



Cavanaugh Macdonald

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March 12, 2013

Mr. Alan Conroy
Executive Director
Kansas Public Employees Retirement System
611 South Kansas Avenue, Suite 100
Topeka, KS 66603

Re: Cost Study for House Bill 2301 and Hybrid Plan Design

Dear Alan:

As you requested, we have prepared a cost study to compare the estimated employer costs under House Bill 2301 (HB 2301) and a hybrid plan design (no bill introduced yet). HB 2301, as introduced earlier in this legislative session, modifies several key benefit provisions in the cash balance plan for Tier 3 members, including moving both the guaranteed interest crediting rate and the annuity interest rate (used to convert the member's account balance in the Cash Balance Plan into a monthly benefit amount) to 5.0%. Other key features of the existing law for the Tier 3 cash balance plan, including the effective date of the new plan design for Tier 3 of January 1, 2015, remain unchanged. The proposed hybrid plan is composed of a cash balance plan, funded entirely by employer contributions, and a pure defined contribution (DC) plan, funded entirely by employee contributions. Under both sets of cost projections, it is assumed that all employees hired on or after January 1, 2015 become members of KPERS Tier 3 with the exception of members of the state corrections group, who will continue to be covered under Tier 2. Active members of KPERS on January 1, 2015 will remain in their current tier, Tier 1 or 2. The plan changes currently in place for Tiers 1 and 2 (as set out in 2012 HB 2333) remain in effect under both HB 2301 and the hybrid plan design.

Plan Design Provisions

Cash Balance Plan Under HB 2301

A brief summary of the cash balance plan provisions for Tier 3 under HB 2301 are outlined below:

- The employer credit to the cash balance account is a service-based schedule, as shown below:

Years of Service	Employer credit
Less than 5	3%
5 but less than 12	4%
12 but less than 24	5%
24 or more	6%

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Hybrid Plan Design

Cash Balance Plan (Funded By Employer Contributions)

The provisions for the Tier 3 Cash Balance Plan are exactly the same as those outlined earlier for HB 2301 except there are no employee contributions to the Cash Balance Plan in the hybrid plan design. One other item is worth noting. The benefit provided by employer contributions in the Cash Balance Plan is payable to the member at retirement whether their employee contribution balance in the DC Plan is withdrawn or not.

Defined Contribution Plan (Funded By Employee Contributions)

- Employee contribution rate is 6% of pay and is deposited into the employee-directed account. Investment earnings and losses will directly accrue to the account balance.
- The employee is always 100% vested in the employee directed account.
- Upon termination of employment the employee can elect to roll the funds in his or her account balance to another qualified plan or an IRA.
- Upon retirement, the employee directed account balance is payable at the direction of the employee in either a lump sum, or periodic payments as determined by the employee. There is no guaranteed payment for the lifetime of the member unless the employee purchases an annuity.

Actuarial Assumptions and Methods

In general, the same actuarial methods and assumptions that were used in the December 31, 2011 actuarial valuation were used in the attached cost projections unless otherwise noted. The projection of future benefit amounts for Tier 3 members in the Cash Balance Plan requires the use of two additional assumptions that are not necessary in the valuation of projected benefits for Tier 1 and 2 members. They are:

- The interest crediting rate (applied to the account balance each year prior to retirement) and
- The annuity conversion factors (which require a postretirement interest rate and a mortality assumption).

Interest Crediting Rate

As stated earlier in this letter, the guaranteed interest crediting rate under both HB 2301 and the hybrid plan design is 5.00%. However, additional interest credits (called dividends) may be granted at the discretion of the KPERS Board of Directors, subject to certain conditions. If the total funded ratio of the system is less than 80%, the dividend shall be payable totally at the Board's discretion taking into account the funding of the system, market conditions, investment returns, and other related factors specified by the Board, with a maximum dividend of 4%. If the funded ratio of the system as a whole is equal to or more than 80%, the dividend cannot exceed the lesser of 4% or a percentage, equal to the funded ratio of the system multiplied by the rate of return on the system's assets that is above 8% for the fiscal year. In all cases, the dividend shall not be granted unless the rate of return on KPERS assets is at least 10% for that fiscal year. The criteria that determine whether or not dividends are granted and the maximum dividend are unchanged in the hybrid plan scenario.

