	23.8%	23.9%	0.1%
2037	3,884	3,886	2	79%	79%	0%	884	885	1	23.8%	23.8%	0.0%
2038	3,387	3,390	3	82%	82%	0%	904	906	2	23.7%	23.8%	0.1%
2039	2,841	2,842	1	85%	85%	0%	927	929	2	23.7%	23.8%	0.1%
2040	2,241	2,242	1	88%	88%	0%	951	953	2	23.7%	23.8%	0.1%
2041	1,582	1,582	-	92%	92%	0%	980	982	2	23.9%	23.9%	0.0%
2042	856	856	-	96%	96%	0%	1,020	1,022	2	24.2%	24.3%	0.1%
2043	-	-	-	100%	100%	0%	162	164	2	3.8%	3.8%	0.0%
2044	-	-	-	100%	100%	0%	165	167	2	3.7%	3.8%	0.1%
2045	-	-	-	100%	100%	0%	169	170	1	3.7%	3.8%	0.1%
2046	-	-	-	100%	100%	0%	172	173	1	3.7%	3.7%	0.0%
2047	-	-	-	100%	100%	0%	176	177	1	3.7%	3.7%	0.0%
2048	-	-	-	100%	100%	0%	179	181	2	3.7%	3.7%	0.0%

Gabriel Roeder Smith & Company

**Kentucky Retirement Systems Exhibit
1-4
CERS Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Comparison of Current Plan and Proposed Legislation (\$
in Millions)**

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	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)
2019	\$ 2,870	\$ 2,870	\$ -	45%	45%	0%	\$ 168	\$ 168	\$ -	30.1%	30.1%	0.0%
2020	2,945	2,945	-	46%	46%	0%	190	190	-	33.9%	33.8%	-0.1%
2021	2,965	2,966	1	47%	47%	0%	226	226	-	39.7%	39.7%	0.0%
2022	2,974	2,976	2	48%	48%	0%	268	268	-	46.4%	46.4%	0.0%
2023	2,952	2,954	2	49%	49%	0%	275	276	1	46.8%	46.9%	0.1%
2024	2,916	2,919	3	51%	51%	0%	279	280	1	46.6%	46.7%	0.1%
2025	2,873	2,876	3	53%	53%	0%	283	283	-	46.4%	46.5%	0.1%
2026	2,823	2,824	1	55%	55%	0%	287	287	-	46.1%	46.2%	0.1%
2027	2,764	2,767	3	56%	56%	0%	291	292	1	45.9%	46.0%	0.1%
2028	2,696	2,698	2	58%	58%	0%	296	296	-	45.6%	45.7%	0.1%
2029	2,620	2,622	2	60%	60%	0%	301	302	1	45.4%	45.5%	0.1%
2030	2,532	2,535	3	62%	62%	0%	307	307	-	45.1%	45.2%	0.1%
2031	2,433	2,436	3	64%	64%	0%	312	313	1	44.7%	44.9%	0.2%
2032	2,323	2,325	2	66%	66%	0%	319	319	-	44.4%	44.5%	0.1%
2033	2,199	2,201	2	69%	69%	0%	325	326	1	44.1%	44.2%	0.1%
2034	2,062	2,064	2	71%	71%	0%	331	332	1	43.8%	43.9%	0.1%
2035	1,911	1,912	1	74%	74%	0%	338	338	-	43.5%	43.5%	0.0%
2036	1,743	1,745	2	76%	76%	0%	344	345	1	43.2%	43.3%	0.1%
2037	1,559	1,561	2	79%	79%	0%	350	351	1	43.0%	43.1%	0.1%
2038	1,359	1,359	-	82%	82%	0%	357	358	1	42.8%	42.9%	0.1%
2039	1,138	1,139	1	85%	85%	0%	365	365	-	42.8%	42.9%	0.1%
2040	896	896	-	89%	89%	0%	373	374	1	42.8%	42.9%	0.1%
2041	630	631	1	92%	92%	0%	384	384	-	43.0%	43.1%	0.1%
2042	339	339	-	96%	96%	0%	398	399	1	43.5%	43.7%	0.2%
2043	-	-	-	100%	100%	0%	56	57	1	6.0%	6.1%	0.1%
2044	-	-	-	100%	100%	0%	57	58	1	6.0%	6.1%	0.1%
2045	-	-	-	100%	100%	0%	58	59	1	6.0%	6.0%	0.0%
2046	-	-	-	100%	100%	0%	59	60	1	6.0%	6.0%	0.0%
2047	-	-	-	100%	100%	0%	60	61	1	5.9%	6.0%	0.1%
2048	-	-	-	100%	100%	0%	62	62	-	5.9%	6.0%	0.1%

Gabriel Roeder Smith & Company

Kentucky Retirement Systems
Exhibit 1-5
State Police Retirement System Retirement Fund
Actuarial Analysis of Proposed Legislation HB 412 HCS
Comparison of Current Plan and Proposed Legislation (\$
in Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	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)
2019	\$ 763	\$ 763	\$ -	27%	27%	0%	\$ 57	\$ 57	\$ -	119.1%	119.1%	0.0%
2020	755	755	-	28%	28%	0%	64	64	-	136.1%	136.2%	0.1%
2021	734	734	-	30%	30%	0%	64	64	-	136.1%	136.2%	0.1%
2022	715	715	-	32%	32%	0%	64	64	-	137.1%	137.1%	0.0%
2023	696	696	-	34%	34%	0%	63	64	1	137.1%	137.1%	0.0%
2024	676	675	(1)	36%	36%	0%	63	63	-	136.6%	136.7%	0.1%
2025	654	654	-	38%	38%	0%	63	63	-	136.6%	136.7%	0.1%
2026	631	632	1	40%	40%	0%	63	63	-	136.7%	136.8%	0.1%
2027	609	608	(1)	41%	42%	1%	63	63	-	136.7%	136.8%	0.1%
2028	583	583	-	44%	44%	0%	62	62	-	135.5%	135.5%	0.0%
2029	556	556	-	46%	46%	0%	62	62	-	135.5%	135.5%	0.0%
2030	528	528	-	48%	48%	0%	62	62	-	133.8%	133.9%	0.1%
2031	499	499	-	51%	51%	0%	63	63	-	133.8%	133.9%	0.1%
2032	467	467	-	54%	54%	0%	62	62	-	130.8%	130.9%	0.1%
2033	434	434	-	56%	56%	0%	63	63	-	130.8%	130.9%	0.1%
2034	398	398	-	60%	60%	0%	61	61	-	127.2%	127.2%	0.0%
2035	363	362	(1)	63%	63%	0%	62	62	-	127.2%	127.2%	0.0%
2036	323	324	1	67%	67%	0%	61	61	-	123.9%	124.0%	0.1%
2037	284	284	-	70%	71%	1%	61	61	-	123.9%	124.0%	0.1%
2038	242	242	-	75%	75%	0%	60	60	-	121.9%	122.0%	0.1%
2039	199	199	-	79%	79%	0%	60	60	-	121.9%	122.0%	0.1%
2040	152	153	1	84%	84%	0%	59	59	-	120.7%	120.7%	0.0%
2041	105	105	-	89%	89%	0%	59	59	-	120.7%	120.7%	0.0%
2042	55	54	(1)	94%	94%	0%	60	60	-	122.1%	122.2%	0.1%
2043	-	-	-	100%	100%	0%	4	4	-	8.5%	8.6%	0.1%
2044	-	-	-	100%	100%	0%	4	4	-	8.3%	8.4%	0.1%
2045	-	-	-	100%	100%	0%	4	4	-	8.1%	8.2%	0.1%
2046	-	-	-	100%	100%	0%	4	4	-	8.0%	8.1%	0.1%
2047	-	-	-	100%	100%	0%	4	4	-	7.9%	7.9%	0.0%
2048	-	-	-	100%	100%	0%	4	4	-	7.8%	7.8%	0.0%

Gabriel Roeder Smith & Company

**Kentucky Retirement Systems Exhibit
1-6
KERS Non-Hazardous Insurance Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Comparison of Current Plan and Proposed Legislation (\$
in Millions)**

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	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)
2019	\$ 1,742	\$ 1,742	\$ -	36%	36%	0%	\$ 165	\$ 165	\$ -	11.5%	11.5%	0.0%
2020	1,718	1,718	-	39%	39%	0%	171	171	-	12.0%	12.0%	0.0%
2021	1,673	1,673	-	42%	42%	0%	170	170	-	12.0%	12.0%	0.0%
2022	1,633	1,634	1	45%	45%	0%	167	167	-	11.8%	11.8%	0.0%
2023	1,595	1,596	1	47%	47%	0%	166	166	-	11.8%	11.8%	0.0%
2024	1,550	1,551	1	50%	50%	0%	163	163	-	11.6%	11.7%	0.1%
2025	1,505	1,505	-	52%	52%	0%	163	163	-	11.6%	11.7%	0.1%
2026	1,454	1,454	-	54%	54%	0%	159	159	-	11.4%	11.4%	0.0%
2027	1,403	1,403	-	56%	56%	0%	159	159	-	11.4%	11.4%	0.0%
2028	1,346	1,347	1	58%	58%	0%	155	155	-	11.2%	11.2%	0.0%
2029	1,288	1,289	1	60%	60%	0%	155	155	-	11.2%	11.2%	0.0%
2030	1,225	1,225	-	62%	62%	0%	151	151	-	10.9%	10.9%	0.0%
2031	1,161	1,160	(1)	64%	64%	0%	151	151	-	10.9%	10.9%	0.0%
2032	1,090	1,091	1	66%	66%	0%	148	148	-	10.7%	10.7%	0.0%
2033	1,018	1,018	-	68%	68%	0%	148	148	-	10.7%	10.7%	0.0%
2034	940	940	-	71%	71%	0%	146	146	-	10.5%	10.5%	0.0%
2035	858	858	-	73%	73%	0%	146	146	-	10.5%	10.5%	0.0%
2036	770	771	1	76%	76%	0%	144	144	-	10.3%	10.3%	0.0%
2037	679	679	-	78%	78%	0%	145	145	-	10.3%	10.3%	0.0%
2038	581	580	(1)	81%	81%	0%	143	143	-	10.1%	10.2%	0.1%
2039	478	478	-	85%	85%	0%	143	144	1	10.1%	10.2%	0.1%
2040	368	367	(1)	88%	88%	0%	141	141	-	9.9%	9.9%	0.0%
2041	252	252	-	92%	92%	0%	142	142	-	9.9%	9.9%	0.0%
2042	128	129	1	96%	96%	0%	139	139	-	9.7%	9.7%	0.0%
2043	-	-	-	100%	100%	0%	6	6	-	0.4%	0.4%	0.0%
2044	-	-	-	100%	100%	0%	6	6	-	0.4%	0.4%	0.0%
2045	-	-	-	100%	100%	0%	6	6	-	0.4%	0.4%	0.0%
2046	-	-	-	100%	100%	0%	6	6	-	0.4%	0.4%	0.0%
2047	-	-	-	100%	100%	0%	6	6	-	0.4%	0.4%	0.0%
2048	-	-	-	100%	100%	0%	5	6	1	0.4%	0.4%	0.0%

