



KENTUCKY RETIREMENT SYSTEMS

David L. Eager, Executive Director

1260 Louisville Road • Frankfort, Kentucky 40601
kyret.ky.gov • Phone: 502-696-8800 • Fax: 502-696-8822



March 1, 2021

Ms. Katie Carney
Office of Fiscal Statement Review
Legislative Research Commission
Capitol Annex, Room 104
Frankfort, KY 40601

RE: Senate Bill 169 (2021 RS BR 1172) – SCS Version
AA Statement Required by KRS 6.350
AA Statement 1 of 4

Dear Ms. Carney:

Kentucky Retirement Systems' (KRS) actuary, GRS Retirement Consulting, had previously provided an Actuarial Analysis of Senate Bill 169 (2021 RS BR 1172) via letter dated February 16, 2021. KRS has now examined the SCS Version of Senate Bill 169 (2021 RS BR 1172) and compared it to the existing AA for Senate Bill 169.

We have determined that the SCS Version of Senate Bill 169 (2021 RS BR 1172) would not impact the previous actuarial impact provided for this legislation. Therefore, the Actuarial Analysis of Senate Bill 169 (2021 RS BR 1172), dated February 16, 2021, is applicable to Senate Bill 169 (2021 RS BR 1172) – SCS Version.

We have not requested any further actuarial analysis of Senate Bill 169 (2021 RS BR 1172) – SCS Version by the Systems' independent actuary. Please let me know if you have any questions regarding our analysis of Senate Bill 169 (2021 RS BR 1172) – SCS Version.

Sincerely,

A handwritten signature in blue ink that reads "David Eager".

David L. Eager
Executive Director
Kentucky Retirement Systems

Actuarial Analysis Summary

BR or Bill Ref.	SB 169	Actuarial Analysis Conducted For:
Date:	2/16/2021	<input checked="" type="checkbox"/> KERS NH <input checked="" type="checkbox"/> KERS Haz <input checked="" type="checkbox"/> SPRS <input type="checkbox"/> TRS
Actuary:	GRS	<input type="checkbox"/> CERS NH <input type="checkbox"/> CERS Haz <input type="checkbox"/> LRP <input type="checkbox"/> JRP

Section I: Executive Summary

In the opinion of the actuary, this bill would make the affected state-administered retirement system(s) actuarially:

☐ MORE SOUND ☐ LESS SOUND ☒ NO IMPACT

If actuarially MORE SOUND OR LESS SOUND, please summarize the factors leading to the actuary's opinion:

The proposed legislation increases the disability benefits for members who become “totally and permanently disabled” in the line of duty or as a result of a duty-related disability, which will slightly increase the liabilities and contribution requirements of the systems. The actuarially determined contribution requirements increase by 0.06% of pay, 0.01% of pay, and 0.11% of pay for the KERS Non-Hazardous, KERS Hazardous, and SPRS Systems, respectively.

As long as employer contribution rates are increased accordingly, we do not believe this benefit change will impact the current actuarial soundness of the systems.

Does this bill increase or decrease employer costs? ☒ INCREASE ☐ DECREASE ☐ NO IMPACT

Does this bill increase or decrease benefits? ☒ INCREASE ☐ DECREASE ☐ NO IMPACT

Does this bill increase or decrease benefit participation? ☐ INCREASE ☐ DECREASE ☒ NO IMPACT

If the bill impacts employer costs, benefits, or benefit participation, please explain and estimate the impact in Sections II and VI.

Section II: Financial Projections

	Combined Pension and Retiree Health Plan					
	KERS Non-Hazardous*		KERS Hazardous*		SPRS*	
	Current	Proposed	Current	Proposed	Current	Proposed
Projected Employer Cost* (\$ in Millions)						
30-Yr Nominal \$	\$32,963	\$32,982	\$1,604	\$1,605	\$1,826	\$1,828
30-Yr Net Present Value \$	\$17,015	\$17,024	\$768	\$768	\$953	\$954
Proj. Normal Cost for New Hire	3.99% of pay	4.02% of pay	6.92% of pay	6.95% of pay	8.98% of pay	9.13% of pay

*Projected costs are for all employers and all fund sources for entire 30 year period. Proj. normal cost is the normal cost for new hires after taking into account employee contributions.

	Pension Plan					
	KERS Non-Hazardous*		KERS Hazardous*		SPRS*	
	Current	Proposed	Current	Proposed	Current	Proposed
Projected UAL (\$ in Millions)						
Baseline (Year 1)	\$14,026	\$14,028	\$574	\$574	\$757	\$757
5 Years	\$13,236	\$13,237	\$558	\$558	\$711	\$712
10 Years	\$11,754	\$11,757	\$496	\$496	\$630	\$629
20 Years	\$7,325	\$7,326	\$302	\$302	\$384	\$385
30 Years	\$0	\$0	\$0	\$0	\$0	\$0
Projected Funding Ratio (%)						
Baseline (Year 1)	14%	14%	55%	55%	28%	28%
5 Years	19%	19%	60%	60%	33%	33%
10 Years	25%	25%	67%	67%	39%	39%
20 Years	46%	46%	83%	83%	59%	59%
30 Years	100%	100%	100%	100%	100%	100%

	Retiree Health Plan					
	KERS Non-Hazardous*		KERS Hazardous*		SPRS*	
	Current	Proposed	Current	Proposed	Current	Proposed
Projected UAL (\$ in Millions)						
Baseline (Year 1)	\$1,469	\$1,470	\$(111)	\$(111)	\$69	\$69
5 Years	\$1,430	\$1,431	\$(92)	\$(92)	\$72	\$72
10 Years	\$1,305	\$1,306	\$(99)	\$(99)	\$63	\$64
20 Years	\$918	\$919	\$(132)	\$(130)	\$41	\$42
30 Years	\$0	\$0	\$(193)	\$(192)	\$0	\$0
Projected Funding Ratio (%)						
Baseline (Year 1)	43%	43%	126%	126%	75%	75%
5 Years	49%	49%	119%	119%	76%	76%
10 Years	56%	56%	120%	120%	78%	78%
20 Years	68%	68%	125%	125%	84%	84%
30 Years	100%	100%	132%	132%	100%	100%

* if necessary or plan administers more than one plan/system.

Section III: Brief Summary of Bill

The proposed legislation increases the disability benefits for members who become “totally and permanently disabled” in the line of duty or as a result of a duty-related disability. Current benefits for members who qualify for total and permanent in the line of duty or duty-related disability provide a minimum benefit equal to 25% of the member’s monthly final rate of pay plus 10% of the member’s monthly final rate of pay for each dependent child (with the total dependentchild benefit not to exceed 40% of the member’s monthly final rate of pay).

The proposed legislation increases the minimum benefit to be equal to 75% of the member's monthly average pay plus 10% of the member's monthly average pay for each dependent child (with the total benefit payable to both the member and dependent children while the member is alive not to exceed 100% of the member's monthly pay). The insurance premium for the member, the member's spouse, and the member's dependent children shall also be paid in full by the System.

Section IV: Statement of Assumptions and Methods

Did the analysis rely solely upon the same assumptions & methods previously established and utilized by the actuary in the retirement system's most recent actuarial valuation?

☐ YES ☒ NO

If NO, please describe each new assumption or method utilized, the basis for selecting the revised assumption or method, and whether each new assumption or method increased or decreased projected employer costs:

The calculations are based on the same methods and assumptions as the June 30, 2020 Actuarial Valuation, except as described below.

Current hazardous in the line of duty disability provisions do not require a "total and permanent" injury, so future members will still be eligible to receive a disability benefit under the current provisions if the injury is deemed to occur in the line of duty but not be a "total and permanent" disability. While the Actuarial Valuation makes an assumption for the percentage of future disability incidences that are deemed to qualify as in the line of duty, the analysis must make an additional assumption for the hazardous plans as to the percentage of hazardous member disabilities that occur in the line of duty and qualify as a "total and permanent" injury.

Based on data compiled for the June 30, 2018 KRS Experience Study, there were 67 disabilities that were classified as in the line of duty or duty related over the five-year period ending June 30, 2018. Additionally, according to data provided by KRS for this analysis, there were 12 disabilities classified as total and permanent in the line of duty or duty-related disability over the 10-year period from 2010-2019, or approximately 10% of all disabilities classified as in the line of duty or duty related.

Because the current provisions already require "total and permanent" disability for non-hazardous members, the analysis assumes all future non-hazardous duty related disabilities that occur will qualify for the proposed benefit provisions.

Section V: Comment from Actuary

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

Section VI: Detailed Actuarial Analysis and Projections *(May be attached as Appendix)*

Please see attached.

Actuarial Analysis Summary –

BR or Bill Ref.	SB 169	Actuarial Analysis Conducted For:
Date:	2/16/2021	<input type="checkbox"/> KERS NH <input type="checkbox"/> KERS Haz <input type="checkbox"/> SPRS <input type="checkbox"/> TRS
Actuary:	GRS	<input checked="" type="checkbox"/> CERS NH <input checked="" type="checkbox"/> CERS Haz <input type="checkbox"/> LRP <input type="checkbox"/> JRP

Section I: Executive Summary

In the opinion of the actuary, this bill would make the affected state-administered retirement system(s) actuarially:

☐ **MORE SOUND** ☐ **LESS SOUND** ☒ **NO IMPACT**

If actuarially **MORE SOUND OR LESS SOUND**, please summarize the factors leading to the actuary's opinion:

The proposed legislation increases the disability benefits for members who become "totally and permanently disabled" in the line of duty or as a result of a duty-related disability, which will slightly increase the liabilities and contribution requirements of the systems. The actuarially determined contribution requirements increase by 0.06% of pay and 0.10% of pay for the CERS Non-Hazardous and CERS Hazardous Systems, respectively.

As long as employer contribution rates are increased accordingly, we do not believe this benefit change will impact the current actuarial soundness of the systems.

Does this bill increase or decrease employer costs? ☒ **INCREASE** ☐ **DECREASE** ☐ **NO IMPACT**

Does this bill increase or decrease benefits? ☒ **INCREASE** ☐ **DECREASE** ☐ **NO IMPACT**

Does this bill increase or decrease benefit participation? ☐ **INCREASE** ☐ **DECREASE** ☒ **NO IMPACT**

If the bill impacts employer costs, benefits, or benefit participation, please explain and estimate the impact in Sections II and VI.

Section II: Financial Projections

	Combined Pension and Retiree Health Plan					
	CERS Non-Hazardous*		CERS Hazardous*		N/A*	
	Current	Proposed	Current	Proposed	Current	Proposed
Projected Employer Cost* (\$ in Millions)						
30-Yr Nominal \$	\$25,556	\$25,622	\$10,242	\$10,269	N/A	N/A
30-Yr Net Present Value \$	\$11,202	\$11,230	\$4,492	\$4,503	N/A	N/A
Proj. Normal Cost for New Hire	4.36% of pay	4.41% of pay	7.24% of pay	7.37% of pay	N/A	N/A

*Projected costs are for all employers and all fund sources for entire 30 year period. Proj. normal cost is the normal cost for new hires after taking into account employee contributions.

	Pension Plan					
	CERS Non-Hazardous*		CERS Hazardous*		N/A*	
	Current	Proposed	Current	Proposed	Current	Proposed
Projected UAL (\$ in Millions)						
Baseline (Year 1)	\$7,390	\$7,393	\$2,983	\$2,983	N/A	N/A
5 Years	\$7,731	\$7,737	\$3,180	\$3,182	N/A	N/A
10 Years	\$7,400	\$7,403	\$3,030	\$3,032	N/A	N/A
20 Years	\$5,280	\$5,281	\$2,100	\$2,100	N/A	N/A
30 Years	\$0	\$0	\$0	\$0	N/A	N/A
Projected Funding Ratio (%)						
Baseline (Year 1)	49%	49%	45%	45%	N/A	N/A
5 Years	52%	52%	47%	47%	N/A	N/A
10 Years	57%	57%	54%	54%	N/A	N/A
20 Years	72%	72%	73%	73%	N/A	N/A
30 Years	100%	100%	100%	100%	N/A	N/A

	Retiree Health Plan					
	CERS Non-Hazardous*		CERS Hazardous*		N/A*	
	Current	Proposed	Current	Proposed	Current	Proposed
Projected UAL (\$ in Millions)						
Baseline (Year 1)	\$731	\$734	\$379	\$380	N/A	N/A
5 Years	\$826	\$829	\$421	\$422	N/A	N/A
10 Years	\$816	\$819	\$403	\$404	N/A	N/A
20 Years	\$720	\$720	\$302	\$303	N/A	N/A
30 Years	\$0	\$0	\$0	\$0	N/A	N/A
Projected Funding Ratio (%)						
Baseline (Year 1)	78%	78%	78%	78%	N/A	N/A
5 Years	79%	79%	78%	78%	N/A	N/A
10 Years	82%	82%	80%	80%	N/A	N/A
20 Years	86%	86%	85%	85%	N/A	N/A
30 Years	100%	100%	100%	100%	N/A	N/A

* if necessary or plan administers more than one plan/system.

Section III: Brief Summary of Bill

The proposed legislation increases the disability benefits for members who become “totally and permanently disabled” in the line of duty or as a result of a duty-related disability. Current benefits for members who qualify for total and permanent in the line of duty or duty-related disability provide a minimum benefit equal to 25% of the member’s monthly final rate of pay plus 10% of the member’s monthly final rate of pay for each dependent child (with the total dependentchild benefit not to exceed 40% of the member’s monthly final rate of pay).

The proposed legislation increases the minimum benefit to be equal to 75% of the member's monthly average pay plus 10% of the member's monthly average pay for each dependent child (with the total benefit payable to both the member and dependent children while the member is alive not to exceed 100% of the member's monthly pay). The insurance premium for the member, the member's spouse, and the member's dependent children shall also be paid in full by the System.

Section IV: Statement of Assumptions and Methods

Did the analysis rely solely upon the same assumptions & methods previously established and utilized by the actuary in the retirement system's most recent actuarial valuation?

☐ YES ☒ NO

If NO, please describe each new assumption or method utilized, the basis for selecting the revised assumption or method, and whether each new assumption or method increased or decreased projected employer costs:

The calculations are based on the same methods and assumptions as the June 30, 2020 Actuarial Valuation, except as described below.

Current hazardous in the line of duty disability provisions do not require a "total and permanent" injury, so future members will still be eligible to receive a disability benefit under the current provisions if the injury is deemed to occur in the line of duty but not be a "total and permanent" disability. While the Actuarial Valuation makes an assumption for the percentage of future disability incidences that are deemed to qualify as in the line of duty, the analysis must make an additional assumption for the hazardous plans as to the percentage of hazardous member disabilities that occur in the line of duty and qualify as a "total and permanent" injury.

Based on data compiled for the June 30, 2018 KRS Experience Study, there were 67 disabilities that were classified as in the line of duty or duty related over the five-year period ending June 30, 2018. Additionally, according to data provided by KRS for this analysis, there were 12 disabilities classified as total and permanent in the line of duty or duty-related disability over the 10-year period from 2010-2019, or approximately 10% of all disabilities classified as in the line of duty or duty related.

Because the current provisions already require "total and permanent" disability for non-hazardous members, the analysis assumes all future non-hazardous duty related disabilities that occur will qualify for the proposed benefit provisions.

Section V: Comment from Actuary

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

Section VI: Detailed Actuarial Analysis and Projections *(May be attached as Appendix)*

Please see attached.



February 16, 2021

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

Re: Actuarial Analysis of Proposed Legislation SB 169 and its Financial Impact on the Kentucky Retirement Systems

Dear Mr. Eager:

We have reviewed the proposed legislation SB 169, 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). Please note that proposed legislation HB 139 provides similar type provision changes and we have prepared a separate, but identical actuarial analysis for that legislation.

