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January 23, 2012

Ms. Elizabeth Miller
Acting Executive Director and Chief Investment Officer
Kansas Public Employees Retirement System
611 South Kansas Avenue, Suite 100
Topeka, KS 66603

Re: Cost Study for Study Commission Plan

Dear Liz:

At your request, we have completed an actuarial cost study related to the plan design for KPERS Tier 3 that was recommended by the KPERS Study Commission. At the time the study was requested, a formal legislative bill had not yet been introduced. Therefore, our cost projections are based on our understanding of the key plan design provisions of the Study Commission recommendations for Tier 3 members. A draft copy of the legislation has since been provided to us, but there was insufficient time to modify the cost projections. Any differences in the draft bill and the plan provisions used for the cost projections are not expected to materially impact our cost projections. Our cost study is based on a plan design for Tier 3 that consists of a cash balance plan (referred to as the employer annuity account) and a pure defined contribution (DC) plan (referred to as the employee directed account). The effective date of the new plan design will be July 1, 2013, and all employees hired on or after that date will be members of KPERS Tier 3. In addition, all non-vested members (both active and inactive) of KPERS on January 1, 2014 will become Tier 3 members and have their employee account balance transferred to the employee directed portion of the Tier 3 plan.

Plan Design

A summary of basic plan provisions included in our cost study follows:

Cash Balance Plan (Employer Annuity Account)

- Employer credits to the account will be based on the employee's years of service beginning with a 1% credit for the first year of service and increasing 0.50% per year until a 5% credit is granted when the employee has completed 8 or more years of service.
- The guaranteed interest credit will be 0%, but the intent of the plan design is to credit the member's employer annuity account with interest credits that mirror the actual earnings of the KPERS portfolio.
- 100% vesting after five (5) years of service.

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- Normal retirement age is age 65 and 5 years of service.
- No employee contributions. Employer contributions are determined as part of the annual actuarial valuation.
- Once vested, a member cannot withdraw the employer annuity account until reaching the normal retirement age of 65. There is no early retirement provision. Upon reaching normal retirement age, the balance in the employer annuity account is converted into monthly income, based on the form of payment elected by the member. The annuity amount is determined by the annuity conversion factors which are based on the interest rates published by the Pension Benefit Guaranty Corporation (PBGC) for distress terminations and the mortality table selected by the Board.
- If a member dies prior to reaching the normal retirement age of 65, no benefit is payable and the account balance is forfeited unless (1) the member is vested; (2) the member has at least ten (10) years of service at death; and (3) the member's spouse at the time of death is designated as the sole primary beneficiary. In that case, the spouse shall receive a benefit when the member would have reached his normal retirement age.
- If a member becomes disabled while actively working, such member shall be given participating service credit for the entire period of his disability. Such member's employer annuity account shall be credited with the regular employer credit. All credits to the employer annuity account shall cease upon the earliest of (i) death; (ii) attainment of normal retirement age; or (iii) the date the member is no longer entitled to receive disability benefits.
- A benefit of \$4,000 is payable upon a retired member's death.

Statutory Contribution Cap

In KPERS, the employers do not necessarily contribute the full actuarial contribution rate. Based on legislation passed in 1993, the employer contribution rates certified by the Board may not increase by more than the statutory cap. The current statutory cap, which has been changed periodically, is 0.60% for the State, School and Local groups. Senate Substitute for HB 2194 increased the statutory cap to an ultimate cap of 1.2%.

The Study Commission recommended the elimination of the statutory cap on employer contributions, effective July 1, 2013. Therefore, this provision is reflected in our cost study.

Senate Substitute for HB 2194

The baseline projections shown in the cost study are based on Senate Substitute for HB 2194 as passed by the 2011 Legislature. In addition, the projections for the Study Commission Plan reflect the default benefit provision changes for KPERS Tier 1 and 2 members included in Senate Substitute for HB 2194.