Gabriel Roeder Smith & Company

Kentucky Retirement Systems Exhibit 1-7
KERS Hazardous Insurance Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Comparison of Current Plan and Proposed Legislation (\$ in
Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	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)
2019	\$ (98)	\$ (98)	\$ -	123%	123%	0%	\$ 4	\$ 4	\$ -	2.5%	2.5%	0.0%
2020	(103)	(103)	-	123%	123%	0%	-	-	-	0.0%	0.0%	0.0%
2021	(110)	(110)	-	124%	124%	0%	-	-	-	0.0%	0.0%	0.0%
2022	(113)	(113)	-	124%	124%	0%	-	-	-	0.0%	0.0%	0.0%
2023	(114)	(114)	-	124%	124%	0%	-	-	-	0.0%	0.0%	0.0%
2024	(116)	(116)	-	124%	124%	0%	-	-	-	0.0%	0.0%	0.0%
2025	(119)	(118)	1	124%	124%	0%	-	-	-	0.0%	0.0%	0.0%
2026	(122)	(122)	-	125%	125%	0%	-	-	-	0.0%	0.0%	0.0%
2027	(125)	(125)	-	125%	125%	0%	-	-	-	0.0%	0.0%	0.0%
2028	(129)	(129)	-	126%	126%	0%	-	-	-	0.0%	0.0%	0.0%
2029	(133)	(133)	-	127%	127%	0%	-	-	-	0.0%	0.0%	0.0%
2030	(138)	(138)	-	128%	128%	0%	-	-	-	0.0%	0.0%	0.0%
2031	(143)	(142)	1	128%	128%	0%	-	-	-	0.0%	0.0%	0.0%
2032	(148)	(148)	-	129%	129%	0%	-	-	-	0.0%	0.0%	0.0%
2033	(154)	(154)	-	130%	130%	0%	-	-	-	0.0%	0.0%	0.0%
2034	(160)	(159)	1	132%	131%	-1%	-	-	-	0.0%	0.0%	0.0%
2035	(167)	(166)	1	133%	133%	0%	-	-	-	0.0%	0.0%	0.0%
2036	(173)	(173)	-	134%	134%	0%	-	-	-	0.0%	0.0%	0.0%
2037	(181)	(180)	1	135%	135%	0%	-	-	-	0.0%	0.0%	0.0%
2038	(188)	(188)	-	136%	136%	0%	-	-	-	0.0%	0.0%	0.0%
2039	(197)	(196)	1	138%	138%	0%	-	-	-	0.0%	0.0%	0.0%
2040	(205)	(205)	-	139%	139%	0%	-	-	-	0.0%	0.0%	0.0%
2041	(215)	(214)	1	141%	140%	-1%	-	-	-	0.0%	0.0%	0.0%
2042	(225)	(224)	1	142%	142%	0%	-	-	-	0.0%	0.0%	0.0%
2043	(236)	(234)	2	144%	143%	-1%	-	-	-	0.0%	0.0%	0.0%
2044	(247)	(246)	1	145%	145%	0%	-	-	-	0.0%	0.0%	0.0%
2045	(259)	(258)	1	147%	147%	0%	-	-	-	0.0%	0.0%	0.0%
2046	(272)	(270)	2	149%	148%	-1%	-	-	-	0.0%	0.0%	0.0%
2047	(286)	(284)	2	151%	150%	-1%	-	-	-	0.0%	0.0%	0.0%
2048	(301)	(299)	2	153%	153%	0%	-	-	-	0.0%	0.0%	0.0%

Gabriel Roeder Smith & Company

Kentucky Retirement Systems Exhibit 1-8
CERS Non-Hazardous Insurance Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Comparison of Current Plan and Proposed Legislation (\$ in
Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	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)
2019	\$ 1,045	\$ 1,046	\$ 1	71%	71%	0%	\$ 119	\$ 119	\$ -	4.8%	4.8%	0.0%
2020	1,058	1,059	1	72%	72%	0%	136	136	-	5.3%	5.3%	0.0%
2021	1,022	1,023	1	74%	74%	0%	146	147	1	5.6%	5.6%	0.0%
2022	997	998	1	75%	75%	0%	143	143	-	5.3%	5.4%	0.1%
2023	987	988	1	76%	76%	0%	141	141	-	5.2%	5.2%	0.0%
2024	972	973	1	78%	78%	0%	140	141	1	5.0%	5.1%	0.1%
2025	955	956	1	79%	79%	0%	139	140	1	4.9%	4.9%	0.0%
2026	935	936	1	80%	80%	0%	138	138	-	4.8%	4.8%	0.0%
2027	913	914	1	81%	81%	0%	136	137	1	4.6%	4.6%	0.0%
2028	888	889	1	82%	82%	0%	136	136	-	4.5%	4.5%	0.0%
2029	860	861	1	83%	83%	0%	135	135	-	4.4%	4.4%	0.0%
2030	829	830	1	83%	83%	0%	134	134	-	4.3%	4.3%	0.0%
2031	796	796	-	84%	84%	0%	134	134	-	4.2%	4.2%	0.0%
2032	758	758	-	85%	85%	0%	134	134	-	4.1%	4.1%	0.0%
2033	717	718	1	86%	86%	0%	134	135	1	4.0%	4.0%	0.0%
2034	672	672	-	87%	87%	0%	135	136	1	3.9%	4.0%	0.1%
2035	622	623	1	88%	88%	0%	137	137	-	3.9%	3.9%	0.0%
2036	567	568	1	90%	90%	0%	138	139	1	3.9%	3.9%	0.0%
2037	508	508	-	91%	91%	0%	140	141	1	3.8%	3.8%	0.0%
2038	442	443	1	92%	92%	0%	142	143	1	3.8%	3.8%	0.0%
2039	370	371	1	94%	94%	0%	145	146	1	3.8%	3.8%	0.0%
2040	291	291	-	95%	95%	0%	148	148	-	3.7%	3.8%	0.1%
2041	205	205	-	97%	97%	0%	151	151	-	3.7%	3.7%	0.0%
2042	109	110	1	98%	98%	0%	155	157	2	3.8%	3.8%	0.0%
2043	-	-	-	100%	100%	0%	45	46	1	1.1%	1.1%	0.0%
2044	-	-	-	100%	100%	0%	45	46	1	1.0%	1.1%	0.1%
2045	-	-	-	100%	100%	0%	45	46	1	1.0%	1.0%	0.0%
2046	-	-	-	100%	100%	0%	46	46	-	1.0%	1.0%	0.0%
2047	-	-	-	100%	100%	0%	46	47	1	1.0%	1.0%	0.0%
2048	-	-	-	100%	100%	0%	46	47	1	1.0%	1.0%	0.0%

Gabriel Roeder Smith & Company

Kentucky Retirement Systems Exhibit 1-9
CERS Hazardous Insurance Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Comparison of Current Plan and Proposed Legislation (\$ in
Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	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)
2019	\$ 419	\$ 420	\$ 1	76%	76%	0%	\$ 53	\$ 53	\$ -	9.5%	9.5%	0.0%
2020	418	419	1	77%	77%	0%	59	59	-	10.5%	10.5%	0.0%
2021	393	394	1	79%	79%	0%	56	57	1	9.9%	10.0%	0.1%
2022	380	381	1	80%	80%	0%	53	54	1	9.2%	9.3%	0.1%
2023	375	376	1	81%	81%	0%	51	51	-	8.6%	8.7%	0.1%
2024	369	370	1	81%	81%	0%	49	50	1	8.2%	8.3%	0.1%
2025	362	364	2	82%	82%	0%	48	49	1	7.9%	8.0%	0.1%
2026	354	356	2	82%	82%	0%	47	48	1	7.6%	7.7%	0.1%
2027	347	348	1	83%	83%	0%	47	47	-	7.4%	7.5%	0.1%
2028	338	338	-	83%	83%	0%	46	47	1	7.2%	7.3%	0.1%
2029	328	329	1	84%	84%	0%	46	47	1	7.0%	7.1%	0.1%
2030	317	318	1	85%	85%	0%	47	47	-	6.9%	7.0%	0.1%
2031	305	305	-	85%	85%	0%	47	48	1	6.7%	6.8%	0.1%
2032	291	291	-	86%	86%	0%	48	48	-	6.7%	6.8%	0.1%
2033	276	276	-	87%	87%	0%	48	49	1	6.6%	6.7%	0.1%
2034	259	260	1	87%	87%	0%	49	50	1	6.5%	6.6%	0.1%
2035	240	241	1	88%	88%	0%	50	51	1	6.5%	6.6%	0.1%
2036	219	220	1	89%	89%	0%	51	52	1	6.4%	6.5%	0.1%
2037	197	197	-	90%	91%	1%	52	53	1	6.4%	6.5%	0.1%
2038	172	172	-	92%	92%	0%	53	54	1	6.4%	6.5%	0.1%
2039	144	144	-	93%	93%	0%	55	55	-	6.4%	6.5%	0.1%
2040	114	114	-	95%	95%	0%	56	57	1	6.4%	6.5%	0.1%
2041	80	81	1	96%	96%	0%	57	58	1	6.4%	6.5%	0.1%
2042	44	44	-	98%	98%	0%	60	60	-	6.5%	6.6%	0.1%
2043	-	-	-	100%	100%	0%	16	17	1	1.7%	1.8%	0.1%
2044	-	-	-	100%	100%	0%	16	17	1	1.7%	1.8%	0.1%
2045	-	-	-	100%	100%	0%	16	17	1	1.7%	1.8%	0.1%
2046	-	-	-	100%	100%	0%	16	17	1	1.7%	1.7%	0.0%
2047	-	-	-	100%	100%	0%	16	17	1	1.6%	1.7%	0.1%
2048	-	-	-	100%	100%	0%	17	17	-	1.6%	1.7%	0.1%