Although the assumed rate of investment return on KPERS' assets is 8% per annum, investment returns are expected to vary from year to year, sometimes significantly. Given the parameters of the plan design (including the statutory dividend criteria) and the standard deviation of the portfolio, the *actual* interest crediting rate (including dividends) is expected to be higher than the guaranteed interest crediting rate



Results

Because both plan designs (HB 2301 and the hybrid plan design) make changes to the benefits for Tier 3 members only, the cost impact will unfold gradually over time as current Tier 1 and Tier 2 members leave covered employment and are replaced by Tier 3 members. Therefore, a projection of employer costs over a long period of time is necessary in order to compare the ultimate impact of the proposed plan design in HB 2301 and the hybrid plan design. The employer cost estimates under the current plan and HB 2301 are reflected in the attached exhibits. Exhibits A1 and A2 show the estimated employer contribution rate and corresponding dollar amounts of employer contributions under each plan design, by year, for the State/School and Local groups. Exhibits B1 and B2 show the projected employer contributions split into employer normal cost and unfunded actuarial liability (UAL) payments, by year and in total. Because such a large portion of the employer contributions are necessary to fund the UAL, the dollar amount of employer contributions under HB 2301 and the hybrid plan are not significantly different through 2033, i.e. the UAL contribution dollars are essentially the same under both proposals so the only difference is the employer cost for new hires.

The projections assume that all actuarial assumptions, including the 8% investment return assumption, are met in the future. To the extent this assumption is not met in the future, the cost projections in this cost study are also expected to change. 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 at the bottom of Exhibits A1 and A2.

The numbers in Exhibits A1 and A2 reflect the present value of all employer contributions, including the UAL payments, which are a substantial part of the overall employer contributions. Because the total UAL payments are roughly equivalent under either scenario, the difference in total employer contributions is due to differences in the employer normal cost of the cash balance plans in HB 2301 and the proposed hybrid. To further illustrate the magnitude of the contributions for the UAL, the following information is provided for the State/School group. The \$612.53 difference in present value is nearly lost in the magnitude of the numbers when total contributions are used. However, the difference is larger when the UAL payments are excluded from the comparison.

Employer Contributions	HB 2301	Hybrid Plan	\$ Difference	% Diff
A. Nominal dollars	\$22,080.99	\$29,459.54	\$7,378.54	33.4%
B. Present value (PV) of total contributions	9,026.92	9,639.45	612.53	6.8%
C. PV of UAL payments	7,546.31	7,546.31	0.00	0.0%
D. PV of future employer normal costs	\$ 1,480.61	\$ 2,093.14	\$ 612.53	41.4%

The employer normal cost rate also provides a reliable way to compare the ultimate cost of different plan designs many years into the future. For example, the long-term employer normal cost for the State/School group in 2060 under HB 2301 is 0.50%, while the employer normal cost in 2060 under the hybrid plan design is 2.45%. The differences in total employer contributions between HB 2301 and the hybrid plan are largely a function of the employer normal cost rate under both scenarios.

It should also be noted that HB 2301 and the hybrid plan do not provide the same amount of retirement benefits for Tier 3 members of the system. This, in turn, has an impact on the cost of the plan designs.

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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, Patrice A. Beckham, FSA and Brent A. Banister, FSA, are consulting actuaries with Cavanaugh Macdonald Consulting, LLC. We are members of the American Academy of Actuaries, 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 any questions or additional information is needed, please let us know. We are available to provide additional analysis or explanation.

Sincerely,

Handwritten signature of Patrice A. Beckham in cursive.

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

Handwritten signature of Brent A. Banister in cursive.