Summary of Fiscal Impact

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

Increase in Actuarially Determined Contribution Requirements

Plan	Retirement Fund	Insurance Fund	Retirement and Insurance	Increase in Annual Contribution ¹
KERS Non-Hazardous	0.04%	0.02%	0.06%	\$833,000
KERS Hazardous	0.01%	<0.01%	0.01%	17,000
CERS Non-Hazardous	0.04%	0.02%	0.06%	1,570,000
CERS Hazardous	0.04%	0.06%	0.10%	580,000
SPRS	0.04%	0.07%	0.11%	51,000

¹ Based on estimated FY 21/22 payroll. Future annual increases in contributions will depend on payroll experience.

The majority of the increase in the employer contribution requirement represents an ultimate increase in the cost of the plan (i.e. an increase in the normal cost) and is therefore payable indefinitely so long as there are active members accruing benefits in the Fund. Note, there is no projected increase in employer contributions for FY 21/22 for the CERS Non-Hazardous Fund and for FY21/22 – FY 22/23 for the CERS Hazardous Fund due to the contribution phase-in provisions currently in

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2021

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

This legislation would also increase disability retirement benefits for four (4) KERS Non-Hazardous disabled retirees with the annual distribution of benefits for these retirees increasing from \$30,000 to \$81,000 per year (\$12,800 increase in average annual benefit). Similarly, there will also be an increase in disability retirement benefits for 13 CERS Non-Hazardous disabled retirees with the total annual distribution for these retirees increasing from \$144,000 to \$292,000 per year (\$11,400 increase in average annual benefit) and an increase in disability retirement benefits for three (3) CERS Hazardous disabled retirees with the total annual distribution for these retirees increasing from \$37,000 to \$50,000 (\$4,200 increase in average annual benefit). This is an approximate \$568,000, \$1,506,000, and \$150,000 increase in the actuarial accrued liability for the KERS Non-Hazardous, CERS Non-Hazardous, and CERS Hazardous Pension Funds, respectively. There is an additional \$867,000 and \$2,250,000 increase in actuarial accrued liability for the KERS Non-Hazardous and CERS Non-Hazardous Insurance Funds, respectively.

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

Comments on Proposed Legislation

Current benefits for members who qualify for total and permanent in the line of duty or duty-related disability provide a minimum benefit equal to 25% of the member's monthly final rate of pay plus 10% of the member's monthly final rate of pay for each dependent child (with the total dependent child benefit not to exceed 40% of the member's monthly final rate of pay). In order to be eligible for this benefit, non-hazardous members must become "totally or permanently disabled" due to a duty-related incident. Hazardous members must become "totally or permanently disabled" and the injury must occur in the line of duty.

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



Comments on Fiscal Analysis

Currently, the Actuarial Valuation makes an assumption for the percentage of future disability incidences that are deemed to qualify for the current benefits payable to non-hazardous members who become totally and permanently disabled due to a duty-related injury. Because the current provisions already require “total and permanent” disability for non-hazardous members, the analysis assumes all future non-hazardous duty related disabilities that occur will qualify for the proposed benefit provisions.

On the other hand, current hazardous in the line of duty disability provisions do not require a “total and permanent” injury, so future members will still be eligible to receive a disability benefit under the current provisions if the injury is deemed to occur in the line of duty but not be a “total and permanent” disability. While the Actuarial Valuation makes an assumption for the percentage of future disability incidences that are deemed to qualify as in the line of duty, the analysis must make an additional assumption for the hazardous plans as to the percentage of hazardous member disabilities that occur in the line of duty and qualify as a “total and permanent” injury.

Based on data compiled for the June 30, 2018 KRS Experience Study, there were 67 disabilities that were classified as in the line of duty or duty related over the five-year period ending June 30, 2018. Additionally, according to data provided by KRS for this analysis, there were 12 disabilities classified as total and permanent in the line of duty or duty-related disability over the 10-year period from 2010-2019, or approximately 10% of all disabilities classified as in the line of duty or duty related.

Line-of-Duty Disability Incidence Assumptions

Plan	Current Assumption for Percentage of Disabilities that Qualify under Current Benefit Provisions for Members who become Disabled in the Line of Duty	Percentage of Disabilities that Occur in the Line of Duty that are Assumed to Qualify as “Total and Permanent” under Proposed Legislation
KERS Non-Hazardous	2%	100%
KERS Hazardous	10%	10%
CERS Non-Hazardous	2%	100%
CERS Hazardous	50%	10%
SPRS	70%	10%

Mr. David Eager
February 16,
2021

Comments on Fiscal Impact

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

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

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, 2020. 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, 2020 actuarial valuation. The analysis and projections were performed without regard to HB 1 that was enacted during the 2019 special legislative session (and amended by SB 249 during the 2020 legislative session) as individual employer elections regarding their future cessation from participating in KERS is unknown at this time. Additionally, the projections assume that the changes are effective June 30, 2020, the date of the last actuarial valuation.

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




Mr. David Eager
February 16,
2021

Closing

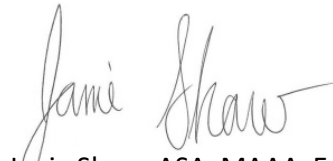
We are not attorneys, and we cannot provide a legal opinion regarding the changes in this proposed legislation. Nothing in this letter should be construed as providing legal, investment or tax advice.

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

Sincerely,



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



Janie Shaw, ASA, MAAA, EA
Consultant



**Actuarial Analysis of SB 169Section 1.
Comparison of Fiscal Impact Current Plan vs.
Proposed Changes**

Kentucky Retirement Systems Exhibit 1-1
KERS Non-Hazardous Retirement Fund
Actuarial Analysis of SB 169
Comparison of Current Plan and Proposed
Legislation (\$ in Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2020	\$ 14,026	\$ 14,028	\$ 2	14%	14%	0%	\$ 923	\$ 923	\$ -	66.5%	66.5%	0.0%
2021	13,915	13,917	2	15%	15%	0%	1,036	1,036	-	75.3%	75.4%	0.1%
2022	13,695	13,697	2	16%	16%	0%	1,034	1,034	-	75.6%	75.7%	0.1%
2023	13,470	13,473	3	17%	17%	0%	1,028	1,029	1	75.6%	75.7%	0.1%
2024	13,236	13,237	1	19%	19%	0%	1,030	1,030	-	76.0%	76.1%	0.1%
2025	12,971	12,972	1	20%	20%	0%	1,026	1,026	-	76.0%	76.1%	0.1%
2026	12,691	12,693	2	21%	21%	0%	1,025	1,026	1	76.2%	76.3%	0.1%
2027	12,395	12,397	2	23%	23%	0%	1,022	1,022	-	76.2%	76.3%	0.1%
2028	12,083	12,085	2	24%	24%	0%	1,019	1,020	1	76.3%	76.3%	0.0%
2029	11,754	11,757	3	25%	25%	0%	1,017	1,017	-	76.3%	76.3%	0.0%
2030	11,409	11,411	2	27%	27%	0%	1,015	1,015	-	76.2%	76.3%	0.1%
2031	11,044	11,046	2	28%	28%	0%	1,014	1,014	-	76.2%	76.3%	0.1%
2032	10,659	10,661	2	30%	30%	0%	1,011	1,012	1	76.1%	76.1%	0.0%
2033	10,255	10,256	1	32%	32%	0%	1,011	1,012	1	76.1%	76.1%	0.0%
2034	9,827	9,828	1	34%	34%	0%	1,007	1,008	1	75.8%	75.8%	0.0%
2035	9,379	9,379	-	36%	36%	0%	1,008	1,009	1	75.8%	75.8%	0.0%
2036	8,904	8,904	-	38%	38%	0%	1,006	1,006	-	75.4%	75.5%	0.1%
2037	8,406	8,407	1	40%	40%	0%	1,010	1,010	-	75.4%	75.5%	0.1%
2038	7,878	7,878	-	43%	43%	0%	1,005	1,005	-	74.7%	74.8%	0.1%
2039	7,325	7,326	1	46%	46%	0%	1,009	1,010	1	74.7%	74.8%	0.1%
2040	6,739	6,739	-	50%	50%	0%	1,005	1,006	1	74.1%	74.1%	0.0%
2041	6,126	6,125	(1)	53%	54%	1%	1,009	1,010	1	74.1%	74.1%	0.0%
2042	5,475	5,476	1	58%	58%	0%	1,003	1,003	-	73.3%	73.4%	0.1%
2043	4,798	4,797	(1)	62%	62%	0%	1,006	1,006	-	73.3%	73.4%	0.1%
2044	4,080	4,080	-	67%	67%	0%	997	997	-	72.5%	72.5%	0.0%
2045	3,334	3,334	-	73%	73%	0%	1,000	1,000	-	72.5%	72.5%	0.0%
2046	2,546	2,546	-	79%	79%	0%	995	995	-	71.9%	71.9%	0.0%
2047	1,720	1,721	1	86%	86%	0%	997	998	1	71.9%	71.9%	0.0%
2048	849	849	-	93%	93%	0%	993	994	1	71.5%	71.5%	0.0%
2049	-	-	-	100%	100%	0%	52	53	1	3.8%	3.8%	0.0%
2050	-	-	-	100%	100%	0%	52	53	1	3.8%	3.8%	0.0%

Kentucky Retirement Systems Exhibit 1-2
KERS Hazardous Retirement Fund
Actuarial Analysis of SB 169
Comparison of Current Plan and Proposed
Legislation (\$ in Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2020	\$ 574	\$ 574	\$ -	55%	55%	0%	\$ 61	\$ 61	\$ -	36.0%	36.0%	0.0%
2021	563	563	-	57%	57%	0%	57	57	-	33.4%	33.4%	0.0%
2022	560	560	-	58%	58%	0%	57	57	-	33.1%	33.1%	0.0%
2023	560	560	-	59%	59%	0%	57	57	-	33.1%	33.1%	0.0%
2024	558	558	-	60%	60%	0%	57	57	-	33.0%	33.0%	0.0%
2025	547	547	-	62%	62%	0%	58	58	-	33.0%	33.0%	0.0%
2026	536	536	-	63%	63%	0%	57	57	-	32.6%	32.6%	0.0%
2027	524	524	-	65%	65%	0%	57	57	-	32.6%	32.6%	0.0%
2028	509	510	1	66%	66%	0%	56	56	-	31.9%	31.9%	0.0%
2029	496	496	-	67%	67%	0%	57	57	-	31.9%	31.9%	0.0%
2030	481	481	-	69%	69%	0%	56	56	-	31.2%	31.2%	0.0%
2031	465	465	-	70%	70%	0%	57	57	-	31.2%	31.2%	0.0%
2032	448	448	-	72%	72%	0%	56	56	-	30.5%	30.5%	0.0%
2033	431	431	-	73%	73%	0%	57	57	-	30.5%	30.5%	0.0%
2034	412	413	1	75%	75%	0%	56	56	-	29.8%	29.8%	0.0%
2035	392	393	1	77%	77%	0%	56	56	-	29.8%	29.8%	0.0%
2036	371	372	1	78%	78%	0%	56	56	-	29.1%	29.1%	0.0%
2037	350	350	-	80%	80%	0%	56	56	-	29.1%	29.1%	0.0%
2038	327	326	(1)	81%	81%	0%	55	55	-	28.5%	28.5%	0.0%
2039	302	302	-	83%	83%	0%	55	55	-	28.5%	28.5%	0.0%
2040	276	276	-	85%	85%	0%	53	53	-	27.2%	27.2%	0.0%
2041	251	250	(1)	86%	86%	0%	53	53	-	27.2%	27.2%	0.0%
2042	223	223	-	88%	88%	0%	52	52	-	26.6%	26.6%	0.0%
2043	196	195	(1)	90%	90%	0%	52	52	-	26.6%	26.6%	0.0%
2044	165	165	-	91%	91%	0%	50	50	-	25.7%	25.7%	0.0%
2045	135	135	-	93%	93%	0%	50	50	-	25.7%	25.7%	0.0%
2046	103	104	1	95%	95%	0%	50	50	-	25.7%	25.7%	0.0%
2047	70	69	(1)	97%	97%	0%	50	50	-	25.7%	25.7%	0.0%
2048	34	34	-	98%	98%	0%	50	51	1	25.9%	25.9%	0.0%
2049	-	-	-	100%	100%	0%	10	10	-	5.3%	5.3%	0.0%
2050	-	-	-	100%	100%	0%	10	10	-	5.3%	5.4%	0.1%

Kentucky Retirement Systems Exhibit 1-3
CERS Non-Hazardous Retirement Fund
Actuarial Analysis of SB 169
Comparison of Current Plan and Proposed
Legislation (\$ in Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2020	\$ 7,390	\$ 7,393	\$ 3	49%	49%	0%	\$ 495	\$ 495	\$ -	19.3%	19.3%	0.0%
2021	7,503	7,507	4	50%	50%	0%	597	597	-	22.8%	22.8%	0.0%
2022	7,588	7,594	6	50%	50%	0%	631	632	1	23.6%	23.6%	0.0%
2023	7,671	7,677	6	51%	51%	0%	641	643	2	23.5%	23.5%	0.0%
2024	7,731	7,737	6	52%	52%	0%	655	656	1	23.5%	23.5%	0.0%
2025	7,696	7,701	5	53%	53%	0%	668	670	2	23.5%	23.5%	0.0%
2026	7,642	7,647	5	54%	54%	0%	675	677	2	23.3%	23.3%	0.0%
2027	7,576	7,581	5	55%	55%	0%	683	685	2	23.1%	23.1%	0.0%
2028	7,496	7,500	4	56%	56%	0%	691	693	2	22.9%	22.9%	0.0%
2029	7,400	7,403	3	57%	57%	0%	701	702	1	22.7%	22.8%	0.1%
2030	7,286	7,291	5	58%	58%	0%	710	712	2	22.5%	22.6%	0.1%
2031	7,155	7,160	5	59%	59%	0%	721	722	1	22.4%	22.4%	0.0%
2032	7,006	7,009	3	61%	61%	0%	731	733	2	22.2%	22.3%	0.1%
2033	6,835	6,838	3	62%	62%	0%	743	744	1	22.1%	22.1%	0.0%
2034	6,643	6,645	2	63%	63%	0%	755	756	1	22.0%	22.0%	0.0%
2035	6,425	6,428	3	65%	65%	0%	767	769	2	21.8%	21.9%	0.1%
2036	6,183	6,184	1	66%	66%	0%	781	782	1	21.7%	21.7%	0.0%
2037	5,912	5,914	2	68%	68%	0%	795	797	2	21.6%	21.6%	0.0%
2038	5,611	5,614	3	70%	70%	0%	810	812	2	21.4%	21.5%	0.1%
2039	5,280	5,281	1	72%	72%	0%	825	827	2	21.3%	21.4%	0.1%
2040	4,913	4,913	-	74%	74%	0%	833	834	1	21.0%	21.0%	0.0%
2041	4,518	4,519	1	77%	77%	0%	848	849	1	20.8%	20.9%	0.1%
2042	4,087	4,087	-	79%	79%	0%	856	858	2	20.6%	20.6%	0.0%
2043	3,622	3,622	-	82%	82%	0%	862	863	1	20.2%	20.2%	0.0%
2044	3,126	3,126	-	84%	84%	0%	870	871	1	19.9%	19.9%	0.0%
2045	2,593	2,593	-	87%	87%	0%	887	889	2	19.8%	19.9%	0.1%
2046	2,013	2,012	(1)	90%	90%	0%	905	907	2	19.7%	19.8%	0.1%
2047	1,380	1,381	1	93%	93%	0%	923	926	3	19.7%	19.7%	0.0%
2048	694	694	-	97%	97%	0%	942	944	2	19.6%	19.6%	0.0%
2049	-	-	-	100%	100%	0%	174	176	2	3.5%	3.6%	0.1%
2050	-	-	-	100%	100%	0%	178	180	2	3.5%	3.6%	0.1%

