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March 4, 2019

Mr. Robert B. Barnes
Deputy Executive Secretary and General Counsel
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Actuarial Impact – House Bill 504 – 19 RS BR 1568 – Impact on Pension Plan
AA Statement 1 of 1

Dear Beau:

We have prepared an actuarial analysis of the impact of House Bill 504 – 19 RS BR 1568 (HB 504) on the Teachers' Retirement System of the State of Kentucky (TRS). This actuarial analysis relates to the pension plan only. HB 504 creates a new benefit structure for active nonuniversity members hired on or after January 1, 2020 and changes actuarial funding, participation requirements and actuarial assumptions. The major provisions of HB 504 are summarized below and the estimated cost impacts are provided in the attached Exhibits.

Section I - Benefit Provisions for New Non-University Members on or after January 1, 2020

All new non-university members hired on or after January 1, 2020 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 5 years of service.
- Final average salary will be based on highest 5 years.
- Benefit formula of 1.50% of final average salary at age 55, increasing incrementally each month, not to exceed a total of 2.20% of final average salary at age 62 or greater, applied to all years of service, plus
- An additional one-twelfth of one percent for each month of service in excess of 30 years, not to exceed 0.30% at 33 years of service, applied to all years of service.
- 1.5% annual COLA will apply.



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- Members contributions earn interest based on a 30-year United States Treasury Bill rate and contributions and interest are portable.
- Some disability and death benefits will continue to new members hired on or after January 1, 2019 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 to any or all of the preceding provisions.

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 30 year United States Treasury Bill rate as of the end of the most recent fiscal year plus 1.0%.
- Once a member meets the service retirement eligibility, the member may elect to 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, 2020, there will be no sick leave credit for retirement purposes, and no service purchases unless the member is called to active duty deployment while working. However, under this new plan, some disability and death benefits will continue to new members hired on or after January 1, 2019 in a similar manner as current members.



Section II - Contribution Requirements

Employee Contribution Rates

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

Item	Member Rate
Foundational	8.00%
Supplemental	2.00
Retiree Health	<u>3.75</u>
Total	13.75%

Employer Contributions

According to HB 504, for all members, employers will pay a fixed base statutory contribution rate of 10.75% of pay for non-university employers to fund the foundational, supplemental and retiree health benefits. The table below shows the statutory contribution rates.

Item	Employer Rate
Foundational	8.00%
Supplemental	2.00%
Retiree Health	<u>0.75%</u>
Total	10.75%

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.



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Section IV - Actuarial Assumptions

The projections for the proposed legislation use the June 30, 2018 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 2.75% for the foundational benefit and 3.75% for the supplemental benefit,
- We have assumed that the actuarially determined employer contribution (ADEC) will be made for each year of the projection. Since the 10.75% statutory contribution rate 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 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 504. 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 504 further impacting the ultimate cost of disability significantly.

Section V - Conclusion

As shown in Exhibit 2, after the first year, there is a savings under HB 504 due to the decrease in benefits for new active members totaling approximately \$560 Million over the 20-year projection period.

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, 2018, 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 DB Plan. Over time, a defined 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 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.

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The undersigned, Edward J. Koebel, is a member of the American Academy of Actuaries and meets 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,

Handwritten signature of Edward J. Koebel in blue ink.

Edward J. Koebel, EA, FCA, MAAA
Principal and Consulting Actuary

Handwritten signature of Cathy Turcot in blue ink.

Cathy Turcot
Principal and Managing Director



Exhibit 1
Teachers' Retirement System of the State of Kentucky
Current Funding Status for the Defined Benefit Plan
(\$ in thousands)

