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February 1, 2021

Mr. Robert B. Barnes
Deputy Executive Secretary and General Counsel
Kentucky Teachers' Retirement System
479 Versailles Road
Frankfort, KY 40601-3800

Actuarial Impact – 21 RS HB 258

Dear Beau:

We have prepared an actuarial analysis of the impact of 21 RS HB 258 (HB 258) on the Teachers' Retirement System of the State of Kentucky (TRS). HB 258 creates a new benefit structure for active members hired on or after January 1, 2022 and changes actuarial funding, participation requirements and actuarial assumptions. The major provisions of HB 258 are summarized below and the estimated cost impacts are provided in the attached Exhibits.

Section I - Benefit Provisions for New Members on or after January 1, 2022

All new members hired on or after January 1, 2022 will accrue retirement benefits under a foundational benefit plan and a supplemental benefit plan within TRS.

The following are the major provisions of the foundational benefit plan:

- Retirement eligibility of age 55 with 10 years of service or age 65 with 5 years of service.
- Final average salary will be based on highest 5 years.
- For non-university members, benefit formula of 1.70% of final average salary at age 60, increasing incrementally each month, not to exceed a total of 1.90% of final average salary at age 65 or greater, applied to all years of service, plus
- An additional one-quarter of one percent if service is at least 20 years but less than 30 years, or an additional one-half of one percent if service is 30 or more years, applied to all years of service.
- Benefits are reduced six percent for each year that age is less than 60 or for each year that service is less than 30 years



- For university members, benefit formula of 0.70% of final average salary at age 60, increasing incrementally each month, not to exceed a total of 0.90% of final average salary at age 65 or greater, applied to all years of service, plus
- An additional one-quarter of one percent if service is at least 20 years but less than 30 years, or an additional one-half of one percent if service is 30 or more years, applied to all years of service.
- Benefits are reduced six percent for each year that age is less than 60 or for each year that service is less than 30 years
- Contributions for members with less than 5 years of service earn interest based on a rolling 5-year yield on a 30-year United States Treasury Bond and contributions for members with more than 5 years of service earn 2.50% annually.
- Some disability and death benefits will continue to new members hired on or after January 1, 2022 in a similar manner as current members.
- Life Insurance benefits of \$10,000 for death after retirement and \$5,000 for death in active service.
- If the funding levels of the foundational benefit plan fall below 90%, the Board will make changes prospectively to any or all of the preceding provisions. Benefits earned are protected by inviolable contract.

The retirement benefit determined under the supplemental plan will be based upon a member's accumulated account balance calculated as follows:

- Members shall contribute 2.0% of monthly salary.
- Employer shall contribute 2.0% of monthly salary.
- Regular interest will be added annually as of June 30 to the contributing member's accumulated account balance. Regular interest is defined as the yield on a 5-year rolling 30-year United States Treasury Bond.
- Once a member meets the eligibility requirements, the member may elect to retire and receive a monthly lifetime retirement allowance by annuitizing the accumulated account balance based on the actuarial assumptions and methods adopted by the TRS Board in effect on the member's retirement date.
- The member may elect to receive an actuarial equivalent benefit under one of the optional forms of payment as established by the TRS Board,
- Or the member may instead take a refund of the accumulated account balance or take a distribution over a period certain.
- Upon termination of employment with less than five years of service, the member shall forfeit the accumulated employer contributions and interest and shall only receive a refund of his or her accumulated contributions with regular interest.
- Upon termination of employment with five or more years of service, the member shall receive a full refund of his or her accumulated account balance.
- If the funding level of the foundational benefit falls below 90%, the Board shall utilize prospective mandatory supplemental contributions to provide funding for the foundational benefit component.



For new members after January 1, 2022, sick leave lump sum payouts will not be allowed to be used for retirement purposes.

Section II - Contribution Requirements

Employee Contribution Rates

Active members will contribute a percentage of salary for the foundational, supplemental and retiree health plans. The table below shows the contribution requirements:

Item	Non-University Member Rate	University Member Rate
Foundational	9.000%	5.000%
Supplemental	2.000	2.000
Retiree Health	<u>3.750</u>	<u>2.775</u>
Total	14.750%	9.775%

Employer Contributions

Non-university employers will pay a fixed base statutory contribution rate of 10.75% of pay and University employers will pay a fixed statutory contribution rate of 9.775% to fund the foundational, supplemental and retiree health benefits. The table below shows the statutory contribution rates. In addition, 3% of pay will be paid by local school district and other agency employers to fund retiree health care benefits.

