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February 9, 2015

Mr. Alan Conroy
Executive Director
Kansas Public Employees Retirement System
611 S. Kansas Ave., Suite 100
Topeka, KS 66603-3803

Re: Cost Study for Senate Bill 168 of Proposed Changes to KPERS State/School Funding: \$1.0B Bond Proceeds, Fixed Contribution Rates of 8.65% for Last Half of FY 2015, No ELARF Funds

Dear Alan:

At your request, we have prepared a cost study to determine the combined impact of the following proposal on the funding of the State/School group of KPERS:

- (1) An employer contribution rate of 8.65% for the last half of fiscal year 2015,
- (2) Net proceeds of \$1.0 billion from a bond issued by the state of Kansas are deposited into the KPERS trust fund.
- (3) The ELARF funds are not added to the trust in addition to the regular KPERS contribution.

Background

Under current law, the employer contribution rate for KPERS is not necessarily the full actuarial required contribution (ARC). Based on legislation passed in 1993, the employer contribution rate certified by the KPERS Board may not increase by more than the statutory cap. The current statutory cap is 1.0% for fiscal year 2015, 1.1% for fiscal year 2016 and 1.2% for fiscal year 2017 and later. The statutory contribution rate for the Local group has been equal to the actuarial required contribution rate in the last two actuarial valuations. However, the statutory employer contribution rate for the State/School group is lower than the actuarial required contribution rate. The following table shows the actuarial required contribution and the statutory contribution rate for the State/School group in the last three valuations.

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Valuation Date	Fiscal Year	Employer Contribution Rates	
		Actuarial	Statutory
12/31/2013	2017	14.85%	13.57%
12/31/2012	2016	14.95%	12.37%
12/31/2011	2015	14.34%	11.27%

There is currently a state budget reduction plan that includes a reduction in the State/School employer contribution rate from the current statutory rate of 11.27% to 8.65% for the last half of FY 2015. This action lowers the contributions to the State/School group by about \$58 million which will have to be funded in future years (with interest at the assumed rate of 8%).

This cost study also reflects the deposit of net bond proceeds of \$1.0 billion. The draft bill provides that the debt service payments on the bond will come from a funding source other than KPERS contributions. Consequently, we have not reflected these debt service payments in any way in our cost analysis. Furthermore, for modeling purposes the bond proceeds are assumed to be deposited into the KPERS trust on December 31, 2015, as you specified, and thus first impact the employer contribution rate in fiscal year 2019. If any of the provisions of the bill draft change, our cost study may need to be revised.

Finally, legislation passed in the 2012 session provided for additional contributions by the State to fund the unfunded actuarial liability for the State/School group until the funded ratio was at least 80%. The additional contribution stream was to come from the Expanded Lottery Act Revenue Fund (ELARF) in the amount of 50% of the money credited to the ELARF, after a reduction of \$10.5 million. Using the 2010 valuation to develop projections of the funded ratio at the time the bill was enacted, the additional ELARF contributions were expected to be required from fiscal year 2014 through fiscal year 2026. However, based on more recent projections of the funded ratio, ELARF contributions were assumed to be paid in fiscal years 2015 through 2025. For purposes of this cost study, the additional contributions from ELARF are assumed to be eliminated under the alternate scenario.

Cost Impact

We used the projection model prepared in conjunction with the December 31, 2013 actuarial valuation to estimate the long term cost impact of this bill. The results (which reflect the reduced contribution rate of 8.65% for the last half of fiscal year 2015; certified employer contribution rates of 12.37% and 13.57% for fiscal years 2016 and 2017 with the statutory cap of 1.2% applicable for fiscal year 2018 and later; the effect beginning in FY 2019 of depositing \$1.0 billion in bond proceeds on December 31, 2015; and elimination of the additional contributions from the ELARF fund, are compared to the baseline projections under current law. Exhibit A shows the estimated employer contribution rate and the corresponding dollar amounts of employer contributions for the draft bill and the current provisions. The proposed funding plan in the bill results in lower contributions through 2035. (Contributions reach a peak of 14.83% in FY 2019 under the "current scenario," compared to 14.77% in FY 2018 under the alternate scenario in the bill). However, after 2035, the alternate scenario produces slightly higher contributions through the end of the projection period, with a total decrease in contributions over the entire period of \$1.8 billion.



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Exhibit B provides a comparison of the key valuation results such as unfunded actuarial liability and funded ratio, under the current and proposed funding alternative in the bill. As that exhibit shows, the funded ratio under the alternate scenario increases from 60.7% to 66.0% in the December 31, 2015, valuation due to the assumed receipt of the bond proceeds of \$1.0 billion, and it remains higher through 2031. The funded ratios remain similar during the remainder of the projection period.