Kentucky Retirement Systems Exhibit 1-4
CERS Hazardous Insurance Fund
Actuarial Analysis of SB 169
Comparison of Current Plan and Proposed
Legislation (\$ in Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2020	\$ 2,983	\$ 2,983	\$ -	45%	45%	0%	\$ 171	\$ 171	\$ -	30.1%	30.1%	0.0%
2021	3,056	3,057	1	45%	45%	0%	204	203	(1)	35.6%	35.5%	-0.1%
2022	3,122	3,123	1	46%	46%	0%	240	240	-	41.4%	41.3%	-0.1%
2023	3,163	3,165	2	46%	46%	0%	259	259	-	43.9%	44.0%	0.1%
2024	3,180	3,182	2	47%	47%	0%	265	265	-	44.1%	44.2%	0.1%
2025	3,163	3,166	3	48%	48%	0%	270	270	-	44.1%	44.2%	0.1%
2026	3,140	3,142	2	50%	50%	0%	273	273	-	43.8%	43.9%	0.1%
2027	3,109	3,112	3	51%	51%	0%	276	277	1	43.5%	43.6%	0.1%
2028	3,074	3,075	1	53%	53%	0%	280	281	1	43.2%	43.3%	0.1%
2029	3,030	3,032	2	54%	54%	0%	284	285	1	42.9%	43.0%	0.1%
2030	2,981	2,982	1	56%	56%	0%	289	290	1	42.5%	42.6%	0.1%
2031	2,922	2,923	1	57%	57%	0%	294	294	-	42.1%	42.2%	0.1%
2032	2,855	2,857	2	59%	59%	0%	299	299	-	41.7%	41.8%	0.1%
2033	2,780	2,780	-	61%	61%	0%	304	305	1	41.3%	41.4%	0.1%
2034	2,694	2,695	1	63%	63%	0%	309	310	1	40.9%	41.0%	0.1%
2035	2,598	2,599	1	64%	64%	0%	314	315	1	40.5%	40.6%	0.1%
2036	2,492	2,493	1	67%	67%	0%	319	320	1	40.2%	40.3%	0.1%
2037	2,374	2,375	1	69%	69%	0%	324	325	1	39.9%	40.0%	0.1%
2038	2,243	2,245	2	71%	71%	0%	329	330	1	39.6%	39.7%	0.1%
2039	2,100	2,100	-	73%	73%	0%	334	335	1	39.3%	39.4%	0.1%
2040	1,943	1,943	-	76%	76%	0%	327	328	1	37.7%	37.8%	0.1%
2041	1,782	1,782	-	78%	78%	0%	328	329	1	37.0%	37.0%	0.0%
2042	1,611	1,611	-	80%	80%	0%	330	331	1	36.3%	36.4%	0.1%
2043	1,429	1,428	(1)	83%	83%	0%	333	333	-	35.8%	35.8%	0.0%
2044	1,233	1,232	(1)	85%	86%	1%	335	336	1	35.3%	35.3%	0.0%
2045	1,023	1,024	1	88%	88%	0%	342	342	-	35.2%	35.3%	0.1%
2046	795	795	-	91%	91%	0%	349	349	-	35.2%	35.3%	0.1%
2047	546	546	-	94%	94%	0%	356	356	-	35.2%	35.2%	0.0%
2048	276	276	-	97%	97%	0%	363	364	1	35.1%	35.2%	0.1%
2049	-	-	-	100%	100%	0%	60	61	1	5.7%	5.7%	0.0%
2050	-	-	-	100%	100%	0%	62	62	-	5.7%	5.8%	0.1%

Kentucky Retirement Systems Exhibit 1-5
SPRS Retirement Fund Actuarial
Analysis of SB 169
Comparison of Current Plan and Proposed
Legislation (\$ in Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2020	\$ 757	\$ 757	\$ -	28%	28%	0%	\$ 57	\$ 57	\$ -	123.8%	123.8%	0.0%
2021	745	745	-	29%	29%	0%	58	58	-	128.0%	128.0%	0.0%
2022	734	734	-	31%	31%	0%	58	58	-	129.4%	129.5%	0.1%
2023	723	723	-	32%	32%	0%	58	58	-	129.4%	129.5%	0.1%
2024	711	712	1	33%	33%	0%	58	58	-	129.9%	129.9%	0.0%
2025	697	697	-	34%	34%	0%	57	57	-	129.9%	129.9%	0.0%
2026	682	682	-	35%	35%	0%	57	57	-	130.5%	130.5%	0.0%
2027	665	666	1	36%	36%	0%	57	57	-	130.5%	130.5%	0.0%
2028	648	648	-	38%	38%	0%	57	57	-	129.1%	129.1%	0.0%
2029	630	629	(1)	39%	39%	0%	57	57	-	129.1%	129.1%	0.0%
2030	611	611	-	40%	40%	0%	57	57	-	127.4%	127.4%	0.0%
2031	591	590	(1)	42%	42%	0%	57	57	-	127.4%	127.4%	0.0%
2032	568	568	-	44%	44%	0%	56	56	-	124.4%	124.4%	0.0%
2033	546	546	-	45%	45%	0%	57	57	-	124.4%	124.4%	0.0%
2034	521	521	-	47%	47%	0%	56	56	-	121.0%	121.1%	0.1%
2035	496	497	1	49%	49%	0%	57	57	-	121.0%	121.1%	0.1%
2036	471	470	(1)	52%	52%	0%	55	55	-	118.0%	118.0%	0.0%
2037	443	443	-	54%	54%	0%	56	56	-	118.0%	118.0%	0.0%
2038	415	414	(1)	56%	57%	1%	55	55	-	116.0%	116.1%	0.1%
2039	384	385	1	59%	59%	0%	55	55	-	116.0%	116.1%	0.1%
2040	354	353	(1)	62%	62%	0%	54	54	-	113.8%	113.8%	0.0%
2041	321	321	-	65%	65%	0%	54	54	-	113.8%	113.8%	0.0%
2042	287	287	-	68%	68%	0%	54	54	-	113.7%	113.8%	0.1%
2043	251	251	-	72%	72%	0%	54	54	-	113.7%	113.8%	0.1%
2044	214	214	-	76%	76%	0%	53	53	-	112.5%	112.5%	0.0%
2045	175	175	-	80%	80%	0%	52	52	-	112.5%	112.5%	0.0%
2046	135	135	-	84%	84%	0%	53	53	-	115.3%	115.3%	0.0%
2047	92	92	-	89%	89%	0%	53	53	-	115.3%	115.3%	0.0%
2048	46	46	-	94%	94%	0%	53	53	-	115.4%	115.4%	0.0%
2049	-	-	-	100%	100%	0%	3	3	-	6.6%	6.7%	0.1%
2050	-	-	-	100%	100%	0%	3	3	-	6.7%	6.8%	0.1%

Kentucky Retirement Systems Exhibit 1-6
KERS Non-Hazardous Insurance Fund
Actuarial Analysis of SB 169
Comparison of Current Plan and Proposed
Legislation (\$ in Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2020	\$ 1,469	\$ 1,470	\$ 1	43%	43%	0%	\$ 146	\$ 146	\$ -	10.6%	10.6%	0.0%
2021	1,446	1,447	1	45%	45%	0%	132	133	1	9.7%	9.7%	0.0%
2022	1,442	1,442	-	47%	47%	0%	131	131	-	9.7%	9.7%	0.0%
2023	1,438	1,439	1	48%	48%	0%	131	131	-	9.7%	9.7%	0.0%
2024	1,430	1,431	1	49%	49%	0%	131	131	-	9.7%	9.7%	0.0%
2025	1,409	1,411	2	51%	51%	0%	130	130	-	9.7%	9.7%	0.0%
2026	1,385	1,387	2	52%	52%	0%	128	128	-	9.6%	9.6%	0.0%
2027	1,361	1,361	-	54%	54%	0%	127	128	1	9.6%	9.6%	0.0%
2028	1,333	1,334	1	55%	55%	0%	124	124	-	9.4%	9.4%	0.0%
2029	1,305	1,306	1	56%	56%	0%	124	124	-	9.4%	9.4%	0.0%
2030	1,274	1,276	2	57%	57%	0%	120	121	1	9.2%	9.2%	0.0%
2031	1,244	1,245	1	58%	58%	0%	120	121	1	9.2%	9.2%	0.0%
2032	1,210	1,211	1	59%	59%	0%	118	118	-	9.0%	9.0%	0.0%
2033	1,174	1,175	1	61%	61%	0%	118	118	-	9.0%	9.0%	0.0%
2034	1,137	1,138	1	62%	62%	0%	116	116	-	8.8%	8.8%	0.0%
2035	1,099	1,099	-	63%	63%	0%	116	116	-	8.8%	8.8%	0.0%
2036	1,057	1,058	1	64%	64%	0%	114	114	-	8.6%	8.7%	0.1%
2037	1,013	1,014	1	65%	65%	0%	114	115	1	8.6%	8.7%	0.1%
2038	966	967	1	66%	66%	0%	113	113	-	8.5%	8.5%	0.0%
2039	918	919	1	68%	68%	0%	113	114	1	8.5%	8.5%	0.0%
2040	865	865	-	69%	69%	0%	135	135	-	10.1%	10.1%	0.0%
2041	787	787	-	72%	72%	0%	135	135	-	10.1%	10.1%	0.0%
2042	704	704	-	75%	75%	0%	132	132	-	9.8%	9.8%	0.0%
2043	617	617	-	78%	78%	0%	133	133	-	9.8%	9.8%	0.0%
2044	526	525	(1)	81%	81%	0%	129	129	-	9.5%	9.5%	0.0%
2045	431	430	(1)	84%	84%	0%	130	130	-	9.5%	9.5%	0.0%
2046	330	330	-	88%	88%	0%	129	129	-	9.5%	9.5%	0.0%
2047	223	222	(1)	92%	92%	0%	129	129	-	9.5%	9.5%	0.0%
2048	109	109	-	96%	96%	0%	129	129	-	9.4%	9.4%	0.0%
2049	-	-	-	100%	100%	0%	3	3	-	0.2%	0.3%	0.1%
2050	-	-	-	100%	100%	0%	3	3	-	0.2%	0.3%	0.1%

Kentucky Retirement Systems Exhibit 1-7
KERS Hazardous Insurance Fund
Actuarial Analysis of SB 169
Comparison of Current Plan and Proposed
Legislation (\$ in Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate						
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)				
2020	\$	(111)	\$	(111)	\$	-	126%	126%	0%	\$	-	\$	-	0.0%	0.0%	0.0%
2021		(110)		(110)		-	125%	125%	0%		-		-	0.0%	0.0%	0.0%
2022		(105)		(105)		-	123%	123%	0%		-		-	0.0%	0.0%	0.0%
2023		(99)		(99)		-	121%	121%	0%		-		-	0.0%	0.0%	0.0%
2024		(92)		(92)		-	119%	119%	0%		-		-	0.0%	0.0%	0.0%
2025		(92)		(92)		-	119%	119%	0%		-		-	0.0%	0.0%	0.0%
2026		(94)		(94)		-	119%	119%	0%		-		-	0.0%	0.0%	0.0%
2027		(95)		(95)		-	119%	119%	0%		-		-	0.0%	0.0%	0.0%
2028		(97)		(97)		-	120%	120%	0%		-		-	0.0%	0.0%	0.0%
2029		(99)		(99)		-	120%	120%	0%		-		-	0.0%	0.0%	0.0%
2030		(101)		(101)		-	120%	120%	0%		-		-	0.0%	0.0%	0.0%
2031		(104)		(104)		-	121%	121%	0%		-		-	0.0%	0.0%	0.0%
2032		(106)		(106)		-	121%	121%	0%		-		-	0.0%	0.0%	0.0%
2033		(109)		(109)		-	121%	121%	0%		-		-	0.0%	0.0%	0.0%
2034		(113)		(112)		1	122%	122%	0%		-		-	0.0%	0.0%	0.0%
2035		(116)		(115)		1	123%	122%	-1%		-		-	0.0%	0.0%	0.0%
2036		(119)		(119)		-	123%	123%	0%		-		-	0.0%	0.0%	0.0%
2037		(123)		(122)		1	124%	124%	0%		-		-	0.0%	0.0%	0.0%
2038		(128)		(126)		2	125%	124%	-1%		-		-	0.0%	0.0%	0.0%
2039		(132)		(130)		2	125%	125%	0%		-		-	0.0%	0.0%	0.0%
2040		(136)		(135)		1	126%	125%	-1%		-		-	0.0%	0.0%	0.0%
2041		(141)		(140)		1	126%	126%	0%		-		-	0.0%	0.0%	0.0%
2042		(146)		(145)		1	127%	127%	0%		-		-	0.0%	0.0%	0.0%
2043		(151)		(150)		1	127%	127%	0%		-		-	0.0%	0.0%	0.0%
2044		(157)		(156)		1	128%	128%	0%		-		-	0.0%	0.0%	0.0%
2045		(163)		(163)		-	129%	129%	0%		-		-	0.0%	0.0%	0.0%
2046		(171)		(169)		2	130%	129%	-1%		-		-	0.0%	0.0%	0.0%
2047		(177)		(176)		1	130%	130%	0%		-		-	0.0%	0.0%	0.0%
2048		(186)		(184)		2	132%	131%	-1%		-		-	0.0%	0.0%	0.0%
2049		(193)		(192)		1	132%	132%	0%		-		-	0.0%	0.0%	0.0%
2050		(203)		(200)		3	134%	133%	-1%		-		-	0.0%	0.0%	0.0%

Kentucky Retirement Systems Exhibit 1-8
CERS Non-Hazardous Insurance Fund
Actuarial Analysis of SB 169
Comparison of Current Plan and Proposed
Legislation (\$ in Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2020	\$ 731	\$ 734	\$ 3	78%	78%	0%	\$ 121	\$ 121	\$ -	4.8%	4.8%	0.0%
2021	723	726	3	80%	80%	0%	108	109	1	4.2%	4.2%	0.0%
2022	751	754	3	80%	80%	0%	106	107	1	4.0%	4.0%	0.0%
2023	790	793	3	79%	79%	0%	106	107	1	3.9%	4.0%	0.1%
2024	826	829	3	79%	79%	0%	108	108	-	3.9%	3.9%	0.0%
2025	827	830	3	80%	80%	0%	108	109	1	3.8%	3.9%	0.1%
2026	826	828	2	80%	80%	0%	106	107	1	3.7%	3.7%	0.0%
2027	823	826	3	81%	81%	0%	104	105	1	3.6%	3.6%	0.0%
2028	820	823	3	82%	82%	0%	103	103	-	3.4%	3.5%	0.1%
2029	816	819	3	82%	82%	0%	101	102	1	3.3%	3.3%	0.0%
2030	811	814	3	82%	82%	0%	99	100	1	3.2%	3.2%	0.0%
2031	806	808	2	83%	83%	0%	98	99	1	3.1%	3.1%	0.0%
2032	799	802	3	83%	83%	0%	97	98	1	3.0%	3.0%	0.0%
2033	792	794	2	84%	84%	0%	97	98	1	2.9%	2.9%	0.0%
2034	784	785	1	84%	84%	0%	97	98	1	2.8%	2.9%	0.1%
2035	774	775	1	84%	84%	0%	97	97	-	2.8%	2.8%	0.0%
2036	763	765	2	85%	85%	0%	98	98	-	2.7%	2.8%	0.1%
2037	751	752	1	85%	85%	0%	99	99	-	2.7%	2.7%	0.0%
2038	736	736	-	86%	86%	0%	99	100	1	2.6%	2.7%	0.1%
2039	720	720	-	86%	86%	0%	101	101	-	2.6%	2.6%	0.0%
2040	702	702	-	87%	87%	0%	140	141	1	3.5%	3.6%	0.1%
2041	642	642	-	88%	88%	0%	143	143	-	3.5%	3.5%	0.0%
2042	575	577	2	90%	90%	0%	142	143	1	3.4%	3.5%	0.1%
2043	506	507	1	91%	91%	0%	141	141	-	3.3%	3.3%	0.0%
2044	434	435	1	92%	92%	0%	139	140	1	3.2%	3.2%	0.0%
2045	360	360	-	94%	94%	0%	142	142	-	3.2%	3.2%	0.0%
2046	278	279	1	95%	95%	0%	144	145	1	3.2%	3.2%	0.0%
2047	189	190	1	97%	97%	0%	147	148	1	3.2%	3.2%	0.0%
2048	92	92	-	99%	99%	0%	150	151	1	3.2%	3.2%	0.0%
2049	-	-	-	100%	100%	0%	40	41	1	0.8%	0.8%	0.0%
2050	-	-	-	100%	100%	0%	41	41	-	0.8%	0.8%	0.0%

