

March 23, 2020

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

**Re: Actuarial Analysis of Proposed Legislation SB 249 (House Substitute) and its Financial Impact on the Kentucky Employees Retirement System (Non-Hazardous funds)**  
**AA Statement 1 of 1**

Dear Mr. Eager:

We have reviewed the proposed changes in the proposed legislation SB 249 (House Substitute) and the purpose of this letter is to communicate the actuarial analysis of this legislation on the KERS Non-Hazardous retirement and insurance funds. **Note this proposed legislation also impacts the other Systems in the Kentucky Retirement Systems. This letter includes the fiscal analysis and comments related to the KERS Non-Hazardous funds only. Please refer to our other letter dated March 23, 2020 regarding SB 249 (House Substitute) for our comments relating to the other Systems (page 23). These two letters should be considered together as a complete Actuarial Analysis on this proposed legislation.**

### **Provisions of Proposed Legislation**

This version of the proposed legislation would change the amortization period for financing the unfunded liability for the KERS non-hazardous retirement and insurance funds from 24 years to 30 years as of June 30, 2019.

Additionally, beginning with the 2020/2021 fiscal year, this proposed legislation would change the method for allocating the contribution requirement related to the amortization of the unfunded actuarial accrued liability among employers from a percentage of payroll to a percentage of each individual employer's percentage of the System's total actuarial accrued liability based on the June 30, 2019 actuarial valuation. Employers would continue contributing a normal cost as a percentage of their employees' covered payroll.

### **Summary of Cost Impact**

The change in the amortization period decreases the employer contribution by \$123 million (retirement and insurance funds combined) for the 2020/2021 fiscal year (or a decrease from 93.01% of pay to 84.43% of pay). However, this contribution savings is offset by the fact that the participating employers will be financing the unfunded actuarial accrued liability an additional six years (i.e. to fiscal year 2048/2049 in the proposed legislation versus fiscal year 2042/2043 in the current plan).

The change to the method of allocating the contribution requirement among employers would have no fiscal impact to the Retirement System as a whole; **however, we believe this legislation will significantly reduce the System's risk of receiving insufficient contributions because employers will no longer be able to reduce their pension cost by reducing their covered payroll. In summary, we believe this legislation (including the change to the 30-year amortization period) will result in an improved and sustainable funding policy for the KERS Non-Hazardous System.**

While the proposed legislation reduces the employer contributions to the System in total, the proposed legislation modifies the method for allocating the total contribution requirement to the participating employers in the System from being based on covered payroll to the employer's share of the System's actuarial accrued liability. As a result, each participating employer's contribution requirement could increase or decrease.

Below is a table summarizing the expected magnitude of the change in the contribution requirement by employer type.

**Table 1. Comparison of Contribution Effort for Current and Proposed Method  
(\$ in Millions)**

Agency Type	Projected FY 20/21 Payroll	Effective Contribution Rate		Estimated Required Contribution	
		Current	Proposed	Current	Proposed
(1)	(2)	(3)	(4)	(5)	(6)
Health Department	\$93.2	93.01%	86.89%	\$86.7	\$81.0
Non-P1 State Assoc/Corp	27.6	93.01%	55.16%	25.7	15.2
Non-P1 State Agencies	10.1	93.01%	31.29%	9.4	3.2
Reg Mental Health Units	89.7	93.01%	82.02%	83.4	73.6
Universities	104.0	93.01%	68.81%	96.7	71.5
County Attorneys	14.4	93.01%	46.50%	13.4	6.7
Legislative Branch	20.8	93.01%	102.22%	19.4	21.3
Judicial Branch	58.7	93.01%	54.84%	54.6	32.2
Executive Branch	<u>1,019.2</u>	93.01%	89.20%	<u>947.9</u>	<u>909.1</u>
<b>Total for all employers</b>	<b>\$1,437.7</b>	<b>93.01%</b>	<b>84.43%</b>	<b>\$1,337.2</b>	<b>\$1,213.8</b>

Please refer to Exhibits 1. and 2. for the expected fiscal impact of the proposed legislation for the Commonwealth and each individual agency.

Sections 3., 4., and 5. provide 35-year projections of the liability and contribution requirements of the pension and insurance funds under the current plan and the proposed plan, as well as a summary of the fiscal impact of the proposed legislation.

### **Comments regarding the Proposed Legislation**

*Amortization Period Change* – Increasing the amortization period from 24 years to 30 years as of June 30, 2019 does not change the liability of or the projected benefit payments to be paid from the retirement and insurance funds. Rather it increases the number of years employers are expected to pay for the current unfunded liability, which results in a decrease in the annual contribution requirement.

As we have noted in the 2019 actuarial valuation report, the KERS Non-Hazardous Retirement Fund has \$16.5 billion in liability and only \$2.2 billion in plan assets. Also benefit payments and expenses for fiscal year 2019/2020 are expected to be \$1.008 billion and the fund is expected to receive \$0.996 billion in employer and member contributions for that same fiscal year. It is imperative that the Commonwealth maintain or increase the contribution effort for this fund until the financial condition of the fund substantially improves.

**The proposed legislation decreases the employer's near-term contribution effort, which may result in some increased risk of plan assets being exhausted. However, we believe this proposed change in the amortization period and contributing the full actuarially determined rate is a more transparent and responsible method for lowering the near-term contribution requirement than other possible methods, such as mandating more optimistic actuarial assumptions (such as increasing the investment return assumption). Additionally, as previously noted, we believe the change in allocation method will significantly reduce the System's risk of receiving insufficient contributions because employers will no longer be able to reduce their pension cost by reducing their covered payroll. In summary, we believe the combination of the use of the proposed 30-year amortization and the fixed allocation method will result in a more sustainable funding outlook compared to the current payroll based contribution method.**

*Allocation of Contributions to Employers* – Currently KRS collects contributions from participating employers based on the employer's total payroll of employees who are earning benefits in KERS (i.e. covered payroll). The actuarially determined contribution rate is comprised of two components - the normal cost rate (to pay for the benefits accruing in the next year) and the unfunded amortization (to pay for the benefits accrued by members in previous years). The unfunded amortization is calculated by first determining the dollar amount necessary to pay for the unfunded liability based on KRS's funding policy and then by dividing that dollar amount by expected covered payroll to convert that contribution requirement to a percentage of payroll (i.e. a contribution rate). Based on the June 30, 2019 actuarial valuation and a 24-year amortization period, the contribution rate for the KERS Non-Hazardous System beginning July 1, 2020 will be 93.01% of pay (pension and insurance) which is comprised of a 10.35% normal cost rate and a 82.66% amortization cost rate.

Under the current plan (24-year amortization period and contribution allocation based on pay), an employer can decrease their pension cost by \$930.10 for every \$1,000 reduction in their reported payroll to the System. Consequently, it is not surprising to see many employers participating in KRS performing deliberate workforce actions to reduce their payroll reported to the System (e.g.

through use of technology improvements, or contractors and outsourcing agencies) in order to reduce their pension cost. The reported payroll and active membership in the KERS Non-Hazardous System has decreased from \$1.732 billion in payroll and 46.6k active members in 2011 to \$1.438 billion in payroll and 33.7k active members in 2019. This is a 17% decrease in covered payroll and a 28% reduction in active membership over the last eight years. This decrease in the covered payroll requires subsequent increases in the unfunded amortization contribution rate in order to maintain the same contribution dollars to the System.

**Based on historical employer behavior and the current contribution rates, we believe employers will continue reducing their covered payroll in future years if the current method for collecting contributions on covered payroll remains unchanged, which will result in contribution rates continuing to increase in future years, thereby further increasing employers' incentive to reduce covered payroll. Maintaining the current method poses a significant risk to the KERS Non-Hazardous System of receiving insufficient contributions. This proposed legislation is expected to significantly reduce this risk by reducing employers' ability to control their pension contribution requirement through covered payroll reduction.**

Under the proposed legislation, employers would continue contributing a normal cost rate (10.35% of pay) times the payroll of their employees earning benefits in KERS plus an allocated portion of the System's annual amortization cost. The amortization cost will be based on the employer's portion of the System's total actuarial accrued liability based on the June 30, 2019 actuarial valuation. Since the amortization cost is no longer tied to employer payroll, the System would be expected to receive the entire contribution requirement regardless of employer workforce actions to reduce covered payroll. Also, since an employer's allocated portion of the amortization cost is fixed as a percentage of the System's total amortization cost, an employer can increase their payroll without seeing large increases in their pension contributions. In other words, the employers pension cost would increase by \$103.50 for every \$1,000 increase in covered payroll (versus the current \$930.10).

In general, the dollar amount of the employer's amortization cost will increase or decrease from year-to-year, depending the System's liability and investment experience, but is expected to remain relatively level during the duration of the funding period, which would be 30 years as of July 1, 2019 under the proposed legislation. For certain employers, the proposed legislation would only allow the amortization cost to be adjusted upon the completion of an actuarial investigation and only every four years.

The basis for determining each employer's required amortization cost is a policy decision, but it is relatively easy to reason that this allocation method is fair because the contributions from each employer are more directly linked to the liability attributable to their current and former employees. **However, the change in allocation method will result in a number of employers experiencing a significant increase or decrease in their pension contribution requirement at July 1, 2020. This could be a significant fiscal budgeting problem for those employers experiencing an**

**increase in pension cost.** Please refer to Exhibit 2. for a list of the expected changes in the contribution requirements for individual employers.

### **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.

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

  
Janie Shaw, ASA, MAAA

Enclosures

**Kentucky Employees Retirement Plan (Non-Hazardous) - Retirement and Insurance Combined**  
**Actuarial Analysis of SB 249, House Substitute**  
**Based on the June 30, 2019 Actuarial Valuation**

**Exhibit 1. Calculation of Employer Required Contributions under Proposed Legislation**

Agency Name <sup>3</sup>	Agency Classification <sup>3</sup>	Projected Payroll FY 20/21	Fixed Percentage of the Total Amortization Cost		Required Contribution <sup>1</sup>			Effective Employer Contribution Rate <sup>2</sup> Required Contribution / Payroll		
			Accrued Liability based on June 30, 2019 Valuation	Fixed Allocation of Amortization Cost	Normal Cost Contributions	Amortization Cost	Total Required Contribution	Normal Cost Contributions	Amortization Cost	Total Estimated Required Contribution as a % of Expected Pay
			(4)	(5) = (4) / \$19,128M	(6) = (3) x 10.35%	(7) = (5) x \$1,118M	(8) = (6) + (7)	(9) = (6) / (3)	(10) = (7) / (3)	(11) = (8) / (3)
LEGISLATIVE BRANCH AGENCIES	LEGISLATIVE BRANCH	20,809,165	343,338,931	1.79500%	2,153,748	19,116,913	21,270,661	10.35%	91.87%	102.22%
JUDICIAL BRANCH AGENCIES	JUDICIAL BRANCH	58,730,183	469,266,488	2.45334%	6,078,573	26,128,298	32,206,871	10.35%	44.49%	54.84%
EXECUTIVE BRANCH AGENCIES	EXECUTIVE BRANCH	1,019,181,420	14,434,001,594	75.46175%	105,485,273	803,674,508	909,159,781	10.35%	78.85%	89.20%
LEX FAYETTE CO HLTH DEPT	Health Departments	6,279,010	89,050,918	0.46556%	649,878	4,958,256	5,608,134	10.35%	78.97%	89.32%
LAKE CUMBERLAND DISTRICT	Health Departments	5,547,445	73,620,021	0.38489%	574,161	4,099,114	4,673,275	10.35%	73.89%	84.24%
BARREN RVR DIST HLTH DEPT	Health Departments	5,032,523	68,855,538	0.35998%	520,866	3,833,820	4,354,686	10.35%	76.18%	86.53%
GREEN RVR DIST HLTH DEPT	Health Departments	6,319,042	82,561,808	0.43164%	654,021	4,597,005	5,251,026	10.35%	72.75%	83.10%
NORTHERN KY DIST HLTH DEP	Health Departments	6,243,649	54,194,473	0.28333%	646,218	3,017,490	3,663,708	10.35%	48.33%	58.68%
LINCOLN TRL DIST HLTH DEP	Health Departments	3,473,278	67,158,260	0.35111%	359,484	3,739,353	4,098,837	10.35%	107.66%	118.01%
KY RIVER DIST HEALTH DEPT	Health Departments	2,808,126	70,590,492	0.36905%	290,641	3,930,416	4,221,057	10.35%	139.97%	150.32%
MADISON CO HEALTH DEP	Health Departments	3,681,668	53,565,044	0.28004%	381,053	2,982,451	3,363,504	10.35%	81.01%	91.36%
CUMBERLAND VLY DIST HEALT	Health Departments	2,393,958	89,949,862	0.47026%	247,775	5,008,312	5,256,087	10.35%	209.21%	219.56%
WEDCO DIST HEALTH DEPT	Health Departments	2,630,208	28,173,710	0.14729%	272,227	1,568,652	1,840,879	10.35%	59.64%	69.99%
FRANKLIN CO HEALTH DEPT	Health Departments	2,420,588	22,689,496	0.11862%	250,531	1,263,314	1,513,845	10.35%	52.19%	62.54%
WHITLEY CO HEALTH DEPT	Health Departments	1,836,382	28,890,387	0.15104%	190,066	1,608,590	1,798,656	10.35%	87.60%	97.95%
PIKE CO HEALTH DEPT	Health Departments	1,816,056	25,165,288	0.13157%	187,962	1,401,232	1,589,194	10.35%	77.16%	87.51%
THREE RIVERS DIST HLTH	Health Departments	1,405,324	22,852,018	0.11947%	145,451	1,272,366	1,417,817	10.35%	90.54%	100.89%
KNOX CO HEALTH DEPT	Health Departments	1,871,943	28,079,768	0.14680%	193,746	1,563,433	1,757,179	10.35%	83.52%	93.87%
PURCHASE DIST HLTH DEPT	Health Departments	1,962,251	44,833,499	0.23439%	203,093	2,496,275	2,699,368	10.35%	127.21%	137.56%
CLARK CO HEALTH DEPT	Health Departments	1,731,244	17,846,746	0.09330%	179,184	993,653	1,172,837	10.35%	57.40%	67.75%
GATEWAY DIST HEALTH DEPT	Health Departments	2,071,219	25,855,364	0.13517%	214,371	1,439,573	1,653,944	10.35%	69.50%	79.85%
N CENTRAL DIST HLTH DEPT	Health Departments	1,534,303	21,562,812	0.11273%	158,800	1,200,585	1,359,385	10.35%	78.25%	88.60%
BREATHITT CO HEALTH DEPT	Health Departments	1,335,524	18,565,852	0.09706%	138,227	1,033,698	1,171,925	10.35%	77.40%	87.75%
PENNYRILE DIST HLTH DEPT	Health Departments	1,606,165	16,344,611	0.08545%	166,238	910,050	1,076,288	10.35%	56.66%	67.01%
MARSHALL CO HEALTH DEPT	Health Departments	1,436,565	17,193,457	0.08989%	148,684	957,337	1,106,021	10.35%	66.64%	76.99%
CHRISTIAN CO HEALTH DEPT	Health Departments	1,287,747	13,360,854	0.06985%	133,282	743,909	877,191	10.35%	57.77%	68.12%
MONTGOMERY CO HEALTH DEPT	Health Departments	1,435,257	11,887,257	0.06215%	148,549	661,903	810,452	10.35%	46.12%	56.47%
HOPKINS CO HEALTH DEPT	Health Departments	1,446,874	17,815,060	0.09314%	149,751	991,949	1,141,700	10.35%	68.56%	78.91%
JOHNSON CO HEALTH DEPT	Health Departments	1,214,044	15,484,079	0.08095%	125,654	862,125	987,779	10.35%	71.01%	81.36%
FLOYD CO HEALTH CENTER	Health Departments	940,121	12,800,870	0.06692%	97,303	712,704	810,007	10.35%	75.81%	86.16%
ASHLAND BOYD CO HEALTH DP	Health Departments	1,077,672	11,539,422	0.09296%	111,539	990,032	1,101,571	10.35%	91.87%	102.22%
LAUREL CO HEALTH DEPT	Health Departments	1,137,856	14,475,341	0.07568%	117,768	805,999	923,767	10.35%	70.83%	81.18%
BULLITT CO HEALTH DEPT	Health Departments	1,194,114	13,823,739	0.07227%	123,591	769,682	893,273	10.35%	64.46%	74.81%
BELL CO HEALTH DEPT	Health Departments	852,505	10,731,667	0.05611%	88,234	597,577	685,811	10.35%	70.10%	80.45%
GREENUP CO HLTH DEPT	Health Departments	921,572	11,509,071	0.06017%	95,383	640,816	736,199	10.35%	69.54%	79.89%
JESSAMINE CO HEALTH DEPT	Health Departments	952,499	8,686,531	0.04541%	98,584	483,621	582,205	10.35%	50.77%	61.12%
GRAVES CO HEALTH CENTER	Health Departments	1,080,652	6,110,503	0.03195%	111,847	340,270	452,117	10.35%	31.49%	41.84%
HARLAN CO HEALTH DEPT	Health Departments	934,178	7,218,470	0.03774%	96,687	401,934	498,621	10.35%	43.03%	53.38%
OLDHAM CO HEALTH DEPT	Health Departments	987,904	10,480,598	0.05479%	102,248	583,518	685,766	10.35%	59.07%	69.42%
ALLEN CO HEALTH DEPT	Health Departments	840,564	7,911,333	0.04136%	86,998	440,488	527,486	10.35%	52.40%	62.75%
BUFFALO TRACE HEALTH DEPT	Health Departments	779,156	10,788,599	0.05640%	80,643	600,665	681,308	10.35%	77.09%	87.44%
MUHLENBERG CO.HEALTH DEPT	Health Departments	661,770	7,886,100	0.04123%	68,493	439,103	507,596	10.35%	66.35%	76.70%
MERCER CO HEALTH DEPT	Health Departments	696,882	10,106,660	0.05284%	72,127	562,751	634,878	10.35%	80.75%	91.10%
LAWRENCE CO HEALTH DEPT	Health Departments	690,884	3,868,705	0.02023%	71,506	215,451	286,957	10.35%	31.18%	41.53%
WOODFORD CO HEALTH DEPT	Health Departments	512,541	5,453,322	0.02851%	53,048	303,634	356,682	10.35%	59.24%	69.59%
CALLOWAY CO HEALTH DEPT	Health Departments	565,019	4,137,638	0.02163%	58,479	230,361	288,840	10.35%	40.77%	51.12%
MAGOFFIN CO HEALTH DEPT	Health Departments	544,522	6,467,092	0.03381%	56,358	360,080	416,438	10.35%	66.13%	76.48%
MARTIN CO HEALTH DEPT	Health Departments	453,796	5,286,010	0.02764%	46,968	294,369	341,337	10.35%	64.87%	75.22%
BOYLE CO HEALTH DEPT	Health Departments	551,379	6,346,920	0.03318%	57,068	353,370	410,438	10.35%	64.09%	74.44%
BOURBON CO HEALTH CENTER	Health Departments	522,078	10,577,403	0.05530%	54,035	588,950	642,985	10.35%	112.81%	123.16%
ANDERSON CO HEALTH DEPT	Health Departments	424,133	5,076,042	0.02654%	43,898	282,653	326,551	10.35%	66.64%	76.99%
LEWIS CO HEALTH DEPT	Health Departments	548,857	3,061,131	0.01600%	56,807	170,401	227,208	10.35%	31.05%	41.40%
ESTILL CO HEALTH DEPT	Health Departments	481,325	5,579,547	0.02917%	49,817	310,663	360,480	10.35%	64.54%	74.89%
LINCOLN CO HEALTH DEPT	Health Departments	434,068	4,897,375	0.02560%	44,926	272,642	317,568	10.35%	62.81%	73.16%
BRECKINRIDGE CO HEALTH BD	Health Departments	544,432	7,704,261	0.04028%	56,349	428,986	485,335	10.35%	78.80%	89.15%
GRAYSON COUNTY HEALTH DEPT	Health Departments	451,991	4,598,067	0.02404%	46,781	256,028	302,809	10.35%	56.64%	66.99%
LITTLE SANDY DIST HEALTH	Health Departments	-	7,237,775	0.03784%	-	402,999	402,999	N/A	N/A	N/A

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**Exhibit 1. Calculation of Employer Required Contributions under Proposed Legislation**

Agency Name <sup>3</sup>	Agency Classification <sup>3</sup>	Projected Payroll FY 20/21	Fixed Percentage of the Total Amortization Cost		Required Contribution <sup>1</sup>			Effective Employer Contribution Rate <sup>2</sup> Required Contribution / Payroll		
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			(4)	(5) = (4) / \$19,128M	(6) = (3) x 10.35%	(7) = (5) x \$1,118M	(8) = (6) + (7)	(9) = (6) / (3)	(10) = (7) / (3)	(11) = (8) / (3)
GARRARD COUNTY HEALTH DPT	Health Departments	325,193	3,926,271	0.02053%	33,657	218,646	252,303	10.35%	67.24%	77.59%
TODD CO HEALTH DEPT	Health Departments	586,208	4,687,868	0.02451%	60,673	261,034	321,707	10.35%	44.53%	54.88%
FLEMING CO HEALTH DEP	Health Departments	348,816	4,386,549	0.02293%	36,102	244,207	280,309	10.35%	70.01%	80.36%
MONROE CO HEALTH DEPT	Health Departments	379,290	3,137,459	0.01640%	39,257	174,661	213,918	10.35%	46.05%	56.40%
BRACKEN CO HEALTH DEPT	Health Departments	348,044	2,410,616	0.01260%	36,023	134,191	170,214	10.35%	38.56%	48.91%
POWELL CO HEALTH DEPT	Health Departments	298,757	4,200,545	0.02196%	30,921	233,876	264,797	10.35%	78.28%	88.63%
CARTER CO HEALTH DEPT	Health Departments	328,054	1,936,351	0.01012%	33,954	107,779	141,733	10.35%	32.85%	43.20%
KY HIGHER ED STUD LN CORP	Non-P1 State Assoc/Corp.	11,081,890	81,896,904	0.42816%	1,146,976	4,559,943	5,706,919	10.35%	41.15%	51.50%
KENTUCKY HOUSING CORP	Non-P1 State Assoc/Corp.	9,887,127	98,280,874	0.51382%	1,023,318	5,472,230	6,495,548	10.35%	55.35%	65.70%
CSG HEADQUARTERS	Non-P1 State Assoc/Corp.	3,572,893	19,274,916	0.10077%	369,794	1,073,210	1,443,004	10.35%	30.04%	40.39%
KET FOUNDATION	Non-P1 State Assoc/Corp.	1,718,678	15,066,238	0.07877%	177,883	838,908	1,016,791	10.35%	48.81%	59.16%
ASST OF COMMONWEALTH ATTY	Non-P1 State Assoc/Corp.	1,086,231	5,807,856	0.03036%	112,425	323,337	435,762	10.35%	29.77%	40.12%
HIGHSCHOOL ATHLETIC ASSOC	Non-P1 State Assoc/Corp.	205,880	1,413,847	0.00739%	21,309	78,704	100,013	10.35%	38.23%	48.58%
O A S I S	Non-P1 State Agencies	640,209	2,304,549	0.01205%	66,262	128,334	194,596	10.35%	20.05%	30.40%
KDVA	Non-P1 State Agencies	871,207	2,431,059	0.01271%	90,170	135,363	225,533	10.35%	15.54%	25.89%
B.R.A.S.S.	Non-P1 State Agencies	638,864	2,132,362	0.01115%	66,122	118,749	184,871	10.35%	18.59%	28.94%
BLUEGRASS RAPE CRISIS CTR	Non-P1 State Agencies	569,641	2,744,493	0.01435%	58,958	152,829	211,787	10.35%	26.83%	37.18%
SAFE HARBOR	Non-P1 State Agencies	651,225	1,312,696	0.00686%	67,402	73,060	140,462	10.35%	11.22%	21.57%
SANCTUARY INC	Non-P1 State Agencies	634,076	2,510,255	0.01312%	65,627	139,729	205,356	10.35%	22.04%	32.39%
LOTUS	Non-P1 State Agencies	820,631	1,074,054	0.00562%	84,935	59,854	144,789	10.35%	7.29%	17.64%
BETHANY HOUSE ABUSE SHEL	Non-P1 State Agencies	462,201	1,675,224	0.00876%	47,838	93,295	141,133	10.35%	20.18%	30.53%
SPRINGHAVEN INC	Non-P1 State Agencies	346,635	1,527,812	0.00799%	35,877	85,094	120,971	10.35%	24.55%	34.90%
KASAP	Non-P1 State Agencies	401,601	943,862	0.00493%	41,566	52,505	94,071	10.35%	13.07%	23.42%
SILVERLEAF	Non-P1 State Agencies	411,241	2,017,711	0.01055%	42,563	112,358	154,921	10.35%	27.32%	37.67%
WOMEN AWARE	Non-P1 State Agencies	213,308	975,811	0.00510%	22,077	54,315	76,392	10.35%	25.46%	35.81%
D.O.V.E.S.	Non-P1 State Agencies	433,267	1,319,147	0.00690%	44,843	73,486	118,329	10.35%	16.96%	27.31%
NURSING HOME OMBUDSMAN	Non-P1 State Agencies	235,384	879,808	0.00460%	24,362	48,990	73,352	10.35%	20.81%	31.16%
HOPE HARBOR INC	Non-P1 State Agencies	349,924	824,202	0.00431%	36,217	45,902	82,119	10.35%	13.12%	23.47%
KY OFFICE OF BAR ADMISSIO	Non-P1 State Agencies	204,270	2,552,890	0.01335%	21,142	142,179	163,321	10.35%	69.60%	79.95%
CHILD WATCH ADVOCACY CTR	Non-P1 State Agencies	227,648	759,321	0.00397%	23,562	42,281	65,843	10.35%	18.57%	28.92%
FRANKLIN CO COUNCIL AGING	Non-P1 State Agencies	110,250	2,147,140	0.01123%	11,411	119,601	131,012	10.35%	108.48%	118.83%
JUDI'S PLACE FOR KIDS, INC.	Non-P1 State Agencies	363,068	777,468	0.00406%	37,578	43,239	80,817	10.35%	11.91%	22.26%
CUMBERLAND V C A CENTER	Non-P1 State Agencies	300,383	821,917	0.00430%	31,090	45,795	76,885	10.35%	15.25%	25.60%
KY ASSOC OF REGIONAL PROG	Non-P1 State Agencies	118,750	1,817,343	0.00950%	12,291	101,176	113,467	10.35%	85.20%	95.55%
BARREN RIVER CHILD ADVOCA	Non-P1 State Agencies	215,348	406,450	0.00212%	22,289	22,578	44,867	10.35%	10.48%	20.83%
CHILD ADV CTR OF GRN RVR	Non-P1 State Agencies	156,406	572,517	0.00299%	16,188	31,844	48,032	10.35%	20.36%	30.71%
MUN ELEC POW ASSOC OF KY	Non-P1 State Agencies	135,616	1,745,743	0.00913%	14,036	97,235	111,271	10.35%	71.70%	82.05%
KY RIVER CHILD ADVOCACY	Non-P1 State Agencies	127,195	290,885	0.00152%	13,165	16,188	29,353	10.35%	12.73%	23.08%
PENNYRILE CHILD ADV CTR	Non-P1 State Agencies	125,509	460,162	0.00241%	12,990	25,667	38,657	10.35%	20.45%	30.80%
LAKE CUMB CHILD ADV CTR	Non-P1 State Agencies	178,427	545,959	0.00285%	18,467	30,353	48,820	10.35%	17.01%	27.36%
BUFFALO TR CHILD ADV INC	Non-P1 State Agencies	96,571	252,189	0.00132%	9,995	14,058	24,053	10.35%	14.56%	24.91%
GATEWAY CHILD ADVOCACY	Non-P1 State Agencies	34,000	53,228	0.00028%	3,519	2,982	6,501	10.35%	8.77%	19.12%
NEW VISTA OF THE BLUEGRASS, INC.	Reg Mental Hlth Units	36,821,842	375,801,295	1.96471%	3,811,061	20,924,340	24,735,401	10.35%	56.83%	67.18%
CUMBERLAND RIVER MHMR	Reg Mental Hlth Units	11,237,059	98,266,354	0.51374%	1,163,036	5,471,378	6,634,414	10.35%	48.69%	59.04%
LIFESKILLS INC	Reg Mental Hlth Units	8,097,314	75,680,895	0.39566%	838,072	4,213,815	5,051,887	10.35%	52.04%	62.39%
COMMUNICARE INC	Reg Mental Hlth Units	5,611,288	66,588,437	0.34813%	580,768	3,707,616	4,288,384	10.35%	66.07%	76.42%
ADANTA/BEHAVIORAL HLTH SR	Reg Mental Hlth Units	5,028,478	89,023,918	0.46542%	520,447	4,956,765	5,477,212	10.35%	98.57%	108.92%
PENNYROYAL REG MHMR BD	Reg Mental Hlth Units	6,603,427	68,135,236	0.35621%	683,455	3,793,669	4,477,124	10.35%	57.45%	67.80%
MOUNTAIN COMP CARE CENTER	Reg Mental Hlth Units	5,284,559	45,921,039	0.24008%	546,952	2,556,874	3,103,826	10.35%	48.38%	58.73%
GREEN RVR REG MHMR BD	Reg Mental Hlth Units	2,625,640	32,599,922	0.17043%	271,754	1,815,095	2,086,849	10.35%	69.13%	79.48%
NORTHERN KY REG MHMR BD	Reg Mental Hlth Units	148,611	57,312,274	0.29963%	15,381	3,191,087	3,206,468	10.35%	2147.28%	2157.62%
WESTERN KY REG MHMR ADV	Reg Mental Hlth Units	3,595,880	35,526,557	0.18573%	372,174	1,978,041	2,350,215	10.35%	55.01%	65.36%
COMPREHEND INC REG MHMR B	Reg Mental Hlth Units	4,656,035	29,064,447	0.15195%	481,900	1,618,281	2,100,181	10.35%	34.76%	45.11%
SEVEN CO SERVICES INC	Reg Mental Hlth Units	-	154,213,520	0.80624%	-	8,586,529	8,586,529	N/A	N/A	N/A
KY RIVER COMM CARE INC	Reg Mental Hlth Units	-	26,687,511	0.13952%	-	1,485,901	1,485,901	N/A	N/A	N/A
NORTHERN KY UNIVERSITY	Universities	33,051,008	216,716,312	1.13300%	3,420,779	12,066,553	15,487,332	10.35%	36.51%	46.86%
EASTERN KY UNIV	Universities	14,964,357	239,050,334	1.24977%	1,548,811	13,310,164	14,858,975	10.35%	88.95%	99.30%
KCTCS	Universities	19,171,232	156,357,525	0.81745%	1,984,223	8,705,917	10,690,140	10.35%	45.41%	55.76%