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

Exhibit A2

HB 2301 vs. Hybrid Plan
Local Group



(1) Fiscal Year	(2) Total Payroll	(3) Employer Contribution Rate		(5) HB 2301	(6) Hybrid Plan	(7) Employer Contribution Amount (\$M)		(8) Present Value of Difference
		HB 2301	Hybrid Plan			Difference		
2013	\$ 1,660.60	7.94%	7.94%	\$ 131.85	\$ 131.85	\$ -	\$ -	
2014	1,706.61	8.84%	8.84%	150.86	150.86	-	-	
2015	1,755.46	9.78%	9.78%	171.62	171.62	-	-	
2016	1,809.70	10.52%	10.52%	190.43	190.43	-	-	
2017	1,867.11	10.41%	10.05%	194.28	187.63	(6.64)	(4.70)	
2018	1,927.21	10.41%	10.20%	200.61	196.52	(4.09)	(2.68)	
2019	1,990.11	10.37%	10.30%	206.44	205.07	(1.36)	(0.83)	
2020	2,055.72	10.37%	10.43%	213.12	214.51	1.39	0.78	
2021	2,124.94	10.36%	10.56%	220.10	224.50	4.39	2.28	
2022	2,197.01	10.37%	10.69%	227.76	234.84	7.08	3.41	
2023	2,272.09	10.37%	10.79%	235.70	245.14	9.44	4.21	
2024	2,351.35	10.38%	10.88%	244.18	255.91	11.74	4.84	
2025	2,434.78	10.39%	10.97%	253.03	267.08	14.06	5.37	
2026	2,521.94	10.40%	11.04%	262.19	278.38	16.19	5.73	
2027	2,613.06	10.42%	11.11%	272.16	290.22	18.07	5.92	
2028	2,709.03	10.42%	11.16%	282.22	302.22	20.00	6.07	
2029	2,809.54	10.44%	11.21%	293.18	314.90	21.72	6.10	
2030	2,914.71	10.45%	11.23%	304.50	327.38	22.88	5.95	
2031	3,024.53	10.46%	11.25%	316.43	340.13	23.70	5.71	
2032	3,138.76	4.21%	5.07%	132.13	159.13	27.00	6.02	
2033	3,257.50	3.16%	4.04%	102.89	131.75	28.85	5.96	
2034	3,381.27	2.07%	2.98%	69.97	100.73	30.76	5.88	
2035	3,510.46	1.69%	2.63%	59.39	92.47	33.08	5.86	
2036	3,644.94	1.44%	2.40%	52.32	87.45	35.13	5.76	
2037	3,785.22	1.30%	2.28%	49.22	86.46	37.24	5.65	
2038	3,931.55	1.22%	2.21%	47.81	86.82	39.01	5.48	
2039	4,084.19	1.15%	2.16%	47.09	88.31	41.22	5.36	
2040	4,243.22	1.10%	2.13%	46.71	90.21	43.50	5.24	
2041	4,408.81	1.06%	2.10%	46.71	92.55	45.85	5.11	
2042	4,581.37	1.03%	2.08%	47.13	95.36	48.23	4.98	
2043	4,761.25	1.00%	2.07%	47.55	98.72	51.18	4.89	
2044	4,948.86	0.97%	2.06%	47.95	102.18	54.23	4.80	
2045	5,144.01	0.95%	2.06%	48.85	105.71	56.86	4.66	
2046	5,346.97	0.93%	2.05%	49.77	109.82	60.05	4.56	
2047	5,557.90	0.92%	2.05%	51.26	114.04	62.78	4.41	
2048	5,777.07	0.90%	2.06%	52.23	118.96	66.73	4.34	
2049	6,004.27	0.90%	2.06%	53.82	123.42	69.60	4.19	
2050	6,240.32	0.89%	2.06%	55.48	128.60	73.12	4.08	
2051	6,485.84	0.88%	2.08%	57.21	134.62	77.40	4.00	
2052	6,741.16	0.88%	2.08%	59.03	140.21	81.18	3.88	
2053	7,006.34	0.87%	2.09%	60.92	146.65	85.73	3.80	
2054	7,282.35	0.86%	2.10%	62.89	153.19	90.29	3.70	
2055	7,569.72	0.86%	2.11%	64.95	159.93	94.98	3.61	
2056	7,868.83	0.84%	2.12%	66.30	166.94	100.64	3.54	
2057	8,180.09	0.84%	2.13%	68.49	174.14	105.64	3.44	
2058	8,504.09	0.83%	2.13%	70.76	181.42	110.66	3.34	
2059	8,841.31	0.82%	2.14%	72.22	188.90	116.67	3.26	
2060	9,192.25	0.81%	2.14%	74.62	196.62	122.00	3.15	
2061	9,557.47	0.80%	2.15%	76.14	205.51	129.36	3.10	
Total				\$ 6,212.45	\$ 8,390.00	\$ 2,177.55	\$ 184.22	
Present Value at 8% as of January 1, 2013				\$ 2,268.88	\$ 2,453.10	\$ 184.22		

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 March 12, 2013.

All assumptions, including the 8% investment return, are assumed to be met each year in the future.