Kentucky Retirement Systems Exhibit 1-9
CERS Hazardous Insurance Fund
Actuarial Analysis of SB 169
Comparison of Current Plan and Proposed
Legislation (\$ in Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2020	\$ 379	\$ 380	\$ 1	78%	78%	0%	\$ 54	\$ 54	\$ -	9.5%	9.5%	0.0%
2021	376	377	1	79%	79%	0%	49	50	1	8.7%	8.8%	0.1%
2022	387	387	-	79%	79%	0%	47	48	1	8.3%	8.3%	0.0%
2023	405	406	1	78%	78%	0%	47	47	-	8.0%	8.0%	0.0%
2024	421	422	1	78%	78%	0%	47	47	-	7.8%	7.9%	0.1%
2025	419	421	2	78%	78%	0%	47	47	-	7.7%	7.8%	0.1%
2026	416	417	1	79%	79%	0%	46	46	-	7.4%	7.5%	0.1%
2027	412	413	1	79%	79%	0%	45	46	1	7.2%	7.3%	0.1%
2028	408	409	1	79%	79%	0%	45	45	-	7.0%	7.1%	0.1%
2029	403	404	1	80%	80%	0%	45	45	-	6.8%	6.9%	0.1%
2030	397	399	2	80%	80%	0%	45	45	-	6.7%	6.7%	0.0%
2031	391	392	1	80%	80%	0%	45	46	1	6.5%	6.6%	0.1%
2032	384	385	1	81%	81%	0%	46	46	-	6.4%	6.5%	0.1%
2033	376	377	1	81%	81%	0%	46	47	1	6.3%	6.4%	0.1%
2034	366	367	1	82%	82%	0%	47	47	-	6.2%	6.3%	0.1%
2035	357	357	-	82%	82%	0%	47	48	1	6.2%	6.2%	0.0%
2036	344	345	1	83%	83%	0%	48	49	1	6.1%	6.2%	0.1%
2037	332	332	-	83%	83%	0%	49	50	1	6.1%	6.1%	0.0%
2038	317	318	1	84%	84%	0%	50	50	-	6.0%	6.1%	0.1%
2039	302	303	1	85%	85%	0%	51	51	-	6.0%	6.1%	0.1%
2040	285	285	-	86%	86%	0%	57	57	-	6.5%	6.6%	0.1%
2041	260	260	-	87%	87%	0%	58	59	1	6.5%	6.6%	0.1%
2042	233	233	-	89%	89%	0%	58	58	-	6.4%	6.4%	0.0%
2043	205	204	(1)	90%	90%	0%	57	57	-	6.1%	6.2%	0.1%
2044	175	175	-	92%	92%	0%	56	56	-	5.9%	6.0%	0.1%
2045	145	146	1	93%	93%	0%	57	57	-	5.9%	6.0%	0.1%
2046	113	113	-	95%	95%	0%	58	58	-	5.9%	6.0%	0.1%
2047	78	78	-	97%	97%	0%	59	59	-	5.9%	5.9%	0.0%
2048	39	39	-	98%	98%	0%	60	61	1	5.8%	5.9%	0.1%
2049	-	-	-	100%	100%	0%	16	17	1	1.6%	1.6%	0.0%
2050	-	-	-	100%	100%	0%	16	17	1	1.5%	1.6%	0.1%

Kentucky Retirement Systems Exhibit 1-10
SPRS Insurance Fund Actuarial
Analysis of SB 169
Comparison of Current Plan and Proposed
Legislation (\$ in Millions)

Fiscal Beginning July 1,	Unfunded Actuarial Accrued Liability			Funded Ratio			Employer Contributions			Employer Contribution Rate		
	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference	Current	Proposed	Difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2020	\$ 69	\$ 69	\$ -	75%	75%	0%	\$ 9	\$ 9	\$ -	19.7%	19.7%	0.0%
2021	67	67	-	76%	76%	0%	8	8	-	18.1%	18.1%	0.0%
2022	68	68	-	76%	76%	0%	8	8	-	17.5%	17.6%	0.1%
2023	70	70	-	76%	76%	0%	8	8	-	17.5%	17.6%	0.1%
2024	72	72	-	76%	76%	0%	8	8	-	17.3%	17.3%	0.0%
2025	70	70	-	76%	76%	0%	8	8	-	17.3%	17.3%	0.0%
2026	69	69	-	77%	77%	0%	7	7	-	16.8%	16.9%	0.1%
2027	68	67	(1)	77%	77%	0%	7	7	-	16.8%	16.9%	0.1%
2028	65	66	1	78%	78%	0%	7	7	-	16.1%	16.1%	0.0%
2029	63	64	1	78%	78%	0%	7	7	-	16.1%	16.1%	0.0%
2030	62	62	-	79%	79%	0%	7	7	-	15.5%	15.6%	0.1%
2031	60	60	-	79%	79%	0%	7	7	-	15.5%	15.6%	0.1%
2032	58	58	-	80%	80%	0%	7	7	-	15.0%	15.1%	0.1%
2033	56	56	-	80%	80%	0%	7	7	-	15.0%	15.1%	0.1%
2034	54	54	-	80%	80%	0%	7	7	-	14.5%	14.6%	0.1%
2035	52	52	-	81%	81%	0%	7	7	-	14.5%	14.6%	0.1%
2036	50	49	(1)	81%	82%	1%	7	7	-	14.2%	14.3%	0.1%
2037	47	47	-	82%	82%	0%	7	7	-	14.2%	14.3%	0.1%
2038	44	44	-	83%	83%	0%	7	7	-	14.0%	14.1%	0.1%
2039	41	42	1	84%	84%	0%	7	7	-	14.0%	14.1%	0.1%
2040	39	38	(1)	85%	85%	0%	7	7	-	15.1%	15.2%	0.1%
2041	34	35	1	87%	86%	-1%	7	7	-	15.1%	15.2%	0.1%
2042	31	31	-	88%	88%	0%	7	7	-	15.0%	15.0%	0.0%
2043	27	27	-	89%	89%	0%	7	7	-	15.0%	15.0%	0.0%
2044	23	23	-	91%	91%	0%	6	7	1	13.9%	14.0%	0.1%
2045	18	18	-	93%	93%	0%	6	6	-	13.9%	14.0%	0.1%
2046	14	14	-	94%	94%	0%	6	7	1	14.3%	14.4%	0.1%
2047	10	10	-	96%	96%	0%	7	7	-	14.3%	14.4%	0.1%
2048	5	5	-	98%	98%	0%	7	7	-	14.4%	14.4%	0.0%
2049	-	-	-	100%	100%	0%	1	1	-	2.3%	2.4%	0.1%
2050	-	-	-	100%	100%	0%	1	1	-	2.3%	2.4%	0.1%

Actuarial Analysis of SB 169Section 2.
Projected Cost of the Retirement and Insurance
Current Plan

Kentucky Retirement Systems
Exhibit 2-1
KERS Non-Hazardous Retirement
Fund Actuarial Analysis of SB 169
Current Plan (\$ in
Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Empl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2020	\$ 16,349	\$ 2,323	\$ 14,026	14%	\$ 923	\$ 69	\$ 1,388	66.51%	73.28%
2021	16,361	2,446	13,915	15%	1,036	69	1,375	75.32%	75.32%
2022	16,351	2,656	13,695	16%	1,034	68	1,367	75.61%	75.61%
2023	16,321	2,851	13,470	17%	1,028	68	1,360	75.61%	75.80%
2024	16,271	3,035	13,236	19%	1,030	68	1,354	76.02%	76.02%
2025	16,202	3,231	12,971	20%	1,026	67	1,349	76.02%	76.17%
2026	16,112	3,421	12,691	21%	1,025	67	1,345	76.22%	76.22%
2027	16,003	3,608	12,395	23%	1,022	67	1,340	76.22%	76.23%
2028	15,874	3,791	12,083	24%	1,019	67	1,337	76.26%	76.26%
2029	15,726	3,972	11,754	25%	1,017	67	1,333	76.26%	76.26%
2030	15,561	4,152	11,409	27%	1,015	67	1,331	76.24%	76.24%
2031	15,385	4,341	11,044	28%	1,014	66	1,330	76.24%	76.20%
2032	15,195	4,536	10,659	30%	1,011	66	1,329	76.07%	76.07%
2033	14,993	4,738	10,255	32%	1,011	66	1,329	76.07%	75.95%
2034	14,779	4,952	9,827	34%	1,007	66	1,329	75.78%	75.78%
2035	14,556	5,177	9,379	36%	1,008	67	1,331	75.78%	75.63%
2036	14,325	5,421	8,904	38%	1,006	67	1,334	75.41%	75.41%
2037	14,090	5,684	8,406	40%	1,010	67	1,339	75.41%	75.12%
2038	13,855	5,977	7,878	43%	1,005	67	1,345	74.73%	74.73%
2039	13,622	6,297	7,325	46%	1,009	68	1,351	74.73%	74.33%
2040	13,394	6,655	6,739	50%	1,005	68	1,357	74.09%	74.09%
2041	13,171	7,045	6,126	53%	1,009	68	1,362	74.09%	73.76%
2042	12,953	7,478	5,475	58%	1,003	68	1,368	73.32%	73.32%
2043	12,743	7,945	4,798	62%	1,006	69	1,372	73.32%	72.87%
2044	12,539	8,459	4,080	67%	997	69	1,376	72.45%	72.45%
2045	12,344	9,010	3,334	73%	1,000	69	1,380	72.45%	72.18%
2046	12,157	9,611	2,546	79%	995	69	1,383	71.92%	71.92%
2047	11,978	10,258	1,720	86%	997	69	1,387	71.92%	71.69%
2048	11,809	10,960	849	93%	993	69	1,390	71.47%	71.47%
2049	11,651	11,651	-	100%	52	70	1,393	3.76%	3.76%
2050	11,503	11,503	-	100%	52	70	1,396	3.75%	3.75%

Notes and assumptions:

The projection is based on the results of the June 30, 2020 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 at a rate such that the total active population is assumed to decrease 2% each year for each of the next 30 years.

The contribution rate established in the Commonwealth's biennium budget is assumed to be equal to the full actuarially determined contribution rate.

The 2020 legislative session did not set the employer contribution rates for FYE 2022. Employer contribution rates for FYE 2022 are assumed to be based on the June 30, 2020 actuarial valuation.

The 66.51% employer contribution rate for FYE 2021 is the effective contribution rate after reflecting HB 352 (passed during the 2020 legislative session) which allowed 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 KERS to contribute 41.06% of pay to the pension fund for FY 2021. Collectively these entities reflect approximately 21% of the covered payroll in the System.



Kentucky Retirement Systems
Exhibit 2-2
KERS Hazardous Retirement
Fund Actuarial Analysis of SB
169 Current Plan
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Empl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2020	\$	1,284	\$ 710	\$ 574	55%	\$ 61	\$ 14	171 36.00%	36.00%
2021		1,317	754	563	57%	57	14	171 33.43%	33.43%
2022		1,348	788	560	58%	57	14	172 33.06%	33.06%
2023		1,377	817	560	59%	57	14	173 33.06%	32.92%
2024		1,405	847	558	60%	57	14	174 32.99%	32.99%
2025		1,432	885	547	62%	58	14	175 32.99%	33.00%
2026		1,458	922	536	63%	57	14	175 32.63%	32.63%
2027		1,482	958	524	65%	57	14	176 32.63%	32.24%
2028		1,504	995	509	66%	56	14	177 31.89%	31.89%
2029		1,526	1,030	496	67%	57	14	178 31.89%	31.56%
2030		1,548	1,067	481	69%	56	14	180 31.20%	31.20%
2031		1,571	1,106	465	70%	57	15	182 31.20%	30.83%
2032		1,595	1,147	448	72%	56	15	183 30.47%	30.47%
2033		1,620	1,189	431	73%	57	15	185 30.47%	30.13%
2034		1,646	1,234	412	75%	56	15	188 29.77%	29.77%
2035		1,673	1,281	392	77%	56	15	189 29.77%	29.43%
2036		1,701	1,330	371	78%	56	15	191 29.11%	29.11%
2037		1,730	1,380	350	80%	56	15	192 29.11%	28.81%
2038		1,759	1,432	327	81%	55	15	193 28.53%	28.53%
2039		1,787	1,485	302	83%	55	16	194 28.53%	28.29%
2040		1,815	1,539	276	85%	53	16	195 27.20%	27.20%
2041		1,844	1,593	251	86%	53	16	196 27.20%	27.05%
2042		1,872	1,649	223	88%	52	16	196 26.62%	26.62%
2043		1,902	1,706	196	90%	52	16	197 26.62%	26.12%
2044		1,931	1,766	165	91%	50	16	197 25.65%	25.65%
2045		1,960	1,825	135	93%	50	16	196 25.65%	25.66%
2046		1,988	1,885	103	95%	50	16	196 25.73%	25.73%
2047		2,016	1,946	70	97%	50	16	195 25.73%	25.82%
2048		2,042	2,008	34	98%	50	16	195 25.92%	25.92%
2049		2,068	2,068	-	100%	10	16	194 5.32%	5.32%
2050		2,092	2,092	-	100%	10	16	194 5.33%	5.33%

Notes and assumptions:

The projection is based on the results of the June 30, 2020 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 at a rate such that the total active population is assumed to decrease 2% each year for each of the next 30 years.

The contribution rate established in the Commonwealth's biennium budget is assumed to be equal to the full actuarially determined contribution rate.

The 2020 legislative session did not set the employer contribution rates for FYE 2022. Employer contribution rates for FYE 2022 are assumed to be based on the June 30, 2020 actuarial valuation.