Item	Non-University Employer Rate	University Employer Rate
Foundational	8.000%	5.775%
Supplemental	2.000%	2.000%
Retiree Health	<u>0.750%</u>	<u>2.000%</u>
Total	10.750%	9.775%

Section III - Actuarial Funding

An employer stabilization reserve account is established that shall consist of the amounts of employer contributions that exceed the combined actuarially required employer contribution for the foundational benefit component and the mandatory employer contribution to the



supplemental benefit component. The funds in this account may only be used to pay off the unfunded liability of the pension and life insurance funds.

Section IV - Actuarial Assumptions

The projections for the proposed legislation use the June 30, 2020 actuarial valuation of TRS as a baseline. Below are additional or alternative actuarial assumptions that are used in the determination of this legislation:

- We have assumed a Regular Interest assumption of 2.5%.
- We have assumed that the actuarially determined employer contribution (ADEC) will be made for each year of the projection. Since the statutory contribution rates for the new plan along with the current statutory contribution rates and required increase for existing members may not be sufficient to pay the full ADEC, the required increase in the ADEC may increase under this legislation. However, the total dollar amount of expected future ADEC contributions will be less.
- We have assumed that the stabilization reserve account will maintain a 100% funded ratio, and any excess contributions would go to help pay down the legacy Unfunded Accrued Liability
- We have revised assumed retirement rates for members of the new plan structure based on the new retirement eligibility requirements. Actual retirement patterns occurring in the future that are different from those assumed, will impact the ultimate cost of HB 258. In addition, other assumptions, such as rates of termination and disability that were determined based on actual experience under the current plan would likely change under HB 258 further impacting the ultimate cost of disability significantly.

Section V - Conclusion

As shown in Exhibit 5, there is a savings under HB 258 due to the decrease in benefits for new active members totaling approximately \$3.57 Billion over the 30-year projection period for all three plans under TRS. There is a savings for the Retirement Annuity Trust and the Retiree Health Trust but a cost for the Life Insurance Trust. Please note that the savings for the Retiree Health Trust begins immediately in fiscal year ending 2023 due to the timing of the actuarially determined contribution calculated in the June 30, 2022 valuation.

Projections are designed to identify anticipated trends rather than predicting some future state of events. The projections are based on TRS' estimated financial status on June 30, 2020, and project future events using one set of assumptions out of a range of many possibilities. The projections do not predict TRS' financial condition or its ability to pay benefits in the future and do not provide any guarantee of future financial soundness of the Plans. Over time, a benefit plan's total cost will depend on a number of factors, including the amount of benefits paid, the number of people paid benefits, the duration of the benefit payments, plan expenses, and the amount of earnings on assets invested to pay benefits. These amounts and other variables are uncertain at the time the projections were made. Because actual experience will not unfold

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exactly as expected, actual results can be expected to differ from the projections. To the extent that actual experience deviates significantly from the assumptions, results could be significantly better or significantly worse than indicated in this study.

The undersigned, Edward J. Koebel and Alisa Bennett, are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

If you have any questions, please do not hesitate to contact us.

Sincerely,

A handwritten signature in blue ink that reads 'Edward J. Koebel'.

Edward J. Koebel, EA, FCA, MAAA
Chief Executive Officer

A handwritten signature in blue ink that reads 'Alisa Bennett'.

Alisa Bennett, FSA, EA, FCA, MAAA
President

A handwritten signature in blue ink that reads 'Cathy Turcot'.

Cathy Turcot
Principal and Managing Director



Exhibit 1
Teachers' Retirement System of the State of Kentucky
Current Funding Status for the Retirement Annuity Trust*
(\$ in thousands)