**Kentucky Employees Retirement Plan (Non-Hazardous) - Retirement and Insurance Combined**  
**Actuarial Analysis of SB 249, House Substitute**  
**Based on the June 30, 2019 Actuarial Valuation**

**Exhibit 1. Calculation of Employer Required Contributions under Proposed Legislation**

Agency Name <sup>3</sup>	Agency Classification <sup>3</sup>	Projected Payroll FY 20/21	Fixed Percentage of the Total Amortization Cost		Required Contribution <sup>1</sup>			Effective Employer Contribution Rate <sup>2</sup> Required Contribution / Payroll		
			Accrued Liability based on June 30, 2019 Valuation	Fixed Allocation of Amortization Cost	Normal Cost Contributions	Amortization Cost	Total Required Contribution	Normal Cost Contributions	Amortization Cost	Total Estimated Required Contribution as a % of Expected Pay
			(4)	(5) = (4) / \$19,128M	(6) = (3) x 10.35%	(7) = (5) x \$1,118M	(8) = (6) + (7)	(9) = (6) / (3)	(10) = (7) / (3)	(11) = (8) / (3)
WESTERN KENTUCKY UNIV	Universities	15,854,956	180,798,950	0.94523%	1,640,988	10,066,786	11,707,774	10.35%	63.49%	73.84%
MURRAY STATE UNIV	Universities	11,391,807	133,053,240	0.69561%	1,179,052	7,408,310	8,587,362	10.35%	65.03%	75.38%
MOREHEAD STATE UNIVERSITY	Universities	4,766,363	121,265,619	0.63398%	493,319	6,751,945	7,245,264	10.35%	141.66%	152.01%
KENTUCKY STATE UNIVERSITY	Universities	4,775,638	44,391,511	0.23208%	494,279	2,471,673	2,965,952	10.35%	51.76%	62.11%
ALLEN COUNTY ATTORNEY	County Attorneys	73,736	1,658,981	0.00867%	7,632	92,336	99,968	10.35%	125.23%	135.58%
ANDERSON COUNTY ATTORNEY	County Attorneys	161,079	1,971,500	0.01031%	16,672	109,802	126,474	10.35%	68.17%	78.52%
BARREN COUNTY ATTORNEY	County Attorneys	418,342	2,875,029	0.01503%	43,298	160,071	203,369	10.35%	38.26%	48.61%
BATH COUNTY ATTORNEY	County Attorneys	-	2,729	0.00001%	-	107	107	N/A	N/A	N/A
BELL COUNTY ATTORNEY	County Attorneys	346,120	1,931,690	0.01010%	35,823	107,566	143,389	10.35%	31.08%	41.43%
BOONE COUNTY ATTORNEY	County Attorneys	1,005,496	5,092,956	0.02663%	104,069	283,612	387,681	10.35%	28.21%	38.56%
BOYLE COUNTY ATTORNEY	County Attorneys	171,740	155,378	0.00081%	17,775	8,627	26,402	10.35%	5.02%	15.37%
BRECKINRIDGE CO ATTORNEY	County Attorneys	256,024	1,029,674	0.00538%	26,498	57,297	83,795	10.35%	22.38%	32.73%
BULLITT COUNTY ATTORNEY	County Attorneys	105,419	703,350	0.00368%	10,911	39,192	50,103	10.35%	37.18%	47.53%
CALLOWAY COUNTY ATTORNEY	County Attorneys	-	54,643	0.00029%	-	3,089	3,089	N/A	N/A	N/A
CARROLL COUNTY ATTORNEY	County Attorneys	212,670	873,614	0.00457%	22,011	48,671	70,682	10.35%	22.89%	33.24%
CASEY COUNTY ATTORNEY	County Attorneys	176,393	947,428	0.00495%	18,257	52,718	70,975	10.35%	29.89%	40.24%
CHILD SUPPORT ENFORCEMENT	County Attorneys	377,891	255,979	0.00134%	39,112	14,271	53,383	10.35%	3.78%	14.13%
CHRISTIAN COUNTY ATTORNEY	County Attorneys	126,490	984,086	0.00514%	13,092	54,741	67,833	10.35%	43.28%	53.63%
CLARK COUNTY ATTORNEY	County Attorneys	264,741	1,322,750	0.00692%	27,401	73,699	101,100	10.35%	27.84%	38.19%
CRITTENDEN CO ATTORNEY	County Attorneys	114,306	365,437	0.00191%	11,831	20,342	32,173	10.35%	17.80%	28.15%
DAVISS COUNTY ATTORNEY	County Attorneys	227,589	1,578,350	0.00825%	23,555	87,863	111,418	10.35%	38.61%	48.96%
EDMONSON COUNTY ATTORNEY	County Attorneys	149,318	474,886	0.00248%	15,454	26,412	41,866	10.35%	17.69%	28.04%
FAYETTE CO ATTORNEY OFF	County Attorneys	214,370	3,136,743	0.01640%	22,187	174,661	196,848	10.35%	81.48%	91.83%
FLOYD COUNTY ATTORNEY	County Attorneys	101,215	1,121,075	0.00586%	10,476	62,410	72,886	10.35%	61.66%	72.01%
FRANKLIN COUNTY ATTORNEY	County Attorneys	488,950	4,833,960	0.02527%	50,606	269,128	319,734	10.35%	55.04%	65.39%
GARRARD COUNTY ATTORNEY	County Attorneys	207,457	988,761	0.00517%	21,472	55,061	76,533	10.35%	26.54%	36.89%
GRANT COUNTY CHILD SUPPOR	County Attorneys	202,677	363,477	0.00190%	20,977	20,235	41,212	10.35%	9.98%	20.33%
GRAVES COUNTY ATTORNEY	County Attorneys	463,368	3,272,663	0.01711%	47,959	182,223	230,182	10.35%	39.33%	49.68%
HANCOCK COUNTY ATTORNEY	County Attorneys	172,169	386,098	0.00202%	17,819	21,513	39,332	10.35%	12.50%	22.84%
HARRISON COUNTY ATTORNEY	County Attorneys	36,413	114,873	0.00060%	3,769	6,390	10,159	10.35%	17.55%	27.90%
HICKMAN COUNTY ATTORNEY	County Attorneys	185,703	1,028,593	0.00538%	19,220	57,297	76,517	10.35%	30.85%	41.20%
HOPKINS COUNTY ATTORNEY	County Attorneys	240,933	1,751,470	0.00916%	24,937	97,555	122,492	10.35%	40.49%	50.84%
JACKSON COUNTY ATTORNEY	County Attorneys	102,216	700,551	0.00366%	10,579	38,979	49,558	10.35%	38.13%	48.48%
JEFFERSON CO ATTORNEY	County Attorneys	741,449	17,151,984	0.08967%	76,740	954,994	1,031,734	10.35%	128.80%	139.15%
JOHNSON COUNTY ATTORNEY	County Attorneys	-	230,506	0.00121%	-	12,887	12,887	N/A	N/A	N/A
KENTON COUNTY ATTORNEY	County Attorneys	115,000	1,021,997	0.00534%	11,903	56,871	68,774	10.35%	49.45%	59.80%
KNOTT COUNTY ATTORNEY	County Attorneys	281,869	900,207	0.00471%	29,173	50,162	79,335	10.35%	17.80%	28.15%
KNOX COUNTY ATTORNEY	County Attorneys	-	5,454	0.00003%	-	320	320	N/A	N/A	N/A
LARUE COUNTY ATTORNEY	County Attorneys	256,453	1,041,769	0.00545%	26,543	58,043	84,586	10.35%	22.63%	32.98%
LAUREL COUNTY ATTORNEY	County Attorneys	72,261	353,526	0.00185%	7,479	19,703	27,182	10.35%	27.27%	37.62%
LAWRENCE COUNTY ATTORNEY	County Attorneys	-	144	0.00000%	-	-	-	N/A	N/A	N/A
LEE COUNTY ATTORNEY	County Attorneys	312,678	888,298	0.00464%	32,362	49,416	81,778	10.35%	15.80%	26.15%
LOGAN COUNTY ATTORNEY	County Attorneys	230,550	1,781,059	0.00931%	23,862	99,152	123,014	10.35%	43.01%	53.36%
MADISON COUNTY ATTORNEY	County Attorneys	944,115	6,472,384	0.03384%	97,716	360,399	458,115	10.35%	38.17%	48.52%
MAGOFFIN CO ATTORNEY	County Attorneys	77,520	195,563	0.00102%	8,023	10,863	18,886	10.35%	14.01%	24.36%
MCCRACKEN COUNTY ATTORNEY	County Attorneys	111,033	1,092,697	0.00571%	11,492	60,812	72,304	10.35%	54.77%	65.12%
MCCREARY COUNTY ATTORNEY	County Attorneys	336,834	1,920,823	0.01004%	34,862	106,927	141,789	10.35%	31.74%	42.09%
MEADE COUNTY ATTORNEY	County Attorneys	193,193	1,485,282	0.00777%	19,995	82,751	102,746	10.35%	42.83%	53.18%
MENIFEE COUNTY ATTORNEY	County Attorneys	105,186	568,840	0.00297%	10,887	31,631	42,518	10.35%	30.07%	40.42%
MERCER COUNTY ATTORNEY	County Attorneys	67,783	507,084	0.00265%	7,016	28,223	35,239	10.35%	41.64%	51.99%
MONROE CO ATTORNEY	County Attorneys	129,168	617,699	0.00323%	13,369	34,400	47,769	10.35%	26.63%	36.98%
MONTGOMERY CO ATTORNEY	County Attorneys	280,759	1,684,951	0.00881%	29,059	93,827	122,886	10.35%	33.42%	43.77%
MORGAN COUNTY ATTORNEY	County Attorneys	92,503	1,815,404	0.00949%	9,574	101,069	110,643	10.35%	109.26%	119.61%
OLDHAM COUNTY ATTORNEY	County Attorneys	425,395	1,690,959	0.00884%	44,028	94,147	138,175	10.35%	22.13%	32.48%
OWEN COUNTY ATTORNEY	County Attorneys	153,193	490,212	0.00256%	15,855	27,264	43,119	10.35%	17.80%	28.15%
PENDLETON COUNTY ATTORNEY	County Attorneys	-	155,600	0.00081%	-	8,627	8,627	N/A	N/A	N/A
POWELL COUNTY ATTORNEY	County Attorneys	-	26,895	0.00014%	-	1,491	1,491	N/A	N/A	N/A
PULASKI COUNTY ATTORNEY	County Attorneys	589,655	1,602,159	0.00838%	61,029	89,248	150,277	10.35%	15.14%	25.49%

**Kentucky Employees Retirement Plan (Non-Hazardous) - Retirement and Insurance Combined**  
**Actuarial Analysis of SB 249, House Substitute**  
**Based on the June 30, 2019 Actuarial Valuation**

**Exhibit 1. Calculation of Employer Required Contributions under Proposed Legislation**

Agency Name <sup>3</sup>	Agency Classification <sup>3</sup>	Projected Payroll FY 20/21	Fixed Percentage of the Total Amortization Cost		Required Contribution <sup>1</sup>			Effective Employer Contribution Rate <sup>2</sup> Required Contribution / Payroll		
			Accrued Liability based on June 30, 2019 Valuation	Fixed Allocation of Amortization Cost	Normal Cost Contributions	Amortization Cost	Total Required Contribution	Normal Cost Contributions	Amortization Cost	Total Estimated Required Contribution as a % of Expected Pay
			(4)	(5) = (4) / \$19,128M	(6) = (3) x 10.35%	(7) = (5) x \$1,118M	(8) = (6) + (7)	(9) = (6) / (3)	(10) = (7) / (3)	(11) = (8) / (3)
ROCKCASTLE CO ATTORNEY	County Attorneys	178,219	774,276	0.00405%	18,446	43,133	61,579	10.35%	24.20%	34.55%
ROWAN COUNTY ATTORNEY	County Attorneys	280,274	820,120	0.00429%	29,008	45,689	74,697	10.35%	16.30%	26.65%
SHELBY COUNTY ATTORNEY	County Attorneys	67,085	400,120	0.00209%	6,943	22,259	29,202	10.35%	33.18%	43.53%
SIMPSON COUNTY ATTORNEY	County Attorneys	67,315	521,989	0.00273%	6,967	29,075	36,042	10.35%	43.19%	53.54%
SPENCER COUNTY ATTORNEY	County Attorneys	353,031	1,200,709	0.00628%	36,539	66,883	103,422	10.35%	18.95%	29.30%
TRIGG COUNTY ATTORNEY	County Attorneys	258,541	933,350	0.00488%	26,759	51,972	78,731	10.35%	20.10%	30.45%
TRIMBLE COUNTY ATTORNEY	County Attorneys	293,780	749,934	0.00392%	30,406	41,748	72,154	10.35%	14.21%	24.56%
UNION COUNTY ATTORNEY	County Attorneys	46,000	293,278	0.00153%	4,761	16,295	21,056	10.35%	35.42%	45.77%
WAYNE COUNTY ATTORNEY	County Attorneys	110,319	668,657	0.00350%	11,418	37,275	48,693	10.35%	33.79%	44.14%
WEBSTER COUNTY ATTORNEY	County Attorneys	339,019	1,413,256	0.00739%	35,088	78,704	113,792	10.35%	23.22%	33.57%
WHITLEY COUNTY ATTORNEY	County Attorneys	285,233	2,013,956	0.01053%	29,522	112,145	141,667	10.35%	39.32%	49.67%
<b>Total</b>		<b>1,437,647,279</b>	<b>19,127,580,191</b>	<b>100.00000%</b>	<b>148,796,493</b>	<b>1,065,009,104</b>	<b>1,213,805,597</b>	<b>10.35%</b>	<b>74.08%</b>	<b>84.43%</b>
<b>Agencies that have ceased participation in the System:</b>										
KENTUCKY BAR ASSOCIATION	Non-P1 State Agencies	-	9,726,855	N/A	N/A	N/A	N/A	N/A	N/A	N/A
KENTUCKY ASSOCIATION OF CHILDREN'S ADVOCACY C	Non-P1 State Agencies	-	14,508	N/A	N/A	N/A	N/A	N/A	N/A	N/A
COMMONWEALTH CREDIT UNION	Non-P1 State Agencies	-	46,950,704	N/A	N/A	N/A	N/A	N/A	N/A	N/A
KENTUCKY EMPLOYERS MUTUAL INSURANCE	Non-P1 State Agencies	-	15,220,243	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total</b>		<b>1,437,647,279</b>	<b>19,199,492,501</b>	<b>100.00000%</b>	<b>148,796,493</b>	<b>1,065,009,104</b>	<b>1,213,805,597</b>	<b>10.35%</b>	<b>74.08%</b>	<b>84.43%</b>

**Summary of Above Information by Agency Classification**

Agency Classification	Projected Payroll FY 20/21	Fixed Percentage of the Total Amortization Cost		Required Contribution <sup>1</sup>			Effective Employer Contribution Rate <sup>2</sup> Required Contribution / Payroll		
		Accrued Liability based on June 30, 2019 Valuation	Fixed Allocation of Amortization Cost	Normal Cost Contributions	Amortization Cost	Total Required Contribution	Normal Cost Contributions	Amortization Cost	Total Estimated Required Contribution as a % of Expected Pay
Health Departments	93,217,225	1,281,433,525	6.69938%	9,647,985	71,349,002	80,996,987	10.35%	76.54%	86.89%
Non-P1 State Assoc/Corp.	27,552,699	221,740,635	1.15927%	2,851,705	12,346,332	15,198,037	10.35%	44.81%	55.16%
Non-P1 State Agencies	10,072,855	37,876,257	0.19803%	1,042,542	2,109,039	3,151,581	10.35%	20.94%	31.29%
Reg Mental Hlth Units	89,710,133	1,154,821,405	6.03745%	9,285,000	64,299,391	73,584,391	10.35%	71.67%	82.02%
Universities	103,975,361	1,091,633,491	5.70712%	10,761,451	60,781,348	71,542,799	10.35%	58.46%	68.81%
County Attorneys	14,398,238	93,467,865	0.48866%	1,490,216	5,204,273	6,694,489	10.35%	36.15%	46.50%
Legislative Branch	20,809,165	343,338,931	1.79500%	2,153,748	19,116,913	21,270,661	10.35%	91.87%	102.22%
Judicial Branch	58,730,183	469,266,488	2.45334%	6,078,573	26,128,298	32,206,871	10.35%	44.49%	54.84%
Executive Branch	1,019,181,420	14,434,001,594	75.46175%	105,485,273	803,674,508	909,159,781	10.35%	78.85%	89.20%

Notes and Assumptions

<sup>1</sup> Actual normal cost contributions will be based on an employer's actual salary for the fiscal year 2020/2021 multiplied by 10.35%.

<sup>2</sup> Required contribution as a percentage of pay shown for illustrative purposes only. Actual required contributions will be equal to 10.35% of an employer's actual payroll for fiscal year 2020/2021 plus the amortization cost shown in column (7).

<sup>3</sup> Agency names and classification information has been provided to GRS by KRS. We have reviewed this data for consistency but did not audit the data. GRS is not responsible for the accuracy or completeness of the information provided to us by KRS.