3/12/2013



Exhibit B2
Kansas Public Employee Retirement System
Comparison of Local Group Employer Contributions for Retirement Benefits
HB 2301 vs. Hybrid Plan

EYE	Payroll (\$M)		HB 2301			Hybrid Plan			Total		Difference (1)	Present Value of Difference		
	Tier 1/2	Tier 3	Employer Contribution Rate	Employer Normal Cost Rate	Employer Normal Cost (%)	UAL Payment (1)	Total Employer Cost (1)	Employer Normal Cost (%)	UAL Payment (1)	Total Employer Cost (1)				
2013	\$1,660.604	\$0.000	7.94%	2.91%	\$48,361	\$83,491	\$131,852	7.94%	2.91%	\$48,361	\$83,491	\$131,852	\$0.000	\$0.000
2014	1,706.606	0.000	8.84%	2.91%	49,701	101,163	150,864	8.84%	2.91%	49,701	101,163	150,864	0.000	0.000
2015	1,755.461	0.000	9.78%	2.03%	35,570	136,048	171,618	9.78%	2.03%	35,570	136,048	171,618	0.000	0.000
2016	1,658.682	151,015	10.52%	1.95%	35,339	155,091	190,430	10.52%	1.95%	35,339	155,091	190,430	0.000	0.000
2017	1,575.692	291,415	10.41%	1.82%	33,892	160,384	194,276	10.41%	1.46%	27,249	160,384	187,634	(6,642)	(4,698)
2018	1,504.853	422,352	10.41%	1.71%	32,942	167,667	200,609	10.20%	1.54%	29,625	166,896	196,521	(4,088)	(2,677)
2019	1,440.724	549,389	10.37%	1.61%	32,104	174,334	206,438	10.30%	1.59%	173,339	205,074	205,074	(1,365)	(0,827)
2020	1,381.836	673,888	10.37%	1.53%	31,392	181,726	213,118	10.43%	1.63%	33,603	180,904	214,507	1,389	0,780
2021	1,328.487	796,450	10.36%	1.45%	30,772	189,332	220,104	10.56%	1.66%	35,378	189,119	224,497	4,394	2,284
2022	1,229.411	1,042,662	10.37%	1.38%	30,248	197,511	227,759	10.69%	1.69%	37,110	197,731	234,841	7,082	3,409
2023	1,182.829	1,168,523	10.37%	1.31%	29,844	205,852	235,696	10.79%	1.71%	38,834	206,306	245,140	9,444	4,209
2024	1,138.492	1,296,287	10.38%	1.25%	29,497	214,678	244,176	10.88%	1.72%	40,528	215,384	255,912	11,736	4,843
2025	1,094.860	1,427,085	10.39%	1.20%	29,269	223,756	253,025	10.97%	1.74%	42,351	224,730	267,081	14,056	5,371
2026	1,052.036	1,561,025	10.40%	1.16%	29,160	233,028	262,188	11.04%	1.76%	44,339	234,036	278,375	16,187	5,727
2027	1,011.323	1,697,706	10.42%	1.12%	29,140	243,015	272,155	11.11%	1.78%	46,425	236,225	290,224	18,068	5,919
2028	972.150	1,837,388	10.44%	1.08%	29,199	253,023	282,222	11.16%	1.80%	48,660	253,565	302,225	20,003	6,068
2029	934.164	1,980,546	10.45%	1.05%	29,364	263,816	293,180	11.21%	1.82%	51,080	273,691	327,382	21,716	6,099
2030	896.687	2,127,843	10.46%	0.99%	30,003	274,857	304,860	11.23%	1.84%	53,691	314,896	372,580	22,880	5,950
2031	859.556	2,279,406	10.46%	0.97%	30,432	286,423	316,426	11.25%	1.87%	56,429	328,701	400,130	23,704	5,708
2032	821.485	2,436,013	10.44%	0.95%	30,902	301,696	332,598	11.21%	1.89%	59,317	351,165	430,487	24,313	5,514
2033	783.430	2,597,839	10.44%	0.93%	31,426	318,546	349,972	11.23%	1.91%	62,361	376,722	469,081	24,853	5,240
2034	745.673	2,764,790	10.44%	0.91%	32,009	337,382	369,391	11.25%	1.96%	65,564	402,955	511,514	25,565	4,981
2035	707.827	2,937,117	10.44%	0.90%	32,639	356,679	399,318	11.25%	1.99%	68,955	432,870	560,824	26,003	4,801
2036	669.798	3,115,419	10.44%	0.88%	33,319	377,583	430,902	11.25%	2.02%	72,508	468,018	617,526	26,498	4,558