Fiscal Year	Non-University Payroll (1)	University Payroll (2)	Total Payroll (3)	Unfunded Accrued Liability (4)	Funding Ratio (5)	Actuarially Determined Contribution in Dollars for DB Plan (6)
FY 2020-21	\$3,571,435	\$207,866	\$3,779,301	\$14,299,615	57.7%	\$1,167,279
FY 2021-22	3,658,514	213,749	3,872,263	14,374,218	58.3%	1,181,007
FY 2022-23	3,746,792	220,674	3,967,466	14,487,014	59.0%	1,214,393
FY 2023-24	3,835,236	227,740	4,062,976	14,298,343	60.5%	1,221,607
FY 2024-25	3,923,547	235,953	4,159,500	14,343,329	61.2%	1,250,400
FY 2025-26	4,011,064	245,602	4,256,666	14,487,484	61.7%	1,290,583
FY 2026-27	4,099,537	256,214	4,355,751	14,635,297	62.2%	1,332,372
FY 2027-28	4,189,469	267,785	4,457,254	14,768,060	62.6%	1,375,446
FY 2028-29	4,283,439	279,938	4,563,377	14,874,398	63.1%	1,419,935
FY 2029-30	4,380,892	292,275	4,673,167	14,944,400	63.7%	1,465,930
FY 2030-31	4,482,233	305,373	4,787,606	14,971,832	64.3%	1,513,669
FY 2031-32	4,589,338	318,575	4,907,913	14,949,175	65.0%	1,563,155
FY 2032-33	4,701,338	331,935	5,033,273	14,868,607	65.8%	1,614,477
FY 2033-34	4,816,709	346,267	5,162,976	14,727,533	66.7%	1,667,676
FY 2034-35	4,939,271	360,392	5,299,663	14,518,959	67.7%	1,722,803
FY 2035-36	5,068,854	375,000	5,443,854	14,229,065	68.9%	1,779,869
FY 2036-37	5,207,360	390,751	5,598,111	13,852,357	70.2%	1,839,156
FY 2037-38	5,354,372	406,856	5,761,228	13,378,366	71.6%	1,956,286
FY 2038-39	5,510,376	423,758	5,934,134	12,798,356	73.2%	1,968,615
FY 2039-40	5,675,485	441,297	6,116,782	12,100,524	75.1%	2,103,045



Exhibit 2
Teachers' Retirement System of the State of Kentucky
Funding Requirements under House Bill 504 and Comparison to Current Plan
(\$ in thousands)

Fiscal Year	Non-University Payroll	University Payroll	Total Payroll	Unfunded Accrued Liability under HB 504	HB 504 Funding Ratio	Total Employer Contribution for Proposed Bill	Total Employer Contribution for Current Plan	Cost/(Savings) to TRS Employers due to HB 504
	(7)	(8)	(9)=(7)+(8)	(10)	(11)	(12)	(13)=(6)	(14)=(13)-(12)
FY 2020-21	\$3,571,435	\$207,866	\$3,779,301	\$14,299,615	57.7%	\$1,167,279	\$1,167,279	\$ 0
FY 2021-22	3,658,514	213,749	3,872,263	14,358,643	58.4%	1,178,879	1,181,007	(2,128)
FY 2022-23	3,746,792	220,674	3,967,466	14,452,808	59.1%	1,210,065	1,214,393	(4,328)
FY 2023-24	3,835,236	227,740	4,062,976	14,180,746	60.8%	1,214,959	1,221,607	(6,648)
FY 2024-25	3,923,547	235,953	4,159,500	14,154,163	61.7%	1,241,341	1,250,400	(9,059)
FY 2025-26	4,011,064	245,602	4,256,666	14,222,464	62.3%	1,279,113	1,290,583	(11,470)
FY 2026-27	4,099,537	256,214	4,355,751	14,292,158	62.9%	1,318,367	1,332,372	(14,005)
FY 2027-28	4,189,469	267,785	4,457,254	14,343,846	63.6%	1,358,692	1,375,446	(16,754)
FY 2028-29	4,283,439	279,938	4,563,377	14,364,986	64.2%	1,400,231	1,419,935	(19,704)
FY 2029-30	4,380,892	292,275	4,673,167	14,348,006	64.9%	1,443,049	1,465,930	(22,881)
FY 2030-31	4,482,233	305,373	4,787,606	14,289,606	65.7%	1,487,426	1,513,669	(26,243)
FY 2031-32	4,589,338	318,575	4,907,913	14,186,080	66.6%	1,533,350	1,563,155	(29,805)
FY 2032-33	4,701,338	331,935	5,033,273	14,030,313	67.5%	1,580,849	1,614,477	(33,628)
FY 2033-34	4,816,709	346,267	5,162,976	13,818,424	68.5%	1,629,978	1,667,676	(37,698)
FY 2034-35	4,939,271	360,392	5,299,663	13,546,272	69.6%	1,680,752	1,722,803	(42,051)
FY 2035-36	5,068,854	375,000	5,443,854	13,203,353	70.8%	1,733,150	1,779,869	(46,719)
FY 2036-37	5,207,360	390,751	5,598,111	12,783,785	72.1%	1,787,479	1,839,156	(51,677)
FY 2037-38	5,354,372	406,856	5,761,228	12,275,932	73.6%	1,899,354	1,956,286	(56,932)
FY 2038-39	5,510,376	423,758	5,934,134	11,674,147	75.2%	1,906,140	1,968,615	(62,475)
FY 2039-40	5,675,485	441,297	6,116,782	10,970,292	77.0%	2,034,722	2,103,045	(68,323)