Likewise, under the alternate scenario, the unfunded actuarial liability for the State/School group initially declines from \$7.3 billion to \$6.3 billion with the addition of the bond proceeds. The unfunded actuarial liability remains lower than "current scenario" through 2031. From that point forward, the unfunded actuarial liability is comparable under both scenarios.

Please note that the cost analysis provided in this letter reflects only the impact of the bond proceeds on KPERS' funding. As mentioned earlier, the debt service payments are to be paid from a source other than KPERS contributions. This "cost" has not been taken into account in our analysis as shown in Exhibits A and B. Only the impact of the draft bill on KPERS' funding is shown in our exhibits.

Please note that the dollar amounts of employer contributions shown in the exhibits are future dollar amounts, calculated using the estimated employer contribution rate and projected payroll in future years. Due to the length of the projection period, the future payroll amounts grow significantly and the resulting contributions in nominal dollars in those years can appear very large. In order to provide a method for more direct comparison of results, the present value of the total employer contributions using an 8% discount rate has been included on Exhibit A. The employer contribution rate also provides a reliable way to compare the cost many years into the future.

The projections used in this cost study assume that all actuarial assumptions, including the 8% investment return assumption, are met each year in the future. The cost projections are sensitive to the assumptions used, particularly the investment return assumption. To the extent the 8% investment return assumption is not met in the future, the cost projections in these studies are expected to change. Further analysis can be provided upon request if it is deemed to be necessary or helpful.

The provision of this actuarial analysis is made solely for the purpose of comparing results of different financing scenarios based on investment return assumptions supplied by KPERS. The results are not intended to, and should not be interpreted as, making any recommendation or suggestion as to the advisability of any particular financing arrangement. The provision of this analysis is not considered a municipal advisory activity, nor does Cavanaugh Macdonald Consulting, LLC hold itself out as a municipal advisor as a result.

Disclaimers, Caveats, and Limitations

The numerical tables that comprises this cost study are based primarily upon the December 31, 2013 valuation results, the actuarial assumptions used in that valuation (unless otherwise noted elsewhere in this letter), and the projection model prepared by the System's actuary, Cavanaugh Macdonald Consulting, LLC. Significant items are noted below:

- The investment return in all future years is assumed to be 8% on a market value basis, unless otherwise indicated.
- All demographic assumptions regarding mortality, disability, retirement, salary increases, and termination of employment are assumed to hold true in the future. Please note that the actuarial assumption assumes that mortality will improve in the future (i.e. people will live longer).



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- The number of active members covered by KPERS in the future is assumed to remain level (neither growth nor decline in the active membership count). As active members leave covered employment, they are assumed to be replaced by new employees who have a similar demographic profile as recent new hires.
- The funding methods, including the entry age normal cost method, the asset smoothing method, and the amortization method and period, remain unchanged other than as noted elsewhere in this letter.
- All projections reflect the current statutory caps of 1.0% in FY 2015, 1.1% in FY 2016 and an ultimate cap of 1.2% in FY 2017 and beyond, except where otherwise noted.
- We relied upon the membership data provided by KPERS for the actuarial valuation. The numerical results depend on the integrity of this information. If there are material inaccuracies in the data, the results presented herein may be different and the projections may need to be revised.

Models are designed to identify anticipated trends and to compare various scenarios rather than predicting some future state of events. The projections are based on the System's estimated financial status on December 31, 2013, and project future events using one set of assumptions out of a range of many possibilities. A different set of assumptions would lead to different results. The projections do not predict the System's financial condition or its ability to pay benefits in the future and do not provide any guarantee of future financial soundness of the System. 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 and unknowable at the time the projections were prepared. Because not all of the assumptions will unfold exactly as expected, actual results will 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.

We are available to answer any questions on the material contained in this study or to provide explanations or further details upon request. We, Patrice A. Beckham F.S.A. and Brent A. Banister, F.S.A., are consulting actuaries with Cavanaugh Macdonald Consulting, LLC. We are also members of the American Academy of Actuaries and Fellows of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

If you have questions or need additional analysis, please let us know.

Sincerely,

A handwritten signature in cursive script that reads "Patrice Beckham".

Patrice A. Beckham, FSA, FCA, EA, MAAA
Principal and Consulting Actuary

A handwritten signature in cursive script that reads "Brent A. Banister".