Fiscal Year	Non-University Payroll	University Payroll	Total Payroll	Unfunded Accrued Liability of Retirement Annuity Trust	Funding Ratio of Retirement Annuity Trust	Actuarially Determined Contribution in Dollars for Retirement Annuity Trust
	(1)	(2)	(3)	(4)	(5)	(6)
FY 2022-23	\$3,716,763	\$188,454	\$3,905,217	\$14,785,756	58.4%	\$1,210,385
FY 2023-24	3,810,973	188,452	3,999,425	14,650,560	59.6%	1,229,553
FY 2024-25	3,907,520	189,788	4,097,308	14,877,747	59.9%	1,278,091
FY 2025-26	4,003,397	191,807	4,195,204	15,210,791	59.9%	1,338,585
FY 2026-27	4,098,744	194,531	4,293,275	15,467,177	60.1%	1,395,827
FY 2027-28	4,194,908	198,021	4,392,929	15,617,027	60.5%	1,449,944
FY 2028-29	4,295,997	201,887	4,497,884	15,721,663	61.0%	1,507,464
FY 2029-30	4,400,886	205,828	4,606,714	15,778,267	61.7%	1,566,858
FY 2030-31	4,509,648	210,000	4,719,648	15,786,666	62.4%	1,627,370
FY 2031-32	4,623,125	214,241	4,837,366	15,742,286	63.2%	1,692,458
FY 2032-33	4,741,595	218,364	4,959,959	15,638,654	64.0%	1,758,709
FY 2033-34	4,863,604	223,292	5,086,896	15,467,326	65.0%	1,826,947
FY 2034-35	4,993,467	227,687	5,221,154	15,223,595	66.1%	1,899,024
FY 2035-36	5,129,751	232,104	5,361,855	14,894,761	67.4%	1,973,468
FY 2036-37	5,273,440	237,377	5,510,817	14,474,653	68.8%	2,051,322
FY 2037-38	5,425,178	242,986	5,668,164	13,950,121	70.4%	2,186,112
FY 2038-39	5,585,919	249,262	5,835,181	13,311,620	72.1%	2,223,629
FY 2039-40	5,755,718	255,985	6,011,703	12,548,475	74.1%	2,376,657
FY 2040-41	5,935,708	263,325	6,199,033	11,592,219	76.4%	2,500,570
FY 2041-42	6,125,444	270,819	6,396,263	10,529,322	78.9%	2,596,353
FY 2042-43	6,324,432	278,580	6,603,012	9,233,427	81.7%	2,680,774
FY 2043-44	6,534,578	286,955	6,821,533	7,721,341	84.9%	2,822,948
FY 2044-45	6,755,354	296,159	7,051,513	6,002,621	88.4%	2,913,425
FY 2045-46	6,987,972	305,559	7,293,531	4,076,423	92.3%	2,985,920
FY 2046-47	7,231,088	315,559	7,546,647	1,866,252	96.5%	652,592
FY 2047-48	7,488,221	326,110	7,814,331	0	100.0%	471,973
FY 2048-49	7,765,859	336,732	8,102,591	0	100.0%	267,739
FY 2049-50	8,045,588	347,983	8,393,571	0	100.0%	226,621
FY 2050-51	8,334,558	359,725	8,694,283	0	100.0%	214,993
FY 2051-52	8,633,447	371,854	9,005,301	0	100.0%	202,359

* Totals may not add due to rounding



Exhibit 2

Teachers' Retirement System of the State of Kentucky

Funding Requirements under House Bill 258 and Comparison to Current Retirement Annuity Trust*

(\$ in thousands)

Fiscal Year	Unfunded Accrued Liability under HB 258	HB 258 Funding Ratio	Total Employer Contribution for Proposed Bill	Total Employer Contribution for Current Retirement Annuity Trust	Cost/(Savings) in Retirement Annuity Trust due to HB 258
	(7)	(8)	(9)	(10)=(6)	(11)=(9)-(10)
FY 2022-23	\$14,785,756	58.4%	\$1,210,385	\$1,210,385	\$0
FY 2023-24	14,650,549	59.6%	1,229,553	1,229,553	0
FY 2024-25	14,876,485	59.9%	1,272,829	1,278,091	(5,262)
FY 2025-26	15,207,066	59.9%	1,328,195	1,338,585	(10,390)
FY 2026-27	15,461,434	60.1%	1,380,372	1,395,827	(15,455)
FY 2027-28	15,609,728	60.5%	1,429,622	1,449,944	(20,322)
FY 2028-29	15,711,223	61.0%	1,482,356	1,507,464	(25,108)
FY 2029-30	15,764,583	61.7%	1,536,810	1,566,858	(30,048)
FY 2030-31	15,769,443	62.4%	1,592,196	1,627,370	(35,174)
FY 2031-32	15,721,785	63.1%	1,652,055	1,692,458	(40,403)
FY 2032-33	15,614,720	64.0%	1,712,892	1,758,709	(45,817)
FY 2033-34	15,440,409	65.0%	1,775,475	1,826,947	(51,472)
FY 2034-35	15,193,981	66.1%	1,841,724	1,899,024	(57,300)
FY 2035-36	14,862,604	67.4%	1,909,987	1,973,468	(63,481)
FY 2036-37	14,440,117	68.8%	1,981,291	2,051,322	(70,031)
FY 2037-38	13,913,309	70.3%	2,109,252	2,186,112	(76,860)
FY 2038-39	13,273,006	72.1%	2,139,573	2,223,629	(84,056)
FY 2039-40	12,508,223	74.0%	2,285,099	2,376,657	(91,558)
FY 2040-41	11,551,037	76.4%	2,401,094	2,500,570	(99,476)
FY 2041-42	10,487,299	78.8%	2,488,594	2,596,353	(107,759)
FY 2042-43	9,190,894	81.7%	2,564,456	2,680,774	(116,318)
FY 2043-44	7,680,484	84.9%	2,697,676	2,822,948	(125,272)
FY 2044-45	5,963,933	88.4%	2,778,970	2,913,425	(134,455)
FY 2045-46	4,042,531	92.3%	2,842,074	2,985,920	(143,846)
FY 2046-47	1,837,874	96.5%	499,406	652,592	(153,186)
FY 2047-48	0	100.0%	309,388	471,973	(162,585)
FY 2048-49	0	100.0%	95,161	267,739	(172,578)
FY 2049-50	0	100.0%	43,750	226,621	(182,871)
FY 2050-51	0	100.0%	21,888	214,993	(193,105)
FY 2051-52	0	100.0%	0	202,359	(202,359)