Gabriel Roeder Smith & Company

Kentucky Retirement Systems
Exhibit 1-10
State Police Retirement System Insurance Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Comparison of Current Plan and Proposed Legislation (\$
in Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	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)
2019	\$ 80	\$ 80	\$ -	71%	71%	0%	\$ 13	\$ 13	\$ -	27.2%	27.2%	0.0%
2020	74	74	-	74%	74%	0%	10	10	-	20.9%	20.9%	0.0%
2021	70	70	-	76%	76%	0%	10	10	-	20.9%	20.9%	0.0%
2022	67	67	-	77%	77%	0%	9	9	-	19.0%	19.0%	0.0%
2023	65	65	-	78%	78%	0%	9	9	-	19.0%	19.0%	0.0%
2024	63	63	-	79%	79%	0%	8	8	-	17.5%	17.6%	0.1%
2025	61	61	-	80%	80%	0%	8	8	-	17.5%	17.6%	0.1%
2026	59	59	-	81%	81%	0%	8	8	-	16.5%	16.6%	0.1%
2027	57	57	-	81%	81%	0%	8	8	-	16.5%	16.6%	0.1%
2028	54	54	-	82%	82%	0%	7	7	-	15.7%	15.8%	0.1%
2029	52	52	-	83%	83%	0%	7	7	-	15.7%	15.8%	0.1%
2030	50	49	(1)	83%	84%	1%	7	7	-	15.1%	15.3%	0.2%
2031	47	47	-	84%	84%	0%	7	7	-	15.1%	15.3%	0.2%
2032	44	44	-	85%	85%	0%	7	7	-	14.7%	14.8%	0.1%
2033	41	41	-	86%	86%	0%	7	7	-	14.7%	14.8%	0.1%
2034	38	38	-	87%	87%	0%	7	7	-	14.2%	14.3%	0.1%
2035	35	34	(1)	88%	88%	0%	7	7	-	14.2%	14.3%	0.1%
2036	31	31	-	89%	89%	0%	7	7	-	13.9%	14.0%	0.1%
2037	27	27	-	90%	90%	0%	7	7	-	13.9%	14.0%	0.1%
2038	24	24	-	91%	91%	0%	7	7	-	13.8%	13.9%	0.1%
2039	19	19	-	93%	93%	0%	7	7	-	13.8%	13.9%	0.1%
2040	15	15	-	94%	94%	0%	7	7	-	13.8%	13.9%	0.1%
2041	11	11	-	96%	96%	0%	7	7	-	13.8%	13.9%	0.1%
2042	5	6	1	98%	98%	0%	7	7	-	14.3%	14.4%	0.1%
2043	-	-	-	100%	100%	0%	1	1	-	2.7%	2.8%	0.1%
2044	-	-	-	100%	100%	0%	1	1	-	2.7%	2.8%	0.1%
2045	-	-	-	100%	100%	0%	1	1	-	2.6%	2.7%	0.1%
2046	-	-	-	100%	100%	0%	1	1	-	2.6%	2.7%	0.1%
2047	-	-	-	100%	100%	0%	1	1	-	2.5%	2.6%	0.1%
2048	-	-	-	100%	100%	0%	1	1	-	2.5%	2.6%	0.1%

Gabriel Roeder Smith & Company

HB 412 HCS

Section 2.

Projected Cost of the Retirement and Insurance

Current Plan

Kentucky Retirement Systems
Exhibit 2-1
KERS Non-Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Current Plan
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2019	\$ 16,466	\$ 2,206	\$ 14,260	13%	\$ 924	\$ 72	\$ 1,438	64.26%	74.54%
2020	16,493	2,301	14,192	14%	1,156	71	1,428	80.98%	80.98%
2021	16,500	2,660	13,840	16%	1,151	71	1,422	80.98%	81.27%
2022	16,489	2,999	13,490	18%	1,150	71	1,417	81.21%	81.21%
2023	16,459	3,332	13,127	20%	1,147	71	1,412	81.21%	81.20%
2024	16,410	3,664	12,746	22%	1,144	70	1,409	81.23%	81.23%
2025	16,342	3,997	12,345	24%	1,142	70	1,406	81.23%	81.22%
2026	16,255	4,333	11,922	27%	1,139	70	1,402	81.20%	81.20%
2027	16,149	4,673	11,476	29%	1,136	70	1,399	81.20%	81.19%
2028	16,024	5,017	11,007	31%	1,134	70	1,396	81.20%	81.20%
2029	15,880	5,368	10,512	34%	1,132	70	1,394	81.20%	81.19%
2030	15,724	5,733	9,991	36%	1,130	70	1,393	81.16%	81.16%
2031	15,552	6,110	9,442	39%	1,130	70	1,393	81.16%	81.12%
2032	15,366	6,505	8,861	42%	1,128	70	1,393	81.00%	81.00%
2033	15,168	6,918	8,250	46%	1,129	70	1,394	81.00%	80.88%
2034	14,959	7,354	7,605	49%	1,126	70	1,395	80.72%	80.72%
2035	14,740	7,814	6,926	53%	1,128	70	1,397	80.72%	80.57%
2036	14,515	8,305	6,210	57%	1,126	70	1,401	80.36%	80.36%
2037	14,286	8,829	5,457	62%	1,130	70	1,406	80.36%	80.07%
2038	14,056	9,399	4,657	67%	1,126	71	1,413	79.66%	79.66%
2039	13,830	10,009	3,821	72%	1,131	71	1,420	79.66%	79.26%
2040	13,608	10,674	2,934	78%	1,123	71	1,426	78.73%	78.73%
2041	13,392	11,383	2,009	85%	1,128	72	1,433	78.73%	78.39%
2042	13,183	12,152	1,031	92%	1,118	72	1,438	77.75%	77.75%
2043	12,980	12,980	-	100%	64	72	1,444	4.44%	4.44%
2044	12,785	12,785	-	100%	64	72	1,448	4.40%	4.40%
2045	12,599	12,599	-	100%	63	73	1,453	4.36%	4.36%
2046	12,421	12,421	-	100%	63	73	1,457	4.32%	4.32%
2047	12,252	12,252	-	100%	63	73	1,461	4.29%	4.29%
2048	12,093	12,093	-	100%	63	73	1,465	4.27%	4.27%

Notes and assumptions:

The projection is based on the results of the June 30, 2019 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, but the total active population is assumed to decrease by 2% each year over the next 30 years.

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

The 64.26% employer contribution rate for FY 2020 is the effective contribution rate after reflecting HB 1 (passed during the 2019 Special Session) 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 to contribute a 41.06% of pay contribution rate for FY 2019. Collectively these entities reflect approximately 23% of the covered payroll in the System.

Kentucky Retirement Systems Exhibit 2-2
KERS Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Current Plan (\$ in
Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2019	\$ 1,226	\$ 672	\$ 554	55%	\$ 52	\$ 12	\$ 150	34.39%	34.42%
2020	1,255	703	552	56%	58	12	150	38.71%	38.71%
2021	1,281	749	532	58%	59	12	152	38.71%	38.35%
2022	1,307	790	517	60%	57	12	152	37.30%	37.30%
2023	1,331	825	506	62%	57	12	153	37.30%	36.77%
2024	1,354	861	493	64%	56	12	154	36.44%	36.44%
2025	1,376	897	479	65%	56	12	155	36.44%	36.07%
2026	1,397	933	464	67%	56	12	156	35.76%	35.76%
2027	1,417	967	450	68%	56	12	156	35.76%	35.46%
2028	1,435	1,002	433	70%	55	13	157	35.15%	35.15%
2029	1,452	1,037	415	71%	56	13	158	35.15%	34.88%
2030	1,471	1,074	397	73%	55	13	160	34.58%	34.58%
2031	1,489	1,113	376	75%	56	13	161	34.58%	34.27%
2032	1,509	1,154	355	76%	55	13	163	33.94%	33.94%
2033	1,529	1,196	333	78%	56	13	165	33.94%	33.64%
2034	1,550	1,242	308	80%	56	13	167	33.30%	33.30%
2035	1,572	1,290	282	82%	56	13	168	33.30%	33.02%
2036	1,595	1,341	254	84%	56	14	170	32.74%	32.74%
2037	1,618	1,393	225	86%	56	14	171	32.74%	32.55%
2038	1,641	1,447	194	88%	56	14	172	32.35%	32.35%
2039	1,664	1,503	161	90%	56	14	172	32.35%	32.25%
2040	1,687	1,562	125	93%	56	14	173	32.19%	32.19%
2041	1,709	1,622	87	95%	56	14	174	32.19%	32.30%
2042	1,732	1,686	46	97%	57	14	174	32.92%	32.92%
2043	1,756	1,756	-	100%	10	14	175	5.87%	5.87%
2044	1,779	1,779	-	100%	10	14	175	5.84%	5.84%
2045	1,802	1,802	-	100%	10	14	174	5.82%	5.82%
2046	1,825	1,825	-	100%	10	14	174	5.81%	5.81%
2047	1,846	1,846	-	100%	10	14	173	5.80%	5.80%
2048	1,867	1,867	-	100%	10	14	173	5.79%	5.79%

Notes and assumptions:

The projection is based on the results of the June 30, 2019 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, but the total active population is assumed to decrease by 2% each year over the next 30 years.