**Kentucky Retirement Systems
Exhibit 2-3
CERS Non-Hazardous Retirement
Fund Actuarial Analysis of SB 169
Current Plan (\$ in
Millions)**

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2020	\$ 14,611	\$ 7,221	\$ 7,390	49%	\$ 495	\$ 128	\$ 2,565	19.30%	23.81%
2021	14,977	7,474	7,503	50%	597	131	2,622	22.78%	23.88%
2022	15,325	7,737	7,588	50%	631	134	2,678	23.55%	23.55%
2023	15,656	7,985	7,671	51%	641	137	2,733	23.46%	23.46%
2024	15,969	8,238	7,731	52%	655	139	2,790	23.49%	23.49%
2025	16,264	8,568	7,696	53%	668	142	2,847	23.48%	23.48%
2026	16,538	8,896	7,642	54%	675	145	2,904	23.26%	23.26%
2027	16,792	9,216	7,576	55%	683	148	2,962	23.06%	23.06%
2028	17,025	9,529	7,496	56%	691	151	3,022	22.88%	22.88%
2029	17,238	9,838	7,400	57%	701	154	3,085	22.71%	22.71%
2030	17,433	10,147	7,286	58%	710	157	3,150	22.54%	22.54%
2031	17,621	10,466	7,155	59%	721	161	3,218	22.39%	22.39%
2032	17,797	10,791	7,006	61%	731	164	3,289	22.24%	22.24%
2033	17,962	11,127	6,835	62%	743	168	3,362	22.09%	22.09%
2034	18,118	11,475	6,643	63%	755	172	3,437	21.96%	21.96%
2035	18,267	11,842	6,425	65%	767	176	3,515	21.82%	21.82%
2036	18,414	12,231	6,183	66%	781	180	3,598	21.70%	21.70%
2037	18,562	12,650	5,912	68%	795	184	3,686	21.57%	21.57%
2038	18,716	13,105	5,611	70%	810	189	3,777	21.44%	21.44%
2039	18,882	13,602	5,280	72%	825	194	3,871	21.30%	21.30%
2040	19,060	14,147	4,913	74%	833	198	3,968	20.99%	20.99%
2041	19,255	14,737	4,518	77%	848	203	4,067	20.84%	20.84%
2042	19,469	15,382	4,087	79%	856	208	4,168	20.55%	20.55%
2043	19,702	16,080	3,622	82%	862	213	4,270	20.19%	20.19%
2044	19,957	16,831	3,126	84%	870	219	4,374	19.89%	19.89%
2045	20,234	17,641	2,593	87%	887	224	4,480	19.81%	19.81%
2046	20,535	18,522	2,013	90%	905	229	4,587	19.74%	19.74%
2047	20,860	19,480	1,380	93%	923	235	4,696	19.66%	19.66%
2048	21,211	20,517	694	97%	942	240	4,807	19.60%	19.60%
2049	21,588	21,588	-	100%	174	246	4,919	3.54%	3.54%
2050	21,991	21,991	-	100%	178	252	5,034	3.54%	3.54%

Notes and assumptions:

The projection is based on the results of the June 30, 2020 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 at a rate such that the total active population is assumed to remain constant through the entire projection.

The Board certified contribution rate paid by employers is assumed to be equal to the full actuarially determined contribution rate, except as allowed by SB 249 (passed during the 2020 legislative session), which set the employer contribution rates for FYE 2021 equal to the rates for FYE 2020, and House Bill 362 (passed during the 2018 legislative session), which limits the certified contribution rate to a 12% increase from the prior year for the period of July 1, 2018 to June 30, 2028.



Kentucky Retirement Systems
Exhibit 2-4
CERS Hazardous Retirement
Fund Actuarial Analysis of SB
169 Current Plan
(\$ in Millions)

Fiscal Year	Actuarial	Actuarial	Unfunded	Funded	Total				Tot	Empl
Beginning July 1,	Accrued Liability	Value of Assets	Actuarial Accrued Liability	Ratio (3) / (2)	Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll		Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		(10)
2020	\$	5,431	\$ 2,448	\$ 2,983	45%	\$ 171	\$ 45	\$ 569	30.06%	42.02%
2021		5,588	2,532	3,056	45%	204	46	572	35.60%	43.23%
2022		5,735	2,613	3,122	46%	240	46	580	41.40%	43.69%
2023		5,876	2,713	3,163	46%	259	47	590	43.93%	43.93%
2024		6,010	2,830	3,180	47%	265	48	600	44.09%	44.09%
2025		6,139	2,976	3,163	48%	270	49	611	44.14%	44.14%
2026		6,263	3,123	3,140	50%	273	50	623	43.83%	43.83%
2027		6,381	3,272	3,109	51%	276	51	635	43.52%	43.52%
2028		6,496	3,422	3,074	53%	280	52	648	43.19%	43.19%
2029		6,607	3,577	3,030	54%	284	53	663	42.87%	42.87%
2030		6,718	3,737	2,981	56%	289	54	680	42.52%	42.52%
2031		6,830	3,908	2,922	57%	294	56	698	42.12%	42.12%
2032		6,945	4,090	2,855	59%	299	57	716	41.73%	41.73%
2033		7,063	4,283	2,780	61%	304	59	736	41.33%	41.33%
2034		7,185	4,491	2,694	63%	309	60	756	40.91%	40.91%
2035		7,311	4,713	2,598	64%	314	62	775	40.53%	40.53%
2036		7,440	4,948	2,492	67%	319	64	795	40.19%	40.19%
2037		7,571	5,197	2,374	69%	324	65	813	39.87%	39.87%
2038		7,701	5,458	2,243	71%	329	67	832	39.58%	39.58%
2039		7,830	5,730	2,100	73%	334	68	850	39.34%	39.34%
2040		7,959	6,016	1,943	76%	327	70	869	37.68%	37.68%
2041		8,088	6,306	1,782	78%	328	71	889	36.95%	36.95%
2042		8,219	6,608	1,611	80%	330	73	909	36.31%	36.31%
2043		8,354	6,925	1,429	83%	333	74	930	35.75%	35.75%
2044		8,493	7,260	1,233	85%	335	76	951	35.28%	35.28%
2045		8,634	7,611	1,023	88%	342	78	970	35.21%	35.21%
2046		8,779	7,984	795	91%	349	79	991	35.19%	35.19%
2047		8,925	8,379	546	94%	356	81	1,012	35.17%	35.17%
2048		9,074	8,798	276	97%	363	83	1,033	35.14%	35.14%
2049		9,225	9,225	-	100%	60	84	1,055	5.67%	5.67%
2050		9,380	9,380	-	100%	62	86	1,081	5.70%	5.70%

Notes and assumptions:

The projection is based on the results of the June 30, 2020 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 at a rate such that the total active population is assumed to remain constant through the entire projection.

The Board certified contribution rate paid by employers is assumed to be equal to the full actuarially determined contribution rate, except as allowed by SB 249 (passed during the 2020 legislative session), which set the employer contribution rates for FYE 2021 equal to the rates for FYE 2020, and House Bill 362 (passed during the 2018 legislative session), which limits the certified contribution rate to a 12% increase from the prior year for the period of July 1, 2018 to June 30, 2028.



**Kentucky Retirement
Systems Exhibit 2-5
SPRS Retirement Fund
Actuarial Analysis of SB
169 Current Plan
(\$ in Millions)**

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Empl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2020	\$	1,053	\$ 296	757	28%	\$	57	46	123.79%
2021		1,056	311	745	29%	58	4	45	127.99%
2022		1,057	323	734	31%	58	4	45	129.43%
2023		1,057	334	723	32%	58	4	45	129.43%
2024		1,055	344	711	33%	58	4	44	129.85%
2025		1,053	356	697	34%	57	4	44	129.85%
2026		1,049	367	682	35%	57	4	44	130.48%
2027		1,043	378	665	36%	57	4	44	130.48%
2028		1,037	389	648	38%	57	4	44	129.07%
2029		1,030	400	630	39%	57	4	44	129.07%
2030		1,023	412	611	40%	57	4	44	127.35%
2031		1,015	424	591	42%	57	4	45	127.35%
2032		1,006	438	568	44%	56	4	45	124.37%
2033		998	452	546	45%	57	4	46	124.37%
2034		989	468	521	47%	56	4	46	120.98%
2035		980	484	496	49%	57	4	47	120.98%
2036		972	501	471	52%	55	4	47	117.96%
2037		962	519	443	54%	56	4	47	117.96%
2038		953	538	415	56%	55	4	47	115.97%
2039		942	558	384	59%	55	4	47	115.97%
2040		932	578	354	62%	54	4	47	113.76%
2041		920	599	321	65%	54	4	47	113.76%
2042		908	621	287	68%	54	4	47	113.71%
2043		896	645	251	72%	54	4	47	113.71%
2044		884	670	214	76%	53	4	47	112.47%
2045		871	696	175	80%	52	4	46	112.47%
2046		857	722	135	84%	53	4	46	115.27%
2047		843	751	92	89%	53	4	46	115.27%
2048		829	783	46	94%	53	4	46	115.35%
2049		815	815	-	100%	3	4	45	6.64%
2050		801	801	-	100%	3	4	45	6.69%

Notes and assumptions:

The projection is based on the results of the June 30, 2020 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 at a rate such that the total active population is assumed to decrease 2% each year for each of the next 30 years.

The contribution rate established in the Commonwealth's biennium budget is assumed to be equal to the full actuarially determined contribution rate.

The employer contribution amount shown does not include the \$384,000 additional contribution budgeted to be paid in fiscal year ending 2021.

The 2020 legislative session did not set the employer contribution rates for FYE 2022. Employer contribution rates for FYE 2022 are assumed to be based on the June 30, 2020 actuarial valuation.



Kentucky Retirement Systems
Exhibit 2-6
KERS Non-Hazardous Insurance
Fund Actuarial Analysis of SB 169
Current Plan (\$ in
Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
2020	\$	2,565	\$ 1,096	\$ 1,469	43%	\$ 146	\$ 6	1,377	10.57%	11.15%
2021		2,633	1,187	1,446	45%	132	6	1,364	9.71%	9.71%
2022		2,700	1,258	1,442	47%	131	7	1,355	9.70%	9.70%
2023		2,763	1,325	1,438	48%	131	7	1,348	9.70%	9.70%
2024		2,820	1,390	1,430	49%	131	8	1,342	9.73%	9.73%
2025		2,870	1,461	1,409	51%	130	8	1,336	9.73%	9.71%
2026		2,913	1,528	1,385	52%	128	9	1,332	9.61%	9.61%
2027		2,948	1,587	1,361	54%	127	9	1,327	9.61%	9.50%
2028		2,973	1,640	1,333	55%	124	10	1,322	9.38%	9.38%
2029		2,989	1,684	1,305	56%	124	10	1,319	9.38%	9.28%
2030		2,996	1,722	1,274	57%	120	10	1,316	9.15%	9.15%
2031		2,995	1,751	1,244	58%	120	11	1,314	9.15%	9.05%
2032		2,987	1,777	1,210	59%	118	11	1,313	8.96%	8.96%
2033		2,973	1,799	1,174	61%	118	11	1,313	8.96%	8.88%
2034		2,955	1,818	1,137	62%	116	12	1,313	8.80%	8.80%
2035		2,933	1,834	1,099	63%	116	12	1,314	8.80%	8.72%
2036		2,909	1,852	1,057	64%	114	12	1,317	8.64%	8.64%
2037		2,885	1,872	1,013	65%	114	13	1,321	8.64%	8.59%
2038		2,862	1,896	966	66%	113	13	1,327	8.50%	8.50%
2039		2,840	1,922	918	68%	113	13	1,333	8.50%	8.44%
2040		2,819	1,954	865	69%	135	13	1,339	10.06%	10.06%
2041		2,800	2,013	787	72%	135	13	1,344	10.06%	9.95%
2042		2,784	2,080	704	75%	132	13	1,349	9.80%	9.80%
2043		2,770	2,153	617	78%	133	13	1,353	9.80%	9.66%
2044		2,759	2,233	526	81%	129	13	1,357	9.53%	9.53%
2045		2,749	2,318	431	84%	130	14	1,361	9.53%	9.50%
2046		2,741	2,411	330	88%	129	14	1,364	9.46%	9.46%
2047		2,732	2,509	223	92%	129	14	1,367	9.46%	9.44%
2048		2,723	2,614	109	96%	129	14	1,370	9.42%	9.42%
2049		2,713	2,713	-	100%	3	14	1,373	0.24%	0.24%
2050		2,701	2,701	-	100%	3	14	1,376	0.24%	0.24%

Notes and assumptions:

The projection is based on the results of the June 30, 2020 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 at a rate such that the total active population is assumed to decrease 2% each year for each of the next 30 years.

The contribution rate established in the Commonwealth's biennium budget is assumed to be equal to the full actuarially determined contribution rate.

The 2020 legislative session did not set the employer contribution rates for FYE 2022. Employer contribution rates for FYE 2022 are assumed to be based on the June 30, 2020 actuarial valuation.

The 10.57% employer contribution rate for FYE 2021 is the effective contribution rate after reflecting HB 352 (passed during the 2020 legislative session) which allowed 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 KERS to contribute 8.41% of pay to the insurance fund for FY 2021. Collectively these entities reflect approximately 21% of the covered payroll in the System.



Kentucky Retirement Systems
Exhibit 2-7
KERS Hazardous Insurance
Fund Actuarial Analysis of SB
169 Current Plan
(\$ in Millions)

Fiscal Year Beginning July 1, (1)	Actuarial Accrued Liability (2)	Actuarial Value of Assets (3)	Unfunded Actuarial Accrued Liability (4)	Funded Ratio (3) / (2) (5)	Total Employer Contribution (6)	Member Contribution (7)	Covered Payroll (8)	Employer Contribution as % of Covered Payroll (9)	Empl Actuarial Determined Contribution Rate (10)
2020	\$ 428	\$ 539	(111)	126%	\$ -	\$ 1	\$ 170	0.00%	0.00%
2021	442	552	(110)	125%	-	1	170	0.00%	0.00%
2022	454	559	(105)	123%	-	1	171	0.00%	0.00%
2023	464	563	(99)	121%	-	1	172	0.00%	0.00%
2024	473	565	(92)	119%	-	1	173	0.00%	0.00%
2025	481	573	(92)	119%	-	1	173	0.00%	0.00%
2026	487	581	(94)	119%	-	1	174	0.00%	0.00%
2027	492	587	(95)	119%	-	2	175	0.00%	0.00%
2028	496	593	(97)	120%	-	2	176	0.00%	0.00%
2029	499	598	(99)	120%	-	2	177	0.00%	0.00%
2030	501	602	(101)	120%	-	2	179	0.00%	0.00%
2031	503	607	(104)	121%	-	2	180	0.00%	0.00%
2032	505	611	(106)	121%	-	2	182	0.00%	0.00%
2033	507	616	(109)	121%	-	2	184	0.00%	0.00%
2034	509	622	(113)	122%	-	2	186	0.00%	0.00%
2035	511	627	(116)	123%	-	2	188	0.00%	0.00%
2036	515	634	(119)	123%	-	2	190	0.00%	0.00%
2037	518	641	(123)	124%	-	2	191	0.00%	0.00%
2038	522	650	(128)	125%	-	2	192	0.00%	0.00%
2039	527	659	(132)	125%	-	2	192	0.00%	0.00%
2040	533	669	(136)	126%	-	2	193	0.00%	0.00%
2041	539	680	(141)	126%	-	2	194	0.00%	0.00%
2042	545	691	(146)	127%	-	2	195	0.00%	0.00%
2043	553	704	(151)	127%	-	2	195	0.00%	0.00%
2044	560	717	(157)	128%	-	2	195	0.00%	0.00%
2045	568	731	(163)	129%	-	2	195	0.00%	0.00%
2046	575	746	(171)	130%	-	2	194	0.00%	0.00%
2047	583	760	(177)	130%	-	2	193	0.00%	0.00%
2048	589	775	(186)	132%	-	2	193	0.00%	0.00%
2049	596	789	(193)	132%	-	2	193	0.00%	0.00%
2050	601	804	(203)	134%	-	2	193	0.00%	0.00%

Notes and assumptions:

The projection is based on the results of the June 30, 2020 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 at a rate such that the total active population is assumed to decrease 2% each year for each of the next 30 years.