* Totals may not add due to rounding



Exhibit 3

Teachers' Retirement System of the State of Kentucky

Funding Requirements under House Bill 258 and Comparison to Current Retiree Health Trust*

(\$ in thousands)

Fiscal Year	Unfunded Accrued Liability under HB 258	HB 258 Funding Ratio	Total Employer Contribution for Proposed Bill	Total Employer Contribution for Current Retiree Health Trust	Cost/(Savings) in Retiree Health Trust due to HB 258
	(12)	(13)	(14)	(15)	(16)=(14)-(15)
FY 2022-23	\$1,056,685	61.7%	\$113,966	\$115,392	\$(1,426)
FY 2023-24	882,252	69.6%	99,912	102,908	(2,996)
FY 2024-25	689,384	77.4%	81,576	86,308	(4,732)
FY 2025-26	465,060	85.5%	66,453	72,271	(5,818)
FY 2026-27	204,035	94.0%	68,455	75,791	(7,336)
FY 2027-28	0	100.0%	70,534	79,400	(8,866)
FY 2028-29	0	100.0%	72,682	83,189	(10,507)
FY 2029-30	0	100.0%	74,951	87,224	(12,273)
FY 2030-31	0	100.0%	77,357	91,509	(14,152)
FY 2031-32	0	100.0%	79,850	96,000	(16,150)
FY 2032-33	0	100.0%	82,475	100,739	(18,264)
FY 2033-34	0	100.0%	85,187	105,730	(20,543)
FY 2034-35	0	100.0%	88,055	111,031	(22,976)
FY 2035-36	0	100.0%	91,085	116,639	(25,554)
FY 2036-37	0	100.0%	94,272	122,556	(28,284)
FY 2037-38	0	100.0%	97,648	128,831	(31,183)
FY 2038-39	0	100.0%	101,187	135,444	(34,257)
FY 2039-40	0	100.0%	104,932	142,455	(37,523)
FY 2040-41	0	100.0%	108,914	149,871	(40,957)
FY 2041-42	0	100.0%	113,114	157,705	(44,591)
FY 2042-43	0	100.0%	117,481	165,917	(48,436)
FY 2043-44	0	100.0%	122,079	174,539	(52,460)
FY 2044-45	0	100.0%	126,901	183,604	(56,703)
FY 2045-46	0	100.0%	132,002	193,143	(61,141)
FY 2046-47	0	100.0%	137,367	203,170	(65,803)
FY 2047-48	0	100.0%	143,046	213,730	(70,684)
FY 2048-49	0	100.0%	149,407	225,050	(75,643)
FY 2049-50	0	100.0%	155,526	236,640	(81,114)
FY 2050-51	0	100.0%	162,666	248,774	(86,108)
FY 2051-52	0	100.0%	170,423	261,514	(91,091)

* Totals may not add due to rounding



Exhibit 4

Teachers' Retirement System of the State of Kentucky

Funding Requirements under House Bill 258 and Comparison to Current Life Insurance Trust*

(\$ in thousands)