**Kentucky Employees Retirement Plan (Non-Hazardous) - Retirement and Insurance Combined**  
**Actuarial Analysis of SB 249, House Substitute**  
**Based on the June 30, 2019 Actuarial Valuation**

**Exhibit 2. Impact of Proposed Legislation on Employer Contribution Rates**

Agency Name <sup>1</sup>	Agency Classification <sup>1</sup>	Projected Payroll FY 20/21	Required Contribution			Effective Employer Contribution Rate Required Contribution / Payroll		
			Current Funding Arrangement	Proposed Legislation	Increase/(Decrease) due to Legislation	Current Funding Arrangement	Proposed Legislation	Increase/(Decrease) due to Legislation
			(4) = (3) x 93.01%	(5) = Exhibit 1, Column (8)	(6) = (5) - (4)	(7) = (4) / (3)	(8) = Exhibit 1, Column (11)	(9) = (8) - (7)
LEGISLATIVE BRANCH AGENCIES	LEGISLATIVE BRANCH	20,809,165	19,354,605	21,270,661	1,916,056	93.01%	102.22%	9.21%
JUDICIAL BRANCH AGENCIES	JUDICIAL BRANCH	58,730,183	54,624,943	32,206,871	(22,418,072)	93.01%	54.84%	-38.17%
EXECUTIVE BRANCH AGENCIES	EXECUTIVE BRANCH	1,019,181,420	947,940,636	909,159,781	(38,780,855)	93.01%	89.20%	-3.81%
LEX FAYETTE CO HLTH DEPT	Health Departments	6,279,010	5,840,107	5,608,134	(231,973)	93.01%	89.32%	-3.69%
LAKE CUMBERLAND DISTRICT	Health Departments	5,547,445	5,159,679	4,673,275	(486,404)	93.01%	84.24%	-8.77%
BARREN RVR DIST HLTH DEPT	Health Departments	5,032,523	4,680,750	4,354,686	(326,064)	93.01%	86.53%	-6.48%
GREEN RVR DIST HLTH DEPT	Health Departments	6,319,042	5,877,341	5,251,026	(626,315)	93.01%	83.10%	-9.91%
NORTHERN KY DIST HLTH DEP	Health Departments	6,243,649	5,807,218	3,663,708	(2,143,510)	93.01%	58.68%	-34.33%
LINCOLN TRL DIST HLTH DEP	Health Departments	3,473,278	3,230,496	4,098,837	868,341	93.01%	118.01%	25.00%
KY RIVER DIST HEALTH DEPT	Health Departments	2,808,126	2,611,838	4,221,057	1,609,219	93.01%	150.32%	57.31%
MADISON CO HEALTH DEP	Health Departments	3,681,668	3,424,319	3,363,504	(60,815)	93.01%	91.36%	-1.65%
CUMBERLAND VLY DIST HEALT	Health Departments	2,393,958	2,226,620	5,256,087	3,029,467	93.01%	219.56%	126.55%
WEDCO DIST HEALTH DEPT	Health Departments	2,630,208	2,446,356	1,840,879	(605,477)	93.01%	69.99%	-23.02%
FRANKLIN CO HEALTH DEPT	Health Departments	2,420,588	2,251,389	1,513,845	(737,544)	93.01%	62.54%	-30.47%
WHITLEY CO HEALTH DEPT	Health Departments	1,836,382	1,708,019	1,798,656	90,637	93.01%	97.95%	4.94%
PIKE CO HEALTH DEPT	Health Departments	1,816,056	1,689,114	1,589,194	(99,920)	93.01%	87.51%	-5.50%
THREE RIVERS DIST HLTH	Health Departments	1,405,324	1,307,092	1,417,817	110,725	93.01%	100.89%	7.88%
KNOX CO HEALTH DEPT	Health Departments	1,871,943	1,741,094	1,757,179	16,085	93.01%	93.87%	0.86%
PURCHASE DIST HLTH DEPT	Health Departments	1,962,251	1,825,090	2,699,368	874,278	93.01%	137.56%	44.55%
CLARK CO HEALTH DEPT	Health Departments	1,731,244	1,610,230	1,172,837	(437,393)	93.01%	67.75%	-25.26%
GATEWAY DIST HEALTH DEPT	Health Departments	2,071,219	1,926,441	1,653,944	(272,497)	93.01%	79.85%	-13.16%
N CENTRAL DIST HLTH DEPT	Health Departments	1,534,303	1,427,055	1,359,385	(67,670)	93.01%	88.60%	-4.41%
BREATHITT CO HEALTH DEPT	Health Departments	1,335,524	1,242,171	1,171,925	(70,246)	93.01%	87.75%	-5.26%
PENNYRILE DIST HLTH DEPT	Health Departments	1,606,165	1,493,894	1,076,288	(417,606)	93.01%	67.01%	-26.00%
MARSHALL CO HEALTH DEPT	Health Departments	1,436,565	1,336,149	1,106,021	(230,128)	93.01%	76.99%	-16.02%
CHRISTIAN CO HEALTH DEPT	Health Departments	1,287,747	1,197,733	877,191	(320,542)	93.01%	68.12%	-24.89%
MONTGOMERY CO HEALTH DEPT	Health Departments	1,435,257	1,334,933	810,452	(524,481)	93.01%	56.47%	-36.54%
HOPKINS CO HEALTH DEPT	Health Departments	1,446,874	1,345,738	1,141,700	(204,038)	93.01%	78.91%	-14.10%
JOHNSON CO HEALTH DEPT	Health Departments	1,214,044	1,129,182	987,779	(141,403)	93.01%	81.36%	-11.65%
FLOYD CO HEALTH CENTER	Health Departments	940,121	874,407	810,007	(64,400)	93.01%	86.16%	-6.85%
ASHLAND BOYD CO HEALTH DP	Health Departments	1,077,672	1,002,343	1,101,571	99,228	93.01%	102.22%	9.21%
LAUREL CO HEALTH DEPT	Health Departments	1,137,856	1,058,320	923,767	(134,553)	93.01%	81.18%	-11.83%
BULLITT CO HEALTH DEPT	Health Departments	1,194,114	1,110,645	893,273	(217,372)	93.01%	74.81%	-18.20%
BELL CO HEALTH DEPT	Health Departments	852,505	792,915	685,811	(107,104)	93.01%	80.45%	-12.56%
GREENUP CO HLTH DEPT	Health Departments	921,572	857,154	736,199	(120,955)	93.01%	79.89%	-13.12%
JESSAMINE CO HEALTH DEPT	Health Departments	952,499	885,919	582,205	(303,714)	93.01%	61.12%	-31.89%
GRAVES CO HEALTH CENTER	Health Departments	1,080,652	1,005,114	452,117	(552,997)	93.01%	41.84%	-51.17%
HARLAN CO HEALTH DEPT	Health Departments	934,178	868,879	498,621	(370,258)	93.01%	53.38%	-39.63%
OLDHAM CO HEALTH DEPT	Health Departments	987,904	918,850	685,766	(233,084)	93.01%	69.42%	-23.59%
ALLEN CO HEALTH DEPT	Health Departments	840,564	781,809	527,486	(254,323)	93.01%	62.75%	-30.26%
BUFFALO TRACE HEALTH DEPT	Health Departments	779,156	724,693	681,308	(43,385)	93.01%	87.44%	-5.57%
MUHLENBERG CO.HEALTH DEPT	Health Departments	661,770	615,512	507,596	(107,916)	93.01%	76.70%	-16.31%
MERCER CO HEALTH DEPT	Health Departments	696,882	648,170	634,878	(13,292)	93.01%	91.10%	-1.91%
LAWRENCE CO HEALTH DEPT	Health Departments	690,884	642,591	286,957	(355,634)	93.01%	41.53%	-51.48%
WOODFORD CO HEALTH DEPT	Health Departments	512,541	476,714	356,682	(120,032)	93.01%	69.59%	-23.42%
CALLOWAY CO HEALTH DEPT	Health Departments	565,019	525,524	288,840	(236,684)	93.01%	51.12%	-41.89%
MAGOFFIN CO HEALTH DEPT	Health Departments	544,522	506,460	416,438	(90,022)	93.01%	76.48%	-16.53%
MARTIN CO HEALTH DEPT	Health Departments	453,796	422,076	341,337	(80,739)	93.01%	75.22%	-17.79%
BOYLE CO HEALTH DEPT	Health Departments	551,379	512,838	410,438	(102,400)	93.01%	74.44%	-18.57%
BOURBON CO HEALTH CENTER	Health Departments	522,078	485,585	642,985	157,400	93.01%	123.16%	30.15%
ANDERSON CO HEALTH DEPT	Health Departments	424,133	394,486	326,551	(67,935)	93.01%	76.99%	-16.02%
LEWIS CO HEALTH DEPT	Health Departments	548,857	510,492	227,208	(283,284)	93.01%	41.40%	-51.61%
ESTILL CO HEALTH DEPT	Health Departments	481,325	447,680	360,480	(87,200)	93.01%	74.89%	-18.12%
LINCOLN CO HEALTH DEPT	Health Departments	434,068	403,727	317,568	(86,159)	93.01%	73.16%	-19.85%
BRECKINRIDGE CO HEALTH BD	Health Departments	544,432	506,376	485,335	(21,041)	93.01%	89.15%	-3.86%
GRAYSON COUNTY HEALTH DEPT	Health Departments	451,991	420,397	302,809	(117,588)	93.01%	66.99%	-26.02%
LITTLE SANDY DIST HEALTH	Health Departments	-	-	402,999	402,999	N/A	N/A	N/A

**Kentucky Employees Retirement Plan (Non-Hazardous) - Retirement and Insurance Combined**  
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**Based on the June 30, 2019 Actuarial Valuation**

**Exhibit 2. Impact of Proposed Legislation on Employer Contribution Rates**

Agency Name <sup>1</sup>	Agency Classification <sup>1</sup>	Projected Payroll FY 20/21	Required Contribution			Effective Employer Contribution Rate Required Contribution / Payroll		
			Current Funding Arrangement	Proposed Legislation	Increase/(Decrease) due to Legislation	Current Funding Arrangement	Proposed Legislation	Increase/(Decrease) due to Legislation
			(4) = (3) x 93.01%	(5) = Exhibit 1, Column (8)	(6) = (5) - (4)	(7) = (4) / (3)	(8) = Exhibit 1, Column (11)	(9) = (8) - (7)
GARRARD COUNTY HEALTH DPT	Health Departments	325,193	302,462	252,303	(50,159)	93.01%	77.59%	-15.42%
TODD CO HEALTH DEPT	Health Departments	586,208	545,232	321,707	(223,525)	93.01%	54.88%	-38.13%
FLEMING CO HEALTH DEP	Health Departments	348,816	324,434	280,309	(44,125)	93.01%	80.36%	-12.65%
MONROE CO HEALTH DEPT	Health Departments	379,290	352,778	213,918	(138,860)	93.01%	56.40%	-36.61%
BRACKEN CO HEALTH DEPT	Health Departments	348,044	323,716	170,214	(153,502)	93.01%	48.91%	-44.10%
POWELL CO HEALTH DEPT	Health Departments	298,757	277,874	264,797	(13,077)	93.01%	88.63%	-4.38%
CARTER CO HEALTH DEPT	Health Departments	328,054	305,123	141,733	(163,390)	93.01%	43.20%	-49.81%
KY HIGHER ED STUD LN CORP	Non-P1 State Assoc/Corp.	11,081,890	10,307,266	5,706,919	(4,600,347)	93.01%	51.50%	-41.51%
KENTUCKY HOUSING CORP	Non-P1 State Assoc/Corp.	9,887,127	9,196,017	6,495,548	(2,700,469)	93.01%	65.70%	-27.31%
CSG HEADQUARTERS	Non-P1 State Assoc/Corp.	3,572,893	3,323,148	1,443,004	(1,880,144)	93.01%	40.39%	-52.62%
KET FOUNDATION	Non-P1 State Assoc/Corp.	1,718,678	1,598,542	1,016,791	(581,751)	93.01%	59.16%	-33.85%
ASST OF COMMONWEALTH ATTY	Non-P1 State Assoc/Corp.	1,086,231	1,010,303	435,762	(574,541)	93.01%	40.12%	-52.89%
HIGHSCHOOL ATHLETIC ASSOC	Non-P1 State Assoc/Corp.	205,880	191,489	100,013	(91,476)	93.01%	48.58%	-44.43%
O A S I S	Non-P1 State Agencies	640,209	595,458	194,596	(400,862)	93.01%	30.40%	-62.61%
KDVA	Non-P1 State Agencies	871,207	810,310	225,533	(584,777)	93.01%	25.89%	-67.12%
B.R.A.S.S.	Non-P1 State Agencies	638,864	594,207	184,871	(409,336)	93.01%	28.94%	-64.07%
BLUEGRASS RAPE CRISIS CTR	Non-P1 State Agencies	569,641	529,823	211,787	(318,036)	93.01%	37.18%	-55.83%
SAFE HARBOR	Non-P1 State Agencies	651,225	605,704	140,462	(465,242)	93.01%	21.57%	-71.44%
SANCTUARY INC	Non-P1 State Agencies	634,076	589,754	205,356	(384,398)	93.01%	32.39%	-60.62%
LOTUS	Non-P1 State Agencies	820,631	763,269	144,789	(618,480)	93.01%	17.64%	-75.37%
BETHANY HOUSE ABUSE SHEL	Non-P1 State Agencies	462,201	429,893	141,133	(288,760)	93.01%	30.53%	-62.48%
SPRINGHAVEN INC	Non-P1 State Agencies	346,635	322,405	120,971	(201,434)	93.01%	34.90%	-58.11%
KASAP	Non-P1 State Agencies	401,601	373,529	94,071	(279,458)	93.01%	23.42%	-69.59%
SILVERLEAF	Non-P1 State Agencies	411,241	382,495	154,921	(227,574)	93.01%	37.67%	-55.34%
WOMEN AWARE	Non-P1 State Agencies	213,308	198,398	76,392	(122,006)	93.01%	35.81%	-57.20%
D.O.V.E.S.	Non-P1 State Agencies	433,267	402,982	118,329	(284,653)	93.01%	27.31%	-65.70%
NURSING HOME OMBUDSMAN	Non-P1 State Agencies	235,384	218,931	73,352	(145,579)	93.01%	31.16%	-61.85%
HOPE HARBOR INC	Non-P1 State Agencies	349,924	325,464	82,119	(243,345)	93.01%	23.47%	-69.54%
KY OFFICE OF BAR ADMISSIO	Non-P1 State Agencies	204,270	189,992	163,321	(26,671)	93.01%	79.95%	-13.06%
CHILD WATCH ADVOCACY CTR	Non-P1 State Agencies	227,648	211,735	65,843	(145,892)	93.01%	28.92%	-64.09%
FRANKLIN CO COUNCIL AGING	Non-P1 State Agencies	110,250	102,544	131,012	28,468	93.01%	118.83%	25.82%
JUDI'S PLACE FOR KIDS, INC.	Non-P1 State Agencies	363,068	337,690	80,817	(256,873)	93.01%	22.26%	-70.75%
CUMBERLAND V C A CENTER	Non-P1 State Agencies	300,383	279,386	76,885	(202,501)	93.01%	25.60%	-67.41%
KY ASSOC OF REGIONAL PROG	Non-P1 State Agencies	118,750	110,449	113,467	3,018	93.01%	95.55%	2.54%
BARREN RIVER CHILD ADVOCA	Non-P1 State Agencies	215,348	200,295	44,867	(155,428)	93.01%	20.83%	-72.18%
CHILD ADV CTR OF GRN RVR	Non-P1 State Agencies	156,406	145,473	48,032	(97,441)	93.01%	30.71%	-62.30%
MUN ELEC POW ASSOC OF KY	Non-P1 State Agencies	135,616	126,136	111,271	(14,865)	93.01%	82.05%	-10.96%
KY RIVER CHILD ADVOCACY	Non-P1 State Agencies	127,195	118,304	29,353	(88,951)	93.01%	23.08%	-69.93%
PENNYRILE CHILD ADV CTR	Non-P1 State Agencies	125,509	116,736	38,657	(78,079)	93.01%	30.80%	-62.21%
LAKE CUMB CHILD ADV CTR	Non-P1 State Agencies	178,427	165,955	48,820	(117,135)	93.01%	27.36%	-65.65%
BUFFALO TR CHILD ADV INC	Non-P1 State Agencies	96,571	89,821	24,053	(65,768)	93.01%	24.91%	-68.10%
GATEWAY CHILD ADVOCACY	Non-P1 State Agencies	34,000	31,623	6,501	(25,122)	93.01%	19.12%	-73.89%
NEW VISTA OF THE BLUEGRASS, INC.	Reg Mental Hlth Units	36,821,842	34,247,995	24,735,401	(9,512,594)	93.01%	67.18%	-25.83%
CUMBERLAND RIVER MHMR	Reg Mental Hlth Units	11,237,059	10,451,589	6,634,414	(3,817,175)	93.01%	59.04%	-33.97%
LIFESKILLS INC	Reg Mental Hlth Units	8,097,314	7,531,312	5,051,887	(2,479,425)	93.01%	62.39%	-30.62%
COMMUNICARE INC	Reg Mental Hlth Units	5,611,288	5,219,059	4,288,384	(930,675)	93.01%	76.42%	-16.59%
ADANTA/BEHAVIORAL HLTH SR	Reg Mental Hlth Units	5,028,478	4,676,987	5,477,212	800,225	93.01%	108.92%	15.91%
PENNYROYAL REG MHMR BD	Reg Mental Hlth Units	6,603,427	6,141,847	4,477,124	(1,664,723)	93.01%	67.80%	-25.21%
MOUNTAIN COMP CARE CENTER	Reg Mental Hlth Units	5,284,559	4,915,168	3,103,826	(1,811,342)	93.01%	58.73%	-34.28%
GREEN RVR REG MHMR BD	Reg Mental Hlth Units	2,625,640	2,442,108	2,086,849	(355,259)	93.01%	79.48%	-13.53%
NORTHERN KY REG MHMR BD	Reg Mental Hlth Units	148,611	138,223	3,206,468	3,068,245	93.01%	2157.62%	2064.61%
WESTERN KY REG MHMR ADV	Reg Mental Hlth Units	3,595,880	3,344,528	2,350,215	(994,313)	93.01%	65.36%	-27.65%
COMPREHEND INC REG MHMR B	Reg Mental Hlth Units	4,656,035	4,330,578	2,100,181	(2,230,397)	93.01%	45.11%	-47.90%
SEVEN CO SERVICES INC	Reg Mental Hlth Units	-	-	8,586,529	8,586,529	N/A	N/A	N/A
KY RIVER COMM CARE INC	Reg Mental Hlth Units	-	-	1,485,901	1,485,901	N/A	N/A	N/A
NORTHERN KY UNIVERSITY	Universities	33,051,008	30,740,743	15,487,332	(15,253,411)	93.01%	46.86%	-46.15%
EASTERN KY UNIV	Universities	14,964,357	13,918,348	14,858,975	940,627	93.01%	99.30%	6.29%
KCTCS	Universities	19,171,232	17,831,163	10,690,140	(7,141,023)	93.01%	55.76%	-37.25%

**Kentucky Employees Retirement Plan (Non-Hazardous) - Retirement and Insurance Combined**  
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WESTERN KENTUCKY UNIV	Universities	15,854,956	14,746,695	11,707,774	(3,038,921)	93.01%	73.84%	-19.17%
MURRAY STATE UNIV	Universities	11,391,807	10,595,520	8,587,362	(2,008,158)	93.01%	75.38%	-17.63%
MOREHEAD STATE UNIVERSITY	Universities	4,766,363	4,433,194	7,245,264	2,812,070	93.01%	152.01%	59.00%
KENTUCKY STATE UNIVERSITY	Universities	4,775,638	4,441,821	2,965,952	(1,475,869)	93.01%	62.11%	-30.90%
ALLEN COUNTY ATTORNEY	County Attorneys	73,736	68,582	99,968	31,386	93.01%	135.58%	42.57%
ANDERSON COUNTY ATTORNEY	County Attorneys	161,079	149,820	126,474	(23,346)	93.01%	78.52%	-14.49%
BARREN COUNTY ATTORNEY	County Attorneys	418,342	389,100	203,369	(185,731)	93.01%	48.61%	-44.40%
BATH COUNTY ATTORNEY	County Attorneys	-	-	107	107	N/A	N/A	N/A
BELL COUNTY ATTORNEY	County Attorneys	346,120	321,926	143,389	(178,537)	93.01%	41.43%	-51.58%
BOONE COUNTY ATTORNEY	County Attorneys	1,005,496	935,212	387,681	(547,531)	93.01%	38.56%	-54.45%
BOYLE COUNTY ATTORNEY	County Attorneys	171,740	159,735	26,402	(133,333)	93.01%	15.37%	-77.64%
BRECKINRIDGE CO ATTORNEY	County Attorneys	256,024	238,128	83,795	(154,333)	93.01%	32.73%	-60.28%
BULLITT COUNTY ATTORNEY	County Attorneys	105,419	98,050	50,103	(47,947)	93.01%	47.53%	-45.48%
CALLOWAY COUNTY ATTORNEY	County Attorneys	-	-	3,089	3,089	N/A	N/A	N/A
CARROLL COUNTY ATTORNEY	County Attorneys	212,670	197,804	70,682	(127,122)	93.01%	33.24%	-59.77%
CASEY COUNTY ATTORNEY	County Attorneys	176,393	164,063	70,975	(93,088)	93.01%	40.24%	-52.77%
CHILD SUPPORT ENFORCEMENT	County Attorneys	377,891	351,476	53,383	(298,093)	93.01%	14.13%	-78.88%
CHRISTIAN COUNTY ATTORNEY	County Attorneys	126,490	117,648	67,833	(49,815)	93.01%	53.63%	-39.38%
CLARK COUNTY ATTORNEY	County Attorneys	264,741	246,236	101,100	(145,136)	93.01%	38.19%	-54.82%
CRITTENDEN CO ATTORNEY	County Attorneys	114,306	106,316	32,173	(74,143)	93.01%	28.15%	-64.86%
DAVIESS COUNTY ATTORNEY	County Attorneys	227,589	211,681	111,418	(100,263)	93.01%	48.96%	-44.05%
EDMONSON COUNTY ATTORNEY	County Attorneys	149,318	138,881	41,866	(97,015)	93.01%	28.04%	-64.97%
FAYETTE CO ATTORNEY OFF	County Attorneys	214,370	199,386	196,848	(2,538)	93.01%	91.83%	-1.18%
FLOYD COUNTY ATTORNEY	County Attorneys	101,215	94,140	72,886	(21,254)	93.01%	72.01%	-21.00%
FRANKLIN COUNTY ATTORNEY	County Attorneys	488,950	454,772	319,734	(135,038)	93.01%	65.39%	-27.62%
GARRARD COUNTY ATTORNEY	County Attorneys	207,457	192,956	76,533	(116,423)	93.01%	36.89%	-56.12%
GRANT COUNTY CHILD SUPPOR	County Attorneys	202,677	188,510	41,212	(147,298)	93.01%	20.33%	-72.68%
GRAVES COUNTY ATTORNEY	County Attorneys	463,368	430,979	230,182	(200,797)	93.01%	49.68%	-43.33%
HANCOCK COUNTY ATTORNEY	County Attorneys	172,169	160,134	39,332	(120,802)	93.01%	22.84%	-70.17%
HARRISON COUNTY ATTORNEY	County Attorneys	36,413	33,868	10,159	(23,709)	93.01%	27.90%	-65.11%
HICKMAN COUNTY ATTORNEY	County Attorneys	185,703	172,722	76,517	(96,205)	93.01%	41.20%	-51.81%
HOPKINS COUNTY ATTORNEY	County Attorneys	240,933	224,092	122,492	(101,600)	93.01%	50.84%	-42.17%
JACKSON COUNTY ATTORNEY	County Attorneys	102,216	95,071	49,558	(45,513)	93.01%	48.48%	-44.53%
JEFFERSON CO ATTORNEY	County Attorneys	741,449	689,622	1,031,734	342,112	93.01%	139.15%	46.14%
JOHNSON COUNTY ATTORNEY	County Attorneys	-	-	12,887	12,887	N/A	N/A	N/A
KENTON COUNTY ATTORNEY	County Attorneys	115,000	106,962	68,774	(38,188)	93.01%	59.80%	-33.21%
KNOTT COUNTY ATTORNEY	County Attorneys	281,869	262,166	79,335	(182,831)	93.01%	28.15%	-64.86%
KNOX COUNTY ATTORNEY	County Attorneys	-	-	320	320	N/A	N/A	N/A
LARUE COUNTY ATTORNEY	County Attorneys	256,453	238,527	84,586	(153,941)	93.01%	32.98%	-60.03%
LAUREL COUNTY ATTORNEY	County Attorneys	72,261	67,210	27,182	(40,028)	93.01%	37.62%	-55.39%
LAWRENCE COUNTY ATTORNEY	County Attorneys	-	-	-	-	N/A	N/A	N/A
LEE COUNTY ATTORNEY	County Attorneys	312,678	290,822	81,778	(209,044)	93.01%	26.15%	-66.86%
LOGAN COUNTY ATTORNEY	County Attorneys	230,550	214,435	123,014	(91,421)	93.01%	53.36%	-39.65%
MADISON COUNTY ATTORNEY	County Attorneys	944,115	878,121	458,115	(420,006)	93.01%	48.52%	-44.49%
MAGOFFIN CO ATTORNEY	County Attorneys	77,520	72,101	18,886	(53,215)	93.01%	24.36%	-68.65%
MCCRACKEN COUNTY ATTORNEY	County Attorneys	111,033	103,272	72,304	(30,968)	93.01%	65.12%	-27.89%
MCCREARY COUNTY ATTORNEY	County Attorneys	336,834	313,289	141,789	(171,500)	93.01%	42.09%	-50.92%
MEADE COUNTY ATTORNEY	County Attorneys	193,193	179,689	102,746	(76,943)	93.01%	53.18%	-39.83%
MENIFEE COUNTY ATTORNEY	County Attorneys	105,186	97,833	42,518	(55,315)	93.01%	40.42%	-52.59%
MERCER COUNTY ATTORNEY	County Attorneys	67,783	63,045	35,239	(27,806)	93.01%	51.99%	-41.02%
MONROE CO ATTORNEY	County Attorneys	129,168	120,139	47,769	(72,370)	93.01%	36.98%	-56.03%
MONTGOMERY CO ATTORNEY	County Attorneys	280,759	261,134	122,886	(138,248)	93.01%	43.77%	-49.24%
MORGAN COUNTY ATTORNEY	County Attorneys	92,503	86,037	110,643	24,606	93.01%	119.61%	26.60%
OLDHAM COUNTY ATTORNEY	County Attorneys	425,395	395,660	138,175	(257,485)	93.01%	32.48%	-60.53%
OWEN COUNTY ATTORNEY	County Attorneys	153,193	142,485	43,119	(99,366)	93.01%	28.15%	-64.86%
PENDLETON COUNTY ATTORNEY	County Attorneys	-	-	8,627	8,627	N/A	N/A	N/A
POWELL COUNTY ATTORNEY	County Attorneys	-	-	1,491	1,491	N/A	N/A	N/A
PULASKI COUNTY ATTORNEY	County Attorneys	589,655	548,438	150,277	(398,161)	93.01%	25.49%	-67.52%

Kentucky Employees Retirement Plan (Non-Hazardous) - Retirement and Insurance Combined  
Actuarial Analysis of SB 249, House Substitute  
Based on the June 30, 2019 Actuarial Valuation

Exhibit 2. Impact of Proposed Legislation on Employer Contribution Rates

Agency Name <sup>1</sup>	Agency Classification <sup>1</sup>	Projected Payroll FY 20/21	Required Contribution			Effective Employer Contribution Rate Required Contribution / Payroll		
			Current Funding Arrangement	Proposed Legislation	Increase/(Decrease) due to Legislation	Current Funding Arrangement	Proposed Legislation	Increase/(Decrease) due to Legislation
			(4) = (3) x 93.01%	(5) = Exhibit 1, Column (8)	(6) = (5) - (4)	(7) = (4) / (3)	(8) = Exhibit 1, Column (11)	(9) = (8) - (7)
ROCKCASTLE CO ATTORNEY	County Attorneys	178,219	165,761	61,579	(104,182)	93.01%	34.55%	-58.46%
ROWAN COUNTY ATTORNEY	County Attorneys	280,274	260,683	74,697	(185,986)	93.01%	26.65%	-66.36%
SHELBY COUNTY ATTORNEY	County Attorneys	67,085	62,396	29,202	(33,194)	93.01%	43.53%	-49.48%
SIMPSON COUNTY ATTORNEY	County Attorneys	67,315	62,610	36,042	(26,568)	93.01%	53.54%	-39.47%
SPENCER COUNTY ATTORNEY	County Attorneys	353,031	328,354	103,422	(224,932)	93.01%	29.30%	-63.71%
TRIGG COUNTY ATTORNEY	County Attorneys	258,541	240,469	78,731	(161,738)	93.01%	30.45%	-62.56%
TRIMBLE COUNTY ATTORNEY	County Attorneys	293,780	273,245	72,154	(201,091)	93.01%	24.56%	-68.45%
UNION COUNTY ATTORNEY	County Attorneys	46,000	42,785	21,056	(21,729)	93.01%	45.77%	-47.24%
WAYNE COUNTY ATTORNEY	County Attorneys	110,319	102,608	48,693	(53,915)	93.01%	44.14%	-48.87%
WEBSTER COUNTY ATTORNEY	County Attorneys	339,019	315,322	113,792	(201,530)	93.01%	33.57%	-59.44%
WHITLEY COUNTY ATTORNEY	County Attorneys	285,233	265,295	141,667	(123,628)	93.01%	49.67%	-43.34%
Total		1,437,647,279	1,337,155,734	1,213,805,597	(123,350,137)	93.01%	84.43%	-8.58%

Summary of Above Information by Agency Classification

Agency Classification	Projected Payroll FY 20/21	Required Contribution			Effective Employer Contribution Rate		
		Current Plan	Proposed Legislation	Increase/(Decrease) due to Legislation	Current Plan	Proposed Legislation	Increase/(Decrease) due to Legislation
Health Departments	93,217,225	86,701,343	80,996,987	(5,704,356)	93.01%	86.89%	-6.12%
Non-P1 State Assoc/Corp.	27,552,699	25,626,765	15,198,037	(10,428,728)	93.01%	55.16%	-37.85%
Non-P1 State Agencies	10,072,855	9,368,761	3,151,581	(6,217,180)	93.01%	31.29%	-61.72%
Reg Mental Hlth Units	89,710,133	83,439,394	73,584,391	(9,855,003)	93.01%	82.02%	-10.99%
Universities	103,975,361	96,707,484	71,542,799	(25,164,685)	93.01%	68.81%	-24.20%
County Attorneys	14,398,238	13,391,803	6,694,489	(6,697,314)	93.01%	46.50%	-46.51%
Legislative Branch	20,809,165	19,354,605	21,270,661	1,916,056	93.01%	102.22%	9.21%
Judicial Branch	58,730,183	54,624,943	32,206,871	(22,418,072)	93.01%	54.84%	-38.17%
Executive Branch	1,019,181,420	947,940,636	909,159,781	(38,780,855)	93.01%	89.20%	-3.81%

Notes and Assumptions

<sup>1</sup> Agency names and classification information has been provided to GRS by KRS. We have reviewed this data for consistency but did not audit the data. GRS is not responsible for the accuracy or completeness of the information provided to us by KRS.