The contribution rate established in the Commonwealth's biennium budget is assumed to be equal to the full actuarially determined contribution rate.

The 2020 legislative session did not set the employer contribution rates for FYE 2022. Employer contribution rates for FYE 2022 are assumed to be based on the June 30, 2020 actuarial valuation.

Kentucky Retirement Systems
Exhibit 2-8
CERS Non-Hazardous Insurance
Fund Actuarial Analysis of SB 169
Current Plan (\$ in
Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Employer Actuarial Determined Contribution Rate	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
2020	\$	3,392	\$ 2,661	\$ 731	78%	\$ 121	\$ 13	\$ 2,534	4.76%	5.43%
2021		3,542	2,819	723	80%	108	15	2,593	4.17%	4.17%
2022		3,691	2,940	751	80%	106	16	2,650	4.00%	4.00%
2023		3,835	3,045	790	79%	106	17	2,707	3.92%	3.92%
2024		3,973	3,147	826	79%	108	19	2,765	3.89%	3.89%
2025		4,104	3,277	827	80%	108	20	2,823	3.84%	3.84%
2026		4,228	3,402	826	80%	106	22	2,882	3.69%	3.69%
2027		4,342	3,519	823	81%	104	23	2,940	3.55%	3.55%
2028		4,447	3,627	820	82%	103	24	3,000	3.43%	3.43%
2029		4,543	3,727	816	82%	101	26	3,062	3.31%	3.31%
2030		4,631	3,820	811	82%	99	27	3,125	3.18%	3.18%
2031		4,712	3,906	806	83%	98	28	3,191	3.07%	3.07%
2032		4,786	3,987	799	83%	97	30	3,262	2.98%	2.98%
2033		4,856	4,064	792	84%	97	31	3,335	2.90%	2.90%
2034		4,924	4,140	784	84%	97	32	3,412	2.83%	2.83%
2035		4,991	4,217	774	84%	97	33	3,494	2.77%	2.77%
2036		5,061	4,298	763	85%	98	35	3,580	2.73%	2.73%
2037		5,134	4,383	751	85%	99	36	3,670	2.69%	2.69%
2038		5,210	4,474	736	86%	99	37	3,763	2.63%	2.63%
2039		5,289	4,569	720	86%	101	38	3,858	2.62%	2.62%
2040		5,373	4,671	702	87%	140	39	3,955	3.54%	3.54%
2041		5,461	4,819	642	88%	143	40	4,051	3.52%	3.52%
2042		5,552	4,977	575	90%	142	41	4,149	3.43%	3.43%
2043		5,648	5,142	506	91%	141	42	4,247	3.32%	3.32%
2044		5,749	5,315	434	92%	139	43	4,348	3.20%	3.20%
2045		5,853	5,493	360	94%	142	44	4,450	3.19%	3.19%
2046		5,960	5,682	278	95%	144	45	4,554	3.17%	3.17%
2047		6,070	5,881	189	97%	147	47	4,660	3.16%	3.16%
2048		6,181	6,089	92	99%	150	48	4,768	3.15%	3.15%
2049		6,293	6,293	-	100%	40	49	4,878	0.82%	0.82%
2050		6,405	6,405	-	100%	41	50	4,990	0.82%	0.82%

Notes and assumptions:

The projection is based on the results of the June 30, 2020 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 at a rate such that the total active population is assumed to remain constant through the entire projection.

The Board certified contribution rate paid by employers is assumed to be equal to the full actuarially determined contribution rate, except as allowed by SB 249 (passed during the 2020 legislative session), which set the employer contribution rates for FYE 2021 equal to the rates for FYE 2020, and House Bill 362 (passed during the 2018 legislative session), which limits the certified contribution rate to a 12% increase from the prior year for the period of July 1, 2018 to June 30, 2028.

Kentucky Retirement Systems
Exhibit 2-9
CERS Hazardous Insurance
Fund Actuarial Analysis of SB
169 Current Plan
(\$ in Millions)

Fiscal Year	Actuarial	Actuarial	Unfunded	Funded	Total				TQ	Empl
Beginning July 1,	Accrued Liability	Value of Assets	Actuarial Accrued Liability	Ratio (3) / (2)	Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll		Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		(10)
2020	\$	1,741	\$ 1,362	\$ 379	78%	\$ 54	\$ 3	\$ 563	9.52%	9.86%
2021		1,794	1,418	376	79%	49	3	567	8.73%	8.73%
2022		1,840	1,453	387	79%	47	3	575	8.25%	8.25%
2023		1,878	1,473	405	78%	47	4	585	7.96%	7.96%
2024		1,909	1,488	421	78%	47	4	595	7.82%	7.82%
2025		1,934	1,515	419	78%	47	4	606	7.71%	7.71%
2026		1,954	1,538	416	79%	46	5	618	7.42%	7.42%
2027		1,968	1,556	412	79%	45	5	630	7.18%	7.18%
2028		1,977	1,569	408	79%	45	5	643	6.97%	6.97%
2029		1,982	1,579	403	80%	45	6	658	6.80%	6.80%
2030		1,984	1,587	397	80%	45	6	674	6.65%	6.65%
2031		1,984	1,593	391	80%	45	6	692	6.53%	6.53%
2032		1,983	1,599	384	81%	46	7	710	6.41%	6.41%
2033		1,982	1,606	376	81%	46	7	730	6.32%	6.32%
2034		1,981	1,615	366	82%	47	7	750	6.23%	6.23%
2035		1,982	1,625	357	82%	47	8	770	6.17%	6.17%
2036		1,985	1,641	344	83%	48	8	790	6.10%	6.10%
2037		1,993	1,661	332	83%	49	8	810	6.05%	6.05%
2038		2,003	1,686	317	84%	50	8	829	6.00%	6.00%
2039		2,018	1,716	302	85%	51	8	848	5.98%	5.98%
2040		2,036	1,751	285	86%	57	9	868	6.53%	6.53%
2041		2,058	1,798	260	87%	58	9	888	6.53%	6.53%
2042		2,084	1,851	233	89%	58	9	907	6.37%	6.37%
2043		2,114	1,909	205	90%	57	9	926	6.12%	6.12%
2044		2,147	1,972	175	92%	56	9	945	5.89%	5.89%
2045		2,182	2,037	145	93%	57	10	963	5.89%	5.89%
2046		2,219	2,106	113	95%	58	10	982	5.88%	5.88%
2047		2,258	2,180	78	97%	59	10	1,002	5.87%	5.87%
2048		2,297	2,258	39	98%	60	10	1,023	5.84%	5.84%
2049		2,336	2,336	-	100%	16	10	1,045	1.56%	1.56%
2050		2,374	2,374	-	100%	16	11	1,070	1.54%	1.54%

Notes and assumptions:

The projection is based on the results of the June 30, 2020 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 at a rate such that the total active population is assumed to remain constant through the entire projection.

The Board certified contribution rate paid by employers is assumed to be equal to the full actuarially determined contribution rate, except as allowed by SB 249 (passed during the 2020 legislative session), which set the employer contribution rates for FYE 2021 equal to the rates for FYE 2020, and House Bill 362 (passed during the 2018 legislative session), which limits the certified contribution rate to a 12% increase from the prior year for the period of July 1, 2018 to June 30, 2028.



**Kentucky Retirement
Systems Exhibit 2-10
SPRS Insurance Fund
Actuarial Analysis of SB
169 Current Plan
(\$ in Millions)**

Fiscal Year Beginning July 1, (1)	Actuarial Accrued Liability (2)	Actuarial Value of Assets (3)	Unfunded Actuarial Accrued Liability (4)	Funded Ratio (3) / (2) (5)	Total Employer Contribution (6)	Member Contribution (7)	Covered Payroll (8)	Employer Contribution as % of Covered Payroll (9)	Empl Actuarial Determined Contribution Rate (10)
2020	\$ 276	\$ 207	\$ 69	75%	\$ 9	\$ -	\$ 46	19.69%	19.69%
2021	282	215	67	76%	8	-	45	18.07%	18.07%
2022	287	219	68	76%	8	-	45	17.53%	17.53%
2023	291	221	70	76%	8	-	45	17.53%	17.29%
2024	294	222	72	76%	8	-	44	17.25%	17.25%
2025	295	225	70	76%	8	-	44	17.25%	17.22%
2026	296	227	69	77%	7	-	44	16.83%	16.83%
2027	296	228	68	77%	7	-	44	16.83%	16.44%
2028	294	229	65	78%	7	-	44	16.05%	16.05%
2029	292	229	63	78%	7	-	44	16.05%	15.75%
2030	290	228	62	79%	7	-	44	15.47%	15.47%
2031	286	226	60	79%	7	-	45	15.47%	15.22%
2032	283	225	58	80%	7	-	45	14.97%	14.97%
2033	279	223	56	80%	7	-	46	14.97%	14.75%
2034	275	221	54	80%	7	-	46	14.51%	14.51%
2035	271	219	52	81%	7	-	47	14.51%	14.34%
2036	267	217	50	81%	7	-	47	14.17%	14.17%
2037	263	216	47	82%	7	-	47	14.17%	14.10%
2038	260	216	44	83%	7	-	47	14.01%	14.01%
2039	257	216	41	84%	7	-	47	14.01%	13.99%
2040	255	216	39	85%	7	-	47	15.13%	15.13%
2041	252	218	34	87%	7	-	47	15.13%	15.23%
2042	251	220	31	88%	7	-	47	14.95%	14.95%
2043	250	223	27	89%	7	-	47	14.95%	14.42%
2044	249	226	23	91%	6	-	47	13.93%	13.93%
2045	248	230	18	93%	6	-	46	13.93%	14.04%
2046	248	234	14	94%	6	-	45	14.30%	14.30%
2047	248	238	10	96%	7	-	46	14.30%	14.40%
2048	248	243	5	98%	7	-	45	14.36%	14.36%
2049	248	248	-	100%	1	-	45	2.32%	2.32%
2050	248	248	-	100%	1	-	45	2.29%	2.29%

Notes and assumptions:

The projection is based on the results of the June 30, 2020 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 at a rate such that the total active population is assumed to decrease 2% each year for each of the next 30 years.

The contribution rate established in the Commonwealth's biennium budget is assumed to be equal to the full actuarially determined contribution rate.

The 2020 legislative session did not set the employer contribution rates for FYE 2022. Employer contribution rates for FYE 2022 are assumed to be based on the June 30, 2020 actuarial valuation.

Actuarial Analysis of SB 169Section 3.
Projected Cost of the Retirement and Insurance
Proposed Legislation

Kentucky Retirement Systems
Exhibit 3-1
KERS Non-Hazardous Retirement
Fund Actuarial Analysis of SB 169
Proposed Legislation (\$ in
Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Empl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2020	\$ 16,351	\$ 2,323	\$ 14,028	14%	\$ 923	\$ 69	\$ 1,388	66.51%	73.28%
2021	16,363	2,446	13,917	15%	1,036	69	1,375	75.36%	75.36%
2022	16,353	2,656	13,697	16%	1,034	68	1,367	75.65%	75.65%
2023	16,324	2,851	13,473	17%	1,029	68	1,360	75.65%	75.83%
2024	16,274	3,037	13,237	19%	1,030	68	1,354	76.05%	76.05%
2025	16,205	3,233	12,972	20%	1,026	67	1,349	76.05%	76.21%
2026	16,116	3,423	12,693	21%	1,026	67	1,345	76.26%	76.26%
2027	16,007	3,610	12,397	23%	1,022	67	1,340	76.26%	76.28%
2028	15,878	3,793	12,085	24%	1,020	67	1,337	76.30%	76.30%
2029	15,731	3,974	11,757	25%	1,017	67	1,333	76.30%	76.31%
2030	15,566	4,155	11,411	27%	1,015	67	1,331	76.28%	76.28%
2031	15,390	4,344	11,046	28%	1,014	66	1,330	76.28%	76.23%
2032	15,201	4,540	10,661	30%	1,012	66	1,329	76.12%	76.12%
2033	14,999	4,743	10,256	32%	1,012	66	1,329	76.12%	76.00%
2034	14,785	4,957	9,828	34%	1,008	66	1,329	75.83%	75.83%
2035	14,562	5,183	9,379	36%	1,009	67	1,331	75.83%	75.67%
2036	14,331	5,427	8,904	38%	1,006	67	1,334	75.45%	75.45%
2037	14,097	5,690	8,407	40%	1,010	67	1,339	75.45%	75.15%
2038	13,862	5,984	7,878	43%	1,005	67	1,345	74.77%	74.77%
2039	13,630	6,304	7,326	46%	1,010	68	1,351	74.77%	74.38%
2040	13,401	6,662	6,739	50%	1,006	68	1,357	74.12%	74.12%
2041	13,178	7,053	6,125	54%	1,010	68	1,362	74.12%	73.77%
2042	12,962	7,486	5,476	58%	1,003	68	1,368	73.35%	73.35%
2043	12,751	7,954	4,797	62%	1,006	69	1,372	73.35%	72.90%
2044	12,548	8,468	4,080	67%	997	69	1,376	72.48%	72.48%
2045	12,353	9,019	3,334	73%	1,000	69	1,380	72.48%	72.21%
2046	12,166	9,620	2,546	79%	995	69	1,383	71.94%	71.94%
2047	11,988	10,267	1,721	86%	998	69	1,387	71.94%	71.71%
2048	11,819	10,970	849	93%	994	69	1,390	71.49%	71.49%
2049	11,661	11,661	-	100%	53	70	1,393	3.78%	3.78%
2050	11,513	11,513	-	100%	53	70	1,396	3.77%	3.77%

Notes and assumptions:

The analysis above is based on the same methods, assumptions, and benefit provisions as the analysis under the Current Plan, except for the changes to disability benefits proposed in SB 169. The June 30, 2020 Actuarial Valuation and this analysis assumes that 2% of future disabilities qualify for benefit provisions for duty-related disabilities.

Of those disabilities that are assumed to be duty-related, all are assumed to qualify as "Total and Permanent", as defined under the proposed legislation, as current non-hazardous disability provisions already require an injury to be "total and permanent".

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

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Empl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2020	\$	1,284 \$	710 \$	574	55%	\$ 61	\$ 14	171 36.00%	36.00%
2021		1,317	754	563	57%	57	14	171 33.44%	33.44%
2022		1,348	788	560	58%	57	14	172 33.07%	33.07%
2023		1,377	817	560	59%	57	14	173 33.07%	32.93%
2024		1,405	847	558	60%	57	14	174 33.00%	33.00%
2025		1,432	885	547	62%	58	14	175 33.00%	33.01%
2026		1,458	922	536	63%	57	14	175 32.64%	32.64%
2027		1,482	958	524	65%	57	14	176 32.64%	32.26%
2028		1,505	995	510	66%	56	14	177 31.90%	31.90%
2029		1,526	1,030	496	67%	57	14	178 31.90%	31.58%
2030		1,548	1,067	481	69%	56	14	180 31.21%	31.21%
2031		1,571	1,106	465	70%	57	15	182 31.21%	30.85%
2032		1,595	1,147	448	72%	56	15	183 30.48%	30.48%
2033		1,620	1,189	431	73%	57	15	185 30.48%	30.15%
2034		1,647	1,234	413	75%	56	15	188 29.78%	29.78%
2035		1,674	1,281	393	77%	56	15	189 29.78%	29.44%
2036		1,702	1,330	372	78%	56	15	191 29.13%	29.13%
2037		1,730	1,380	350	80%	56	15	192 29.13%	28.83%
2038		1,759	1,433	326	81%	55	15	193 28.54%	28.54%
2039		1,787	1,485	302	83%	55	16	194 28.54%	28.31%
2040		1,816	1,540	276	85%	53	16	195 27.22%	27.22%
2041		1,844	1,594	250	86%	53	16	196 27.22%	27.06%
2042		1,873	1,650	223	88%	52	16	196 26.64%	26.64%
2043		1,902	1,707	195	90%	52	16	197 26.64%	26.14%
2044		1,931	1,766	165	91%	50	16	197 25.66%	25.66%
2045		1,960	1,825	135	93%	50	16	196 25.66%	25.67%
2046		1,989	1,885	104	95%	50	16	196 25.74%	25.74%
2047		2,016	1,947	69	97%	50	16	195 25.74%	25.83%
2048		2,043	2,009	34	98%	51	16	195 25.94%	25.94%
2049		2,068	2,068	-	100%	10	16	194 5.33%	5.33%
2050		2,093	2,093	-	100%	10	16	194 5.35%	5.35%

Notes and assumptions:

The analysis above is based on the same methods, assumptions, and benefit provisions as the analysis under the Current Plan, except for the changes to disability benefits proposed in SB 169. The June 30, 2020 Actuarial Valuation and this analysis assumes that 10% of future disabilities qualify for benefit provisions related to disabilities that occur in the line of duty. Of those disabilities that are assumed to occur in the line of duty, 10% are assumed to qualify as "Total and Permanent", as defined under the proposed legislation.