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

Kentucky Retirement Systems
Exhibit 2-3
CERS Non-Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Current Plan
(\$ in Millions)

Fiscal Year	Actuarial	Actuarial	Unfunded	Funded	Total	Member	Covered	Tot	Emnl
Beginning	Accrued	Value of	Actuarial	Ratio	Employer	Contribution	Payroll	Employer	Actuarial
July 1,	Liability	Assets	Accrued Liability	(3) / (2)	Contribution			Contribution as %	Determined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	of Covered Payroll	Contribution Rate
								(9)	(10)
2019	\$ 14,356	\$ 7,050	\$ 7,306	49%	\$ 487	\$ 126	\$ 2,522	19.30%	22.52%
2020	14,726	7,281	7,445	49%	558	129	2,581	21.62%	26.21%
2021	15,079	7,669	7,410	51%	648	132	2,638	24.58%	26.14%
2022	15,418	8,061	7,357	52%	692	135	2,694	25.67%	25.67%
2023	15,742	8,454	7,288	54%	697	138	2,751	25.35%	25.35%
2024	16,049	8,851	7,198	55%	707	140	2,809	25.16%	25.16%
2025	16,339	9,248	7,091	57%	716	143	2,866	24.97%	24.97%
2026	16,609	9,644	6,965	58%	725	146	2,924	24.80%	24.80%
2027	16,859	10,039	6,820	60%	735	149	2,983	24.64%	24.64%
2028	17,088	10,434	6,654	61%	746	152	3,044	24.50%	24.50%
2029	17,299	10,833	6,466	63%	758	155	3,107	24.39%	24.39%
2030	17,499	11,246	6,253	64%	770	159	3,174	24.27%	24.27%
2031	17,685	11,671	6,014	66%	784	162	3,243	24.17%	24.17%
2032	17,858	12,114	5,744	68%	798	166	3,315	24.07%	24.07%
2033	18,021	12,577	5,444	70%	813	169	3,390	23.98%	23.98%
2034	18,176	13,065	5,111	72%	829	173	3,467	23.91%	23.91%
2035	18,326	13,584	4,742	74%	845	177	3,546	23.84%	23.84%
2036	18,473	14,139	4,334	77%	864	182	3,631	23.79%	23.79%
2037	18,622	14,738	3,884	79%	884	186	3,720	23.76%	23.76%
2038	18,778	15,391	3,387	82%	904	191	3,813	23.72%	23.72%
2039	18,946	16,105	2,841	85%	927	195	3,909	23.71%	23.71%
2040	19,128	16,887	2,241	88%	951	200	4,007	23.74%	23.74%
2041	19,327	17,745	1,582	92%	980	205	4,107	23.86%	23.86%
2042	19,545	18,689	856	96%	1,020	210	4,209	24.22%	24.22%
2043	19,783	19,783	-	100%	162	216	4,313	3.76%	3.76%
2044	20,043	20,043	-	100%	165	221	4,419	3.74%	3.74%
2045	20,326	20,326	-	100%	169	226	4,526	3.73%	3.73%
2046	20,633	20,633	-	100%	172	232	4,635	3.71%	3.71%
2047	20,965	20,965	-	100%	176	237	4,745	3.70%	3.70%
2048	21,322	21,322	-	100%	179	243	4,857	3.69%	3.69%

Notes and assumptions:

The projection is based on the results of the June 30, 2019 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 constant through the entire projection.

The Board certified contribution rate paid by employers is based on the calculated actuarially determined contribution rate and reflects House Bill 362 passed during the 2018 legislative session that limits the contribution rate increases up to 12% per year over the prior fiscal year for the period of July 1, 2018 to June 30, 2028.

Kentucky Retirement Systems Exhibit 2-4
CERS Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Current Plan (\$ in
Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Tot Employer Contribution as % of Covered Payroll	Fmnl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2019	\$ 5,245	\$ 2,375	\$ 2,870	45%	\$ 168	\$ 45	\$ 559	30.06%	36.98%
2020	5,407	2,462	2,945	46%	190	45	562	33.86%	46.31%
2021	5,557	2,592	2,965	47%	226	46	570	39.73%	47.18%
2022	5,700	2,726	2,974	48%	268	46	578	46.43%	47.06%
2023	5,837	2,885	2,952	49%	275	47	588	46.79%	46.79%
2024	5,968	3,052	2,916	51%	279	48	599	46.62%	46.62%
2025	6,093	3,220	2,873	53%	283	49	610	46.37%	46.37%
2026	6,214	3,391	2,823	55%	287	50	622	46.12%	46.12%
2027	6,329	3,565	2,764	56%	291	51	635	45.88%	45.88%
2028	6,441	3,745	2,696	58%	296	52	648	45.62%	45.62%
2029	6,550	3,930	2,620	60%	301	53	663	45.37%	45.37%
2030	6,658	4,126	2,532	62%	307	54	680	45.09%	45.09%
2031	6,768	4,335	2,433	64%	312	56	698	44.74%	44.74%
2032	6,880	4,557	2,323	66%	319	57	717	44.42%	44.42%
2033	6,995	4,796	2,199	69%	325	59	737	44.09%	44.09%
2034	7,115	5,053	2,062	71%	331	51	757	43.75%	43.75%
2035	7,239	5,328	1,911	74%	338	52	777	43.46%	43.46%
2036	7,366	5,623	1,743	76%	344	54	796	43.20%	43.20%
2037	7,495	5,936	1,559	79%	350	55	815	42.99%	42.99%
2038	7,625	6,266	1,359	82%	357	57	834	42.84%	42.84%
2039	7,753	6,615	1,138	85%	365	58	852	42.78%	42.78%
2040	7,881	6,985	896	89%	373	70	872	42.80%	42.80%
2041	8,009	7,379	630	92%	384	71	892	42.99%	42.99%
2042	8,141	7,802	339	96%	398	73	913	43.54%	43.54%
2043	8,277	8,277	-	100%	56	75	935	6.03%	6.03%
2044	8,417	8,417	-	100%	57	77	956	5.99%	5.99%
2045	8,561	8,561	-	100%	58	78	976	5.97%	5.97%
2046	8,708	8,708	-	100%	59	80	996	5.95%	5.95%
2047	8,856	8,856	-	100%	60	81	1,017	5.94%	5.94%
2048	9,006	9,006	-	100%	62	83	1,038	5.93%	5.93%

Notes and assumptions:

The projection is based on the results of the June 30, 2019 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 constant through the entire projection.

The Board certified contribution rate paid by employers is based on the calculated actuarially determined contribution rate and reflects House Bill 362 passed during the 2018 legislative session that limits the contribution rate increases up to 12% per year over the prior fiscal year for the period of July 1, 2018 to June 30, 2028.

Kentucky Retirement Systems
Exhibit 2-5
State Police Retirement System Retirement Fund
Actuarial Analysis of Proposed Legislation HB 412 HCS
Current Plan
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Tot Employer Contribution as % of Covered Payroll	Fmnl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2019	\$ 1,045	\$ 282	\$ 763	27%	\$ 57	\$ 4	\$ 48	119.05%	120.54%
2020	1,050	295	755	28%	64	4	47	136.12%	136.12%
2021	1,052	318	734	30%	64	4	47	136.12%	137.64%
2022	1,053	338	715	32%	64	4	47	137.06%	137.06%
2023	1,053	357	696	34%	63	4	46	137.06%	136.73%
2024	1,052	376	676	36%	63	4	46	136.63%	136.63%
2025	1,049	395	654	38%	63	4	46	136.63%	136.45%
2026	1,045	414	631	40%	63	4	46	136.73%	136.73%
2027	1,041	432	609	41%	63	4	46	136.73%	136.35%
2028	1,035	452	583	44%	62	4	46	135.45%	135.45%
2029	1,028	472	556	46%	62	4	46	135.45%	134.79%
2030	1,021	493	528	48%	62	4	46	133.84%	133.84%
2031	1,013	514	499	51%	63	4	47	133.84%	132.52%
2032	1,005	538	467	54%	62	4	47	130.81%	130.81%
2033	996	562	434	56%	63	4	48	130.81%	129.28%
2034	988	590	398	60%	61	4	48	127.16%	127.16%
2035	980	617	363	63%	62	4	49	127.16%	125.63%
2036	971	648	323	67%	61	4	49	123.92%	123.92%
2037	962	678	284	70%	61	4	49	123.92%	123.15%
2038	953	711	242	75%	60	4	49	121.90%	121.90%
2039	944	745	199	79%	60	4	49	121.90%	121.57%
2040	933	781	152	84%	59	4	49	120.67%	120.67%
2041	923	818	105	89%	59	4	49	120.67%	120.92%
2042	912	857	55	94%	60	4	49	122.14%	122.14%
2043	900	900	-	100%	4	4	49	8.51%	8.51%
2044	889	889	-	100%	4	4	49	8.30%	8.30%
2045	877	877	-	100%	4	4	48	8.13%	8.13%
2046	864	864	-	100%	4	4	48	7.97%	7.97%
2047	851	851	-	100%	4	4	48	7.85%	7.85%
2048	837	837	-	100%	4	4	48	7.76%	7.76%

Notes and assumptions:

The projection is based on the results of the June 30, 2019 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, but the total active population is assumed to decrease by 2% each year over the next 30 years.

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

The employer contribution amount shown does not include the \$1.086 million additional contribution budgeted to be paid in fiscal year ending 2020.

Kentucky Retirement Systems Exhibit 2-7
KERS Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Current Plan (\$ in
Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2019	\$ 2,733	\$ 991	\$ 1,742	36%	\$ 165	\$ 6	\$ 1,431	11.50%	10.65%
2020	2,808	1,090	1,718	39%	171	6	1,421	12.03%	12.03%
2021	2,882	1,209	1,673	42%	170	7	1,415	12.03%	11.99%
2022	2,951	1,318	1,633	45%	167	7	1,410	11.83%	11.83%
2023	3,015	1,420	1,595	47%	166	8	1,406	11.83%	11.73%
2024	3,072	1,522	1,550	50%	163	8	1,402	11.63%	11.63%
2025	3,123	1,618	1,505	52%	163	9	1,399	11.63%	11.53%
2026	3,165	1,711	1,454	54%	159	9	1,396	11.40%	11.40%
2027	3,200	1,797	1,403	56%	159	10	1,393	11.40%	11.28%
2028	3,224	1,878	1,346	58%	155	10	1,390	11.15%	11.15%
2029	3,239	1,951	1,288	60%	155	11	1,388	11.15%	11.03%
2030	3,245	2,020	1,225	62%	151	11	1,387	10.89%	10.89%
2031	3,244	2,083	1,161	64%	151	11	1,387	10.89%	10.78%
2032	3,235	2,145	1,090	66%	148	12	1,387	10.66%	10.66%
2033	3,221	2,203	1,018	68%	148	12	1,388	10.66%	10.58%
2034	3,203	2,263	940	71%	146	13	1,389	10.48%	10.48%
2035	3,180	2,322	858	73%	146	13	1,391	10.48%	10.40%
2036	3,156	2,386	770	76%	144	13	1,395	10.32%	10.32%
2037	3,132	2,453	679	78%	145	13	1,401	10.32%	10.23%
2038	3,108	2,527	581	81%	143	14	1,407	10.13%	10.13%
2039	3,085	2,607	478	85%	143	14	1,414	10.13%	10.05%
2040	3,063	2,695	368	88%	141	14	1,421	9.93%	9.93%
2041	3,043	2,791	252	92%	142	14	1,427	9.93%	9.87%
2042	3,024	2,896	128	96%	139	14	1,433	9.67%	9.67%
2043	3,009	3,009	-	100%	6	14	1,438	0.42%	0.42%
2044	2,995	2,995	-	100%	6	14	1,443	0.41%	0.41%
2045	2,983	2,983	-	100%	6	14	1,447	0.40%	0.40%
2046	2,971	2,971	-	100%	6	14	1,451	0.38%	0.38%
2047	2,960	2,960	-	100%	6	15	1,455	0.38%	0.38%
2048	2,947	2,947	-	100%	5	15	1,459	0.37%	0.37%

Notes and assumptions:

The projection is based on the results of the June 30, 2019 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, but the total active population is assumed to decrease by 2% each year over the next 30 years.