**SB 249 with Fixed Allocation  
Section 3.  
Comparison of Fiscal Impact  
Current Plan vs. Proposed Changes**

**Kentucky Retirement Systems**  
**Exhibit 3-1**  
**KERS Non-Hazardous Retirement Fund**  
**Actuarial Analysis of SB 249, House Substitute**  
**Comparison of Current Plan and Proposed Legislation**  
**(\$ in Millions)**

Fiscal Year 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	\$ 14,260	\$ -	13%	13%	0%	\$ 924	\$ 924	\$ -	64.3%	64.3%	0.0%
2020	14,192	14,192	-	14%	14%	0%	1,156	1,046	(110)	81.0%	73.3%	-7.7%
2021	13,840	13,952	112	16%	15%	-1%	1,151	1,042	(109)	81.0%	73.3%	-7.7%
2022	13,490	13,721	231	18%	17%	-1%	1,150	1,040	(110)	81.2%	73.4%	-7.8%
2023	13,127	13,483	356	20%	18%	-2%	1,147	1,037	(110)	81.2%	73.4%	-7.8%
2024	12,746	13,234	488	22%	19%	-3%	1,144	1,034	(110)	81.2%	73.4%	-7.8%
2025	12,345	12,972	627	24%	21%	-3%	1,142	1,032	(110)	81.2%	73.4%	-7.8%
2026	11,922	12,694	772	27%	22%	-5%	1,139	1,028	(111)	81.2%	73.3%	-7.9%
2027	11,476	12,403	927	29%	23%	-6%	1,136	1,026	(110)	81.2%	73.3%	-7.9%
2028	11,007	12,095	1,088	31%	25%	-6%	1,134	1,023	(111)	81.2%	73.3%	-7.9%
2029	10,512	11,771	1,259	34%	26%	-8%	1,132	1,021	(111)	81.2%	73.3%	-7.9%
2030	9,991	11,430	1,439	36%	27%	-9%	1,130	1,019	(111)	81.2%	73.2%	-8.0%
2031	9,442	11,071	1,629	39%	29%	-10%	1,130	1,019	(111)	81.2%	73.2%	-8.0%
2032	8,861	10,690	1,829	42%	30%	-12%	1,128	1,016	(112)	81.0%	73.0%	-8.0%
2033	8,250	10,290	2,040	46%	32%	-14%	1,129	1,017	(112)	81.0%	73.0%	-8.0%
2034	7,605	9,866	2,261	49%	34%	-15%	1,126	1,014	(112)	80.7%	72.7%	-8.0%
2035	6,926	9,422	2,496	53%	36%	-17%	1,128	1,015	(113)	80.7%	72.7%	-8.0%
2036	6,210	8,952	2,742	57%	38%	-19%	1,126	1,013	(113)	80.4%	72.3%	-8.1%
2037	5,457	8,458	3,001	62%	41%	-21%	1,130	1,017	(113)	80.4%	72.3%	-8.1%
2038	4,657	7,932	3,275	67%	44%	-23%	1,126	1,013	(113)	79.7%	71.7%	-8.0%
2039	3,821	7,383	3,562	72%	47%	-25%	1,131	1,018	(113)	79.7%	71.7%	-8.0%
2040	2,934	6,800	3,866	78%	50%	-28%	1,123	1,012	(111)	78.7%	70.9%	-7.8%
2041	2,009	6,192	4,183	85%	54%	-31%	1,128	1,016	(112)	78.7%	70.9%	-7.8%
2042	1,031	5,547	4,516	92%	58%	-34%	1,118	1,010	(108)	77.8%	70.2%	-7.6%
2043	-	4,874	4,874	100%	62%	-38%	64	1,014	950	4.4%	70.2%	65.8%
2044	-	4,162	4,162	100%	67%	-33%	64	1,009	945	4.4%	69.6%	65.2%
2045	-	3,418	3,418	100%	73%	-27%	63	1,012	949	4.4%	69.6%	65.2%
2046	-	2,631	2,631	100%	79%	-21%	63	1,009	946	4.3%	69.3%	65.0%
2047	-	1,805	1,805	100%	85%	-15%	63	1,012	949	4.3%	69.3%	65.0%
2048	-	933	933	100%	92%	-8%	63	1,015	952	4.3%	69.3%	65.0%
2049	-	-	-	100%	100%	0%	62	62	-	4.3%	4.3%	0.0%
2050	-	-	-	100%	100%	0%	63	63	-	4.2%	4.2%	0.0%
2051	-	-	-	100%	100%	0%	64	64	-	4.2%	4.2%	0.0%
2052	-	-	-	100%	100%	0%	65	65	-	4.2%	4.2%	0.0%
2053	-	-	-	100%	100%	0%	66	66	-	4.2%	4.2%	0.0%

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**Kentucky Retirement Systems**  
**Exhibit 3-2**  
**KERS Non-Hazardous Insurance Fund**  
**Actuarial Analysis of SB 249, House Substitute**  
**Comparison of Current Plan and Proposed Legislation**  
**(\$ in Millions)**

Fiscal Year 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	158	(13)	12.0%	11.2%	-0.8%
2021	1,673	1,686	13	42%	41%	-1%	170	158	(12)	12.0%	11.2%	-0.8%
2022	1,633	1,660	27	45%	44%	-1%	167	154	(13)	11.8%	10.9%	-0.9%
2023	1,595	1,636	41	47%	46%	-1%	166	154	(12)	11.8%	10.9%	-0.9%
2024	1,550	1,607	57	50%	48%	-2%	163	151	(12)	11.6%	10.7%	-0.9%
2025	1,505	1,578	73	52%	49%	-3%	163	150	(13)	11.6%	10.7%	-0.9%
2026	1,454	1,544	90	54%	51%	-3%	159	147	(12)	11.4%	10.5%	-0.9%
2027	1,403	1,512	109	56%	53%	-3%	159	146	(13)	11.4%	10.5%	-0.9%
2028	1,346	1,474	128	58%	54%	-4%	155	143	(12)	11.2%	10.3%	-0.9%
2029	1,288	1,437	149	60%	56%	-4%	155	142	(13)	11.2%	10.3%	-0.9%
2030	1,225	1,396	171	62%	57%	-5%	151	139	(12)	10.9%	10.0%	-0.9%
2031	1,161	1,356	195	64%	58%	-6%	151	139	(12)	10.9%	10.0%	-0.9%
2032	1,090	1,310	220	66%	60%	-6%	148	136	(12)	10.7%	9.8%	-0.9%
2033	1,018	1,264	246	68%	61%	-7%	148	136	(12)	10.7%	9.8%	-0.9%
2034	940	1,215	275	71%	62%	-9%	146	133	(13)	10.5%	9.6%	-0.9%
2035	858	1,162	304	73%	63%	-10%	146	134	(12)	10.5%	9.6%	-0.9%
2036	770	1,106	336	76%	65%	-11%	144	132	(12)	10.3%	9.5%	-0.8%
2037	679	1,049	370	78%	67%	-11%	145	132	(13)	10.3%	9.5%	-0.8%
2038	581	986	405	81%	68%	-13%	143	131	(12)	10.1%	9.3%	-0.8%
2039	478	921	443	85%	70%	-15%	143	131	(12)	10.1%	9.3%	-0.8%
2040	368	850	482	88%	72%	-16%	141	130	(11)	9.9%	9.1%	-0.8%
2041	252	777	525	92%	74%	-18%	142	130	(12)	9.9%	9.1%	-0.8%
2042	128	697	569	96%	77%	-19%	139	129	(10)	9.7%	9.0%	-0.7%
2043	-	615	615	100%	80%	-20%	6	129	123	0.4%	9.0%	8.6%
2044	-	527	527	100%	82%	-18%	6	128	122	0.4%	8.9%	8.5%
2045	-	434	434	100%	85%	-15%	6	129	123	0.4%	8.9%	8.5%
2046	-	334	334	100%	89%	-11%	6	128	122	0.4%	8.8%	8.4%
2047	-	230	230	100%	92%	-8%	6	128	122	0.4%	8.8%	8.4%
2048	-	118	118	100%	96%	-4%	5	127	122	0.4%	8.7%	8.3%
2049	-	-	-	100%	100%	0%	5	5	-	0.4%	0.4%	0.0%
2050	-	-	-	100%	100%	0%	5	5	-	0.4%	0.4%	0.0%
2051	-	-	-	100%	100%	0%	5	5	-	0.3%	0.3%	0.0%
2052	-	-	-	100%	100%	0%	5	5	-	0.3%	0.3%	0.0%
2053	-	-	-	100%	100%	0%	5	5	-	0.3%	0.3%	0.0%

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**SB 249 with Fixed Allocation**  
**Section 4.**  
**Projected Cost of the Retirement and Insurance**  
**Current Plan**

**Kentucky Retirement Systems**  
**Exhibit 4-1**  
**Actuarial Analysis of SB 249, House Substitute**  
**Actuarial Analysis of HB171, GA Version (amended for a 30-year amortization period as of July 1, 2019)**  
**Current Plan (Amortization Period = 24 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 16,466	\$ 2,206	\$ 14,260	13%	\$ 924	\$ 72	\$ 1,438	64.26%	74.54%	\$ 996	\$ (1,008)	\$ (12)	\$ 117
2020	16,493	2,301	14,192	14%	1,156	71	1,428	80.98%	80.98%	1,227	(1,024)	203	128
2021	16,500	2,660	13,840	16%	1,151	71	1,422	80.98%	81.27%	1,222	(1,038)	184	145
2022	16,489	2,999	13,490	18%	1,150	71	1,417	81.21%	81.21%	1,221	(1,051)	170	162
2023	16,459	3,332	13,127	20%	1,147	71	1,412	81.21%	81.20%	1,218	(1,065)	153	179
2024	16,410	3,664	12,746	22%	1,144	70	1,409	81.23%	81.23%	1,214	(1,077)	137	196
2025	16,342	3,997	12,345	24%	1,142	70	1,406	81.23%	81.22%	1,212	(1,089)	123	213
2026	16,255	4,333	11,922	27%	1,139	70	1,402	81.20%	81.20%	1,209	(1,100)	109	230
2027	16,149	4,673	11,476	29%	1,136	70	1,399	81.20%	81.19%	1,206	(1,110)	96	248
2028	16,024	5,017	11,007	31%	1,134	70	1,396	81.20%	81.20%	1,204	(1,118)	86	266
2029	15,880	5,368	10,512	34%	1,132	70	1,394	81.20%	81.19%	1,202	(1,121)	81	284
2030	15,724	5,733	9,991	36%	1,130	70	1,393	81.16%	81.16%	1,200	(1,126)	74	303
2031	15,552	6,110	9,442	39%	1,130	70	1,393	81.16%	81.12%	1,200	(1,128)	72	323
2032	15,366	6,505	8,861	42%	1,128	70	1,393	81.00%	81.00%	1,198	(1,128)	70	343
2033	15,168	6,918	8,250	46%	1,129	70	1,394	81.00%	80.88%	1,199	(1,127)	72	365
2034	14,959	7,354	7,605	49%	1,126	70	1,395	80.72%	80.72%	1,196	(1,124)	72	388
2035	14,740	7,814	6,926	53%	1,128	70	1,397	80.72%	80.57%	1,198	(1,119)	79	412
2036	14,515	8,305	6,210	57%	1,126	70	1,401	80.36%	80.36%	1,196	(1,109)	87	438
2037	14,286	8,829	5,457	62%	1,130	70	1,406	80.36%	80.07%	1,200	(1,097)	103	466
2038	14,056	9,399	4,657	67%	1,126	71	1,413	79.66%	79.66%	1,197	(1,082)	115	496
2039	13,830	10,009	3,821	72%	1,131	71	1,420	79.66%	79.26%	1,202	(1,067)	135	529
2040	13,608	10,674	2,934	78%	1,123	71	1,426	78.73%	78.73%	1,194	(1,049)	145	564
2041	13,392	11,383	2,009	85%	1,128	72	1,433	78.73%	78.39%	1,200	(1,032)	168	602
2042	13,183	12,152	1,031	92%	1,118	72	1,438	77.75%	77.75%	1,190	(1,014)	176	643
2043	12,980	12,980	-	100%	64	72	1,444	4.44%	4.44%	136	(996)	(860)	658
2044	12,785	12,785	-	100%	64	72	1,448	4.40%	4.40%	136	(979)	(843)	648
2045	12,599	12,599	-	100%	63	73	1,453	4.36%	4.36%	136	(961)	(825)	639
2046	12,421	12,421	-	100%	63	73	1,457	4.32%	4.32%	136	(943)	(807)	629
2047	12,252	12,252	-	100%	63	73	1,461	4.29%	4.29%	136	(925)	(789)	620
2048	12,093	12,093	-	100%	63	73	1,465	4.27%	4.27%	136	(907)	(771)	612
2049	11,944	11,944	-	100%	62	73	1,468	4.25%	4.25%	135	(888)	(753)	604
2050	11,809	11,809	-	100%	63	75	1,494	4.23%	4.23%	138	(870)	(732)	597
2051	11,687	11,687	-	100%	64	76	1,523	4.22%	4.22%	140	(853)	(713)	590
2052	11,581	11,581	-	100%	65	78	1,552	4.21%	4.21%	143	(836)	(693)	584
2053	11,488	11,488	-	100%	66	79	1,583	4.20%	4.20%	145	(821)	(676)	579

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 4-2**  
**KERS Non-Hazardous Insurance Fund**  
**Actuarial Analysis of SB 249, House Substitute**  
**Current Plan (Amortization Period = 24 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 2,733	\$ 991	\$ 1,742	36%	\$ 165	\$ 6	\$ 1,431	11.50%	10.65%	\$ 171	\$ (133)	\$ 38	\$ 63
2020	2,808	1,090	1,718	39%	171	6	1,421	12.03%	12.03%	177	(137)	40	70
2021	2,882	1,209	1,673	42%	170	7	1,415	12.03%	11.99%	177	(145)	32	76
2022	2,951	1,318	1,633	45%	167	7	1,410	11.83%	11.83%	174	(153)	21	83
2023	3,015	1,420	1,595	47%	166	8	1,406	11.83%	11.73%	174	(161)	13	89
2024	3,072	1,522	1,550	50%	163	8	1,402	11.63%	11.63%	171	(170)	1	95
2025	3,123	1,618	1,505	52%	163	9	1,399	11.63%	11.53%	172	(180)	(8)	101
2026	3,165	1,711	1,454	54%	159	9	1,396	11.40%	11.40%	168	(189)	(21)	106
2027	3,200	1,797	1,403	56%	159	10	1,393	11.40%	11.28%	169	(199)	(30)	111
2028	3,224	1,878	1,346	58%	155	10	1,390	11.15%	11.15%	165	(208)	(43)	116
2029	3,239	1,951	1,288	60%	155	11	1,388	11.15%	11.03%	166	(217)	(51)	120
2030	3,245	2,020	1,225	62%	151	11	1,387	10.89%	10.89%	162	(224)	(62)	124
2031	3,244	2,083	1,161	64%	151	11	1,387	10.89%	10.78%	162	(229)	(67)	128
2032	3,235	2,145	1,090	66%	148	12	1,387	10.66%	10.66%	160	(233)	(73)	132
2033	3,221	2,203	1,018	68%	148	12	1,388	10.66%	10.58%	160	(236)	(76)	135
2034	3,203	2,263	940	71%	146	13	1,389	10.48%	10.48%	159	(238)	(79)	139
2035	3,180	2,322	858	73%	146	13	1,391	10.48%	10.40%	159	(238)	(79)	143
2036	3,156	2,386	770	76%	144	13	1,395	10.32%	10.32%	157	(236)	(79)	147
2037	3,132	2,453	679	78%	145	13	1,401	10.32%	10.23%	158	(234)	(76)	151
2038	3,108	2,527	581	81%	143	14	1,407	10.13%	10.13%	157	(232)	(75)	156
2039	3,085	2,607	478	85%	143	14	1,414	10.13%	10.05%	157	(229)	(72)	161
2040	3,063	2,695	368	88%	141	14	1,421	9.93%	9.93%	155	(226)	(71)	166
2041	3,043	2,791	252	92%	142	14	1,427	9.93%	9.87%	156	(223)	(67)	172
2042	3,024	2,896	128	96%	139	14	1,433	9.67%	9.67%	153	(219)	(66)	179
2043	3,009	3,009	-	100%	6	14	1,438	0.42%	0.42%	20	(216)	(196)	182
2044	2,995	2,995	-	100%	6	14	1,443	0.41%	0.41%	20	(214)	(194)	181
2045	2,983	2,983	-	100%	6	14	1,447	0.40%	0.40%	20	(212)	(192)	180
2046	2,971	2,971	-	100%	6	14	1,451	0.38%	0.38%	20	(212)	(192)	180
2047	2,960	2,960	-	100%	6	15	1,455	0.38%	0.38%	21	(212)	(191)	179
2048	2,947	2,947	-	100%	5	15	1,459	0.37%	0.37%	20	(212)	(192)	178
2049	2,934	2,934	-	100%	5	15	1,463	0.36%	0.36%	20	(213)	(193)	177
2050	2,919	2,919	-	100%	5	15	1,489	0.35%	0.35%	20	(213)	(193)	176
2051	2,903	2,903	-	100%	5	15	1,517	0.34%	0.34%	20	(214)	(194)	175
2052	2,885	2,885	-	100%	5	15	1,546	0.32%	0.32%	20	(214)	(194)	174
2053	2,867	2,867	-	100%	5	16	1,577	0.31%	0.31%	21	(214)	(193)	173

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.

**SB 249 with Fixed Allocation  
Section 5.  
Projected Cost of the Retirement and Insurance  
Proposed Legislation**

**Kentucky Retirement Systems**  
**Exhibit 5-1**  
**KERS Non-Hazardous Retirement Fund**  
**Actuarial Analysis of SB 249, House Substitute**  
**Proposed Plan (Amortization Period = 30 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	1	0	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2019	\$ 16,466	\$ 2,206	\$ 14,260	13%	\$ 924	\$ 72	\$ 1,438	64.26%	74.54%	\$ 996	\$ (1,008)	\$ (12)	\$ 117
2020	16,493	2,301	14,192	14%	1,046	71	1,428	73.28%	73.28%	1,117	(1,024)	93	125
2021	16,500	2,548	13,952	15%	1,042	71	1,422	73.28%	73.51%	1,113	(1,038)	75	136
2022	16,489	2,768	13,721	17%	1,040	71	1,417	73.43%	73.43%	1,111	(1,051)	60	147
2023	16,459	2,976	13,483	18%	1,037	71	1,412	73.43%	73.40%	1,108	(1,065)	43	157
2024	16,410	3,176	13,234	19%	1,034	70	1,409	73.39%	73.39%	1,104	(1,077)	27	167
2025	16,342	3,370	12,972	21%	1,032	70	1,406	73.39%	73.36%	1,102	(1,089)	13	177
2026	16,255	3,561	12,694	22%	1,028	70	1,402	73.31%	73.31%	1,098	(1,100)	(2)	187
2027	16,149	3,746	12,403	23%	1,026	70	1,399	73.31%	73.28%	1,096	(1,110)	(14)	196
2028	16,024	3,929	12,095	25%	1,023	70	1,396	73.26%	73.26%	1,093	(1,118)	(25)	206
2029	15,880	4,109	11,771	26%	1,021	70	1,394	73.26%	73.23%	1,091	(1,121)	(30)	215
2030	15,724	4,294	11,430	27%	1,019	70	1,393	73.17%	73.17%	1,089	(1,126)	(37)	224
2031	15,552	4,481	11,071	29%	1,019	70	1,393	73.17%	73.11%	1,089	(1,128)	(39)	234
2032	15,366	4,676	10,690	30%	1,016	70	1,393	72.97%	72.97%	1,086	(1,128)	(42)	244
2033	15,168	4,878	10,290	32%	1,017	70	1,394	72.97%	72.84%	1,087	(1,127)	(40)	255
2034	14,959	5,093	9,866	34%	1,014	70	1,395	72.68%	72.68%	1,084	(1,124)	(40)	266
2035	14,740	5,318	9,422	36%	1,015	70	1,397	72.68%	72.52%	1,085	(1,119)	(34)	278
2036	14,515	5,563	8,952	38%	1,013	70	1,401	72.32%	72.32%	1,083	(1,109)	(26)	291
2037	14,286	5,828	8,458	41%	1,017	70	1,406	72.32%	72.05%	1,087	(1,097)	(10)	306
2038	14,056	6,124	7,932	44%	1,013	71	1,413	71.70%	71.70%	1,084	(1,082)	2	322
2039	13,830	6,447	7,383	47%	1,018	71	1,420	71.70%	71.33%	1,089	(1,067)	22	339
2040	13,608	6,808	6,800	50%	1,012	71	1,426	70.93%	70.93%	1,083	(1,049)	34	358
2041	13,392	7,200	6,192	54%	1,016	72	1,433	70.93%	70.59%	1,088	(1,032)	56	379
2042	13,183	7,636	5,547	58%	1,010	72	1,438	70.21%	70.21%	1,082	(1,014)	68	403
2043	12,980	8,106	4,874	62%	1,014	72	1,444	70.21%	69.94%	1,086	(996)	90	428
2044	12,785	8,623	4,162	67%	1,009	72	1,448	69.64%	69.64%	1,081	(979)	102	455
2045	12,599	9,181	3,418	73%	1,012	73	1,453	69.64%	69.46%	1,085	(961)	124	485
2046	12,421	9,790	2,631	79%	1,009	73	1,457	69.26%	69.26%	1,082	(943)	139	518
2047	12,252	10,447	1,805	85%	1,012	73	1,461	69.26%	69.21%	1,085	(925)	160	553
2048	12,093	11,160	933	92%	1,015	73	1,465	69.29%	69.29%	1,088	(907)	181	591
2049	11,944	11,944	-	100%	62	73	1,468	4.25%	4.25%	135	(888)	(753)	607
2050	11,809	11,809	-	100%	63	75	1,494	4.23%	4.23%	138	(870)	(732)	600
2051	11,687	11,687	-	100%	64	76	1,523	4.22%	4.22%	140	(853)	(713)	593
2052	11,581	11,581	-	100%	65	78	1,552	4.21%	4.21%	143	(836)	(693)	587
2053	11,488	11,488	-	100%	66	79	1,583	4.20%	4.20%	145	(821)	(676)	582

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan (Exhibit 3-2), except that the funding period is 30 years at June 30, 2019 (rather than the current funding period of 24 years at June 30, 2019).