2037	631.744	3,299,802	10.44%	0.87%	34,049	400,130	474,179	11.25%	2.05%	76,237	508,265	674,502	26,910	4,313
2038	593.492	3,490,700	10.44%	0.85%	34,839	423,225	518,064	11.25%	2.08%	80,136	553,200	739,336	27,300	4,068
2039	555.203	3,688,013	10.44%	0.84%	35,679	447,111	561,790	11.25%	2.11%	84,227	603,027	817,254	27,680	3,823
2040	516.439	3,892,373	10.44%	0.83%	36,567	471,944	605,511	11.25%	2.14%	88,512	657,539	895,051	28,053	3,578
2041	477.700	4,103,667	10.44%	0.82%	37,507	500,130	649,637	11.25%	2.17%	92,995	716,634	984,629	28,428	3,333
2042	439.470	4,321,777	10.44%	0.81%	38,501	529,906	694,407	11.25%	2.20%	97,681	781,315	1,085,996	28,803	3,088
2043	402.975	4,545,881	10.44%	0.80%	39,537	561,413	749,950	11.25%	2.23%	102,532	852,482	1,198,014	29,178	2,843
2044	366.511	4,777,500	10.44%	0.79%	40,621	595,820	815,441	11.25%	2.26%	107,621	929,103	1,320,524	29,553	2,598
2045	330.966	5,016,003	10.44%	0.78%	41,747	633,225	884,967	11.25%	2.29%	112,914	1,002,017	1,458,931	30,000	2,353
2046	295.949	5,261,952	10.44%	0.77%	42,920	674,808	958,728	11.25%	2.32%	118,371	1,081,389	1,604,760	30,425	2,108
2047	262.213	5,514,858	10.44%	0.76%	44,138	720,888	1,024,026	11.25%	2.35%	124,046	1,166,435	1,767,471	30,840	1,863
2048	228.104	5,776,162	10.44%	0.75%	45,411	771,944	1,070,357	11.25%	2.38%	130,000	1,257,435	1,946,382	31,245	1,618
2049	195.344	6,044,979	10.44%	0.74%	46,741	828,337	1,128,078	11.25%	2.41%	136,229	1,354,664	2,141,892	31,640	1,373
2050	164.967	6,320,872	10.44%	0.73%	48,134	891,413	1,190,547	11.25%	2.44%	142,827	1,468,391	2,354,718	32,025	1,128
2051	138.479	6,602,680	10.44%	0.72%	49,589	960,820	1,267,409	11.25%	2.47%	149,741	1,593,132	2,594,873	32,400	883
2052	113.354	6,892,984	10.44%	0.71%	51,112	1,037,413	1,349,525	11.25%	2.50%	157,000	1,728,132	2,861,264	32,775	638
2053	90.351	7,192,000	10.44%	0.70%	52,696	1,120,820	1,443,516	11.25%	2.53%	164,646	1,873,778	3,154,546	33,150	393
2054	70.920	7,498,796	10.44%	0.69%	54,354	1,211,944	1,564,898	11.25%	2.56%	172,741	2,039,519	3,478,239	33,525	148
2055	56.002	7,812,827	10.44%	0.68%	56,076	1,311,413	1,702,829	11.25%	2.59%	181,371	2,224,890	3,839,729	33,900	(93)
2056	43.538	8,136,549	10.44%	0.67%	57,860	1,421,944	1,890,884	11.25%	2.62%	190,621	2,437,511	4,239,040	34,275	(248)
2057	33.158	8,470,937	10.44%	0.66%	59,704	1,543,413	2,106,825	11.25%	2.65%	200,532	2,674,043	4,681,575	34,650	(503)
2058	25.139	8,816,173	10.44%	0.65%	61,615	1,677,413	2,344,829	11.25%	2.68%	211,119	2,939,162	5,169,037	35,025	(758)
2059	19.322	9,172,930	10.44%	0.64%	63,589	1,824,820	2,619,649	11.25%	2.71%	222,424	3,237,586	5,704,170	35,400	(1,013)
2060	14.693	9,542,777	10.44%	0.63%	65,631	1,987,413	2,934,850	11.25%	2.74%	234,531	3,569,117	6,297,287	35,775	(1,268)
2061														
TOTAL					\$1,954,786	\$4,257,667	\$6,212,453			\$4,655,374	\$3,734,624	\$8,389,998	\$2,177,545	\$184,219

(1) In millions.

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 March 12, 2013.

All assumptions, including the 8% investment return, are assumed to be met each year in the future.