Kentucky Retirement Systems
Exhibit 3-3
CERS Non-Hazardous Retirement
Fund Actuarial Analysis of SB 169
Proposed Legislation (\$ in
Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Empl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2020	\$ 14,614	\$ 7,221	\$ 7,393	49%	\$ 495	\$ 128	\$ 2,565	19.30%	23.81%
2021	14,981	7,474	7,507	50%	597	131	2,622	22.76%	23.92%
2022	15,330	7,736	7,594	50%	632	134	2,678	23.60%	23.60%
2023	15,662	7,985	7,677	51%	643	137	2,733	23.51%	23.51%
2024	15,976	8,239	7,737	52%	656	139	2,790	23.53%	23.53%
2025	16,271	8,570	7,701	53%	670	142	2,847	23.53%	23.53%
2026	16,546	8,899	7,647	54%	677	145	2,904	23.30%	23.30%
2027	16,801	9,220	7,581	55%	685	148	2,962	23.11%	23.11%
2028	17,034	9,534	7,500	56%	693	151	3,022	22.93%	22.93%
2029	17,248	9,845	7,403	57%	702	154	3,085	22.76%	22.76%
2030	17,445	10,154	7,291	58%	712	157	3,150	22.60%	22.60%
2031	17,634	10,474	7,160	59%	722	161	3,218	22.43%	22.43%
2032	17,810	10,801	7,009	61%	733	164	3,289	22.29%	22.29%
2033	17,976	11,138	6,838	62%	744	168	3,362	22.14%	22.14%
2034	18,133	11,488	6,645	63%	756	172	3,437	22.00%	22.00%
2035	18,284	11,856	6,428	65%	769	176	3,515	21.87%	21.87%
2036	18,431	12,247	6,184	66%	782	180	3,598	21.74%	21.74%
2037	18,580	12,666	5,914	68%	797	184	3,686	21.62%	21.62%
2038	18,736	13,122	5,614	70%	812	189	3,777	21.49%	21.49%
2039	18,902	13,621	5,281	72%	827	194	3,871	21.36%	21.36%
2040	19,081	14,168	4,913	74%	834	198	3,968	21.02%	21.02%
2041	19,278	14,759	4,519	77%	849	203	4,067	20.87%	20.87%
2042	19,492	15,405	4,087	79%	858	208	4,168	20.59%	20.59%
2043	19,726	16,104	3,622	82%	863	213	4,270	20.22%	20.22%
2044	19,982	16,856	3,126	84%	871	219	4,374	19.92%	19.92%
2045	20,260	17,667	2,593	87%	889	224	4,480	19.85%	19.85%
2046	20,562	18,550	2,012	90%	907	229	4,587	19.77%	19.77%
2047	20,889	19,508	1,381	93%	926	235	4,696	19.71%	19.71%
2048	21,241	20,547	694	97%	944	240	4,807	19.63%	19.63%
2049	21,619	21,619	-	100%	176	246	4,919	3.58%	3.58%
2050	22,023	22,023	-	100%	180	252	5,034	3.58%	3.58%

Notes and assumptions:

The analysis above is based on the same methods, assumptions, and benefit provisions as the analysis under the Current Plan, except for the changes to disability benefits proposed in SB 169. The June 30, 2020 Actuarial Valuation and this analysis assumes that 2% of future disabilities qualify for benefit provisions for duty-related disabilities.

Of those disabilities that are assumed to be duty-related, all are assumed to qualify as "Total and Permanent", as defined under the proposed legislation, as current non-hazardous disability provisions already require an injury to be "total and permanent".



Kentucky Retirement Systems
Exhibit 3-4
CERS Hazardous Retirement
Fund Actuarial Analysis of SB
169 Proposed Legislation
(\$ in Millions)

Fiscal Year	Actuarial	Actuarial	Unfunded	Funded	Total				T	Empl
Beginning July 1,	Accrued Liability	Value of Assets	Actuarial Accrued Liability	Ratio (3) / (2)	Employer Contribution	Member Contribution	Covered Payroll		Employer Contribution as % of Covered Payroll	Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		(9)	(10)
2020	\$	5,431	\$ 2,448	\$ 2,983	45%	\$ 171	\$ 45	\$ 569	30.06%	42.02%
2021		5,589	2,532	3,057	45%	203	46	572	35.54%	43.27%
2022		5,736	2,613	3,123	46%	240	46	580	41.34%	43.75%
2023		5,877	2,712	3,165	46%	259	47	590	44.00%	44.00%
2024		6,011	2,829	3,182	47%	265	48	600	44.16%	44.16%
2025		6,141	2,975	3,166	48%	270	49	611	44.22%	44.22%
2026		6,265	3,123	3,142	50%	273	50	623	43.91%	43.91%
2027		6,384	3,272	3,112	51%	277	51	635	43.60%	43.60%
2028		6,498	3,423	3,075	53%	281	52	648	43.28%	43.28%
2029		6,610	3,578	3,032	54%	285	53	663	42.95%	42.95%
2030		6,721	3,739	2,982	56%	290	54	680	42.60%	42.60%
2031		6,834	3,911	2,923	57%	294	56	698	42.20%	42.20%
2032		6,949	4,092	2,857	59%	299	57	716	41.81%	41.81%
2033		7,067	4,287	2,780	61%	305	59	736	41.41%	41.41%
2034		7,190	4,495	2,695	63%	310	60	756	41.00%	41.00%
2035		7,316	4,717	2,599	64%	315	62	775	40.62%	40.62%
2036		7,445	4,952	2,493	67%	320	64	795	40.28%	40.28%
2037		7,577	5,202	2,375	69%	325	65	813	39.96%	39.96%
2038		7,708	5,463	2,245	71%	330	67	832	39.68%	39.68%
2039		7,837	5,737	2,100	73%	335	68	850	39.43%	39.43%
2040		7,966	6,023	1,943	76%	328	70	869	37.77%	37.77%
2041		8,095	6,313	1,782	78%	329	71	889	37.03%	37.03%
2042		8,227	6,616	1,611	80%	331	73	909	36.38%	36.38%
2043		8,362	6,934	1,428	83%	333	74	930	35.82%	35.82%
2044		8,501	7,269	1,232	86%	336	76	951	35.34%	35.34%
2045		8,644	7,620	1,024	88%	342	78	970	35.28%	35.28%
2046		8,788	7,993	795	91%	349	79	991	35.26%	35.26%
2047		8,935	8,389	546	94%	356	81	1,012	35.23%	35.23%
2048		9,085	8,809	276	97%	364	83	1,033	35.21%	35.21%
2049		9,236	9,236	-	100%	61	84	1,055	5.74%	5.74%
2050		9,391	9,391	-	100%	62	86	1,081	5.76%	5.76%

Notes and assumptions:

The analysis above is based on the same methods, assumptions, and benefit provisions as the analysis under the Current Plan, except for the changes to disability benefits proposed in SB 169. The June 30, 2020 Actuarial Valuation and this analysis assumes that 50% of future disabilities qualify for benefit provisions related to disabilities that occur in the line of duty. Of those disabilities that are assumed to occur in the line of duty, 10% are assumed to qualify as "Total and Permanent", as defined under the proposed legislation.

**Kentucky Retirement
Systems Exhibit 3-5
SPRS Retirement Fund
Actuarial Analysis of SB
169 Proposed Legislation
(\$ in Millions)**

Fiscal Year	Actuarial	Actuarial	Unfunded	Funded	Total	Member	Covered	Employer	Empl	
Beginning July 1,	Accrued Liability	Value of Assets	Actuarial Accrued Liability	Ratio (3) / (2)	Employer Contribution	Contribution	Payroll	Contribution as % of Covered Payroll	Actuarial Determined Contribution Rate	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
2020	\$	1,053	\$ 296	\$ 757	28%	\$ 57	\$ 4	46	123.79%	123.79%
2021		1,056	311	745	29%	58	4	45	128.03%	128.03%
2022		1,057	323	734	31%	58	4	45	129.48%	129.48%
2023		1,057	334	723	32%	58	4	45	129.48%	129.57%
2024		1,056	344	712	33%	58	4	44	129.90%	129.90%
2025		1,053	356	697	34%	57	4	44	129.90%	130.15%
2026		1,049	367	682	35%	57	4	44	130.54%	130.54%
2027		1,044	378	666	36%	57	4	44	130.54%	130.08%
2028		1,037	389	648	38%	57	4	44	129.14%	129.14%
2029		1,030	401	629	39%	57	4	44	129.14%	128.37%
2030		1,023	412	611	40%	57	4	44	127.42%	127.42%
2031		1,015	425	590	42%	57	4	45	127.42%	126.07%
2032		1,006	438	568	44%	56	4	45	124.44%	124.44%
2033		998	452	546	45%	57	4	46	124.44%	122.93%
2034		989	468	521	47%	56	4	46	121.07%	121.07%
2035		981	484	497	49%	57	4	47	121.07%	119.56%
2036		972	502	470	52%	55	4	47	118.04%	118.04%
2037		963	520	443	54%	56	4	47	118.04%	117.20%
2038		953	539	414	57%	55	4	47	116.05%	116.05%
2039		943	558	385	59%	55	4	47	116.05%	115.61%
2040		932	579	353	62%	54	4	47	113.84%	113.84%
2041		921	600	321	65%	54	4	47	113.84%	113.89%
2042		909	622	287	68%	54	4	47	113.78%	113.78%
2043		897	646	251	72%	54	4	47	113.78%	112.98%
2044		885	671	214	76%	53	4	47	112.54%	112.54%
2045		872	697	175	80%	52	4	46	112.54%	113.14%
2046		858	723	135	84%	53	4	46	115.34%	115.34%
2047		844	752	92	89%	53	4	46	115.34%	115.94%
2048		830	784	46	94%	53	4	46	115.42%	115.42%
2049		816	816	-	100%	3	4	45	6.72%	6.72%
2050		801	801	-	100%	3	4	45	6.76%	6.76%

Notes and assumptions:

The analysis above is based on the same methods, assumptions, and benefit provisions as the analysis under the Current Plan, except for the changes to disability benefits proposed in SB 169. The June 30, 2020 Actuarial Valuation and this analysis assumes that 70% of future disabilities qualify for benefit provisions related to disabilities that occur in the line of duty. Of those disabilities that are assumed to occur in the line of duty, 10% are assumed to qualify as "Total and Permanent", as defined under the proposed legislation.

Kentucky Retirement Systems
Exhibit 3-6
KERS Non-Hazardous Insurance
Fund Actuarial Analysis of SB 169
Proposed Legislation
(\$ in Millions)

Fiscal Year	Actuarial	Actuarial	Unfunded	Funded	Total			T	Empl	
Beginning July 1,	Accrued Liability	Value of Assets	Actuarial Accrued Liability	Ratio (3) / (2)	Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Actuarial Determined Contribution Rate	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
2020	\$	2,566	\$ 1,096	\$ 1,470	43%	\$ 146	\$ 6	1,377	10.57%	11.15%
2021		2,634	1,187	1,447	45%	133	6	1,364	9.73%	9.73%
2022		2,701	1,259	1,442	47%	131	7	1,355	9.70%	9.70%
2023		2,764	1,325	1,439	48%	131	7	1,348	9.70%	9.72%
2024		2,821	1,390	1,431	49%	131	8	1,342	9.74%	9.74%
2025		2,872	1,461	1,411	51%	130	8	1,336	9.74%	9.73%
2026		2,915	1,528	1,387	52%	128	9	1,332	9.62%	9.62%
2027		2,949	1,588	1,361	54%	128	9	1,327	9.62%	9.52%
2028		2,975	1,641	1,334	55%	124	10	1,322	9.40%	9.40%
2029		2,991	1,685	1,306	56%	124	10	1,319	9.40%	9.29%
2030		2,998	1,722	1,276	57%	121	10	1,316	9.17%	9.17%
2031		2,997	1,752	1,245	58%	121	11	1,314	9.17%	9.07%
2032		2,989	1,778	1,211	59%	118	11	1,313	8.98%	8.98%
2033		2,975	1,800	1,175	61%	118	11	1,313	8.98%	8.90%
2034		2,957	1,819	1,138	62%	116	12	1,313	8.82%	8.82%
2035		2,935	1,836	1,099	63%	116	12	1,314	8.82%	8.74%
2036		2,912	1,854	1,058	64%	114	12	1,317	8.67%	8.67%
2037		2,888	1,874	1,014	65%	115	13	1,321	8.67%	8.61%
2038		2,865	1,898	967	66%	113	13	1,327	8.53%	8.53%
2039		2,843	1,924	919	68%	114	13	1,333	8.53%	8.46%
2040		2,822	1,957	865	69%	135	13	1,339	10.07%	10.07%
2041		2,803	2,016	787	72%	135	13	1,344	10.07%	9.96%
2042		2,787	2,083	704	75%	132	13	1,349	9.81%	9.81%
2043		2,773	2,156	617	78%	133	13	1,353	9.81%	9.67%
2044		2,762	2,237	525	81%	129	13	1,357	9.54%	9.54%
2045		2,752	2,322	430	84%	130	14	1,361	9.54%	9.51%
2046		2,744	2,414	330	88%	129	14	1,364	9.47%	9.47%
2047		2,735	2,513	222	92%	129	14	1,367	9.47%	9.45%
2048		2,726	2,617	109	96%	129	14	1,370	9.43%	9.43%
2049		2,716	2,716	-	100%	3	14	1,373	0.25%	0.25%
2050		2,704	2,704	-	100%	3	14	1,376	0.25%	0.25%

Notes and assumptions:

The analysis above is based on the same methods, assumptions, and benefit provisions as the analysis under the Current Plan, except for the changes to disability benefits proposed in SB 169. The June 30, 2020 Actuarial Valuation and this analysis assumes that 2% of future disabilities qualify for benefit provisions for duty-related disabilities.

Of those disabilities that are assumed to be duty-related, all are assumed to qualify as "Total and Permanent", as defined under the proposed legislation, as current non-hazardous disability provisions already require an injury to be "total and permanent".