**Kentucky Retirement Systems**  
**Exhibit 5-2**  
**KERS Non-Hazardous Insurance Fund**  
**Actuarial Analysis of SB 249, House Substitute**  
**Proposed Plan (Amortization Period = 30 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 2,733	\$ 991	\$ 1,742	36%	\$ 165	\$ 6	\$ 1,431	11.50%	10.65%	\$ 171	\$ (133)	\$ 38	\$ 63
2020	2,808	1,090	1,718	39%	158	6	1,421	11.15%	11.15%	164	(137)	27	69
2021	2,882	1,196	1,686	41%	158	7	1,415	11.15%	11.09%	165	(145)	20	75
2022	2,951	1,291	1,660	44%	154	7	1,410	10.94%	10.94%	161	(153)	8	81
2023	3,015	1,379	1,636	46%	154	8	1,406	10.94%	10.84%	162	(161)	1	86
2024	3,072	1,465	1,607	48%	151	8	1,402	10.74%	10.74%	159	(170)	(11)	91
2025	3,123	1,545	1,578	49%	150	9	1,399	10.74%	10.64%	159	(180)	(21)	96
2026	3,165	1,621	1,544	51%	147	9	1,396	10.51%	10.51%	156	(189)	(33)	100
2027	3,200	1,688	1,512	53%	146	10	1,393	10.51%	10.38%	156	(199)	(43)	104
2028	3,224	1,750	1,474	54%	143	10	1,390	10.25%	10.25%	153	(208)	(55)	108
2029	3,239	1,802	1,437	56%	142	11	1,388	10.25%	10.13%	153	(217)	(64)	111
2030	3,245	1,849	1,396	57%	139	11	1,387	10.00%	10.00%	150	(224)	(74)	113
2031	3,244	1,888	1,356	58%	139	11	1,387	10.00%	9.89%	150	(229)	(79)	116
2032	3,235	1,925	1,310	60%	136	12	1,387	9.77%	9.77%	148	(233)	(85)	118
2033	3,221	1,957	1,264	61%	136	12	1,388	9.77%	9.70%	148	(236)	(88)	120
2034	3,203	1,988	1,215	62%	133	13	1,389	9.60%	9.60%	146	(238)	(92)	121
2035	3,180	2,018	1,162	63%	134	13	1,391	9.60%	9.53%	147	(238)	(91)	123
2036	3,156	2,050	1,106	65%	132	13	1,395	9.45%	9.45%	145	(236)	(91)	125
2037	3,132	2,083	1,049	67%	132	13	1,401	9.45%	9.37%	145	(234)	(89)	127
2038	3,108	2,122	986	68%	131	14	1,407	9.29%	9.29%	145	(232)	(87)	130
2039	3,085	2,164	921	70%	131	14	1,414	9.29%	9.22%	145	(229)	(84)	133
2040	3,063	2,213	850	72%	130	14	1,421	9.13%	9.13%	144	(226)	(82)	136
2041	3,043	2,266	777	74%	130	14	1,427	9.13%	9.08%	144	(223)	(79)	139
2042	3,024	2,327	697	77%	129	14	1,433	9.00%	9.00%	143	(219)	(76)	143
2043	3,009	2,394	615	80%	129	14	1,438	9.00%	8.95%	143	(216)	(73)	147
2044	2,995	2,468	527	82%	128	14	1,443	8.90%	8.90%	142	(214)	(72)	152
2045	2,983	2,549	434	85%	129	14	1,447	8.90%	8.86%	143	(212)	(69)	157
2046	2,971	2,637	334	89%	128	14	1,451	8.79%	8.79%	142	(212)	(70)	163
2047	2,960	2,730	230	92%	128	15	1,455	8.79%	8.77%	143	(212)	(69)	168
2048	2,947	2,829	118	96%	127	15	1,459	8.71%	8.71%	142	(212)	(70)	175
2049	2,934	2,934	-	100%	5	15	1,463	0.36%	0.36%	20	(213)	(193)	177
2050	2,919	2,919	-	100%	5	15	1,489	0.35%	0.35%	20	(213)	(193)	176
2051	2,903	2,903	-	100%	5	15	1,517	0.34%	0.34%	20	(214)	(194)	175
2052	2,885	2,885	-	100%	5	15	1,546	0.32%	0.32%	20	(214)	(194)	174
2053	2,867	2,867	-	100%	5	16	1,577	0.31%	0.31%	21	(214)	(193)	173

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan (Exhibit 4-2), except that the funding period is 30 years at June 30, 2019 (rather than the current funding period of 24 years at June 30, 2019).



March 23, 2020

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

**Re: Actuarial Analysis of Proposed Legislation SB 249 (House Substitute) and its Financial Impact on the Kentucky Retirement Systems (excluding the KERS Non-Hazardous funds)**

Dear Mr. Eager:

We have reviewed the proposed changes in the proposed legislation SB 249 (House Substitute) 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). **Except for the inclusion of the fiscal impact in the summary below, this letter excludes the fiscal analysis and comments related to the KERS Non-Hazardous funds. Please refer to our other letter dated March 23, 2020 regarding SB 249 (House Substitute) for our comments relating to those funds. These two letters should be considered together as a complete Actuarial Analysis on this proposed legislation.**

### Summary of Fiscal Impact

The proposed legislation increases the unfunded liability amortization period from 24 years to 30 years as of June 30, 2019 and freezes the CERS employer contribution rates for one year. Increasing the amortization period does not change the liability of or the projected benefit payments to be paid from the retirement and insurance funds. Rather it increases the number of years employers are expected to pay for the current unfunded liability, which results in a decrease in the annual contribution requirement.

#### Impact on Employer Contribution Requirements for FY 2020/2021

Plan	Actuarially Determined Contribution		Budgeted Employer Contribution		Decrease in FY 20/21 Contribution
	Current	Proposed	Current	Proposed	
KERS Hazardous	38.71%	36.00%	38.71%	36.00%	\$4 million
CERS Non-Hazardous	31.99%	29.24%	26.95%	24.06%	\$74 million
CERS Hazardous	56.78%	51.88%	44.33%	39.58%	\$27 million
SPRS	156.97%	143.48%	156.97%	143.48%	\$7 million
<b>Total Decrease in FY 20/21 Contributions (All Systems):</b>					<b>\$235 million<sup>1</sup></b>
<sup>1</sup> Includes \$123 million decrease in employer contributions for the KERS Non-Hazardous Funds					

Section 1 of the enclosed exhibits provides a 35-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 35-year projection of the funds under the current plan provisions and section 3 of the enclosed exhibits provides a 35-year projection of the funds under the proposed funding methods.

### **Comments on Proposed Legislation**

The amortization period of the unfunded liability was set to 30 years in the year 2007. With 24 years remaining in the funding period, the amortization period was re-set to 30 years again in the year 2013. This is the current amortization period in statute, with 24 years remaining as of the last actuarial valuation date of June 30, 2019. The proposed legislation would again re-set the amortization period of the unfunded liability as of June 30, 2019 to be 30 years. Any future increases or decreases in the unfunded liability after the June 30, 2019 actuarial valuation would be amortized over 20 years as of the date of the actuarial valuation they are recognized.

**If the proposed legislation is passed, we believe this establishes a pattern of the General Assembly re-setting the amortization period every five to seven years. When an amortization period is continually re-set in this pattern, the unfunded liability and the financial condition of the Systems will not ever materially improve.**

*CERS Retirement and Insurance Funds* – While the CERS Non-Hazardous and Hazardous Retirement Systems are relatively better funded than other funds in the System with funded ratios of 49% and 45%, respectively, the funded ratios of both these Systems are in the bottom 20<sup>th</sup> percentile of funded ratios for large retirement systems in the country. Because the calculation of the contribution rates for these Systems includes an assumption that the covered payroll will increase at the rate of 2.00% per year, the contributions these Systems will receive for the next several years will be insufficient to finance the interest on the unfunded actuarial accrued liability (i.e. negative amortization). As the projections show for the CERS Non-Hazardous Retirement System, the unfunded actuarial accrued liability is projected to increase from the current \$7.3 billion to \$7.5 billion in the year 2023 and is not projected to decrease below the current unfunded liability amount until the year 2029. **Given the historical pattern of the General Assembly resetting the amortization period, we believe this change imposes significant long-term financial risk to both CERS Systems. Given their current financial condition and these potential financial risks, we recommend the proposed legislation keep the current funding period for the CERS Systems.**

This proposed legislation includes a provision that a county (or counties) will be responsible for paying a share of the actuarial cost in the event an independent district board of health ceases to exist or if a county withdraws from an independent district board of health. This provision does not alter the calculation of an entity's actuarial cost, but will improve the likelihood the System receives contributions from health departments (and counties) when these health departments cease to



operate or go through an underlying business restructure that would otherwise result in deficient contributions to KRS.

### **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.

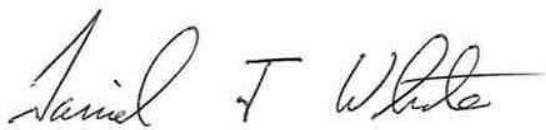
Our calculations are based upon assumptions regarding future events, which may or may not materialize. Depending on actual plan experience, actual results could deviate significantly from our projections.

### **Closing**

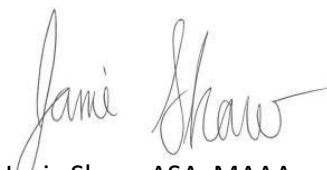
We are not attorneys, and we cannot provide a legal opinion regarding the changes in this proposed legislation. Nothing in this letter should be construed as providing legal, investment or tax advice.

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

**SB 249 (House Substitute)**

**Section 1.**

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

**Kentucky Retirement Systems**  
**Exhibit 1-1**  
**KERS Hazardous Retirement Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Comparison of Current Plan and Proposed Legislation**  
**(\$ in Millions)**

Fiscal Year 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	54	(4)	38.7%	36.0%	-2.7%
2021	532	536	4	58%	58%	0%	59	55	(4)	38.7%	36.0%	-2.7%
2022	517	526	9	60%	60%	0%	57	53	(4)	37.3%	34.7%	-2.6%
2023	506	519	13	62%	61%	-1%	57	53	(4)	37.3%	34.7%	-2.6%
2024	493	511	18	64%	62%	-2%	56	52	(4)	36.4%	33.9%	-2.5%
2025	479	503	24	65%	63%	-2%	56	52	(4)	36.4%	33.9%	-2.5%
2026	464	494	30	67%	65%	-2%	56	52	(4)	35.8%	33.2%	-2.6%
2027	450	485	35	68%	66%	-2%	56	52	(4)	35.8%	33.2%	-2.6%
2028	433	474	41	70%	67%	-3%	55	51	(4)	35.2%	32.6%	-2.6%
2029	415	463	48	71%	68%	-3%	56	52	(4)	35.2%	32.6%	-2.6%
2030	397	452	55	73%	69%	-4%	55	51	(4)	34.6%	32.1%	-2.5%
2031	376	439	63	75%	71%	-4%	56	52	(4)	34.6%	32.1%	-2.5%
2032	355	426	71	76%	72%	-4%	55	51	(4)	33.9%	31.5%	-2.4%
2033	333	412	79	78%	73%	-5%	56	52	(4)	33.9%	31.5%	-2.4%
2034	308	397	89	80%	74%	-6%	56	51	(5)	33.3%	30.9%	-2.4%
2035	282	381	99	82%	76%	-6%	56	52	(4)	33.3%	30.9%	-2.4%
2036	254	364	110	84%	77%	-7%	56	51	(5)	32.7%	30.3%	-2.4%
2037	225	345	120	86%	79%	-7%	56	52	(4)	32.7%	30.3%	-2.4%
2038	194	326	132	88%	80%	-8%	56	51	(5)	32.4%	29.9%	-2.5%
2039	161	305	144	90%	82%	-8%	56	52	(4)	32.4%	29.9%	-2.5%
2040	125	283	158	93%	83%	-10%	56	51	(5)	32.2%	29.6%	-2.6%
2041	87	259	172	95%	85%	-10%	56	51	(5)	32.2%	29.6%	-2.6%
2042	46	234	188	97%	86%	-11%	57	51	(6)	32.9%	29.4%	-3.5%
2043	-	209	209	100%	88%	-12%	10	51	41	5.9%	29.4%	23.5%
2044	-	180	180	100%	90%	-10%	10	52	42	5.8%	29.6%	23.8%
2045	-	150	150	100%	92%	-8%	10	52	42	5.8%	29.6%	23.8%
2046	-	119	119	100%	93%	-7%	10	53	43	5.8%	30.3%	24.5%
2047	-	83	83	100%	96%	-4%	10	52	42	5.8%	30.3%	24.5%
2048	-	47	47	100%	97%	-3%	10	56	46	5.8%	32.6%	26.8%
2049	-	-	-	100%	100%	0%	10	10	-	5.8%	5.8%	0.0%
2050	-	-	-	100%	100%	0%	10	10	-	5.8%	5.8%	0.0%
2051	-	-	-	100%	100%	0%	10	10	-	5.8%	5.8%	0.0%
2052	-	-	-	100%	100%	0%	11	11	-	5.8%	5.8%	0.0%
2053	-	-	-	100%	100%	0%	11	11	-	5.8%	5.8%	0.0%

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**Kentucky Retirement Systems**  
**Exhibit 1-2**  
**CERS Non-Hazardous Retirement Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Comparison of Current Plan and Proposed Legislation**  
**(\$ in Millions)**

Fiscal Year 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	\$ 7,306	\$ -	49%	49%	0%	\$ 487	\$ 487	\$ -	19.3%	19.3%	0.0%
2020	7,445	7,445	-	49%	49%	0%	558	498	(60)	21.6%	19.3%	-2.3%
2021	7,410	7,472	62	51%	50%	-1%	648	572	(76)	24.6%	21.7%	-2.9%
2022	7,357	7,502	145	52%	51%	-1%	692	628	(64)	25.7%	23.3%	-2.4%
2023	7,288	7,508	220	54%	52%	-2%	697	632	(65)	25.4%	23.0%	-2.4%
2024	7,198	7,498	300	55%	53%	-2%	707	640	(67)	25.2%	22.8%	-2.4%
2025	7,091	7,479	388	57%	54%	-3%	716	648	(68)	25.0%	22.6%	-2.4%
2026	6,965	7,447	482	58%	55%	-3%	725	656	(69)	24.8%	22.4%	-2.4%
2027	6,820	7,404	584	60%	56%	-4%	735	664	(71)	24.6%	22.3%	-2.3%
2028	6,654	7,348	694	61%	57%	-4%	746	673	(73)	24.5%	22.1%	-2.4%
2029	6,466	7,278	812	63%	58%	-5%	758	683	(75)	24.4%	22.0%	-2.4%
2030	6,253	7,192	939	64%	59%	-5%	770	694	(76)	24.3%	21.9%	-2.4%
2031	6,014	7,090	1,076	66%	60%	-6%	784	706	(78)	24.2%	21.8%	-2.4%
2032	5,744	6,969	1,225	68%	61%	-7%	798	718	(80)	24.1%	21.7%	-2.4%
2033	5,444	6,828	1,384	70%	62%	-8%	813	730	(83)	24.0%	21.6%	-2.4%
2034	5,111	6,666	1,555	72%	63%	-9%	829	744	(85)	23.9%	21.5%	-2.4%
2035	4,742	6,482	1,740	74%	65%	-9%	845	759	(86)	23.8%	21.4%	-2.4%
2036	4,334	6,272	1,938	77%	66%	-11%	864	774	(90)	23.8%	21.3%	-2.5%
2037	3,884	6,036	2,152	79%	68%	-11%	884	790	(94)	23.8%	21.3%	-2.5%
2038	3,387	5,769	2,382	82%	69%	-13%	904	808	(96)	23.7%	21.2%	-2.5%
2039	2,841	5,472	2,631	85%	71%	-14%	927	825	(102)	23.7%	21.1%	-2.6%
2040	2,241	5,142	2,901	88%	73%	-15%	951	844	(107)	23.7%	21.1%	-2.6%
2041	1,582	4,774	3,192	92%	75%	-17%	980	863	(117)	23.9%	21.0%	-2.9%
2042	856	4,369	3,513	96%	78%	-18%	1,020	883	(137)	24.2%	21.0%	-3.2%
2043	-	3,920	3,920	100%	80%	-20%	162	905	743	3.8%	21.0%	17.2%
2044	-	3,425	3,425	100%	83%	-17%	165	928	763	3.7%	21.0%	17.3%
2045	-	2,881	2,881	100%	86%	-14%	169	953	784	3.7%	21.1%	17.4%
2046	-	2,280	2,280	100%	89%	-11%	172	981	809	3.7%	21.2%	17.5%
2047	-	1,619	1,619	100%	92%	-8%	176	1,015	839	3.7%	21.4%	17.7%
2048	-	886	886	100%	96%	-4%	179	1,065	886	3.7%	21.9%	18.2%
2049	-	-	-	100%	100%	0%	183	183	-	3.7%	3.7%	0.0%
2050	-	-	-	100%	100%	0%	187	187	-	3.7%	3.7%	0.0%
2051	-	-	-	100%	100%	0%	190	190	-	3.7%	3.7%	0.0%
2052	-	-	-	100%	100%	0%	195	195	-	3.7%	3.7%	0.0%
2053	-	-	-	100%	100%	0%	199	199	-	3.7%	3.7%	0.0%

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**Kentucky Retirement Systems**  
**Exhibit 1-3**  
**CERS Hazardous Retirement Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Comparison of Current Plan and Proposed Legislation**  
**(\$ in Millions)**

Fiscal Year 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	169	(21)	33.9%	30.1%	-3.8%
2021	2,965	2,987	22	47%	46%	-1%	226	199	(27)	39.7%	35.0%	-4.7%
2022	2,974	3,026	52	48%	47%	-1%	268	237	(31)	46.4%	41.0%	-5.4%
2023	2,952	3,038	86	49%	48%	-1%	275	249	(26)	46.8%	42.3%	-4.5%
2024	2,916	3,036	120	51%	49%	-2%	279	252	(27)	46.6%	42.1%	-4.5%
2025	2,873	3,027	154	53%	50%	-3%	283	255	(28)	46.4%	41.8%	-4.6%
2026	2,823	3,016	193	55%	51%	-4%	287	259	(28)	46.1%	41.6%	-4.5%
2027	2,764	2,998	234	56%	53%	-3%	291	262	(29)	45.9%	41.3%	-4.6%
2028	2,696	2,975	279	58%	54%	-4%	296	266	(30)	45.6%	41.1%	-4.5%
2029	2,620	2,946	326	60%	55%	-5%	301	270	(31)	45.4%	40.8%	-4.6%
2030	2,532	2,910	378	62%	56%	-6%	307	275	(32)	45.1%	40.5%	-4.6%
2031	2,433	2,867	434	64%	58%	-6%	312	280	(32)	44.7%	40.2%	-4.5%
2032	2,323	2,817	494	66%	59%	-7%	319	286	(33)	44.4%	39.9%	-4.5%
2033	2,199	2,757	558	69%	61%	-8%	325	292	(33)	44.1%	39.6%	-4.5%
2034	2,062	2,690	628	71%	62%	-9%	331	297	(34)	43.8%	39.2%	-4.6%
2035	1,911	2,613	702	74%	64%	-10%	338	302	(36)	43.5%	38.9%	-4.6%
2036	1,743	2,526	783	76%	66%	-10%	344	308	(36)	43.2%	38.7%	-4.5%
2037	1,559	2,428	869	79%	68%	-11%	350	313	(37)	43.0%	38.4%	-4.6%
2038	1,359	2,320	961	82%	70%	-12%	357	319	(38)	42.8%	38.3%	-4.5%
2039	1,138	2,198	1,060	85%	72%	-13%	365	325	(40)	42.8%	38.1%	-4.7%
2040	896	2,064	1,168	89%	74%	-15%	373	331	(42)	42.8%	38.0%	-4.8%
2041	630	1,914	1,284	92%	76%	-16%	384	338	(46)	43.0%	37.9%	-5.1%
2042	339	1,750	1,411	96%	79%	-17%	398	346	(52)	43.5%	37.8%	-5.7%
2043	-	1,569	1,569	100%	81%	-19%	56	354	298	6.0%	37.8%	31.8%
2044	-	1,369	1,369	100%	84%	-16%	57	362	305	6.0%	37.8%	31.8%
2045	-	1,150	1,150	100%	87%	-13%	58	370	312	6.0%	38.0%	32.0%
2046	-	911	911	100%	90%	-10%	59	382	323	6.0%	38.3%	32.3%
2047	-	646	646	100%	93%	-7%	60	395	335	5.9%	38.8%	32.9%
2048	-	353	353	100%	96%	-4%	62	414	352	5.9%	39.9%	34.0%
2049	-	-	-	100%	100%	0%	63	63	-	5.9%	5.9%	0.0%
2050	-	-	-	100%	100%	0%	64	64	-	5.9%	5.9%	0.0%
2051	-	-	-	100%	100%	0%	66	66	-	5.9%	5.9%	0.0%
2052	-	-	-	100%	100%	0%	67	67	-	5.9%	5.9%	0.0%
2053	-	-	-	100%	100%	0%	68	68	-	5.9%	5.9%	0.0%

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**Kentucky Retirement Systems**  
**Exhibit 1-4**  
**State Police Retirement System Retirement Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Comparison of Current Plan and Proposed Legislation**  
**(\$ in Millions)**

Fiscal Year 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	58	(6)	136.1%	123.8%	-12.3%
2021	734	740	6	30%	30%	0%	64	58	(6)	136.1%	123.8%	-12.3%
2022	715	727	12	32%	31%	-1%	64	58	(6)	137.1%	124.5%	-12.6%
2023	696	714	18	34%	32%	-2%	63	58	(5)	137.1%	124.5%	-12.6%
2024	676	701	25	36%	33%	-3%	63	57	(6)	136.6%	124.0%	-12.6%
2025	654	687	33	38%	35%	-3%	63	57	(6)	136.6%	124.0%	-12.6%
2026	631	672	41	40%	36%	-4%	63	57	(6)	136.7%	123.9%	-12.8%
2027	609	658	49	41%	37%	-4%	63	57	(6)	136.7%	123.9%	-12.8%
2028	583	641	58	44%	38%	-6%	62	56	(6)	135.5%	122.6%	-12.9%
2029	556	623	67	46%	39%	-7%	62	56	(6)	135.5%	122.6%	-12.9%
2030	528	605	77	48%	41%	-7%	62	56	(6)	133.8%	121.1%	-12.7%
2031	499	585	86	51%	42%	-9%	63	57	(6)	133.8%	121.1%	-12.7%
2032	467	564	97	54%	44%	-10%	62	56	(6)	130.8%	118.3%	-12.5%
2033	434	542	108	56%	46%	-10%	63	57	(6)	130.8%	118.3%	-12.5%
2034	398	518	120	60%	48%	-12%	61	56	(5)	127.2%	115.2%	-12.0%
2035	363	495	132	63%	49%	-14%	62	56	(6)	127.2%	115.2%	-12.0%
2036	323	468	145	67%	52%	-15%	61	55	(6)	123.9%	112.4%	-11.5%
2037	284	442	158	70%	54%	-16%	61	55	(6)	123.9%	112.4%	-11.5%
2038	242	414	172	75%	57%	-18%	60	54	(6)	121.9%	110.6%	-11.3%
2039	199	387	188	79%	59%	-20%	60	54	(6)	121.9%	110.6%	-11.3%
2040	152	355	203	84%	62%	-22%	59	54	(5)	120.7%	109.5%	-11.2%
2041	105	324	219	89%	65%	-24%	59	54	(5)	120.7%	109.5%	-11.2%
2042	55	291	236	94%	68%	-26%	60	54	(6)	122.1%	109.6%	-12.5%
2043	-	255	255	100%	72%	-28%	4	54	50	8.5%	109.6%	101.1%
2044	-	219	219	100%	75%	-25%	4	54	50	8.3%	109.3%	101.0%
2045	-	180	180	100%	79%	-21%	4	52	48	8.1%	109.3%	101.2%
2046	-	140	140	100%	84%	-16%	4	54	50	8.0%	112.4%	104.4%
2047	-	97	97	100%	89%	-11%	4	54	50	7.9%	112.4%	104.5%
2048	-	50	50	100%	94%	-6%	4	54	50	7.8%	113.0%	105.2%
2049	-	-	-	100%	100%	0%	4	4	-	7.7%	7.7%	0.0%
2050	-	-	-	100%	100%	0%	4	4	-	7.7%	7.7%	0.0%
2051	-	-	-	100%	100%	0%	4	4	-	7.7%	7.7%	0.0%
2052	-	-	-	100%	100%	0%	4	4	-	7.7%	7.7%	0.0%
2053	-	-	-	100%	100%	0%	4	4	-	7.7%	7.7%	0.0%

Gabriel Roeder Smith & Company

**Kentucky Retirement Systems**  
**Exhibit 1-5**  
**KERS Hazardous Insurance Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Comparison of Current Plan and Proposed Legislation**  
**(\$ in Millions)**

Fiscal Year 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)	(119)	-	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)	(143)	-	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)	(160)	-	132%	132%	0%	-	-	-	0.0%	0.0%	0.0%
2035	(167)	(167)	-	133%	133%	0%	-	-	-	0.0%	0.0%	0.0%
2036	(173)	(173)	-	134%	134%	0%	-	-	-	0.0%	0.0%	0.0%
2037	(181)	(181)	-	135%	135%	0%	-	-	-	0.0%	0.0%	0.0%
2038	(188)	(188)	-	136%	136%	0%	-	-	-	0.0%	0.0%	0.0%
2039	(197)	(197)	-	138%	138%	0%	-	-	-	0.0%	0.0%	0.0%
2040	(205)	(205)	-	139%	139%	0%	-	-	-	0.0%	0.0%	0.0%
2041	(215)	(215)	-	141%	141%	0%	-	-	-	0.0%	0.0%	0.0%
2042	(225)	(225)	-	142%	142%	0%	-	-	-	0.0%	0.0%	0.0%
2043	(236)	(236)	-	144%	144%	0%	-	-	-	0.0%	0.0%	0.0%
2044	(247)	(247)	-	145%	145%	0%	-	-	-	0.0%	0.0%	0.0%
2045	(259)	(259)	-	147%	147%	0%	-	-	-	0.0%	0.0%	0.0%
2046	(272)	(272)	-	149%	149%	0%	-	-	-	0.0%	0.0%	0.0%
2047	(286)	(286)	-	151%	151%	0%	-	-	-	0.0%	0.0%	0.0%
2048	(301)	(301)	-	153%	153%	0%	-	-	-	0.0%	0.0%	0.0%
2049	(317)	(317)	-	156%	156%	0%	-	-	-	0.0%	0.0%	0.0%
2050	(333)	(333)	-	158%	158%	0%	-	-	-	0.0%	0.0%	0.0%
2051	(351)	(351)	-	161%	161%	0%	-	-	-	0.0%	0.0%	0.0%
2052	(369)	(369)	-	164%	164%	0%	-	-	-	0.0%	0.0%	0.0%
2053	(390)	(390)	-	167%	167%	0%	-	-	-	0.0%	0.0%	0.0%