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

The 11.50% employer contribution rate for FY 2020 is the effective contribution rate after reflecting HB 1 (passed during the 2019 Special Session) 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 to contribute a 8.41% of pay contribution rate for FY 2019. Collectively these entities reflect approximately 23% of the covered payroll in the System.

Kentucky Retirement Systems Exhibit 2-7
KERS Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Current Plan (\$ in
Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2019	\$ 427	\$ 525	\$ (98)	123%	\$ 4	\$ 1	\$ 150	2.46%	0.00%
2020	440	543	(103)	123%	-	1	150	0.00%	0.00%
2021	453	563	(110)	124%	-	1	151	0.00%	0.00%
2022	464	577	(113)	124%	-	1	152	0.00%	0.00%
2023	473	587	(114)	124%	-	1	153	0.00%	0.00%
2024	480	596	(116)	124%	-	1	154	0.00%	0.00%
2025	486	605	(119)	124%	-	1	155	0.00%	0.00%
2026	491	613	(122)	125%	-	1	155	0.00%	0.00%
2027	495	620	(125)	125%	-	1	156	0.00%	0.00%
2028	498	627	(129)	126%	-	1	157	0.00%	0.00%
2029	500	633	(133)	127%	-	1	158	0.00%	0.00%
2030	501	639	(138)	128%	-	2	160	0.00%	0.00%
2031	502	645	(143)	128%	-	2	161	0.00%	0.00%
2032	504	652	(148)	129%	-	2	163	0.00%	0.00%
2033	505	659	(154)	130%	-	2	165	0.00%	0.00%
2034	507	667	(160)	132%	-	2	167	0.00%	0.00%
2035	508	675	(167)	133%	-	2	168	0.00%	0.00%
2036	511	684	(173)	134%	-	2	170	0.00%	0.00%
2037	513	694	(181)	135%	-	2	171	0.00%	0.00%
2038	517	705	(188)	136%	-	2	172	0.00%	0.00%
2039	520	717	(197)	138%	-	2	172	0.00%	0.00%
2040	525	730	(205)	139%	-	2	173	0.00%	0.00%
2041	529	744	(215)	141%	-	2	174	0.00%	0.00%
2042	535	760	(225)	142%	-	2	174	0.00%	0.00%
2043	540	776	(236)	144%	-	2	175	0.00%	0.00%
2044	546	793	(247)	145%	-	2	175	0.00%	0.00%
2045	552	811	(259)	147%	-	2	174	0.00%	0.00%
2046	557	829	(272)	149%	-	2	174	0.00%	0.00%
2047	562	848	(286)	151%	-	2	173	0.00%	0.00%
2048	567	868	(301)	153%	-	2	173	0.00%	0.00%

Notes and assumptions:

The projection is based on the results of the June 30, 2019 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, but the total active population is assumed to decrease by 2% each year over the next 30 years.

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

Kentucky Retirement Systems Exhibit 2-8
CERS Non-Hazardous Insurance Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Current Plan (\$ in
Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Tot Employer Contribution as % of Covered Payroll	Emnl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2019	\$ 3,568	\$ 2,523	\$ 1,045	71%	\$ 119	\$ 12	\$ 2,498	4.76%	4.76%
2020	3,728	2,670	1,058	72%	136	14	2,558	5.33%	5.78%
2021	3,888	2,866	1,022	74%	146	15	2,615	5.60%	5.60%
2022	4,042	3,045	997	75%	143	16	2,672	5.34%	5.34%
2023	4,191	3,204	987	76%	141	18	2,728	5.16%	5.16%
2024	4,332	3,360	972	78%	140	19	2,786	5.03%	5.03%
2025	4,467	3,512	955	79%	139	20	2,843	4.89%	4.89%
2026	4,593	3,658	935	80%	138	22	2,901	4.76%	4.76%
2027	4,711	3,798	913	81%	136	23	2,959	4.61%	4.61%
2028	4,819	3,931	888	82%	136	24	3,018	4.49%	4.49%
2029	4,919	4,059	860	83%	135	26	3,080	4.37%	4.37%
2030	5,011	4,182	829	83%	134	27	3,143	4.25%	4.25%
2031	5,096	4,300	796	84%	134	29	3,210	4.16%	4.16%
2032	5,175	4,417	758	85%	134	30	3,280	4.07%	4.07%
2033	5,251	4,534	717	86%	134	31	3,353	4.00%	4.00%
2034	5,324	4,652	672	87%	135	32	3,430	3.94%	3.94%
2035	5,397	4,775	622	88%	137	34	3,509	3.89%	3.89%
2036	5,472	4,905	567	90%	138	35	3,594	3.85%	3.85%
2037	5,550	5,042	508	91%	140	36	3,682	3.80%	3.80%
2038	5,630	5,188	442	92%	142	37	3,771	3.77%	3.77%
2039	5,712	5,342	370	94%	145	38	3,863	3.75%	3.75%
2040	5,798	5,507	291	95%	148	39	3,957	3.73%	3.73%
2041	5,887	5,682	205	97%	151	40	4,049	3.74%	3.74%
2042	5,978	5,869	109	98%	155	41	4,146	3.75%	3.75%
2043	6,073	6,073	-	100%	45	42	4,243	1.06%	1.06%
2044	6,171	6,171	-	100%	45	43	4,343	1.04%	1.04%
2045	6,272	6,272	-	100%	45	44	4,443	1.02%	1.02%
2046	6,374	6,374	-	100%	46	45	4,546	1.01%	1.01%
2047	6,477	6,477	-	100%	46	46	4,651	0.99%	0.99%
2048	6,581	6,581	-	100%	46	48	4,758	0.97%	0.97%

Notes and assumptions:

The projection is based on the results of the June 30, 2019 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 constant through the entire projection.

The Board certified contribution rate paid by employers is based on the calculated actuarially determined contribution rate and reflects House Bill 362 passed during the 2018 legislative session that limits the contribution rate increases up to 12% per year over the prior fiscal year for the period of July 1, 2018 to June 30, 2028.

Kentucky Retirement Systems Exhibit 2-9
CERS Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Current Plan (\$ in
Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Tot Employer Contribution as % of Covered Payroll	Fmnl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2019	\$ 1,733	\$ 1,314	\$ 419	76%	\$ 53	\$ 2	\$ 559	9.52%	9.52%
2020	1,795	1,377	418	77%	59	3	562	10.47%	10.47%
2021	1,852	1,459	393	79%	56	3	569	9.92%	9.92%
2022	1,901	1,521	380	80%	53	4	578	9.18%	9.18%
2023	1,941	1,566	375	81%	51	4	588	8.63%	8.63%
2024	1,974	1,605	369	81%	49	4	599	8.23%	8.23%
2025	1,999	1,637	362	82%	48	5	610	7.90%	7.90%
2026	2,018	1,664	354	82%	47	5	622	7.61%	7.61%
2027	2,032	1,685	347	83%	47	5	635	7.37%	7.37%
2028	2,040	1,702	338	83%	46	6	648	7.17%	7.17%
2029	2,045	1,717	328	84%	46	6	663	7.00%	7.00%
2030	2,048	1,731	317	85%	47	6	680	6.87%	6.87%
2031	2,048	1,743	305	85%	47	6	698	6.74%	6.74%
2032	2,048	1,757	291	86%	48	7	717	6.66%	6.66%
2033	2,048	1,772	276	87%	48	7	737	6.57%	6.57%
2034	2,049	1,790	259	87%	49	7	757	6.51%	6.51%
2035	2,051	1,811	240	88%	50	8	778	6.46%	6.46%
2036	2,056	1,837	219	89%	51	8	798	6.41%	6.41%
2037	2,065	1,868	197	90%	52	8	818	6.37%	6.37%
2038	2,077	1,905	172	92%	53	8	838	6.37%	6.37%
2039	2,092	1,948	144	93%	55	9	858	6.36%	6.36%
2040	2,112	1,998	114	95%	56	9	878	6.37%	6.37%
2041	2,135	2,055	80	96%	57	9	898	6.39%	6.39%
2042	2,162	2,118	44	98%	50	9	918	6.51%	6.51%
2043	2,192	2,192	-	100%	16	9	939	1.72%	1.72%
2044	2,226	2,226	-	100%	16	10	959	1.70%	1.70%
2045	2,262	2,262	-	100%	16	10	977	1.68%	1.68%
2046	2,300	2,300	-	100%	16	10	996	1.65%	1.65%
2047	2,339	2,339	-	100%	16	10	1,016	1.62%	1.62%
2048	2,377	2,377	-	100%	17	10	1,037	1.60%	1.60%

Notes and assumptions:

The projection is based on the results of the June 30, 2019 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 constant through the entire projection.

The Board certified contribution rate paid by employers is based on the calculated actuarially determined contribution rate and reflects House Bill 362 passed during the 2018 legislative session that limits the contribution rate increases up to 12% per year over the prior fiscal year for the period of July 1, 2018 to June 30, 2028.