Kentucky Retirement Systems
Exhibit 3-7
KERS Hazardous Insurance
Fund Actuarial Analysis of SB
169 Proposed Legislation
(\$ in Millions)

Fiscal Year Beginning July 1, (1)	Actuarial Accrued Liability (2)	Actuarial Value of Assets (3)	Unfunded Actuarial Accrued Liability (4)	Funded Ratio (3) / (2) (5)	Total Employer Contribution (6)	Member Contribution (7)	Covered Payroll (8)	Employer Contribution as % of Covered Payroll (9)	Employer Actuarial Determined Contribution Rate (10)
2020	\$ 428	\$ 539	(111)	126%	\$ -	\$ 1	\$ 170	0.00%	0.00%
2021	442	552	(110)	125%	-	1	170	0.00%	0.00%
2022	454	559	(105)	123%	-	1	171	0.00%	0.00%
2023	464	563	(99)	121%	-	1	172	0.00%	0.00%
2024	473	565	(92)	119%	-	1	173	0.00%	0.00%
2025	481	573	(92)	119%	-	1	173	0.00%	0.00%
2026	487	581	(94)	119%	-	1	174	0.00%	0.00%
2027	492	587	(95)	119%	-	2	175	0.00%	0.00%
2028	496	593	(97)	120%	-	2	176	0.00%	0.00%
2029	499	598	(99)	120%	-	2	177	0.00%	0.00%
2030	501	602	(101)	120%	-	2	179	0.00%	0.00%
2031	503	607	(104)	121%	-	2	180	0.00%	0.00%
2032	505	611	(106)	121%	-	2	182	0.00%	0.00%
2033	507	616	(109)	121%	-	2	184	0.00%	0.00%
2034	509	621	(112)	122%	-	2	186	0.00%	0.00%
2035	512	627	(115)	122%	-	2	188	0.00%	0.00%
2036	515	634	(119)	123%	-	2	190	0.00%	0.00%
2037	519	641	(122)	124%	-	2	191	0.00%	0.00%
2038	523	649	(126)	124%	-	2	192	0.00%	0.00%
2039	528	658	(130)	125%	-	2	192	0.00%	0.00%
2040	533	668	(135)	125%	-	2	193	0.00%	0.00%
2041	539	679	(140)	126%	-	2	194	0.00%	0.00%
2042	546	691	(145)	127%	-	2	195	0.00%	0.00%
2043	553	703	(150)	127%	-	2	195	0.00%	0.00%
2044	561	717	(156)	128%	-	2	195	0.00%	0.00%
2045	568	731	(163)	129%	-	2	195	0.00%	0.00%
2046	576	745	(169)	129%	-	2	194	0.00%	0.00%
2047	583	759	(176)	130%	-	2	193	0.00%	0.00%
2048	590	774	(184)	131%	-	2	193	0.00%	0.00%
2049	596	788	(192)	132%	-	2	193	0.00%	0.00%
2050	602	802	(200)	133%	-	2	193	0.00%	0.00%

Notes and assumptions:

The analysis above is based on the same methods, assumptions, and benefit provisions as the analysis under the Current Plan, except for the changes to disability benefits proposed in SB 169. The June 30, 2020 Actuarial Valuation and this analysis assumes that 10% of future disabilities qualify for benefit provisions related to disabilities that occur in the line of duty. Of those disabilities that are assumed to occur in the line of duty, 10% are assumed to qualify as "Total and Permanent", as defined under the proposed legislation.

Kentucky Retirement Systems
Exhibit 3-8
CERS Non-Hazardous Insurance
Fund Actuarial Analysis of SB 169
Proposed Legislation
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Empl Actuarial Determined Contribution Rate
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2020	\$	3,395	\$ 2,661	78%	\$	121	\$ 13	4.76%	5.43%
2021		3,545	2,819	80%		109	15	4.19%	4.19%
2022		3,694	2,940	80%		107	16	4.03%	4.03%
2023		3,838	3,045	79%		107	17	3.95%	3.95%
2024		3,977	3,148	79%		108	19	3.91%	3.91%
2025		4,108	3,278	80%		109	20	3.86%	3.86%
2026		4,232	3,404	80%		107	22	3.71%	3.71%
2027		4,347	3,521	81%		105	23	3.58%	3.58%
2028		4,452	3,629	82%		103	24	3.45%	3.45%
2029		4,549	3,730	82%		102	26	3.33%	3.33%
2030		4,637	3,823	82%		100	27	3.21%	3.21%
2031		4,718	3,910	83%		99	28	3.10%	3.10%
2032		4,793	3,991	83%		98	30	3.01%	3.01%
2033		4,863	4,069	84%		98	31	2.93%	2.93%
2034		4,931	4,146	84%		98	32	2.86%	2.86%
2035		4,999	4,224	84%		97	33	2.79%	2.79%
2036		5,069	4,304	85%		98	35	2.75%	2.75%
2037		5,142	4,390	85%		99	36	2.71%	2.71%
2038		5,218	4,482	86%		100	37	2.66%	2.66%
2039		5,298	4,578	86%		101	38	2.63%	2.63%
2040		5,382	4,680	87%		141	39	3.56%	3.56%
2041		5,470	4,828	88%		143	40	3.54%	3.54%
2042		5,563	4,986	90%		143	41	3.45%	3.45%
2043		5,659	5,152	91%		141	42	3.33%	3.33%
2044		5,760	5,325	92%		140	43	3.22%	3.22%
2045		5,864	5,504	94%		142	44	3.20%	3.20%
2046		5,972	5,693	95%		145	45	3.19%	3.19%
2047		6,082	5,892	97%		148	47	3.18%	3.18%
2048		6,193	6,101	99%		151	48	3.16%	3.16%
2049		6,306	6,306	100%		41	49	0.84%	0.84%
2050		6,418	6,418	100%		41	50	0.83%	0.83%

Notes and assumptions:

The analysis above is based on the same methods, assumptions, and benefit provisions as the analysis under the Current Plan, except for the changes to disability benefits proposed in SB 169. The June 30, 2020 Actuarial Valuation and this analysis assumes that 2% of future disabilities qualify for benefit provisions for duty-related disabilities.

Of those disabilities that are assumed to be duty-related, all are assumed to qualify as "Total and Permanent", as defined under the proposed legislation, as current non-hazardous disability provisions already require an injury to be "total and permanent".

Kentucky Retirement Systems
Exhibit 3-9
CERS Hazardous Insurance
Fund Actuarial Analysis of SB
169 Proposed Legislation
(\$ in Millions)

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Empl Actuarial Determined Contribution Rate	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
2020	\$	1,742	\$ 1,362	\$ 380	78%	\$ 54	\$ 3	563	9.52%	9.86%
2021		1,795	1,418	377	79%	50	3	567	8.79%	8.79%
2022		1,841	1,454	387	79%	48	3	575	8.31%	8.31%
2023		1,880	1,474	406	78%	47	4	585	8.04%	8.04%
2024		1,911	1,489	422	78%	47	4	595	7.90%	7.90%
2025		1,937	1,516	421	78%	47	4	606	7.78%	7.78%
2026		1,957	1,540	417	79%	46	5	618	7.50%	7.50%
2027		1,972	1,559	413	79%	46	5	630	7.26%	7.26%
2028		1,981	1,572	409	79%	45	5	643	7.05%	7.05%
2029		1,987	1,583	404	80%	45	6	658	6.88%	6.88%
2030		1,990	1,591	399	80%	45	6	674	6.73%	6.73%
2031		1,990	1,598	392	80%	46	6	692	6.61%	6.61%
2032		1,990	1,605	385	81%	46	7	710	6.50%	6.50%
2033		1,989	1,612	377	81%	47	7	730	6.39%	6.39%
2034		1,989	1,622	367	82%	47	7	750	6.32%	6.32%
2035		1,990	1,633	357	82%	48	8	770	6.24%	6.24%
2036		1,994	1,649	345	83%	49	8	790	6.18%	6.18%
2037		2,002	1,670	332	83%	50	8	810	6.13%	6.13%
2038		2,014	1,696	318	84%	50	8	829	6.09%	6.09%
2039		2,029	1,726	303	85%	51	8	848	6.05%	6.05%
2040		2,048	1,763	285	86%	57	9	868	6.60%	6.60%
2041		2,070	1,810	260	87%	59	9	888	6.60%	6.60%
2042		2,097	1,864	233	89%	58	9	907	6.44%	6.44%
2043		2,127	1,923	204	90%	57	9	926	6.19%	6.19%
2044		2,161	1,986	175	92%	56	9	945	5.97%	5.97%
2045		2,197	2,051	146	93%	57	10	963	5.96%	5.96%
2046		2,235	2,122	113	95%	58	10	982	5.95%	5.95%
2047		2,274	2,196	78	97%	59	10	1,002	5.93%	5.93%
2048		2,313	2,274	39	98%	61	10	1,023	5.92%	5.92%
2049		2,353	2,353	-	100%	17	10	1,045	1.62%	1.62%
2050		2,391	2,391	-	100%	17	11	1,070	1.61%	1.61%

Notes and assumptions:

The analysis above is based on the same methods, assumptions, and benefit provisions as the analysis under the Current Plan, except for the changes to disability benefits proposed in SB 169. The June 30, 2020 Actuarial Valuation and this analysis assumes that 50% of future disabilities qualify for benefit provisions related to disabilities that occur in the line of duty. Of those disabilities that are assumed to occur in the line of duty, 10% are assumed to qualify as "Total and Permanent", as defined under the proposed legislation.

**Kentucky Retirement
Systems Exhibit 3-10
SPRS Insurance Fund
Actuarial Analysis of SB
169 Proposed Legislation
(\$ in Millions)**

Fiscal Year Beginning July 1,	Actuarial Accrued Liability	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability	Funded Ratio (3) / (2)	Total Employer Contribution	Member Contribution	Covered Payroll	Employer Contribution as % of Covered Payroll	Empl Actuarial Determined Contribution Rate	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
2020	\$	276	\$ 207	69	75%	\$ 9	\$ -	46	19.69%	19.69%
2021		282	215	67	76%	8	-	45	18.14%	18.14%
2022		287	219	68	76%	8	-	45	17.60%	17.60%
2023		291	221	70	76%	8	-	45	17.60%	17.36%
2024		294	222	72	76%	8	-	44	17.33%	17.33%
2025		295	225	70	76%	8	-	44	17.33%	17.30%
2026		296	227	69	77%	7	-	44	16.92%	16.92%
2027		296	229	67	77%	7	-	44	16.92%	16.53%
2028		295	229	66	78%	7	-	44	16.14%	16.14%
2029		293	229	64	78%	7	-	44	16.14%	15.84%
2030		290	228	62	79%	7	-	44	15.57%	15.57%
2031		287	227	60	79%	7	-	45	15.57%	15.32%
2032		283	225	58	80%	7	-	45	15.06%	15.06%
2033		279	223	56	80%	7	-	46	15.06%	14.86%
2034		275	221	54	80%	7	-	46	14.61%	14.61%
2035		271	219	52	81%	7	-	47	14.61%	14.43%
2036		267	218	49	82%	7	-	47	14.28%	14.28%
2037		264	217	47	82%	7	-	47	14.28%	14.20%
2038		261	217	44	83%	7	-	47	14.11%	14.11%
2039		258	216	42	84%	7	-	47	14.11%	14.09%
2040		255	217	38	85%	7	-	47	15.21%	15.21%
2041		253	218	35	86%	7	-	47	15.21%	15.31%
2042		252	221	31	88%	7	-	47	15.03%	15.03%
2043		251	224	27	89%	7	-	47	15.03%	14.51%
2044		250	227	23	91%	7	-	47	14.02%	14.02%
2045		249	231	18	93%	6	-	46	14.02%	14.12%
2046		249	235	14	94%	7	-	45	14.38%	14.38%
2047		249	239	10	96%	7	-	46	14.38%	14.48%
2048		249	244	5	98%	7	-	45	14.43%	14.43%
2049		249	249	-	100%	1	-	45	2.40%	2.40%
2050		249	249	-	100%	1	-	45	2.37%	2.37%

Notes and assumptions:

The analysis above is based on the same methods, assumptions, and benefit provisions as the analysis under the Current Plan, except for the changes to disability benefits proposed in SB 169. The June 30, 2020 Actuarial Valuation and this analysis assumes that 70% of future disabilities qualify for benefit provisions related to disabilities that occur in the line of duty. Of those disabilities that are assumed to occur in the line of duty, 10% are assumed to qualify as "Total and Permanent", as defined under the proposed legislation.



TEACHERS' RETIREMENT SYSTEM of the State of Kentucky

GARY L. HARBIN, CPA
Executive Secretary

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

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

March 2, 2021

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

RE: SB 169 SCS/BR 1172
AA Statement 2 of 4

Dear Ms. Carney:

SB 169 SCS, AN ACT relating to duty-related disability benefits, in part amends KRS 61.621 to increase the disability benefit payable under that statute from 25% of the member's final rate of pay, to 75% of the member's monthly average pay. SB 169 SCS provides that in the event of a duty related disability, payments to the member and dependent child payments shall not exceed 100% of the member's monthly average pay, and that total dependent child benefits shall not exceed 25% of the member's pay while the member is living, and that payments to dependent children shall be divided equally among them. SB 169 SCS also amends KRS 61.720 to provide that in the event that a member becomes disabled as a result of a duty-related injury as defined under KRS 61.621 that the health insurance premium for the member, the member's spouse, and the dependent children as long as they remain eligible, will be paid.

TRS has examined SB 169 SCS and determined that it could increase retirement benefits for members who suffer a disabling condition from a "duty-related" injury. However, since KRS 61.621 first became effective on June 1, 2000, TRS has had no members suffer a duty-related injury resulting in a disabling condition, and, therefore, no members have qualified for this benefit. TRS has spoken with its actuary and, given this history with TRS members, SB 169 SCS would have no material impact on the funded liability of the pension fund.

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

1. There were approximately 133,000 participants in TRS as of June 30, 2020. No members have qualified for disability benefits under this statute since its effective date.
2. The change in benefits would be to increase the disability benefit payable under the statute from 25% of the member's final rate of pay, to 75% of the member's monthly average pay. SB 169 SCS further provides that in the event of a duty-related disability, payments to the member and dependent child payments shall not exceed 100% of the member's monthly average pay, and that total dependent child benefits shall not exceed 25% of the member's pay while the member is living, and that payments to dependent children shall be divided



TEACHERS' RETIREMENT SYSTEM of the State of Kentucky

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Deputy Executive Secretary
Finance and Administration

equally among them. There is also a change that in the event that a member becomes disabled as a result of a duty-related injury as defined under KRS 61.621 that the health insurance premium for the member, the member's spouse, and the dependent children as long as they remain eligible, will be paid.

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

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

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

Sincerely,

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

cc. Mariah Derringer-Lackey

479 Versailles Road • Frankfort, Kentucky 40601-3800
800-618-1687 • <https://trs.ky.gov>

JUDICIAL RETIREMENT PLAN
LEGISLATORS RETIREMENT PLAN

March 2, 2021

Ms. Katie Carney
Director's Office
Legislative Research Commission
Capitol Annex, Room 104
Frankfort, KY 40601

SB 169 SCS
AA Statement 3 and 4 of 4

Dear Ms. Carney:

JFRS has examined **SB 169 SCS 1(BR 1172)**, which amends KRS 16.582 and 61.621 to increase minimum total and permanent in line of duty or duty-related disability benefits payable to a member.

We have determined that the bill would increase retirement benefits for members who become disabled from a "duty-related" incident. However, as of this date, JFRS has not had any members receive benefits under this statute as a result of a line of duty or duty-related injury. Therefore, given the unlikely nature of incidence, JFRS believes the proposals included in SB 169 SCS 1 would not materially impact the funding, payment of benefits, or participation in either plan administered by JFRS. Therefore, requested any further actuarial analysis of SB 169 by the Systems' independent actuary.

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

1. There has no individuals affected.
2. There is no change in benefits.
3. There is no change to employer costs.
4. There is no change to administrative expenses

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

Sincerely,



Bo Cracraft
Executive Director