**Gabriel Roeder Smith & Company**

**Kentucky Retirement Systems**  
**Exhibit 1-6**  
**CERS Non-Hazardous Insurance Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Comparison of Current Plan and Proposed Legislation**  
**(\$ in Millions)**

Fiscal Year 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	\$ 1,045	\$ -	71%	71%	0%	\$ 119	\$ 119	\$ -	4.8%	4.8%	0.0%
2020	1,058	1,058	-	72%	72%	0%	136	122	(14)	5.3%	4.8%	-0.5%
2021	1,022	1,037	15	74%	73%	-1%	146	138	(8)	5.6%	5.3%	-0.3%
2022	997	1,022	25	75%	75%	0%	143	134	(9)	5.3%	5.0%	-0.3%
2023	987	1,022	35	76%	76%	0%	141	132	(9)	5.2%	4.9%	-0.3%
2024	972	1,018	46	78%	77%	-1%	140	131	(9)	5.0%	4.7%	-0.3%
2025	955	1,013	58	79%	77%	-2%	139	130	(9)	4.9%	4.6%	-0.3%
2026	935	1,005	70	80%	78%	-2%	138	129	(9)	4.8%	4.5%	-0.3%
2027	913	997	84	81%	79%	-2%	136	128	(8)	4.6%	4.3%	-0.3%
2028	888	986	98	82%	80%	-2%	136	126	(10)	4.5%	4.2%	-0.3%
2029	860	974	114	83%	80%	-3%	135	125	(10)	4.4%	4.1%	-0.3%
2030	829	961	132	83%	81%	-2%	134	124	(10)	4.3%	4.0%	-0.3%
2031	796	945	149	84%	81%	-3%	134	124	(10)	4.2%	3.9%	-0.3%
2032	758	927	169	85%	82%	-3%	134	123	(11)	4.1%	3.8%	-0.3%
2033	717	907	190	86%	83%	-3%	134	124	(10)	4.0%	3.7%	-0.3%
2034	672	884	212	87%	83%	-4%	135	125	(10)	3.9%	3.6%	-0.3%
2035	622	858	236	88%	84%	-4%	137	126	(11)	3.9%	3.6%	-0.3%
2036	567	829	262	90%	85%	-5%	138	127	(11)	3.9%	3.5%	-0.4%
2037	508	797	289	91%	86%	-5%	140	129	(11)	3.8%	3.5%	-0.3%
2038	442	761	319	92%	86%	-6%	142	130	(12)	3.8%	3.5%	-0.3%
2039	370	721	351	94%	87%	-7%	145	133	(12)	3.8%	3.4%	-0.4%
2040	291	676	385	95%	88%	-7%	148	135	(13)	3.7%	3.4%	-0.3%
2041	205	628	423	97%	89%	-8%	151	137	(14)	3.7%	3.4%	-0.3%
2042	109	573	464	98%	90%	-8%	155	140	(15)	3.8%	3.4%	-0.4%
2043	-	513	513	100%	92%	-8%	45	142	97	1.1%	3.4%	2.3%
2044	-	447	447	100%	93%	-7%	45	145	100	1.0%	3.3%	2.3%
2045	-	375	375	100%	94%	-6%	45	148	103	1.0%	3.3%	2.3%
2046	-	296	296	100%	95%	-5%	46	151	105	1.0%	3.3%	2.3%
2047	-	208	208	100%	97%	-3%	46	154	108	1.0%	3.3%	2.3%
2048	-	112	112	100%	98%	-2%	46	159	113	1.0%	3.3%	2.3%
2049	-	-	-	100%	100%	0%	47	47	-	1.0%	1.0%	0.0%
2050	-	-	-	100%	100%	0%	47	47	-	0.9%	0.9%	0.0%
2051	-	-	-	100%	100%	0%	47	47	-	0.9%	0.9%	0.0%
2052	-	-	-	100%	100%	0%	47	47	-	0.9%	0.9%	0.0%
2053	-	-	-	100%	100%	0%	47	47	-	0.9%	0.9%	0.0%

**Gabriel Roeder Smith & Company**

**Kentucky Retirement Systems**  
**Exhibit 1-7**  
**CERS Hazardous Insurance Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Comparison of Current Plan and Proposed Legislation**  
**(\$ in Millions)**

Fiscal Year 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	\$ 419	\$ -	76%	76%	0%	\$ 53	\$ 53	\$ -	9.5%	9.5%	0.0%
2020	418	418	-	77%	77%	0%	59	53	(6)	10.5%	9.5%	-1.0%
2021	393	398	5	79%	79%	0%	56	53	(3)	9.9%	9.3%	-0.6%
2022	380	390	10	80%	79%	-1%	53	50	(3)	9.2%	8.6%	-0.6%
2023	375	388	13	81%	80%	-1%	51	47	(4)	8.6%	8.1%	-0.5%
2024	369	386	17	81%	80%	-1%	49	46	(3)	8.2%	7.7%	-0.5%
2025	362	384	22	82%	81%	-1%	48	45	(3)	7.9%	7.4%	-0.5%
2026	354	381	27	82%	81%	-1%	47	44	(3)	7.6%	7.1%	-0.5%
2027	347	379	32	83%	81%	-2%	47	43	(4)	7.4%	6.8%	-0.6%
2028	338	375	37	83%	82%	-1%	46	43	(3)	7.2%	6.6%	-0.6%
2029	328	371	43	84%	82%	-2%	46	43	(3)	7.0%	6.5%	-0.5%
2030	317	367	50	85%	82%	-3%	47	43	(4)	6.9%	6.3%	-0.6%
2031	305	361	56	85%	82%	-3%	47	43	(4)	6.7%	6.2%	-0.5%
2032	291	355	64	86%	83%	-3%	48	44	(4)	6.7%	6.1%	-0.6%
2033	276	348	72	87%	83%	-4%	48	44	(4)	6.6%	6.0%	-0.6%
2034	259	340	81	87%	83%	-4%	49	45	(4)	6.5%	6.0%	-0.5%
2035	240	330	90	88%	84%	-4%	50	46	(4)	6.5%	5.9%	-0.6%
2036	219	319	100	89%	84%	-5%	51	47	(4)	6.4%	5.9%	-0.5%
2037	197	307	110	90%	85%	-5%	52	48	(4)	6.4%	5.8%	-0.6%
2038	172	294	122	92%	86%	-6%	53	49	(4)	6.4%	5.8%	-0.6%
2039	144	278	134	93%	87%	-6%	55	50	(5)	6.4%	5.8%	-0.6%
2040	114	262	148	95%	88%	-7%	56	51	(5)	6.4%	5.8%	-0.6%
2041	80	243	163	96%	89%	-7%	57	52	(5)	6.4%	5.8%	-0.6%
2042	44	223	179	98%	90%	-8%	60	53	(7)	6.5%	5.8%	-0.7%
2043	-	199	199	100%	91%	-9%	16	54	38	1.7%	5.7%	4.0%
2044	-	174	174	100%	92%	-8%	16	55	39	1.7%	5.7%	4.0%
2045	-	146	146	100%	94%	-6%	16	56	40	1.7%	5.8%	4.1%
2046	-	116	116	100%	95%	-5%	16	57	41	1.7%	5.8%	4.1%
2047	-	83	83	100%	96%	-4%	16	59	43	1.6%	5.8%	4.2%
2048	-	44	44	100%	98%	-2%	17	61	44	1.6%	5.9%	4.3%
2049	-	-	-	100%	100%	0%	17	17	-	1.6%	1.6%	0.0%
2050	-	-	-	100%	100%	0%	17	17	-	1.6%	1.6%	0.0%
2051	-	-	-	100%	100%	0%	17	17	-	1.5%	1.5%	0.0%
2052	-	-	-	100%	100%	0%	17	17	-	1.5%	1.5%	0.0%
2053	-	-	-	100%	100%	0%	17	17	-	1.5%	1.5%	0.0%

**Gabriel Roeder Smith & Company**

**Kentucky Retirement Systems**  
**Exhibit 1-8**  
**State Police Retirement System Insurance Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Comparison of Current Plan and Proposed Legislation**  
**(\$ in Millions)**

Fiscal Year 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	9	(1)	20.9%	19.7%	-1.2%
2021	70	70	-	76%	76%	0%	10	9	(1)	20.9%	19.7%	-1.2%
2022	67	68	1	77%	77%	0%	9	8	(1)	19.0%	17.9%	-1.1%
2023	65	67	2	78%	78%	0%	9	8	(1)	19.0%	17.9%	-1.1%
2024	63	65	2	79%	79%	0%	8	8	-	17.5%	16.4%	-1.1%
2025	61	64	3	80%	79%	-1%	8	8	-	17.5%	16.4%	-1.1%
2026	59	63	4	81%	79%	-2%	8	7	(1)	16.5%	15.4%	-1.1%
2027	57	61	4	81%	80%	-1%	8	7	(1)	16.5%	15.4%	-1.1%
2028	54	60	6	82%	80%	-2%	7	7	-	15.7%	14.6%	-1.1%
2029	52	58	6	83%	81%	-2%	7	7	-	15.7%	14.6%	-1.1%
2030	50	57	7	83%	81%	-2%	7	7	-	15.1%	14.1%	-1.0%
2031	47	55	8	84%	82%	-2%	7	7	-	15.1%	14.1%	-1.0%
2032	44	53	9	85%	82%	-3%	7	6	(1)	14.7%	13.6%	-1.1%
2033	41	51	10	86%	83%	-3%	7	7	-	14.7%	13.6%	-1.1%
2034	38	49	11	87%	83%	-4%	7	6	(1)	14.2%	13.2%	-1.0%
2035	35	47	12	88%	84%	-4%	7	6	(1)	14.2%	13.2%	-1.0%
2036	31	45	14	89%	84%	-5%	7	6	(1)	13.9%	13.0%	-0.9%
2037	27	42	15	90%	85%	-5%	7	6	(1)	13.9%	13.0%	-0.9%
2038	24	40	16	91%	86%	-5%	7	6	(1)	13.8%	12.8%	-1.0%
2039	19	37	18	93%	86%	-7%	7	6	(1)	13.8%	12.8%	-1.0%
2040	15	35	20	94%	87%	-7%	7	6	(1)	13.8%	12.8%	-1.0%
2041	11	32	21	96%	88%	-8%	7	6	(1)	13.8%	12.8%	-1.0%
2042	5	28	23	98%	90%	-8%	7	6	(1)	14.3%	12.9%	-1.4%
2043	-	26	26	100%	90%	-10%	1	6	5	2.7%	12.9%	10.2%
2044	-	22	22	100%	92%	-8%	1	6	5	2.7%	12.9%	10.2%
2045	-	18	18	100%	93%	-7%	1	6	5	2.6%	12.9%	10.3%
2046	-	14	14	100%	95%	-5%	1	6	5	2.6%	13.2%	10.6%
2047	-	10	10	100%	96%	-4%	1	6	5	2.5%	13.2%	10.7%
2048	-	5	5	100%	98%	-2%	1	6	5	2.5%	13.3%	10.8%
2049	-	-	-	100%	100%	0%	1	1	-	2.4%	2.4%	0.0%
2050	-	-	-	100%	100%	0%	1	1	-	2.3%	2.3%	0.0%
2051	-	-	-	100%	100%	0%	1	1	-	2.3%	2.3%	0.0%
2052	-	-	-	100%	100%	0%	1	1	-	2.3%	2.3%	0.0%
2053	-	-	-	100%	100%	0%	1	1	-	2.2%	2.2%	0.0%

Gabriel Roeder Smith & Company

**SB 249 (House Substitute)**

**Section 2.**

**Projected Cost of the Retirement and Insurance  
Current Plan**

**Kentucky Retirement Systems**  
**Exhibit 2-1**  
**KERS Hazardous Retirement Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Current Plan (Amortization Period = 24 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 1,226	\$ 672	\$ 554	55%	\$ 52	\$ 12	\$ 150	34.39%	34.42%	\$ 64	\$ (74)	\$ (10)	\$ 42
2020	1,255	703	552	56%	58	12	150	38.71%	38.71%	70	(77)	(7)	44
2021	1,281	749	532	58%	59	12	152	38.71%	38.35%	71	(79)	(8)	47
2022	1,307	790	517	60%	57	12	152	37.30%	37.30%	69	(82)	(13)	49
2023	1,331	825	506	62%	57	12	153	37.30%	36.77%	69	(84)	(15)	51
2024	1,354	861	493	64%	56	12	154	36.44%	36.44%	68	(86)	(18)	53
2025	1,376	897	479	65%	56	12	155	36.44%	36.07%	68	(89)	(21)	55
2026	1,397	933	464	67%	56	12	156	35.76%	35.76%	68	(91)	(23)	58
2027	1,417	967	450	68%	56	12	156	35.76%	35.46%	68	(93)	(25)	60
2028	1,435	1,002	433	70%	55	13	157	35.15%	35.15%	68	(95)	(27)	62
2029	1,452	1,037	415	71%	56	13	158	35.15%	34.88%	69	(95)	(26)	64
2030	1,471	1,074	397	73%	55	13	160	34.58%	34.58%	68	(96)	(28)	66
2031	1,489	1,113	376	75%	56	13	161	34.58%	34.27%	69	(96)	(27)	69
2032	1,509	1,154	355	76%	55	13	163	33.94%	33.94%	68	(97)	(29)	71
2033	1,529	1,196	333	78%	56	13	165	33.94%	33.64%	69	(97)	(28)	74
2034	1,550	1,242	308	80%	56	13	167	33.30%	33.30%	69	(98)	(29)	77
2035	1,572	1,290	282	82%	56	13	168	33.30%	33.02%	69	(99)	(30)	80
2036	1,595	1,341	254	84%	56	14	170	32.74%	32.74%	70	(100)	(30)	83
2037	1,618	1,393	225	86%	56	14	171	32.74%	32.55%	70	(101)	(31)	86
2038	1,641	1,447	194	88%	56	14	172	32.35%	32.35%	70	(103)	(33)	89
2039	1,664	1,503	161	90%	56	14	172	32.35%	32.25%	70	(104)	(34)	93
2040	1,687	1,562	125	93%	56	14	173	32.19%	32.19%	70	(105)	(35)	96
2041	1,709	1,622	87	95%	56	14	174	32.19%	32.30%	70	(107)	(37)	100
2042	1,732	1,686	46	97%	57	14	174	32.92%	32.92%	71	(108)	(37)	104
2043	1,756	1,756	-	100%	10	14	175	5.87%	5.87%	24	(109)	(85)	107
2044	1,779	1,779	-	100%	10	14	175	5.84%	5.84%	24	(111)	(87)	108
2045	1,802	1,802	-	100%	10	14	174	5.82%	5.82%	24	(113)	(89)	110
2046	1,825	1,825	-	100%	10	14	174	5.81%	5.81%	24	(115)	(91)	111
2047	1,846	1,846	-	100%	10	14	173	5.80%	5.80%	24	(117)	(93)	112
2048	1,867	1,867	-	100%	10	14	173	5.79%	5.79%	24	(119)	(95)	113
2049	1,887	1,887	-	100%	10	14	173	5.79%	5.79%	24	(121)	(97)	114
2050	1,906	1,906	-	100%	10	14	176	5.79%	5.79%	24	(124)	(100)	115
2051	1,925	1,925	-	100%	10	14	178	5.79%	5.79%	24	(126)	(102)	116
2052	1,944	1,944	-	100%	11	15	182	5.79%	5.79%	26	(128)	(102)	117
2053	1,961	1,961	-	100%	11	15	185	5.79%	5.79%	26	(130)	(104)	118

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 2-2**  
**CERS Non-Hazardous Retirement Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Current Plan (Amortization Period = 24 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 14,356	\$ 7,050	\$ 7,306	49%	\$ 487	\$ 126	\$ 2,522	19.30%	22.52%	\$ 613	\$ (818)	\$ (205)	\$ 441
2020	14,726	7,281	7,445	49%	558	129	2,581	21.62%	26.21%	687	(855)	(168)	457
2021	15,079	7,669	7,410	51%	648	132	2,638	24.58%	26.14%	780	(890)	(110)	477
2022	15,418	8,061	7,357	52%	692	135	2,694	25.67%	25.67%	827	(926)	(99)	500
2023	15,742	8,454	7,288	54%	697	138	2,751	25.35%	25.35%	835	(962)	(127)	524
2024	16,049	8,851	7,198	55%	707	140	2,809	25.16%	25.16%	847	(999)	(152)	548
2025	16,339	9,248	7,091	57%	716	143	2,866	24.97%	24.97%	859	(1,036)	(177)	572
2026	16,609	9,644	6,965	58%	725	146	2,924	24.80%	24.80%	871	(1,073)	(202)	596
2027	16,859	10,039	6,820	60%	735	149	2,983	24.64%	24.64%	884	(1,109)	(225)	620
2028	17,088	10,434	6,654	61%	746	152	3,044	24.50%	24.50%	898	(1,143)	(245)	644
2029	17,299	10,833	6,466	63%	758	155	3,107	24.39%	24.39%	913	(1,169)	(256)	669
2030	17,499	11,246	6,253	64%	770	159	3,174	24.27%	24.27%	929	(1,198)	(269)	694
2031	17,685	11,671	6,014	66%	784	162	3,243	24.17%	24.17%	946	(1,225)	(279)	721
2032	17,858	12,114	5,744	68%	798	166	3,315	24.07%	24.07%	964	(1,249)	(285)	748
2033	18,021	12,577	5,444	70%	813	169	3,390	23.98%	23.98%	982	(1,271)	(289)	777
2034	18,176	13,065	5,111	72%	829	173	3,467	23.91%	23.91%	1,002	(1,291)	(289)	808
2035	18,326	13,584	4,742	74%	845	177	3,546	23.84%	23.84%	1,022	(1,308)	(286)	840
2036	18,473	14,139	4,334	77%	864	182	3,631	23.79%	23.79%	1,046	(1,321)	(275)	875
2037	18,622	14,738	3,884	79%	884	186	3,720	23.76%	23.76%	1,070	(1,330)	(260)	913
2038	18,778	15,391	3,387	82%	904	191	3,813	23.72%	23.72%	1,095	(1,336)	(241)	954
2039	18,946	16,105	2,841	85%	927	195	3,909	23.71%	23.71%	1,122	(1,340)	(218)	1,000
2040	19,128	16,887	2,241	88%	951	200	4,007	23.74%	23.74%	1,151	(1,343)	(192)	1,049
2041	19,327	17,745	1,582	92%	980	205	4,107	23.86%	23.86%	1,185	(1,345)	(160)	1,104
2042	19,545	18,689	856	96%	1,020	210	4,209	24.22%	24.22%	1,230	(1,348)	(118)	1,164
2043	19,783	19,783	-	100%	162	216	4,313	3.76%	3.76%	378	(1,350)	(972)	1,203
2044	20,043	20,043	-	100%	165	221	4,419	3.74%	3.74%	386	(1,353)	(967)	1,218
2045	20,326	20,326	-	100%	169	226	4,526	3.73%	3.73%	395	(1,357)	(962)	1,234
2046	20,633	20,633	-	100%	172	232	4,635	3.71%	3.71%	404	(1,361)	(957)	1,251
2047	20,965	20,965	-	100%	176	237	4,745	3.70%	3.70%	413	(1,368)	(955)	1,269
2048	21,322	21,322	-	100%	179	243	4,857	3.69%	3.69%	422	(1,375)	(953)	1,289
2049	21,705	21,705	-	100%	183	249	4,971	3.68%	3.68%	432	(1,384)	(952)	1,310
2050	22,113	22,113	-	100%	187	254	5,087	3.67%	3.67%	441	(1,395)	(954)	1,332
2051	22,548	22,548	-	100%	190	260	5,204	3.66%	3.66%	450	(1,407)	(957)	1,356
2052	23,009	23,009	-	100%	195	266	5,324	3.66%	3.66%	461	(1,422)	(961)	1,380
2053	23,497	23,497	-	100%	199	272	5,446	3.66%	3.66%	471	(1,439)	(968)	1,406

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 2-3**  
**CERS Hazardous Retirement Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Current Plan (Amortization Period = 24 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer	Benefit Payments and Expenses	Net External	Investment
										Contributions	Cash Flow	Income	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 5,245	\$ 2,375	\$ 2,870	45%	\$ 168	\$ 45	\$ 559	30.06%	36.98%	\$ 213	\$ (275)	\$ (62)	\$ 149
2020	5,407	2,462	2,945	46%	190	45	562	33.86%	46.31%	235	(293)	(58)	155
2021	5,557	2,592	2,965	47%	226	46	570	39.73%	47.18%	272	(308)	(36)	161
2022	5,700	2,726	2,974	48%	268	46	578	46.43%	47.06%	314	(322)	(8)	170
2023	5,837	2,885	2,952	49%	275	47	588	46.79%	46.79%	322	(336)	(14)	180
2024	5,968	3,052	2,916	51%	279	48	599	46.62%	46.62%	327	(349)	(22)	190
2025	6,093	3,220	2,873	53%	283	49	610	46.37%	46.37%	332	(361)	(29)	200
2026	6,214	3,391	2,823	55%	287	50	622	46.12%	46.12%	337	(373)	(36)	211
2027	6,329	3,565	2,764	56%	291	51	635	45.88%	45.88%	342	(384)	(42)	222
2028	6,441	3,745	2,696	58%	296	52	648	45.62%	45.62%	348	(394)	(46)	233
2029	6,550	3,930	2,620	60%	301	53	663	45.37%	45.37%	354	(402)	(48)	244
2030	6,658	4,126	2,532	62%	307	54	680	45.09%	45.09%	361	(409)	(48)	256
2031	6,768	4,335	2,433	64%	312	56	698	44.74%	44.74%	368	(415)	(47)	269
2032	6,880	4,557	2,323	66%	319	57	717	44.42%	44.42%	376	(420)	(44)	283
2033	6,995	4,796	2,199	69%	325	59	737	44.09%	44.09%	384	(425)	(41)	298
2034	7,115	5,053	2,062	71%	331	61	757	43.75%	43.75%	392	(431)	(39)	315
2035	7,239	5,328	1,911	74%	338	62	777	43.46%	43.46%	400	(437)	(37)	332
2036	7,366	5,623	1,743	76%	344	64	796	43.20%	43.20%	408	(445)	(37)	350
2037	7,495	5,936	1,559	79%	350	65	815	42.99%	42.99%	415	(455)	(40)	370
2038	7,625	6,266	1,359	82%	357	67	834	42.84%	42.84%	424	(465)	(41)	390
2039	7,753	6,615	1,138	85%	365	68	852	42.78%	42.78%	433	(475)	(42)	412
2040	7,881	6,985	896	89%	373	70	872	42.80%	42.80%	443	(484)	(41)	435
2041	8,009	7,379	630	92%	384	71	892	42.99%	42.99%	455	(492)	(37)	460
2042	8,141	7,802	339	96%	398	73	913	43.54%	43.54%	471	(498)	(27)	487
2043	8,277	8,277	-	100%	56	75	935	6.03%	6.03%	131	(505)	(374)	505
2044	8,417	8,417	-	100%	57	77	956	5.99%	5.99%	134	(514)	(380)	513
2045	8,561	8,561	-	100%	58	78	976	5.97%	5.97%	136	(523)	(387)	521
2046	8,708	8,708	-	100%	59	80	996	5.95%	5.95%	139	(533)	(394)	529
2047	8,856	8,856	-	100%	60	81	1,017	5.94%	5.94%	141	(544)	(403)	537
2048	9,006	9,006	-	100%	62	83	1,038	5.93%	5.93%	145	(554)	(409)	545
2049	9,159	9,159	-	100%	63	85	1,062	5.93%	5.93%	148	(565)	(417)	553
2050	9,314	9,314	-	100%	64	87	1,082	5.93%	5.93%	151	(577)	(426)	562
2051	9,470	9,470	-	100%	66	88	1,105	5.93%	5.93%	154	(589)	(435)	570
2052	9,626	9,626	-	100%	67	90	1,128	5.93%	5.93%	157	(601)	(444)	578
2053	9,784	9,784	-	100%	68	92	1,152	5.93%	5.93%	160	(613)	(453)	586