Fiscal Year	Unfunded Accrued Liability under HB 258	HB 258 Funding Ratio	Total Employer Contribution for Proposed Bill	Total Employer Contribution for Current Life Insurance Trust	Cost/(Savings) in Life Insurance Trust due to HB 258
	(17)	(18)	(19)	(20)	(21)=(19)-(20)
FY 2022-23	\$29,965	75.5%	\$3,065	\$3,065	\$0
FY 2023-24	33,396	73.3%	3,343	3,343	0
FY 2024-25	35,455	72.3%	3,630	3,552	78
FY 2025-26	36,296	72.3%	3,839	3,691	148
FY 2026-27	36,810	72.5%	4,029	3,818	211
FY 2027-28	37,003	72.9%	4,202	3,933	269
FY 2028-29	37,107	73.3%	4,376	4,053	323
FY 2029-30	37,109	73.8%	4,550	4,179	371
FY 2030-31	36,996	74.4%	4,729	4,308	421
FY 2031-32	36,754	75.0%	4,914	4,443	471
FY 2032-33	36,368	75.7%	5,102	4,583	519
FY 2033-34	35,820	76.4%	5,294	4,729	565
FY 2034-35	35,090	77.3%	5,492	4,883	609
FY 2035-36	34,158	78.2%	5,697	5,043	654
FY 2036-37	33,000	79.2%	5,908	5,212	696
FY 2037-38	31,589	80.4%	6,125	5,389	736
FY 2038-39	29,895	81.6%	6,350	5,576	774
FY 2039-40	27,886	83.1%	6,588	5,776	812
FY 2040-41	25,524	84.7%	6,838	5,989	849
FY 2041-42	22,765	86.5%	7,106	6,221	885
FY 2042-43	19,556	88.5%	7,400	6,479	921
FY 2043-44	15,836	90.8%	7,736	6,776	960
FY 2044-45	11,520	93.4%	8,151	7,146	1,005
FY 2045-46	6,481	96.3%	8,786	7,719	1,067
FY 2046-47	434	99.8%	2,761	1,768	993
FY 2047-48	212	99.9%	2,559	1,551	1,008
FY 2048-49	208	99.9%	2,575	1,549	1,026
FY 2049-50	213	99.9%	2,598	1,555	1,043
FY 2050-51	218	99.9%	2,618	1,561	1,057
FY 2051-52	224	99.9%	2,640	1,567	1,073

* Totals may not add due to rounding



Exhibit 5
Teachers' Retirement System of the State of Kentucky
Total Savings to All Trusts under House Bill 258*
 (\$ in thousands)

Fiscal Year	Cost/(Savings) in Retirement Annuity Trust due to HB 258 (22)=(11)	Cost/(Savings) in Retiree Health Trust due to HB 258 (23)=(16)	Cost/(Savings) in Life Insurance Trust due to HB 258 (24)=(21)	Cost/(Savings) in Total due to HB 258 (25)=(22)+(23)+(24)
FY 2022-23	\$0	\$(1,426)	\$0	\$(1,426)
FY 2023-24	0	(2,996)	0	(2,996)
FY 2024-25	(5,262)	(4,732)	78	(9,918)
FY 2025-26	(10,390)	(5,818)	148	(16,060)
FY 2026-27	(15,455)	(7,336)	211	(22,580)
FY 2027-28	(20,322)	(8,866)	269	(28,918)
FY 2028-29	(25,108)	(10,507)	323	(35,292)
FY 2029-30	(30,048)	(12,273)	371	(41,950)
FY 2030-31	(35,174)	(14,152)	421	(48,906)
FY 2031-32	(40,403)	(16,150)	471	(56,081)
FY 2032-33	(45,817)	(18,264)	519	(63,562)
FY 2033-34	(51,472)	(20,543)	565	(71,450)
FY 2034-35	(57,300)	(22,976)	609	(79,666)
FY 2035-36	(63,481)	(25,554)	654	(88,382)
FY 2036-37	(70,031)	(28,284)	696	(97,620)
FY 2037-38	(76,860)	(31,183)	736	(107,307)
FY 2038-39	(84,056)	(34,257)	774	(117,538)
FY 2039-40	(91,558)	(37,523)	812	(128,270)
FY 2040-41	(99,476)	(40,957)	849	(139,583)
FY 2041-42	(107,759)	(44,591)	885	(151,465)
FY 2042-43	(116,318)	(48,436)	921	(163,831)
FY 2043-44	(125,272)	(52,460)	960	(176,772)
FY 2044-45	(134,455)	(56,703)	1,005	(190,154)
FY 2045-46	(143,846)	(61,141)	1,067	(203,919)
FY 2046-47	(153,186)	(65,803)	993	(217,996)
FY 2047-48	(162,585)	(70,684)	1,008	(232,261)
FY 2048-49	(172,578)	(75,643)	1,026	(247,195)
FY 2049-50	(182,871)	(81,114)	1,043	(262,942)
FY 2050-51	(193,105)	(86,108)	1,057	(278,157)
FY 2051-52	(202,359)	(91,091)	1,073	(292,377)
TOTAL	\$(2,516,545)	\$(1,077,571)	\$19,544	\$(3,574,574)

* Totals may not add due to rounding