Kentucky Retirement Systems
Exhibit 2-10
State Police Retirement System Insurance Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Current Plan
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Tot Employer Contribution as % of Covered Payroll	Fmnl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2019	\$ 277	\$ 197	\$ 80	71%	\$ 13	\$ -	\$ 48	27.23%	19.50%
2020	284	210	74	74%	10	-	47	20.85%	20.85%
2021	291	221	70	76%	10	-	47	20.85%	20.19%
2022	297	230	67	77%	9	-	46	18.96%	18.96%
2023	301	236	65	78%	9	-	46	18.96%	18.16%
2024	304	241	63	79%	8	-	46	17.47%	17.47%
2025	306	245	61	80%	8	-	46	17.47%	16.94%
2026	307	248	59	81%	8	-	46	16.49%	16.49%
2027	307	250	57	81%	8	-	46	16.49%	16.09%
2028	306	252	54	82%	7	-	46	15.70%	15.70%
2029	304	252	52	83%	7	-	46	15.70%	15.42%
2030	302	252	50	83%	7	-	46	15.14%	15.14%
2031	299	252	47	84%	7	-	47	15.14%	14.90%
2032	295	251	44	85%	7	-	47	14.65%	14.65%
2033	292	251	41	86%	7	-	48	14.65%	14.45%
2034	288	250	38	87%	7	-	49	14.21%	14.21%
2035	285	250	35	88%	7	-	49	14.21%	14.06%
2036	281	250	31	89%	7	-	49	13.92%	13.92%
2037	278	251	27	90%	7	-	50	13.92%	13.87%
2038	276	252	24	91%	7	-	50	13.80%	13.80%
2039	273	254	19	93%	7	-	50	13.80%	13.82%
2040	271	256	15	94%	7	-	50	13.82%	13.82%
2041	270	259	11	96%	7	-	50	13.82%	13.94%
2042	268	263	5	98%	7	-	50	14.28%	14.28%
2043	268	268	-	100%	1	-	50	2.68%	2.68%
2044	267	267	-	100%	1	-	50	2.65%	2.65%
2045	267	267	-	100%	1	-	49	2.61%	2.61%
2046	267	267	-	100%	1	-	49	2.56%	2.56%
2047	268	268	-	100%	1	-	49	2.52%	2.52%
2048	268	268	-	100%	1	-	49	2.48%	2.48%

Notes and assumptions:

The projection is based on the results of the June 30, 2019 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, but the total active population is assumed to decrease by 2% each year over the next 30 years.

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

HB 412 HCS

Section 3.

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

Kentucky Retirement Systems
Exhibit 3-1
KERS Non-Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Proposed Plan
(\$ in Millions)

Fiscal Year	Actuarial	Actuarial	Unfunded	Funded	Total	Member	Covered	Tot	Emnl
Beginning	Accrued	Value of	Actuarial	Ratio	Employer	Contribution	Payroll	Employer	Actuarial
July 1,	Liability	Assets	Accrued Liability	(3) / (2)	Contribution			Contribution as %	Determined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	of Covered Payroll	Contribution Rate
								(9)	(10)
2019	\$ 16,467	\$ 2,206	\$ 14,261	13%	\$ 924	\$ 72	\$ 1,438	64.26%	74.54%
2020	16,494	2,301	14,193	14%	1,157	71	1,428	81.01%	81.01%
2021	16,502	2,661	13,841	16%	1,152	71	1,422	81.01%	81.30%
2022	16,491	3,000	13,491	18%	1,151	71	1,417	81.24%	81.24%
2023	16,461	3,333	13,128	20%	1,147	71	1,412	81.24%	81.24%
2024	16,413	3,665	12,748	22%	1,145	70	1,409	81.26%	81.26%
2025	16,345	3,999	12,346	24%	1,142	70	1,406	81.26%	81.26%
2026	16,258	4,336	11,922	27%	1,139	70	1,402	81.24%	81.24%
2027	16,153	4,676	11,477	29%	1,137	70	1,399	81.24%	81.23%
2028	16,028	5,021	11,007	31%	1,134	70	1,396	81.23%	81.23%
2029	15,885	5,372	10,513	34%	1,133	70	1,394	81.23%	81.22%
2030	15,729	5,737	9,992	36%	1,131	70	1,393	81.20%	81.20%
2031	15,557	6,115	9,442	39%	1,131	70	1,393	81.20%	81.16%
2032	15,371	6,510	8,861	42%	1,129	70	1,393	81.03%	81.03%
2033	15,174	6,923	8,251	46%	1,129	70	1,394	81.03%	80.92%
2034	14,965	7,359	7,606	49%	1,126	70	1,395	80.76%	80.76%
2035	14,747	7,819	6,928	53%	1,128	70	1,397	80.76%	80.61%
2036	14,521	8,311	6,210	57%	1,126	70	1,401	80.40%	80.40%
2037	14,293	8,836	5,457	62%	1,131	70	1,406	80.40%	80.11%
2038	14,064	9,406	4,658	67%	1,126	71	1,413	79.70%	79.70%
2039	13,838	10,016	3,822	72%	1,132	71	1,420	79.70%	79.31%
2040	13,616	10,681	2,935	78%	1,123	71	1,426	78.76%	78.76%
2041	13,400	11,391	2,009	85%	1,128	72	1,433	78.76%	78.42%
2042	13,191	12,161	1,030	92%	1,119	72	1,438	77.81%	77.81%
2043	12,989	12,989	-	100%	64	72	1,444	4.46%	4.46%
2044	12,794	12,794	-	100%	64	72	1,448	4.42%	4.42%
2045	12,608	12,608	-	100%	64	73	1,453	4.39%	4.39%
2046	12,430	12,430	-	100%	63	73	1,457	4.35%	4.35%
2047	12,262	12,262	-	100%	63	73	1,461	4.32%	4.32%
2048	12,103	12,103	-	100%	63	73	1,465	4.30%	4.30%

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except for the changes made the to disability benefits outlined in HB 412.

Kentucky Retirement Systems Exhibit 3-2
KERS Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Proposed Plan (\$ in
Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Tot Employer Contribution as % of Covered Payroll	Fmnl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2019	\$ 1,226	\$ 672	\$ 554	55%	\$ 52	\$ 12	\$ 150	34.39%	34.42%
2020	1,255	703	552	56%	58	12	150	38.72%	38.72%
2021	1,281	749	532	58%	59	12	152	38.72%	38.36%
2022	1,307	790	517	60%	57	12	152	37.31%	37.31%
2023	1,331	825	506	62%	57	12	153	37.31%	36.78%
2024	1,354	861	493	64%	56	12	154	36.46%	36.46%
2025	1,376	897	479	65%	56	12	155	36.46%	36.08%
2026	1,397	933	464	67%	56	12	156	35.77%	35.77%
2027	1,417	968	449	68%	56	12	156	35.77%	35.47%
2028	1,435	1,002	433	70%	55	13	157	35.16%	35.16%
2029	1,453	1,037	416	71%	56	13	158	35.16%	34.89%
2030	1,471	1,074	397	73%	55	13	160	34.59%	34.59%
2031	1,490	1,113	377	75%	56	13	161	34.59%	34.28%
2032	1,509	1,154	355	76%	55	13	163	33.96%	33.96%
2033	1,529	1,197	332	78%	56	13	165	33.96%	33.65%
2034	1,550	1,242	308	80%	56	13	167	33.31%	33.31%
2035	1,572	1,290	282	82%	56	13	168	33.31%	33.03%
2036	1,595	1,341	254	84%	56	14	170	32.75%	32.75%
2037	1,618	1,393	225	86%	56	14	171	32.75%	32.56%
2038	1,641	1,448	193	88%	56	14	172	32.35%	32.35%
2039	1,664	1,504	160	90%	56	14	172	32.35%	32.26%
2040	1,687	1,562	125	93%	56	14	173	32.21%	32.21%
2041	1,710	1,623	87	95%	56	14	174	32.21%	32.31%
2042	1,733	1,686	47	97%	57	14	174	32.92%	32.92%
2043	1,756	1,756	-	100%	10	14	175	5.88%	5.88%
2044	1,780	1,780	-	100%	10	14	175	5.85%	5.85%
2045	1,803	1,803	-	100%	10	14	174	5.83%	5.83%
2046	1,825	1,825	-	100%	10	14	174	5.82%	5.82%
2047	1,847	1,847	-	100%	10	14	173	5.81%	5.81%
2048	1,867	1,867	-	100%	10	14	173	5.80%	5.80%

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except for the changes made the to disability benefits outlined in HB 412.
10% of future incidences of disability that occur in the line of duty are assumed to result in a "total and permanent" injury and qualify for benefits provided in the proposed legislation.

Kentucky Retirement Systems
Exhibit 3-3
CERS Non-Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Proposed Plan
(\$ in Millions)

Fiscal Year	Actuarial	Actuarial	Unfunded	Funded	Total	Member	Covered	Tot	Emnl
Beginning	Accrued	Value of	Actuarial	Ratio	Employer	Contribution	Payroll	Employer	Actuarial
July 1,	Liability	Assets	Accrued Liability	(3) / (2)	Contribution			Contribution as %	Determined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	of Covered Payroll	Contribution Rate
								(9)	(10)
2019	\$ 14,358	\$ 7,050	\$ 7,308	49%	\$ 487	\$ 126	\$ 2,522	19.30%	22.52%
2020	14,728	7,281	7,447	49%	558	129	2,581	21.62%	26.25%
2021	15,082	7,669	7,413	51%	648	132	2,638	24.56%	26.18%
2022	15,422	8,060	7,362	52%	693	135	2,694	25.71%	25.71%
2023	15,747	8,454	7,293	54%	699	138	2,751	25.40%	25.40%
2024	16,055	8,852	7,203	55%	708	140	2,809	25.20%	25.20%
2025	16,345	9,250	7,095	57%	717	143	2,866	25.01%	25.01%
2026	16,617	9,646	6,971	58%	726	146	2,924	24.84%	24.84%
2027	16,867	10,042	6,825	60%	737	149	2,983	24.69%	24.69%
2028	17,098	10,438	6,660	61%	748	152	3,044	24.56%	24.56%
2029	17,309	10,839	6,470	63%	759	155	3,107	24.44%	24.44%
2030	17,511	11,254	6,257	64%	772	159	3,174	24.32%	24.32%
2031	17,697	11,680	6,017	66%	785	162	3,243	24.21%	24.21%
2032	17,871	12,123	5,748	68%	799	166	3,315	24.11%	24.11%
2033	18,035	12,587	5,448	70%	815	169	3,390	24.03%	24.03%
2034	18,191	13,077	5,114	72%	830	173	3,467	23.95%	23.95%
2035	18,342	13,597	4,745	74%	847	177	3,546	23.89%	23.89%
2036	18,490	14,153	4,337	77%	866	182	3,631	23.85%	23.85%
2037	18,640	14,754	3,886	79%	885	186	3,720	23.80%	23.80%
2038	18,798	15,408	3,390	82%	906	191	3,813	23.77%	23.77%
2039	18,966	16,124	2,842	85%	929	195	3,909	23.76%	23.76%
2040	19,149	16,907	2,242	88%	953	200	4,007	23.78%	23.78%
2041	19,349	17,767	1,582	92%	982	205	4,107	23.90%	23.90%
2042	19,568	18,712	856	96%	1,022	210	4,209	24.29%	24.29%
2043	19,807	19,807	-	100%	164	216	4,313	3.80%	3.80%
2044	20,068	20,068	-	100%	167	221	4,419	3.78%	3.78%
2045	20,353	20,353	-	100%	170	226	4,526	3.76%	3.76%
2046	20,661	20,661	-	100%	173	232	4,635	3.74%	3.74%
2047	20,994	20,994	-	100%	177	237	4,745	3.73%	3.73%
2048	21,352	21,352	-	100%	181	243	4,857	3.72%	3.72%

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except for the changes made the to disability benefits outlined in HB 412.