Brent A. Banister, PhD, FSA, FCA, EA, MAAA
Chief Pension Actuary

Exhibit A

Current Provisions vs. SB 168: 8.65% for Last Half of FY15, \$1.0B Bond Proceeds, No Additional Funding from Expanded Lottery Act Revenue Fund (No ELARF) KPERs State/School Group



(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Fiscal Year	Total Payroll	Employer Contribution Rate		Employer Contribution Amount (\$M)					
		Current	SB 168	Payroll Based	Current ELARF	Total	SB 168	Difference	Present Value**
2015	\$ 4,440.00	11.27%	11.27%/8.65%	\$ 500.39	-	\$ 500.39	\$ 442.22	(\$ 58.16)	\$ (62.82)
2016	4,554.81	12.37% *	12.37%	563.43	39.67	603.09	563.43	(39.67)	(39.67)
2017	4,663.16	13.57% *	13.57%	632.79	40.56	673.35	632.79	(40.56)	(37.56)
2018	4,784.85	14.77% *	14.77%	706.72	41.48	748.20	706.72	(41.48)	(35.56)
2019	4,918.20	14.83% *	13.10%	729.60	42.41	772.01	644.51	(127.50)	(101.21)
2020	5,061.65	14.51% *	12.69%	734.50	43.37	777.87	642.38	(135.49)	(99.59)
2021	5,215.15	14.19% *	12.26%	739.97	44.34	784.31	639.32	(144.99)	(98.68)
2022	5,378.89	14.09% *	12.11%	757.66	45.33	802.99	651.16	(151.83)	(95.68)
2023	5,552.28	13.96% *	12.03%	775.25	51.59	826.85	668.09	(158.75)	(92.63)
2024	5,734.26	13.85% *	11.99%	793.98	52.63	846.61	687.32	(159.28)	(86.06)
2025	5,925.05	13.72% *	11.95%	813.02	53.68	866.70	708.15	(158.55)	(79.31)
2026	6,124.89	13.58%	11.91%	831.84	-	831.84	729.55	(102.29)	(47.38)
2027	6,334.01	13.41%	11.89%	849.37	-	849.37	753.10	(96.28)	(41.29)
2028	6,553.23	13.21%	11.86%	865.54	-	865.54	777.07	(88.47)	(35.13)
2029	6,782.71	12.98%	11.83%	880.10	-	880.10	802.10	(78.00)	(28.68)
2030	7,022.28	12.85%	11.78%	902.70	-	902.70	827.57	(75.14)	(25.58)
2031	7,271.88	12.74%	11.74%	926.12	-	926.12	853.41	(72.72)	(22.92)
2032	7,532.39	12.61%	11.68%	949.67	-	949.67	879.62	(70.05)	(20.45)
2033	7,804.13	4.97%	4.67%	387.51	-	387.51	364.10	(23.41)	(6.33)
2034	8,087.28	3.67%	3.49%	297.12	-	297.12	282.56	(14.56)	(3.64)
2035	8,382.76	2.36%	2.29%	197.81	-	197.81	191.95	(5.87)	(1.36)
2036	8,690.60	1.46%	1.46%	127.24	-	127.24	127.24	-	-
2037	9,010.83	1.08%	1.11%	97.34	-	97.34	100.05	2.70	0.54
2038	9,344.71	0.85%	0.90%	79.37	-	79.37	84.04	4.67	0.86
2039	9,693.54	0.75%	0.80%	72.77	-	72.77	77.62	4.85	0.83
2040	10,057.93	0.72%	0.78%	72.66	-	72.66	78.69	6.03	0.95
2041	10,440.12	0.75%	0.81%	77.81	-	77.81	84.08	6.26	0.91
2042	10,842.35	0.80%	0.85%	86.79	-	86.79	92.21	5.42	0.73
2043	11,264.17	0.86%	0.91%	96.46	-	96.46	102.09	5.63	0.71
2044	11,704.70	0.93%	0.97%	109.28	-	109.28	113.97	4.68	0.54
2045	12,163.69	1.01%	1.04%	123.14	-	123.14	126.79	3.65	0.39
2046	12,640.67	1.08%	1.11%	136.75	-	136.75	140.54	3.79	0.38

* Indicates additional contributions from ELARF are added to this contribution rate to get the total contribution amount shown.