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**  
**State Police Retirement System Retirement Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Current Plan (Amortization Period = 24 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 1,045	\$ 282	\$ 763	27%	\$ 57	\$ 4	\$ 48	119.05%	120.54%	\$ 61	\$ (63)	\$ (2)	\$ 15
2020	1,050	295	755	28%	64	4	47	136.12%	136.12%	68	(64)	4	16
2021	1,052	318	734	30%	64	4	47	136.12%	137.64%	68	(65)	3	17
2022	1,053	338	715	32%	64	4	47	137.06%	137.06%	68	(66)	2	18
2023	1,053	357	696	34%	63	4	46	137.06%	136.73%	67	(67)	-	19
2024	1,052	376	676	36%	63	4	46	136.63%	136.63%	67	(68)	(1)	20
2025	1,049	395	654	38%	63	4	46	136.63%	136.45%	67	(69)	(2)	21
2026	1,045	414	631	40%	63	4	46	136.73%	136.73%	67	(69)	(2)	22
2027	1,041	432	609	41%	63	4	46	136.73%	136.35%	67	(69)	(2)	23
2028	1,035	452	583	44%	62	4	46	135.45%	135.45%	66	(70)	(4)	24
2029	1,028	472	556	46%	62	4	46	135.45%	134.79%	66	(70)	(4)	25
2030	1,021	493	528	48%	62	4	46	133.84%	133.84%	66	(70)	(4)	26
2031	1,013	514	499	51%	63	4	47	133.84%	132.52%	67	(70)	(3)	27
2032	1,005	538	467	54%	62	4	47	130.81%	130.81%	66	(69)	(3)	28
2033	996	562	434	56%	63	4	48	130.81%	129.28%	67	(69)	(2)	29
2034	988	590	398	60%	61	4	48	127.16%	127.16%	65	(68)	(3)	31
2035	980	617	363	63%	62	4	49	127.16%	125.63%	66	(68)	(2)	32
2036	971	648	323	67%	61	4	49	123.92%	123.92%	65	(68)	(3)	34
2037	962	678	284	70%	61	4	49	123.92%	123.15%	65	(67)	(2)	36
2038	953	711	242	75%	60	4	49	121.90%	121.90%	64	(67)	(3)	37
2039	944	745	199	79%	60	4	49	121.90%	121.57%	64	(67)	(3)	39
2040	933	781	152	84%	59	4	49	120.67%	120.67%	63	(67)	(4)	41
2041	923	818	105	89%	59	4	49	120.67%	120.92%	63	(67)	(4)	43
2042	912	857	55	94%	60	4	49	122.14%	122.14%	64	(66)	(2)	45
2043	900	900	-	100%	4	4	49	8.51%	8.51%	8	(66)	(58)	46
2044	889	889	-	100%	4	4	49	8.30%	8.30%	8	(66)	(58)	45
2045	877	877	-	100%	4	4	48	8.13%	8.13%	8	(66)	(58)	44
2046	864	864	-	100%	4	4	48	7.97%	7.97%	8	(65)	(57)	44
2047	851	851	-	100%	4	4	48	7.85%	7.85%	8	(64)	(56)	43
2048	837	837	-	100%	4	4	48	7.76%	7.76%	8	(64)	(56)	42
2049	824	824	-	100%	4	4	48	7.70%	7.70%	8	(64)	(56)	42
2050	810	810	-	100%	4	4	49	7.67%	7.67%	8	(63)	(55)	41
2051	797	797	-	100%	4	4	49	7.66%	7.66%	8	(62)	(54)	40
2052	783	783	-	100%	4	4	50	7.66%	7.66%	8	(62)	(54)	39
2053	770	770	-	100%	4	4	51	7.66%	7.66%	8	(61)	(53)	39

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 2-5**  
**KERS Hazardous Insurance Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Current Plan (Amortization Period = 24 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis													
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income										
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)										
2019	\$	427	\$	525	\$	(98)	123%	\$	4	\$	1	\$	150	2.46%	0.00%	\$	5	\$	(20)	\$	(15)	\$	33
2020		440		543		(103)	123%		-		1		150	0.00%	0.00%		1		(22)		(21)		34
2021		453		563		(110)	124%		-		1		151	0.00%	0.00%		1		(24)		(23)		35
2022		464		577		(113)	124%		-		1		152	0.00%	0.00%		1		(26)		(25)		35
2023		473		587		(114)	124%		-		1		153	0.00%	0.00%		1		(27)		(26)		36
2024		480		596		(116)	124%		-		1		154	0.00%	0.00%		1		(29)		(28)		36
2025		486		605		(119)	124%		-		1		155	0.00%	0.00%		1		(30)		(29)		37
2026		491		613		(122)	125%		-		1		155	0.00%	0.00%		1		(32)		(31)		37
2027		495		620		(125)	125%		-		1		156	0.00%	0.00%		1		(32)		(31)		38
2028		498		627		(129)	126%		-		1		157	0.00%	0.00%		1		(33)		(32)		38
2029		500		633		(133)	127%		-		1		158	0.00%	0.00%		1		(34)		(33)		39
2030		501		639		(138)	128%		-		2		160	0.00%	0.00%		2		(34)		(32)		39
2031		502		645		(143)	128%		-		2		161	0.00%	0.00%		2		(34)		(32)		39
2032		504		652		(148)	129%		-		2		163	0.00%	0.00%		2		(34)		(32)		40
2033		505		659		(154)	130%		-		2		165	0.00%	0.00%		2		(34)		(32)		40
2034		507		667		(160)	132%		-		2		167	0.00%	0.00%		2		(34)		(32)		41
2035		508		675		(167)	133%		-		2		168	0.00%	0.00%		2		(34)		(32)		41
2036		511		684		(173)	134%		-		2		170	0.00%	0.00%		2		(33)		(31)		42
2037		513		694		(181)	135%		-		2		171	0.00%	0.00%		2		(33)		(31)		42
2038		517		705		(188)	136%		-		2		172	0.00%	0.00%		2		(33)		(31)		43
2039		520		717		(197)	138%		-		2		172	0.00%	0.00%		2		(33)		(31)		44
2040		525		730		(205)	139%		-		2		173	0.00%	0.00%		2		(32)		(30)		45
2041		529		744		(215)	141%		-		2		174	0.00%	0.00%		2		(32)		(30)		46
2042		535		760		(225)	142%		-		2		174	0.00%	0.00%		2		(32)		(30)		47
2043		540		776		(236)	144%		-		2		175	0.00%	0.00%		2		(32)		(30)		48
2044		546		793		(247)	145%		-		2		175	0.00%	0.00%		2		(33)		(31)		49
2045		552		811		(259)	147%		-		2		174	0.00%	0.00%		2		(33)		(31)		50
2046		557		829		(272)	149%		-		2		174	0.00%	0.00%		2		(34)		(32)		51
2047		562		848		(286)	151%		-		2		173	0.00%	0.00%		2		(34)		(32)		52
2048		567		868		(301)	153%		-		2		173	0.00%	0.00%		2		(35)		(33)		53
2049		571		888		(317)	156%		-		2		173	0.00%	0.00%		2		(36)		(34)		54
2050		575		908		(333)	158%		-		2		176	0.00%	0.00%		2		(37)		(35)		56
2051		578		929		(351)	161%		-		2		179	0.00%	0.00%		2		(37)		(35)		57
2052		581		950		(369)	164%		-		2		182	0.00%	0.00%		2		(38)		(36)		58
2053		583		973		(390)	167%		-		2		185	0.00%	0.00%		2		(38)		(36)		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, 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 2-6**  
**CERS Non-Hazardous Insurance Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Current Plan (Amortization Period = 24 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 3,568	\$ 2,523	\$ 1,045	71%	\$ 119	\$ 12	\$ 2,498	4.76%	4.76%	\$ 131	\$ (149)	\$ (18)	\$ 160
2020	3,728	2,670	1,058	72%	136	14	2,558	5.33%	5.78%	150	(158)	(8)	169
2021	3,888	2,866	1,022	74%	146	15	2,615	5.60%	5.60%	161	(172)	(11)	179
2022	4,042	3,045	997	75%	143	16	2,672	5.34%	5.34%	159	(186)	(27)	189
2023	4,191	3,204	987	76%	141	18	2,728	5.16%	5.16%	159	(201)	(42)	199
2024	4,332	3,360	972	78%	140	19	2,786	5.03%	5.03%	159	(216)	(57)	208
2025	4,467	3,512	955	79%	139	20	2,843	4.89%	4.89%	159	(231)	(72)	217
2026	4,593	3,658	935	80%	138	22	2,901	4.76%	4.76%	160	(246)	(86)	226
2027	4,711	3,798	913	81%	136	23	2,959	4.61%	4.61%	159	(261)	(102)	234
2028	4,819	3,931	888	82%	136	24	3,018	4.49%	4.49%	160	(275)	(115)	242
2029	4,919	4,059	860	83%	135	26	3,080	4.37%	4.37%	161	(287)	(126)	250
2030	5,011	4,182	829	83%	134	27	3,143	4.25%	4.25%	161	(299)	(138)	257
2031	5,096	4,300	796	84%	134	29	3,210	4.16%	4.16%	163	(309)	(146)	264
2032	5,175	4,417	758	85%	134	30	3,280	4.07%	4.07%	164	(318)	(154)	271
2033	5,251	4,534	717	86%	134	31	3,353	4.00%	4.00%	165	(325)	(160)	278
2034	5,324	4,652	672	87%	135	32	3,430	3.94%	3.94%	167	(330)	(163)	286
2035	5,397	4,775	622	88%	137	34	3,509	3.89%	3.89%	171	(334)	(163)	293
2036	5,472	4,905	567	90%	138	35	3,594	3.85%	3.85%	173	(337)	(164)	301
2037	5,550	5,042	508	91%	140	36	3,682	3.80%	3.80%	176	(340)	(164)	310
2038	5,630	5,188	442	92%	142	37	3,771	3.77%	3.77%	179	(344)	(165)	319
2039	5,712	5,342	370	94%	145	38	3,863	3.75%	3.75%	183	(347)	(164)	329
2040	5,798	5,507	291	95%	148	39	3,957	3.73%	3.73%	187	(351)	(164)	339
2041	5,887	5,682	205	97%	151	40	4,049	3.74%	3.74%	191	(355)	(164)	350
2042	5,978	5,869	109	98%	155	41	4,146	3.75%	3.75%	196	(358)	(162)	362
2043	6,073	6,073	-	100%	45	42	4,243	1.06%	1.06%	87	(362)	(275)	371
2044	6,171	6,171	-	100%	45	43	4,343	1.04%	1.04%	88	(367)	(279)	377
2045	6,272	6,272	-	100%	45	44	4,443	1.02%	1.02%	89	(373)	(284)	383
2046	6,374	6,374	-	100%	46	45	4,546	1.01%	1.01%	91	(379)	(288)	389
2047	6,477	6,477	-	100%	46	46	4,651	0.99%	0.99%	92	(386)	(294)	395
2048	6,581	6,581	-	100%	46	48	4,758	0.97%	0.97%	94	(394)	(300)	401
2049	6,685	6,685	-	100%	47	49	4,868	0.96%	0.96%	96	(402)	(306)	407
2050	6,789	6,789	-	100%	47	50	4,980	0.94%	0.94%	97	(411)	(314)	413
2051	6,891	6,891	-	100%	47	51	5,093	0.92%	0.92%	98	(419)	(321)	419
2052	6,993	6,993	-	100%	47	52	5,208	0.91%	0.91%	99	(427)	(328)	425
2053	7,095	7,095	-	100%	47	53	5,327	0.89%	0.89%	100	(434)	(334)	431

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 2-7**  
**CERS Hazardous Insurance Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Current Plan (Amortization Period = 24 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 1,733	\$ 1,314	\$ 419	76%	\$ 53	\$ 2	\$ 559	9.52%	9.52%	\$ 55	\$ (79)	\$ (24)	\$ 83
2020	1,795	1,377	418	77%	59	3	562	10.47%	10.47%	62	(86)	(24)	87
2021	1,852	1,459	393	79%	56	3	569	9.92%	9.92%	59	(94)	(35)	90
2022	1,901	1,521	380	80%	53	4	578	9.18%	9.18%	57	(103)	(46)	94
2023	1,941	1,566	375	81%	51	4	588	8.63%	8.63%	55	(112)	(57)	96
2024	1,974	1,605	369	81%	49	4	599	8.23%	8.23%	53	(120)	(67)	98
2025	1,999	1,637	362	82%	48	5	610	7.90%	7.90%	53	(126)	(73)	100
2026	2,018	1,664	354	82%	47	5	622	7.61%	7.61%	52	(132)	(80)	101
2027	2,032	1,685	347	83%	47	5	635	7.37%	7.37%	52	(137)	(85)	103
2028	2,040	1,702	338	83%	46	6	648	7.17%	7.17%	52	(141)	(89)	104
2029	2,045	1,717	328	84%	46	6	663	7.00%	7.00%	52	(143)	(91)	104
2030	2,048	1,731	317	85%	47	6	680	6.87%	6.87%	53	(145)	(92)	105
2031	2,048	1,743	305	85%	47	6	698	6.74%	6.74%	53	(146)	(93)	106
2032	2,048	1,757	291	86%	48	7	717	6.66%	6.66%	55	(146)	(91)	107
2033	2,048	1,772	276	87%	48	7	737	6.57%	6.57%	55	(146)	(91)	108
2034	2,049	1,790	259	87%	49	7	757	6.51%	6.51%	56	(145)	(89)	109
2035	2,051	1,811	240	88%	50	8	778	6.46%	6.46%	58	(143)	(85)	111
2036	2,056	1,837	219	89%	51	8	798	6.41%	6.41%	59	(140)	(81)	112
2037	2,065	1,868	197	90%	52	8	818	6.37%	6.37%	60	(138)	(78)	114
2038	2,077	1,905	172	92%	53	8	838	6.37%	6.37%	61	(136)	(75)	117
2039	2,092	1,948	144	93%	55	9	858	6.36%	6.36%	64	(133)	(69)	120
2040	2,112	1,998	114	95%	56	9	878	6.37%	6.37%	65	(131)	(66)	123
2041	2,135	2,055	80	96%	57	9	898	6.39%	6.39%	66	(129)	(63)	126
2042	2,162	2,118	44	98%	60	9	918	6.51%	6.51%	69	(128)	(59)	131
2043	2,192	2,192	-	100%	16	9	939	1.72%	1.72%	25	(127)	(102)	134
2044	2,226	2,226	-	100%	16	10	959	1.70%	1.70%	26	(127)	(101)	136
2045	2,262	2,262	-	100%	16	10	977	1.68%	1.68%	26	(128)	(102)	138
2046	2,300	2,300	-	100%	16	10	996	1.65%	1.65%	26	(130)	(104)	140
2047	2,339	2,339	-	100%	16	10	1,016	1.62%	1.62%	26	(132)	(106)	142
2048	2,377	2,377	-	100%	17	10	1,037	1.60%	1.60%	27	(135)	(108)	145
2049	2,416	2,416	-	100%	17	11	1,060	1.57%	1.57%	28	(139)	(111)	147
2050	2,453	2,453	-	100%	17	11	1,081	1.55%	1.55%	28	(143)	(115)	149
2051	2,489	2,489	-	100%	17	11	1,103	1.52%	1.52%	28	(147)	(119)	151
2052	2,524	2,524	-	100%	17	11	1,127	1.50%	1.50%	28	(150)	(122)	153
2053	2,556	2,556	-	100%	17	12	1,151	1.48%	1.48%	29	(154)	(125)	155

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 2-8**  
**State Police Retirement System Insurance Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Current Plan (Amortization Period = 24 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 277	\$ 197	\$ 80	71%	\$ 13	\$ -	\$ 48	27.23%	19.50%	\$ 13	\$ (14)	\$ (1)	\$ 13
2020	284	210	74	74%	10	-	47	20.85%	20.85%	10	(15)	(5)	13
2021	291	221	70	76%	10	-	47	20.85%	20.19%	10	(16)	(6)	14
2022	297	230	67	77%	9	-	46	18.96%	18.96%	9	(17)	(8)	14
2023	301	236	65	78%	9	-	46	18.96%	18.16%	9	(18)	(9)	14
2024	304	241	63	79%	8	-	46	17.47%	17.47%	8	(19)	(11)	15
2025	306	245	61	80%	8	-	46	17.47%	16.94%	8	(20)	(12)	15
2026	307	248	59	81%	8	-	46	16.49%	16.49%	8	(21)	(13)	15
2027	307	250	57	81%	8	-	46	16.49%	16.09%	8	(22)	(14)	15
2028	306	252	54	82%	7	-	46	15.70%	15.70%	7	(22)	(15)	15
2029	304	252	52	83%	7	-	46	15.70%	15.42%	7	(23)	(16)	15
2030	302	252	50	83%	7	-	46	15.14%	15.14%	7	(23)	(16)	15
2031	299	252	47	84%	7	-	47	15.14%	14.90%	7	(23)	(16)	15
2032	295	251	44	85%	7	-	47	14.65%	14.65%	7	(23)	(16)	15
2033	292	251	41	86%	7	-	48	14.65%	14.45%	7	(23)	(16)	15
2034	288	250	38	87%	7	-	49	14.21%	14.21%	7	(23)	(16)	15
2035	285	250	35	88%	7	-	49	14.21%	14.06%	7	(22)	(15)	15
2036	281	250	31	89%	7	-	49	13.92%	13.92%	7	(22)	(15)	15
2037	278	251	27	90%	7	-	50	13.92%	13.87%	7	(21)	(14)	15
2038	276	252	24	91%	7	-	50	13.80%	13.80%	7	(21)	(14)	15
2039	273	254	19	93%	7	-	50	13.80%	13.82%	7	(20)	(13)	15
2040	271	256	15	94%	7	-	50	13.82%	13.82%	7	(20)	(13)	16
2041	270	259	11	96%	7	-	50	13.82%	13.94%	7	(19)	(12)	16
2042	268	263	5	98%	7	-	50	14.28%	14.28%	7	(19)	(12)	16
2043	268	268	-	100%	1	-	50	2.68%	2.68%	1	(18)	(17)	16
2044	267	267	-	100%	1	-	50	2.65%	2.65%	1	(18)	(17)	16
2045	267	267	-	100%	1	-	49	2.61%	2.61%	1	(18)	(17)	16
2046	267	267	-	100%	1	-	49	2.56%	2.56%	1	(18)	(17)	16
2047	268	268	-	100%	1	-	49	2.52%	2.52%	1	(18)	(17)	16
2048	268	268	-	100%	1	-	49	2.48%	2.48%	1	(18)	(17)	16
2049	269	269	-	100%	1	-	49	2.41%	2.41%	1	(18)	(17)	16
2050	269	269	-	100%	1	-	49	2.34%	2.34%	1	(18)	(17)	16
2051	268	268	-	100%	1	1	50	2.30%	2.30%	2	(19)	(17)	16
2052	268	268	-	100%	1	1	51	2.26%	2.26%	2	(19)	(17)	16
2053	267	267	-	100%	1	1	52	2.23%	2.23%	2	(19)	(17)	16

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.

**SB 249 (House Substitute)**

**Section 3.**

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

**Kentucky Retirement Systems**  
**Exhibit 3-1**  
**KERS Hazardous Retirement Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Proposed Plan (Amortization Period = 30 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 1,226	\$ 672	\$ 554	55%	\$ 52	\$ 12	\$ 150	34.39%	34.42%	\$ 64	\$ (74)	\$ (10)	\$ 42
2020	1,255	703	552	56%	54	12	150	36.00%	36.00%	66	(77)	(11)	44
2021	1,281	745	536	58%	55	12	152	36.00%	35.65%	67	(79)	(12)	46
2022	1,307	781	526	60%	53	12	152	34.69%	34.69%	65	(82)	(17)	48
2023	1,331	812	519	61%	53	12	153	34.69%	34.18%	65	(84)	(19)	50
2024	1,354	843	511	62%	52	12	154	33.85%	33.85%	64	(86)	(22)	52
2025	1,376	873	503	63%	52	12	155	33.85%	33.50%	64	(89)	(25)	54
2026	1,397	903	494	65%	52	12	156	33.20%	33.20%	64	(91)	(27)	56
2027	1,417	932	485	66%	52	12	156	33.20%	32.90%	64	(93)	(29)	57
2028	1,435	961	474	67%	51	13	157	32.60%	32.60%	64	(95)	(31)	59
2029	1,452	989	463	68%	52	13	158	32.60%	32.33%	65	(95)	(30)	61
2030	1,471	1,019	452	69%	51	13	160	32.05%	32.05%	64	(96)	(32)	63
2031	1,489	1,050	439	71%	52	13	161	32.05%	31.75%	65	(96)	(31)	65
2032	1,509	1,083	426	72%	51	13	163	31.45%	31.45%	64	(97)	(33)	67
2033	1,529	1,117	412	73%	52	13	165	31.45%	31.16%	65	(97)	(32)	69
2034	1,550	1,153	397	74%	51	13	167	30.85%	30.85%	64	(98)	(34)	71
2035	1,572	1,191	381	76%	52	13	168	30.85%	30.58%	65	(99)	(34)	73
2036	1,595	1,231	364	77%	51	14	170	30.32%	30.32%	65	(100)	(35)	76
2037	1,618	1,273	345	79%	52	14	171	30.32%	30.10%	66	(101)	(35)	78
2038	1,641	1,315	326	80%	51	14	172	29.89%	29.89%	65	(103)	(38)	81
2039	1,664	1,359	305	82%	52	14	172	29.89%	29.73%	66	(104)	(38)	84
2040	1,687	1,404	283	83%	51	14	173	29.59%	29.59%	65	(105)	(40)	86
2041	1,709	1,450	259	85%	51	14	174	29.59%	29.49%	65	(107)	(42)	89
2042	1,732	1,498	234	86%	51	14	174	29.44%	29.44%	65	(108)	(43)	92
2043	1,756	1,547	209	88%	51	14	175	29.44%	29.48%	65	(109)	(44)	95
2044	1,779	1,599	180	90%	52	14	175	29.58%	29.58%	66	(111)	(45)	99
2045	1,802	1,652	150	92%	52	14	174	29.58%	29.79%	66	(113)	(47)	102
2046	1,825	1,706	119	93%	53	14	174	30.27%	30.27%	67	(115)	(48)	105
2047	1,846	1,763	83	96%	52	14	173	30.27%	30.83%	66	(117)	(51)	109
2048	1,867	1,820	47	97%	56	14	173	32.58%	32.58%	70	(119)	(49)	112
2049	1,887	1,887	-	100%	10	14	173	5.79%	5.79%	24	(121)	(97)	115
2050	1,906	1,906	-	100%	10	14	176	5.79%	5.79%	24	(124)	(100)	116
2051	1,925	1,925	-	100%	10	14	178	5.79%	5.79%	24	(126)	(102)	117
2052	1,944	1,944	-	100%	11	15	182	5.79%	5.79%	26	(128)	(102)	118
2053	1,961	1,961	-	100%	11	15	185	5.79%	5.79%	26	(130)	(104)	118

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except that the funding period is 30 years at June 30, 2019 (rather than the current funding period of 24 years at June 30, 2019).

**Kentucky Retirement Systems**  
**Exhibit 3-2**  
**CERS Non-Hazardous Retirement Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Proposed Plan (Amortization Period = 30 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 14,356	\$ 7,050	\$ 7,306	49%	\$ 487	\$ 126	\$ 2,522	19.30%	22.52%	\$ 613	\$ (818)	\$ (205)	\$ 441
2020	14,726	7,281	7,445	49%	498	129	2,581	19.30%	23.81%	627	(855)	(228)	455
2021	15,079	7,607	7,472	50%	572	132	2,638	21.68%	23.70%	704	(890)	(186)	471
2022	15,418	7,916	7,502	51%	628	135	2,694	23.29%	23.29%	763	(926)	(163)	489
2023	15,742	8,234	7,508	52%	632	138	2,751	22.99%	22.99%	770	(962)	(192)	509
2024	16,049	8,551	7,498	53%	640	140	2,809	22.79%	22.79%	780	(999)	(219)	528
2025	16,339	8,860	7,479	54%	648	143	2,866	22.60%	22.60%	791	(1,036)	(245)	546
2026	16,609	9,162	7,447	55%	656	146	2,924	22.42%	22.42%	802	(1,073)	(271)	564
2027	16,859	9,455	7,404	56%	664	149	2,983	22.26%	22.26%	813	(1,109)	(296)	582
2028	17,088	9,740	7,348	57%	673	152	3,044	22.12%	22.12%	825	(1,143)	(318)	599
2029	17,299	10,021	7,278	58%	683	155	3,107	21.99%	21.99%	838	(1,169)	(331)	616
2030	17,499	10,307	7,192	59%	694	159	3,174	21.87%	21.87%	853	(1,198)	(345)	633
2031	17,685	10,595	7,090	60%	706	162	3,243	21.76%	21.76%	868	(1,225)	(357)	651
2032	17,858	10,889	6,969	61%	718	166	3,315	21.65%	21.65%	884	(1,249)	(365)	669
2033	18,021	11,193	6,828	62%	730	169	3,390	21.55%	21.55%	899	(1,271)	(372)	688
2034	18,176	11,510	6,666	63%	744	173	3,467	21.47%	21.47%	917	(1,291)	(374)	708
2035	18,326	11,844	6,482	65%	759	177	3,546	21.39%	21.39%	936	(1,308)	(372)	729
2036	18,473	12,201	6,272	66%	774	182	3,631	21.31%	21.31%	956	(1,321)	(365)	751
2037	18,622	12,586	6,036	68%	790	186	3,720	21.25%	21.25%	976	(1,330)	(354)	776
2038	18,778	13,009	5,769	69%	808	191	3,813	21.18%	21.18%	999	(1,336)	(337)	803
2039	18,946	13,474	5,472	71%	825	195	3,909	21.11%	21.11%	1,020	(1,340)	(320)	832
2040	19,128	13,986	5,142	73%	844	200	4,007	21.06%	21.06%	1,044	(1,343)	(299)	865
2041	19,327	14,553	4,774	75%	863	205	4,107	21.01%	21.01%	1,068	(1,345)	(277)	901
2042	19,545	15,176	4,369	78%	883	210	4,209	20.98%	20.98%	1,093	(1,348)	(255)	941
2043	19,783	15,863	3,920	80%	905	216	4,313	20.97%	20.97%	1,121	(1,350)	(229)	984
2044	20,043	16,618	3,425	83%	928	221	4,419	20.99%	20.99%	1,149	(1,353)	(204)	1,032
2045	20,326	17,445	2,881	86%	953	226	4,526	21.05%	21.05%	1,179	(1,357)	(178)	1,085
2046	20,633	18,353	2,280	89%	981	232	4,635	21.16%	21.16%	1,213	(1,361)	(148)	1,142
2047	20,965	19,346	1,619	92%	1,015	237	4,745	21.38%	21.38%	1,252	(1,368)	(116)	1,206
2048	21,322	20,436	886	96%	1,065	243	4,857	21.92%	21.92%	1,308	(1,375)	(67)	1,275
2049	21,705	21,705	-	100%	183	249	4,971	3.68%	3.68%	432	(1,384)	(952)	1,323
2050	22,113	22,113	-	100%	187	254	5,087	3.67%	3.67%	441	(1,395)	(954)	1,346
2051	22,548	22,548	-	100%	190	260	5,204	3.66%	3.66%	450	(1,407)	(957)	1,370
2052	23,009	23,009	-	100%	195	266	5,324	3.66%	3.66%	461	(1,422)	(961)	1,396
2053	23,497	23,497	-	100%	199	272	5,446	3.66%	3.66%	471	(1,439)	(968)	1,423

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except that the funding period is 30 years at June 30, 2019 (rather than the current funding period of 24 years at June 30, 2019) and the employer contribution rate for FY 2020/2021 is assumed to remain at 19.30% of pay.