Kentucky Retirement Systems Exhibit 3-4
CERS Hazardous Retirement Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Proposed Plan (\$ in
Millions)

Fiscal Year	Actuarial	Actuarial	Unfunded	Funded	Total	Member	Covered	Tot	Fmnl
Beginning	Accrued	Value of	Actuarial	Ratio	Employer	Contribution	Payroll	Employer	Actuarial
July 1,	Liability	Assets	Accrued Liability	(3) / (2)	Contribution			Contribution as %	Determined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	of Covered Payroll	Contribution Rate
								(9)	(10)
2019	\$ 5,245	\$ 2,375	\$ 2,870	45%	\$ 168	\$ 45	\$ 559	30.06%	36.98%
2020	5,407	2,462	2,945	46%	190	45	562	33.79%	46.35%
2021	5,557	2,591	2,966	47%	226	46	570	39.65%	47.24%
2022	5,701	2,725	2,976	48%	268	46	578	46.35%	47.13%
2023	5,838	2,884	2,954	49%	276	47	588	46.88%	46.88%
2024	5,969	3,050	2,919	51%	280	48	599	46.70%	46.70%
2025	6,095	3,219	2,876	53%	283	49	610	46.45%	46.45%
2026	6,215	3,391	2,824	55%	287	50	622	46.22%	46.22%
2027	6,332	3,565	2,767	56%	292	51	635	45.96%	45.96%
2028	6,443	3,745	2,698	58%	296	52	648	45.71%	45.71%
2029	6,553	3,931	2,622	60%	302	53	663	45.47%	45.47%
2030	6,662	4,127	2,535	62%	307	54	680	45.18%	45.18%
2031	6,772	4,336	2,436	64%	313	56	698	44.85%	44.85%
2032	6,884	4,559	2,325	66%	319	57	717	44.52%	44.52%
2033	7,000	4,799	2,201	69%	326	59	737	44.18%	44.18%
2034	7,120	5,056	2,064	71%	332	51	757	43.85%	43.85%
2035	7,244	5,332	1,912	74%	338	52	777	43.54%	43.54%
2036	7,372	5,627	1,745	76%	345	54	796	43.29%	43.29%
2037	7,501	5,940	1,561	79%	351	55	815	43.08%	43.08%
2038	7,631	6,272	1,359	82%	358	57	834	42.93%	42.93%
2039	7,760	6,621	1,139	85%	365	58	852	42.87%	42.87%
2040	7,888	6,992	896	89%	374	70	872	42.90%	42.90%
2041	8,017	7,386	631	92%	384	71	892	43.07%	43.07%
2042	8,149	7,810	339	96%	399	73	913	43.65%	43.65%
2043	8,285	8,285	-	100%	57	75	935	6.10%	6.10%
2044	8,426	8,426	-	100%	58	77	956	6.06%	6.06%
2045	8,571	8,571	-	100%	59	78	976	6.03%	6.03%
2046	8,717	8,717	-	100%	60	80	996	6.01%	6.01%
2047	8,866	8,866	-	100%	61	81	1,017	6.00%	6.00%
2048	9,017	9,017	-	100%	62	83	1,038	6.00%	6.00%

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except for the changes made the to disability benefits outlined in HB 412.
10% of future incidences of disability that occur in the line of duty are assumed to result in a "total and permanent" injury and qualify for benefits provided in the proposed legislation.

Kentucky Retirement Systems
Exhibit 3-5
State Police Retirement System Retirement Fund
Actuarial Analysis of Proposed Legislation HB 412
HCS Proposed Plan
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Tot Employer Contribution as % of Covered Payroll	Fmnl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2019	\$ 1,045	\$ 282	\$ 763	27%	\$ 57	\$ 4	\$ 48	119.05%	120.54%
2020	1,050	295	755	28%	64	4	47	136.16%	136.16%
2021	1,052	318	734	30%	64	4	47	136.16%	137.68%
2022	1,053	338	715	32%	64	4	47	137.11%	137.11%
2023	1,053	357	696	34%	64	4	46	137.11%	136.77%
2024	1,052	377	675	36%	63	4	46	136.68%	136.68%
2025	1,049	395	654	38%	63	4	46	136.68%	136.52%
2026	1,046	414	632	40%	63	4	46	136.80%	136.80%
2027	1,041	433	608	42%	63	4	46	136.80%	136.41%
2028	1,035	452	583	44%	62	4	46	135.51%	135.51%
2029	1,028	472	556	46%	62	4	46	135.51%	134.85%
2030	1,021	493	528	48%	62	4	46	133.92%	133.92%
2031	1,013	514	499	51%	63	4	47	133.92%	132.59%
2032	1,005	538	467	54%	62	4	47	130.87%	130.87%
2033	997	563	434	56%	63	4	48	130.87%	129.35%
2034	988	590	398	60%	61	4	48	127.24%	127.24%
2035	980	618	362	63%	62	4	49	127.24%	125.70%
2036	972	648	324	67%	61	4	49	123.99%	123.99%
2037	963	679	284	71%	61	4	49	123.99%	123.23%
2038	954	712	242	75%	60	4	49	121.98%	121.98%
2039	944	745	199	79%	60	4	49	121.98%	121.65%
2040	934	781	153	84%	59	4	49	120.74%	120.74%
2041	923	818	105	89%	59	4	49	120.74%	121.00%
2042	912	858	54	94%	60	4	49	122.22%	122.22%
2043	901	901	-	100%	4	4	49	8.58%	8.58%
2044	889	889	-	100%	4	4	49	8.37%	8.37%
2045	877	877	-	100%	4	4	48	8.20%	8.20%
2046	864	864	-	100%	4	4	48	8.05%	8.05%
2047	851	851	-	100%	4	4	48	7.92%	7.92%
2048	838	838	-	100%	4	4	48	7.83%	7.83%

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except for the changes made the to disability benefits outlined in HB 412.
10% of future incidences of disability that occur in the line of duty are assumed to result in a "total and permanent" injury and qualify for benefits provided in the proposed legislation.

Kentucky Retirement Systems Exhibit 3-6
KERS Non-Hazardous Insurance Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Proposed Plan (\$ in
Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Tot Employer Contribution as % of Covered Payroll	Fmnl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2019	\$ 2,733	\$ 991	\$ 1,742	36%	\$ 165	\$ 6	\$ 1,431	11.50%	10.65%
2020	2,808	1,090	1,718	39%	171	6	1,421	12.03%	12.03%
2021	2,882	1,209	1,673	42%	170	7	1,415	12.03%	11.99%
2022	2,952	1,318	1,634	45%	167	7	1,410	11.84%	11.84%
2023	3,016	1,420	1,596	47%	166	8	1,406	11.84%	11.74%
2024	3,073	1,522	1,551	50%	163	8	1,402	11.65%	11.65%
2025	3,124	1,619	1,505	52%	163	9	1,399	11.65%	11.55%
2026	3,166	1,712	1,454	54%	159	9	1,396	11.41%	11.41%
2027	3,201	1,798	1,403	56%	159	10	1,393	11.41%	11.29%
2028	3,226	1,879	1,347	58%	155	10	1,390	11.16%	11.16%
2029	3,241	1,952	1,289	60%	155	11	1,388	11.16%	11.04%
2030	3,247	2,022	1,225	62%	151	11	1,387	10.90%	10.90%
2031	3,245	2,085	1,160	64%	151	11	1,387	10.90%	10.79%
2032	3,237	2,146	1,091	66%	148	12	1,387	10.67%	10.67%
2033	3,223	2,205	1,018	68%	148	12	1,388	10.67%	10.59%
2034	3,205	2,265	940	71%	146	13	1,389	10.49%	10.49%
2035	3,182	2,324	858	73%	146	13	1,391	10.49%	10.42%
2036	3,159	2,388	771	76%	144	13	1,395	10.33%	10.33%
2037	3,134	2,455	679	78%	145	13	1,401	10.33%	10.24%
2038	3,110	2,530	580	81%	143	14	1,407	10.15%	10.15%
2039	3,087	2,609	478	85%	144	14	1,414	10.15%	10.06%
2040	3,065	2,698	367	88%	141	14	1,421	9.93%	9.93%
2041	3,045	2,793	252	92%	142	14	1,427	9.93%	9.88%
2042	3,027	2,898	129	96%	139	14	1,433	9.72%	9.72%
2043	3,012	3,012	-	100%	6	14	1,438	0.43%	0.43%
2044	2,998	2,998	-	100%	6	14	1,443	0.42%	0.42%
2045	2,986	2,986	-	100%	6	14	1,447	0.41%	0.41%
2046	2,975	2,975	-	100%	6	14	1,451	0.40%	0.40%
2047	2,963	2,963	-	100%	6	15	1,455	0.39%	0.39%
2048	2,951	2,951	-	100%	6	15	1,459	0.38%	0.38%

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except for the changes made the to disability benefits outlined in HB 412.