** Present Value is calculated as of 12/31/15

\$ 15,914.73

\$ 455.06

\$ 16,369.78

\$ 14,574.43

\$ (1,795.35)

\$ (1,054.69)

* Indicates additional contributions from ELARF are added to this contribution rate to get the total contribution amount shown.
** Present Value is calculated as of 12/31/15

\$ 15,914.73 \$ 455.06 \$ 16,369.78 \$ 14,574.43 \$ (1,795.35) \$ (1,054.69)

This exhibit is an attachment to a letter that contains important information and explanations regarding the numbers shown. Therefore, the exhibit should only be considered with the accompanying letter from Cavanaugh Macdonald dated February 9, 2015.
All assumptions, including the 8% investment return, are assumed to be met each year in the future.



Exhibit B

Kansas Public Employee Retirement System
Comparison of State/School Group Funded Status Measures
Current Provisions vs. SB 168: 8.65% for Last Half of FY15, \$1.0B Bond Proceeds, No Additional Funding from
Expanded Lottery Act Revenue Fund (No ELARF)
(Dollar amounts in millions)

Valuation Date	Current Provisions			SB 168 Provisions		
	Actuarial Liability	Actuarial Assets	Actuarial Liability	Actuarial Assets	Actuarial Liability	Funded Ratio
12/31/2013	\$ 17,078.13	\$ 9,726.42	\$ 7,351.70	\$ 17,078.13	\$ 9,726.42	\$ 7,351.70
12/31/2014	17,783.41	10,473.40	7,310.01	17,783.41	10,473.40	7,310.01
12/31/2015	18,462.18	11,200.48	7,261.70	18,462.18	12,178.39	6,283.79
12/31/2016	19,111.31	12,105.39	7,005.92	19,111.31	13,120.31	5,990.99
12/31/2017	19,735.84	12,998.50	6,737.34	19,735.84	14,052.46	5,683.38
12/31/2018	20,337.87	13,764.98	6,572.90	20,337.87	14,816.56	5,521.31
12/31/2019	20,937.13	14,561.09	6,376.03	20,937.13	15,560.73	5,376.40
12/31/2020	21,528.52	15,374.70	6,153.82	21,528.52	16,309.16	5,219.36
12/31/2021	22,114.60	16,216.53	5,898.07	22,114.60	17,072.10	5,042.50
12/31/2022	22,701.02	17,100.20	5,600.82	22,701.02	17,866.11	4,834.91
12/31/2023	23,288.73	18,036.30	5,252.43	23,288.73	18,698.77	4,589.96
12/31/2024	23,881.04	19,026.87	4,854.17	23,881.04	19,577.74	4,303.31
12/31/2025	24,478.87	20,076.84	4,402.03	24,478.87	20,508.33	3,970.54
12/31/2026	25,085.06	21,134.99	3,950.07	25,085.06	21,497.78	3,587.28
12/31/2027	25,704.59	22,260.27	3,444.32	25,704.59	22,556.03	3,148.56
12/31/2028	26,339.22	23,456.75	2,882.48	26,339.22	23,689.59	2,649.64
12/31/2029	26,991.85	24,734.81	2,257.04	26,991.85	24,906.68	2,085.17
12/31/2030	27,678.56	26,106.63	1,571.93	27,678.56	26,215.40	1,463.16
12/31/2031	28,393.88	27,582.23	811.65	28,393.88	27,625.50	768.38
12/31/2032	29,139.65	28,870.28	269.37	29,139.65	28,868.02	271.63
12/31/2033	29,921.64	29,889.54	32.10	29,921.64	29,867.29	54.35
12/31/2034	30,744.24	30,864.34	(120.10)	30,744.24	30,829.62	(85.38)
12/31/2035	31,610.21	31,800.19	(189.99)	31,610.21	31,759.59	(149.38)
12/31/2036	32,522.27	32,728.76	(206.48)	32,522.27	32,686.28	(164.01)
12/31/2037	33,488.04	33,680.22	(192.17)	33,488.04	33,638.16	(150.11)
12/31/2038	34,513.89	34,669.99	(156.10)	34,513.89	34,629.51	(115.62)
12/31/2039	35,603.26	35,708.59	(105.33)	35,603.26	35,670.51	(67.25)
12/31/2040	36,769.86	36,813.53	(43.67)	36,769.86	36,778.79	(8.94)
12/31/2041	38,022.25	37,996.56	25.70	38,022.25	37,965.12	57.13
12/31/2042	39,365.81	39,264.21	101.61	39,365.81	39,236.00	129.82
12/31/2043	40,808.05	40,624.84	183.21	40,808.05	40,599.74	208.31

This exhibit is an attachment to a letter that contains important information and explanations regarding the numbers shown. Therefore, the exhibit should only be considered with the accompanying letter from Cavanaugh Macdonald dated February 9, 2015.

2/9/2015