**Kentucky Retirement Systems**  
**Exhibit 3-3**  
**CERS Hazardous Retirement Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Proposed Plan (Amortization Period = 30 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 5,245	\$ 2,375	\$ 2,870	45%	\$ 168	\$ 45	\$ 559	30.06%	36.98%	\$ 213	\$ (275)	\$ (62)	\$ 149
2020	5,407	2,462	2,945	46%	169	45	562	30.06%	42.02%	214	(293)	(79)	154
2021	5,557	2,570	2,987	46%	199	46	570	35.00%	42.68%	245	(308)	(63)	159
2022	5,700	2,674	3,026	47%	237	46	578	41.02%	42.54%	283	(322)	(39)	166
2023	5,837	2,799	3,038	48%	249	47	588	42.31%	42.31%	296	(336)	(40)	174
2024	5,968	2,932	3,036	49%	252	48	599	42.10%	42.10%	300	(349)	(49)	182
2025	6,093	3,066	3,027	50%	255	49	610	41.84%	41.84%	304	(361)	(57)	190
2026	6,214	3,198	3,016	51%	259	50	622	41.57%	41.57%	309	(373)	(64)	198
2027	6,329	3,331	2,998	53%	262	51	635	41.32%	41.32%	313	(384)	(71)	206
2028	6,441	3,466	2,975	54%	266	52	648	41.05%	41.05%	318	(394)	(76)	214
2029	6,550	3,604	2,946	55%	270	53	663	40.79%	40.79%	323	(402)	(79)	223
2030	6,658	3,748	2,910	56%	275	54	680	40.50%	40.50%	329	(409)	(80)	232
2031	6,768	3,901	2,867	58%	280	56	698	40.18%	40.18%	336	(415)	(79)	241
2032	6,880	4,063	2,817	59%	286	57	717	39.87%	39.87%	343	(420)	(77)	252
2033	6,995	4,238	2,757	61%	292	59	737	39.55%	39.55%	351	(425)	(74)	263
2034	7,115	4,425	2,690	62%	297	61	757	39.22%	39.22%	358	(431)	(73)	274
2035	7,239	4,626	2,613	64%	302	62	777	38.94%	38.94%	364	(437)	(73)	287
2036	7,366	4,840	2,526	66%	308	64	796	38.67%	38.67%	372	(445)	(73)	300
2037	7,495	5,067	2,428	68%	313	65	815	38.44%	38.44%	378	(455)	(77)	314
2038	7,625	5,305	2,320	70%	319	67	834	38.25%	38.25%	386	(465)	(79)	329
2039	7,753	5,555	2,198	72%	325	68	852	38.10%	38.10%	393	(475)	(82)	345
2040	7,881	5,817	2,064	74%	331	70	872	37.98%	37.98%	401	(484)	(83)	361
2041	8,009	6,095	1,914	76%	338	71	892	37.91%	37.91%	409	(492)	(83)	378
2042	8,141	6,391	1,750	79%	346	73	913	37.84%	37.84%	419	(498)	(79)	397
2043	8,277	6,708	1,569	81%	354	75	935	37.82%	37.82%	429	(505)	(76)	417
2044	8,417	7,048	1,369	84%	362	77	956	37.84%	37.84%	439	(514)	(75)	438
2045	8,561	7,411	1,150	87%	370	78	976	37.97%	37.97%	448	(523)	(75)	461
2046	8,708	7,797	911	90%	382	80	996	38.31%	38.31%	462	(533)	(71)	485
2047	8,856	8,210	646	93%	395	81	1,017	38.82%	38.82%	476	(544)	(68)	511
2048	9,006	8,653	353	96%	414	83	1,038	39.89%	39.89%	497	(554)	(57)	539
2049	9,159	9,159	-	100%	63	85	1,062	5.93%	5.93%	148	(565)	(417)	558
2050	9,314	9,314	-	100%	64	87	1,082	5.93%	5.93%	151	(577)	(426)	566
2051	9,470	9,470	-	100%	66	88	1,105	5.93%	5.93%	154	(589)	(435)	575
2052	9,626	9,626	-	100%	67	90	1,128	5.93%	5.93%	157	(601)	(444)	583
2053	9,784	9,784	-	100%	68	92	1,152	5.93%	5.93%	160	(613)	(453)	592

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except that the funding period is 30 years at June 30, 2019 (rather than the current funding period of 24 years at June 30, 2019) and the employer contribution rate for FY 2020/2021 is assumed to remain at 30.06% of pay.

**Kentucky Retirement Systems**  
**Exhibit 3-4**  
**State Police Retirement System Retirement Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Proposed Plan (Amortization Period = 30 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 1,045	\$ 282	\$ 763	27%	\$ 57	\$ 4	\$ 48	119.05%	120.54%	\$ 61	\$ (63)	\$ (2)	\$ 15
2020	1,050	295	755	28%	58	4	47	123.79%	123.79%	62	(64)	(2)	16
2021	1,052	312	740	30%	58	4	47	123.79%	125.08%	62	(65)	(3)	16
2022	1,053	326	727	31%	58	4	47	124.48%	124.48%	62	(66)	(4)	17
2023	1,053	339	714	32%	58	4	46	124.48%	124.12%	62	(67)	(5)	18
2024	1,052	351	701	33%	57	4	46	123.96%	123.96%	61	(68)	(7)	18
2025	1,049	362	687	35%	57	4	46	123.96%	123.72%	61	(69)	(8)	19
2026	1,045	373	672	36%	57	4	46	123.88%	123.88%	61	(69)	(8)	19
2027	1,041	383	658	37%	57	4	46	123.88%	123.46%	61	(69)	(8)	20
2028	1,035	394	641	38%	56	4	46	122.60%	122.60%	60	(70)	(10)	20
2029	1,028	405	623	39%	56	4	46	122.60%	121.94%	60	(70)	(10)	21
2030	1,021	416	605	41%	56	4	46	121.05%	121.05%	60	(70)	(10)	22
2031	1,013	428	585	42%	57	4	47	121.05%	119.84%	61	(70)	(9)	22
2032	1,005	441	564	44%	56	4	47	118.34%	118.34%	60	(69)	(9)	23
2033	996	454	542	46%	57	4	48	118.34%	116.97%	61	(69)	(8)	24
2034	988	470	518	48%	56	4	48	115.16%	115.16%	60	(68)	(8)	24
2035	980	485	495	49%	56	4	49	115.16%	113.79%	60	(68)	(8)	25
2036	971	503	468	52%	55	4	49	112.37%	112.37%	59	(68)	(9)	26
2037	962	520	442	54%	55	4	49	112.37%	111.65%	59	(67)	(8)	27
2038	953	539	414	57%	54	4	49	110.60%	110.60%	58	(67)	(9)	28
2039	944	557	387	59%	54	4	49	110.60%	110.22%	58	(67)	(9)	29
2040	933	578	355	62%	54	4	49	109.45%	109.45%	58	(67)	(9)	30
2041	923	599	324	65%	54	4	49	109.45%	109.42%	58	(67)	(9)	31
2042	912	621	291	68%	54	4	49	109.59%	109.59%	58	(66)	(8)	32
2043	900	645	255	72%	54	4	49	109.59%	109.22%	58	(66)	(8)	34
2044	889	670	219	75%	54	4	49	109.27%	109.27%	58	(66)	(8)	35
2045	877	697	180	79%	52	4	48	109.27%	109.27%	56	(66)	(10)	36
2046	864	724	140	84%	54	4	48	112.37%	112.37%	58	(65)	(7)	38
2047	851	754	97	89%	54	4	48	112.37%	112.90%	58	(64)	(6)	39
2048	837	787	50	94%	54	4	48	112.99%	112.99%	58	(64)	(6)	41
2049	824	824	-	100%	4	4	48	7.70%	7.70%	8	(64)	(56)	42
2050	810	810	-	100%	4	4	49	7.67%	7.67%	8	(63)	(55)	41
2051	797	797	-	100%	4	4	49	7.66%	7.66%	8	(62)	(54)	40
2052	783	783	-	100%	4	4	50	7.66%	7.66%	8	(62)	(54)	40
2053	770	770	-	100%	4	4	51	7.66%	7.66%	8	(61)	(53)	39

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except that the funding period is 30 years at June 30, 2019 (rather than the current funding period of 24 years at June 30, 2019).

**Kentucky Retirement Systems**  
**Exhibit 3-5**  
**KERS Hazardous Insurance Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Proposed Plan (Amortization Period = 30 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 427	\$ 525	\$ (98)	123%	\$ 4	\$ 1	\$ 150	2.46%	0.00%	\$ 5	\$ (20)	\$ (15)	\$ 33
2020	440	543	(103)	123%	-	1	150	0.00%	0.00%	1	(22)	(21)	34
2021	453	563	(110)	124%	-	1	151	0.00%	0.00%	1	(24)	(23)	35
2022	464	577	(113)	124%	-	1	152	0.00%	0.00%	1	(26)	(25)	35
2023	473	587	(114)	124%	-	1	153	0.00%	0.00%	1	(27)	(26)	36
2024	480	596	(116)	124%	-	1	154	0.00%	0.00%	1	(29)	(28)	36
2025	486	605	(119)	124%	-	1	155	0.00%	0.00%	1	(30)	(29)	37
2026	491	613	(122)	125%	-	1	155	0.00%	0.00%	1	(32)	(31)	37
2027	495	620	(125)	125%	-	1	156	0.00%	0.00%	1	(32)	(31)	38
2028	498	627	(129)	126%	-	1	157	0.00%	0.00%	1	(33)	(32)	38
2029	500	633	(133)	127%	-	1	158	0.00%	0.00%	1	(34)	(33)	39
2030	501	639	(138)	128%	-	2	160	0.00%	0.00%	2	(34)	(32)	39
2031	502	645	(143)	128%	-	2	161	0.00%	0.00%	2	(34)	(32)	39
2032	504	652	(148)	129%	-	2	163	0.00%	0.00%	2	(34)	(32)	40
2033	505	659	(154)	130%	-	2	165	0.00%	0.00%	2	(34)	(32)	40
2034	507	667	(160)	132%	-	2	167	0.00%	0.00%	2	(34)	(32)	41
2035	508	675	(167)	133%	-	2	168	0.00%	0.00%	2	(34)	(32)	41
2036	511	684	(173)	134%	-	2	170	0.00%	0.00%	2	(33)	(31)	42
2037	513	694	(181)	135%	-	2	171	0.00%	0.00%	2	(33)	(31)	42
2038	517	705	(188)	136%	-	2	172	0.00%	0.00%	2	(33)	(31)	43
2039	520	717	(197)	138%	-	2	172	0.00%	0.00%	2	(33)	(31)	44
2040	525	730	(205)	139%	-	2	173	0.00%	0.00%	2	(32)	(30)	45
2041	529	744	(215)	141%	-	2	174	0.00%	0.00%	2	(32)	(30)	46
2042	535	760	(225)	142%	-	2	174	0.00%	0.00%	2	(32)	(30)	47
2043	540	776	(236)	144%	-	2	175	0.00%	0.00%	2	(32)	(30)	48
2044	546	793	(247)	145%	-	2	175	0.00%	0.00%	2	(33)	(31)	49
2045	552	811	(259)	147%	-	2	174	0.00%	0.00%	2	(33)	(31)	50
2046	557	829	(272)	149%	-	2	174	0.00%	0.00%	2	(34)	(32)	51
2047	562	848	(286)	151%	-	2	173	0.00%	0.00%	2	(34)	(32)	52
2048	567	868	(301)	153%	-	2	173	0.00%	0.00%	2	(35)	(33)	53
2049	571	888	(317)	156%	-	2	173	0.00%	0.00%	2	(36)	(34)	54
2050	575	908	(333)	158%	-	2	176	0.00%	0.00%	2	(37)	(35)	56
2051	578	929	(351)	161%	-	2	179	0.00%	0.00%	2	(37)	(35)	57
2052	581	950	(369)	164%	-	2	182	0.00%	0.00%	2	(38)	(36)	58
2053	583	973	(390)	167%	-	2	185	0.00%	0.00%	2	(38)	(36)	60

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except that the funding period is 30 years at June 30, 2019 (rather than the current funding period of 24 years at June 30, 2019).

**Kentucky Retirement Systems**  
**Exhibit 3-6**  
**CERS Non-Hazardous Insurance Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Proposed Plan (Amortization Period = 30 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 3,568	\$ 2,523	\$ 1,045	71%	\$ 119	\$ 12	\$ 2,498	4.76%	4.76%	\$ 131	\$ (149)	\$ (18)	\$ 160
2020	3,728	2,670	1,058	72%	122	14	2,558	4.76%	5.43%	136	(158)	(22)	169
2021	3,888	2,851	1,037	73%	138	15	2,615	5.27%	5.27%	153	(172)	(19)	178
2022	4,042	3,020	1,022	75%	134	16	2,672	5.03%	5.03%	150	(186)	(36)	187
2023	4,191	3,169	1,022	76%	132	18	2,728	4.85%	4.85%	150	(201)	(51)	196
2024	4,332	3,314	1,018	77%	131	19	2,786	4.72%	4.72%	150	(216)	(66)	205
2025	4,467	3,454	1,013	77%	130	20	2,843	4.58%	4.58%	150	(231)	(81)	213
2026	4,593	3,588	1,005	78%	129	22	2,901	4.45%	4.45%	151	(246)	(95)	221
2027	4,711	3,714	997	79%	128	23	2,959	4.31%	4.31%	151	(261)	(110)	229
2028	4,819	3,833	986	80%	126	24	3,018	4.18%	4.18%	150	(275)	(125)	236
2029	4,919	3,945	974	80%	125	26	3,080	4.06%	4.06%	151	(287)	(136)	242
2030	5,011	4,050	961	81%	124	27	3,143	3.95%	3.95%	151	(299)	(148)	249
2031	5,096	4,151	945	81%	124	29	3,210	3.86%	3.86%	153	(309)	(156)	255
2032	5,175	4,248	927	82%	123	30	3,280	3.76%	3.76%	153	(318)	(165)	260
2033	5,251	4,344	907	83%	124	31	3,353	3.69%	3.69%	155	(325)	(170)	266
2034	5,324	4,440	884	83%	125	32	3,430	3.64%	3.64%	157	(330)	(173)	272
2035	5,397	4,539	858	84%	126	34	3,509	3.59%	3.59%	160	(334)	(174)	278
2036	5,472	4,643	829	85%	127	35	3,594	3.54%	3.54%	162	(337)	(175)	285
2037	5,550	4,753	797	86%	129	36	3,682	3.50%	3.50%	165	(340)	(175)	292
2038	5,630	4,869	761	86%	130	37	3,771	3.46%	3.46%	167	(344)	(177)	299
2039	5,712	4,991	721	87%	133	38	3,863	3.44%	3.44%	171	(347)	(176)	306
2040	5,798	5,122	676	88%	135	39	3,957	3.40%	3.40%	174	(351)	(177)	315
2041	5,887	5,259	628	89%	137	40	4,049	3.39%	3.39%	177	(355)	(178)	323
2042	5,978	5,405	573	90%	140	41	4,146	3.37%	3.37%	181	(358)	(177)	332
2043	6,073	5,560	513	92%	142	42	4,243	3.35%	3.35%	184	(362)	(178)	342
2044	6,171	5,724	447	93%	145	43	4,343	3.33%	3.33%	188	(367)	(179)	352
2045	6,272	5,897	375	94%	148	44	4,443	3.32%	3.32%	192	(373)	(181)	363
2046	6,374	6,078	296	95%	151	45	4,546	3.32%	3.32%	196	(379)	(183)	374
2047	6,477	6,269	208	97%	154	46	4,651	3.31%	3.31%	200	(386)	(186)	386
2048	6,581	6,469	112	98%	159	48	4,758	3.34%	3.34%	207	(394)	(187)	398
2049	6,685	6,685	-	100%	47	49	4,868	0.96%	0.96%	96	(402)	(306)	408
2050	6,789	6,789	-	100%	47	50	4,980	0.94%	0.94%	97	(411)	(314)	414
2051	6,891	6,891	-	100%	47	51	5,093	0.92%	0.92%	98	(419)	(321)	420
2052	6,993	6,993	-	100%	47	52	5,208	0.91%	0.91%	99	(427)	(328)	426
2053	7,095	7,095	-	100%	47	53	5,327	0.89%	0.89%	100	(434)	(334)	432

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except that the funding period is 30 years at June 30, 2019 (rather than the current funding period of 24 years at June 30, 2019) and

**Kentucky Retirement Systems**  
**Exhibit 3-7**  
**CERS Hazardous Insurance Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Proposed Plan (Amortization Period = 30 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 1,733	\$ 1,314	\$ 419	76%	\$ 53	\$ 2	\$ 559	9.52%	9.52%	\$ 55	\$ (79)	\$ (24)	\$ 83
2020	1,795	1,377	418	77%	53	3	562	9.52%	9.86%	56	(86)	(30)	87
2021	1,852	1,454	398	79%	53	3	569	9.33%	9.33%	56	(94)	(38)	90
2022	1,901	1,511	390	79%	50	4	578	8.63%	8.63%	54	(103)	(49)	93
2023	1,941	1,553	388	80%	47	4	588	8.08%	8.08%	51	(112)	(61)	95
2024	1,974	1,588	386	80%	46	4	599	7.69%	7.69%	50	(120)	(70)	97
2025	1,999	1,615	384	81%	45	5	610	7.36%	7.36%	50	(126)	(76)	99
2026	2,018	1,637	381	81%	44	5	622	7.07%	7.07%	49	(132)	(83)	100
2027	2,032	1,653	379	81%	43	5	635	6.83%	6.83%	48	(137)	(89)	101
2028	2,040	1,665	375	82%	43	6	648	6.63%	6.63%	49	(141)	(92)	101
2029	2,045	1,674	371	82%	43	6	663	6.45%	6.45%	49	(143)	(94)	102
2030	2,048	1,681	367	82%	43	6	680	6.33%	6.33%	49	(145)	(96)	102
2031	2,048	1,687	361	82%	43	6	698	6.20%	6.20%	49	(146)	(97)	102
2032	2,048	1,693	355	83%	44	7	717	6.11%	6.11%	51	(146)	(95)	103
2033	2,048	1,700	348	83%	44	7	737	6.03%	6.03%	51	(146)	(95)	103
2034	2,049	1,709	340	83%	45	7	757	5.97%	5.97%	52	(145)	(93)	104
2035	2,051	1,721	330	84%	46	8	778	5.91%	5.91%	54	(143)	(89)	105
2036	2,056	1,737	319	84%	47	8	798	5.86%	5.86%	55	(140)	(85)	106
2037	2,065	1,758	307	85%	48	8	818	5.82%	5.82%	56	(138)	(82)	107
2038	2,077	1,783	294	86%	49	8	838	5.80%	5.80%	57	(136)	(79)	109
2039	2,092	1,814	278	87%	50	9	858	5.78%	5.78%	59	(133)	(74)	111
2040	2,112	1,850	262	88%	51	9	878	5.76%	5.76%	60	(131)	(71)	113
2041	2,135	1,892	243	89%	52	9	898	5.75%	5.75%	61	(129)	(68)	116
2042	2,162	1,939	223	90%	53	9	918	5.75%	5.75%	62	(128)	(66)	119
2043	2,192	1,993	199	91%	54	9	939	5.74%	5.74%	63	(127)	(64)	123
2044	2,226	2,052	174	92%	55	10	959	5.74%	5.74%	65	(127)	(62)	126
2045	2,262	2,116	146	94%	56	10	977	5.75%	5.75%	66	(128)	(62)	130
2046	2,300	2,184	116	95%	57	10	996	5.76%	5.76%	67	(130)	(63)	135
2047	2,339	2,256	83	96%	59	10	1,016	5.80%	5.80%	69	(132)	(63)	139
2048	2,377	2,333	44	98%	61	10	1,037	5.92%	5.92%	71	(135)	(64)	144
2049	2,416	2,416	-	100%	17	11	1,060	1.57%	1.57%	28	(139)	(111)	147
2050	2,453	2,453	-	100%	17	11	1,081	1.55%	1.55%	28	(143)	(115)	149
2051	2,489	2,489	-	100%	17	11	1,103	1.52%	1.52%	28	(147)	(119)	152
2052	2,524	2,524	-	100%	17	11	1,127	1.50%	1.50%	28	(150)	(122)	153
2053	2,556	2,556	-	100%	17	12	1,151	1.48%	1.48%	29	(154)	(125)	155

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except that the funding period is 30 years at June 30, 2019 (rather than the current funding period of 24 years at June 30, 2019) and

**Kentucky Retirement Systems**  
**Exhibit 3-8**  
**State Police Retirement System Insurance Fund**  
**Actuarial Analysis of Proposed Legislation SB 249 (House Substitute)**  
**Proposed Plan (Amortization Period = 30 Years at June 30, 2019)**  
**(\$ 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	Total Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	Annual Cash Flow Analysis			
										Member and Employer Contributions	Benefit Payments and Expenses	Net External Cash Flow	Investment Income
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2019	\$ 277	\$ 197	\$ 80	71%	\$ 13	\$ -	\$ 48	27.23%	19.50%	\$ 13	\$ (14)	\$ (1)	\$ 13
2020	284	210	74	74%	9	-	47	19.69%	19.69%	9	(15)	(6)	13
2021	291	221	70	76%	9	-	47	19.69%	19.03%	9	(16)	(7)	14
2022	297	229	68	77%	8	-	46	17.86%	17.86%	8	(17)	(9)	14
2023	301	234	67	78%	8	-	46	17.86%	17.07%	8	(18)	(10)	14
2024	304	239	65	79%	8	-	46	16.39%	16.39%	8	(19)	(11)	15
2025	306	242	64	79%	8	-	46	16.39%	15.86%	8	(20)	(12)	15
2026	307	244	63	79%	7	-	46	15.41%	15.41%	7	(21)	(14)	15
2027	307	246	61	80%	7	-	46	15.41%	15.01%	7	(22)	(15)	15
2028	306	246	60	80%	7	-	46	14.63%	14.63%	7	(22)	(15)	15
2029	304	246	58	81%	7	-	46	14.63%	14.35%	7	(23)	(16)	15
2030	302	245	57	81%	7	-	46	14.08%	14.08%	7	(23)	(16)	15
2031	299	244	55	82%	7	-	47	14.08%	13.85%	7	(23)	(16)	15
2032	295	242	53	82%	6	-	47	13.62%	13.62%	6	(23)	(17)	15
2033	292	241	51	83%	7	-	48	13.62%	13.43%	7	(23)	(16)	15
2034	288	239	49	83%	6	-	49	13.21%	13.21%	6	(23)	(17)	14
2035	285	238	47	84%	6	-	49	13.21%	13.08%	6	(22)	(16)	14
2036	281	236	45	84%	6	-	49	12.95%	12.95%	6	(22)	(16)	14
2037	278	236	42	85%	6	-	50	12.95%	12.89%	6	(21)	(15)	14
2038	276	236	40	86%	6	-	50	12.83%	12.83%	6	(21)	(15)	14
2039	273	236	37	86%	6	-	50	12.83%	12.82%	6	(20)	(14)	14
2040	271	236	35	87%	6	-	50	12.79%	12.79%	6	(20)	(14)	14
2041	270	238	32	88%	6	-	50	12.79%	12.83%	6	(19)	(13)	14
2042	268	240	28	90%	6	-	50	12.86%	12.86%	6	(19)	(13)	15
2043	268	242	26	90%	6	-	50	12.86%	12.86%	6	(18)	(12)	15
2044	267	245	22	92%	6	-	50	12.88%	12.88%	6	(18)	(12)	15
2045	267	249	18	93%	6	-	49	12.88%	12.88%	6	(18)	(12)	15
2046	267	253	14	95%	6	-	49	13.17%	13.17%	6	(18)	(12)	15
2047	268	258	10	96%	6	-	49	13.17%	13.24%	6	(18)	(12)	16
2048	268	263	5	98%	6	-	49	13.32%	13.32%	6	(18)	(12)	16
2049	269	269	-	100%	1	-	49	2.41%	2.41%	1	(18)	(17)	16
2050	269	269	-	100%	1	-	49	2.34%	2.34%	1	(18)	(17)	16
2051	268	268	-	100%	1	1	50	2.30%	2.30%	2	(19)	(17)	16
2052	268	268	-	100%	1	1	51	2.26%	2.26%	2	(19)	(17)	16
2053	267	267	-	100%	1	1	52	2.23%	2.23%	2	(19)	(17)	16

Notes and assumptions:

The projection is based on the same methods and assumptions as the projection under the Current Plan, except that the funding period is 30 years at June 30, 2019 (rather than the current funding period of 24 years at June 30, 2019).