Kentucky Retirement Systems Exhibit 3-7
KERS Hazardous Insurance Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Proposed Plan (\$ in
Millions)

Fiscal Year	Actuarial	Actuarial	Unfunded	Funded	Total	Member	Covered	Tot	Fmnl
Beginning	Accrued	Value of	Actuarial	Ratio	Employer	Contribution	Payroll	Employer	Actuarial
July 1,	Liability	Assets	Accrued Liability	(3) / (2)	Contribution			Contribution as %	Determined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	of Covered Payroll	Contribution Rate
								(9)	(10)
2019	\$ 427	\$ 525	\$ (98)	123%	\$ 4	\$ 1	\$ 150	2.46%	0.00%
2020	440	543	(103)	123%	-	1	150	0.00%	0.00%
2021	453	563	(110)	124%	-	1	151	0.00%	0.00%
2022	464	577	(113)	124%	-	1	152	0.00%	0.00%
2023	473	587	(114)	124%	-	1	153	0.00%	0.00%
2024	480	596	(116)	124%	-	1	154	0.00%	0.00%
2025	487	605	(118)	124%	-	1	155	0.00%	0.00%
2026	491	613	(122)	125%	-	1	155	0.00%	0.00%
2027	495	620	(125)	125%	-	1	156	0.00%	0.00%
2028	498	627	(129)	126%	-	1	157	0.00%	0.00%
2029	500	633	(133)	127%	-	1	158	0.00%	0.00%
2030	501	639	(138)	128%	-	2	160	0.00%	0.00%
2031	503	645	(142)	128%	-	2	161	0.00%	0.00%
2032	504	652	(148)	129%	-	2	163	0.00%	0.00%
2033	505	659	(154)	130%	-	2	165	0.00%	0.00%
2034	507	666	(159)	131%	-	2	167	0.00%	0.00%
2035	509	675	(166)	133%	-	2	168	0.00%	0.00%
2036	511	684	(173)	134%	-	2	170	0.00%	0.00%
2037	514	694	(180)	135%	-	2	171	0.00%	0.00%
2038	517	705	(188)	136%	-	2	172	0.00%	0.00%
2039	521	717	(196)	138%	-	2	172	0.00%	0.00%
2040	525	730	(205)	139%	-	2	173	0.00%	0.00%
2041	530	744	(214)	140%	-	2	174	0.00%	0.00%
2042	535	759	(224)	142%	-	2	174	0.00%	0.00%
2043	541	775	(234)	143%	-	2	175	0.00%	0.00%
2044	546	792	(246)	145%	-	2	175	0.00%	0.00%
2045	552	810	(258)	147%	-	2	174	0.00%	0.00%
2046	558	828	(270)	148%	-	2	174	0.00%	0.00%
2047	563	847	(284)	150%	-	2	173	0.00%	0.00%
2048	568	867	(299)	153%	-	2	173	0.00%	0.00%

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except for the changes made the to disability benefits outlined in HB 412.
10% of future incidences of disability that occur in the line of duty are assumed to result in a "total and permanent" injury and qualify for benefits provided in the proposed legislation.

Kentucky Retirement Systems Exhibit 3-8
CERS Non-Hazardous Insurance Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Proposed Plan (\$ in
Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Tot Employer Contribution as % of Covered Payroll	Fmnl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2019	\$ 3,569	\$ 2,523	\$ 1,046	71%	\$ 119	\$ 12	\$ 2,498	4.76%	4.76%
2020	3,729	2,670	1,059	72%	136	14	2,558	5.33%	5.79%
2021	3,889	2,866	1,023	74%	147	15	2,615	5.62%	5.62%
2022	4,043	3,045	998	75%	143	16	2,672	5.35%	5.35%
2023	4,192	3,204	988	76%	141	18	2,728	5.17%	5.17%
2024	4,334	3,361	973	78%	141	19	2,786	5.05%	5.05%
2025	4,469	3,513	956	79%	140	20	2,843	4.91%	4.91%
2026	4,596	3,660	936	80%	138	22	2,901	4.77%	4.77%
2027	4,714	3,800	914	81%	137	23	2,959	4.64%	4.64%
2028	4,823	3,934	889	82%	136	24	3,018	4.51%	4.51%
2029	4,923	4,062	861	83%	135	26	3,080	4.39%	4.39%
2030	5,015	4,185	830	83%	134	27	3,143	4.27%	4.27%
2031	5,101	4,305	796	84%	134	29	3,210	4.17%	4.17%
2032	5,180	4,422	758	85%	134	30	3,280	4.08%	4.08%
2033	5,256	4,538	718	86%	135	31	3,353	4.02%	4.02%
2034	5,330	4,658	672	87%	136	32	3,430	3.96%	3.96%
2035	5,404	4,781	623	88%	137	34	3,509	3.90%	3.90%
2036	5,479	4,911	568	90%	139	35	3,594	3.86%	3.86%
2037	5,557	5,049	508	91%	141	36	3,682	3.83%	3.83%
2038	5,638	5,195	443	92%	143	37	3,771	3.80%	3.80%
2039	5,721	5,350	371	94%	146	38	3,863	3.78%	3.78%
2040	5,807	5,516	291	95%	148	39	3,957	3.75%	3.75%
2041	5,896	5,691	205	97%	151	40	4,049	3.74%	3.74%
2042	5,988	5,878	110	98%	157	41	4,146	3.78%	3.78%
2043	6,084	6,084	-	100%	46	42	4,243	1.08%	1.08%
2044	6,182	6,182	-	100%	46	43	4,343	1.05%	1.05%
2045	6,283	6,283	-	100%	46	44	4,443	1.04%	1.04%
2046	6,386	6,386	-	100%	46	45	4,546	1.02%	1.02%
2047	6,490	6,490	-	100%	47	46	4,651	1.00%	1.00%
2048	6,594	6,594	-	100%	47	48	4,758	0.99%	0.99%

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except for the changes made the to disability benefits outlined in HB 412.

Kentucky Retirement Systems Exhibit 3-9
CERS Hazardous Insurance Fund Actuarial
Analysis of Proposed Legislation HB 412 HCS
Proposed Plan (\$ in
Millions)

Fiscal Year	Actuarial	Actuarial	Unfunded	Funded	Total	Member	Covered	Tot	Emnl
Beginning	Accrued	Value of	Actuarial	Ratio	Employer	Contribution	Payroll	Employer	Actuarial
July 1,	Liability	Assets	Accrued Liability	(3) / (2)	Contribution			Contribution as %	Determined
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	of Covered Payroll	Contribution Rate
								(9)	(10)
2019	\$ 1,734	\$ 1,314	\$ 420	76%	\$ 53	\$ 2	\$ 559	9.52%	9.52%
2020	1,796	1,377	419	77%	59	3	562	10.54%	10.54%
2021	1,853	1,459	394	79%	57	3	569	10.00%	10.00%
2022	1,903	1,522	381	80%	54	4	578	9.26%	9.26%
2023	1,944	1,568	376	81%	51	4	588	8.71%	8.71%
2024	1,977	1,607	370	81%	50	4	599	8.31%	8.31%
2025	2,003	1,639	364	82%	49	5	610	7.98%	7.98%
2026	2,022	1,666	356	82%	48	5	622	7.71%	7.71%
2027	2,036	1,688	348	83%	47	5	635	7.47%	7.47%
2028	2,045	1,707	338	83%	47	6	648	7.26%	7.26%
2029	2,051	1,722	329	84%	47	6	663	7.08%	7.08%
2030	2,054	1,736	318	85%	47	6	680	6.96%	6.96%
2031	2,055	1,750	305	85%	48	6	698	6.84%	6.84%
2032	2,055	1,764	291	86%	48	7	717	6.75%	6.75%
2033	2,056	1,780	276	87%	49	7	737	6.67%	6.67%
2034	2,058	1,798	260	87%	50	7	757	6.60%	6.60%
2035	2,061	1,820	241	88%	51	8	778	6.55%	6.55%
2036	2,067	1,847	220	89%	52	8	798	6.51%	6.51%
2037	2,076	1,879	197	91%	53	8	818	6.47%	6.47%
2038	2,089	1,917	172	92%	54	8	838	6.46%	6.46%
2039	2,105	1,961	144	93%	55	9	858	6.45%	6.45%
2040	2,126	2,012	114	95%	57	9	878	6.45%	6.45%
2041	2,150	2,069	81	96%	58	9	898	6.49%	6.49%
2042	2,177	2,133	44	98%	50	9	918	6.58%	6.58%
2043	2,209	2,209	-	100%	17	9	939	1.79%	1.79%
2044	2,243	2,243	-	100%	17	10	959	1.77%	1.77%
2045	2,280	2,280	-	100%	17	10	977	1.75%	1.75%
2046	2,318	2,318	-	100%	17	10	996	1.73%	1.73%
2047	2,357	2,357	-	100%	17	10	1,016	1.70%	1.70%
2048	2,397	2,397	-	100%	17	10	1,037	1.67%	1.67%

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except for the changes made the to disability benefits outlined in HB 412.
10% of future incidences of disability that occur in the line of duty are assumed to result in a "total and permanent" injury and qualify for benefits provided in the proposed legislation.

Kentucky Retirement Systems
Exhibit 3-10
State Police Retirement System Insurance Fund
Actuarial Analysis of Proposed Legislation HB 412 HCS
Proposed Plan
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Tot Employer Contribution as % of Covered Payroll	Fmnl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2019	\$ 277	\$ 197	\$ 80	71%	\$ 13	\$ -	\$ 48	27.23%	19.50%
2020	284	210	74	74%	10	-	47	20.93%	20.93%
2021	291	221	70	76%	10	-	47	20.93%	20.27%
2022	297	230	67	77%	9	-	46	19.04%	19.04%
2023	301	236	65	78%	9	-	46	19.04%	18.24%
2024	304	241	63	79%	8	-	46	17.57%	17.57%
2025	306	245	61	80%	8	-	46	17.57%	17.03%
2026	307	248	59	81%	8	-	46	16.59%	16.59%
2027	307	250	57	81%	8	-	46	16.59%	16.19%
2028	306	252	54	82%	7	-	46	15.80%	15.80%
2029	304	252	52	83%	7	-	46	15.80%	15.53%
2030	302	253	49	84%	7	-	46	15.25%	15.25%
2031	299	252	47	84%	7	-	47	15.25%	15.01%
2032	296	252	44	85%	7	-	47	14.76%	14.76%
2033	292	251	41	86%	7	-	48	14.76%	14.56%
2034	289	251	38	87%	7	-	49	14.32%	14.32%
2035	285	251	34	88%	7	-	49	14.32%	14.17%
2036	282	251	31	89%	7	-	49	14.03%	14.03%
2037	279	252	27	90%	7	-	50	14.03%	13.98%
2038	277	253	24	91%	7	-	50	13.92%	13.92%
2039	274	255	19	93%	7	-	50	13.92%	13.93%
2040	272	257	15	94%	7	-	50	13.94%	13.94%
2041	271	260	11	96%	7	-	50	13.94%	14.06%
2042	270	264	6	98%	7	-	50	14.42%	14.42%
2043	269	269	-	100%	1	-	50	2.78%	2.78%
2044	269	269	-	100%	1	-	50	2.75%	2.75%
2045	269	269	-	100%	1	-	49	2.71%	2.71%
2046	269	269	-	100%	1	-	49	2.65%	2.65%
2047	269	269	-	100%	1	-	49	2.61%	2.61%
2048	270	270	-	100%	1	-	49	2.57%	2.57%

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except for the changes made the to disability benefits outlined in HB 412.
10% of future incidences of disability that occur in the line of duty are assumed to result in a "total and permanent" injury and qualify for benefits provided in the proposed legislation.