Defined Contribution Plan (Employee Directed Account)

- Employee contribution rate is 6% of pay and is deposited into the employee directed account. The employee will direct all investments in this account and 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

The same actuarial methods and assumptions that were used in the December 31, 2010 actuarial valuation were used in this cost study with the exception of retirement rates. Because retirement eligibility requirements are different than those in the current plan, as well as the benefits provided, the retirement patterns are expected to change. Cavanaugh Macdonald selected retirement rates that we believe are reasonable given the limited knowledge we have at this time about behaviors that will occur many years in the future. However, actual experience may vary, at times significantly, from the assumptions used in these projections. If it does, the cost projections will also be impacted.

The employer funded portion of the Study Commission Plan is a cash balance plan, which is a defined benefit plan. As such, the contribution rate to fund the benefits will be based on the results of the actuarial valuation. The projection of future benefit amounts for Tier 3 members requires the use of two additional assumptions that are not necessary in the valuation of projected benefits for Tiers 1 and 2 members. They are:

- (1) interest crediting rate and
- (2) annuity conversion factors (which requires a postretirement interest rate and a mortality table).

Because the intent of the Study Commission proposal is to credit the actual return on the KPERS portfolio to the employer annuity account, the interest crediting rate was set to the assumed rate of return, currently 8%. The Study Commission recommended the interest rates published by the Pension Benefit Guaranty Corporation for distress terminations be used to determine the annuity conversion factors. The PBGC distress termination interest rates vary every month and are dependent on market conditions. Tying the annuity conversion rate to the PBGC distress termination rates increases the uncertainty about what rates will actually be used to convert a member's employer annuity account into monthly income and requires that an actuarial assumption be used to estimate future experience. Based on long term historical PBGC distress termination rates, this assumption was set at 6.5% for the cost study. The mortality table used for the annuity conversion factor (which is used to convert the employer annuity account to monthly income) was the RP 2000 Mortality Table projected to 2035, using Projection Scale AA, with a 50/50 male/female blend.

The projected benefit payments for Tier 3 members will be projected in the actuarial valuation along with those for Tiers 1 and 2 members. The valuation will develop one overall employer contribution rate, which will include the UAL payment, to be paid on all covered payroll (Tier 1, Tier 2 and Tier 3 members). From an actuarial perspective, the valuation process will be unchanged other than reflecting the new benefit structure for Tier 3 members.

The amortization period used in the cost study remained at a closed 22 year period starting on December 31, 2010. In order to mitigate the impact of the time lag between the valuation date and the fiscal year in which the contribution rate is effective, the amortization period was set to an open ten year period in 2030 for cost projections for both the baseline and the Study Commission Plan.

Results

The cost impact of the Study Commission plan design will unfold over time as current Tier 1 and Tier 2 members leave covered employment and are replaced by Tier 3 members. Therefore, a projection of costs over a long time period is necessary to evaluate the long term impact of the proposed changes. The cost estimates for the Study Commission Plan are reflected in the attached exhibits which show the expected employer contribution in each future year, assuming all actuarial assumptions are met in the future.



The “Baseline” scenario reflects the estimated employer costs under Senate Substitute for HB 2194. Please note that all dollar amounts shown are future dollar amounts, calculated using the estimated employer contribution rate and projected payroll in future years.

Disclaimers, Caveats, and Limitations

The numerical charts and graphs that comprise this study are based primarily upon the December 31, 2010 valuation results, the actuarial assumptions used in the valuation, and the projection model prepared by the System’s actuary, Cavanaugh Macdonald Consulting, LLC. Significant items are noted below:

- Investment return in 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).
- Changes in the retirement plan eligibility and benefit amounts may have an effect on future termination and retirement patterns. While we have attempted to reflect the change in retirement eligibility, how changes in the benefit structure may ultimately impact employment patterns cannot be known at this time and, therefore, has not been modeled.
- 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 employment, they are assumed to be replaced by new employees who have a similar demographic profile as recent new hires.
- Plan provisions for Tiers 1 and 2 are modified in accordance with Senate Substitute for HB 2194, Tier 3 benefits are described in this letter. There are no other benefit changes reflected in future years.
- 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.
- The state and local employers will contribute as scheduled under HB 2194 (with consideration to changes in the statutory caps in the legislation) and with no statutory cap under the Study Commission Plan.
- 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 this 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, 2010, and project future events using one set of assumptions out of a range of many possibilities. 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 made. 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.

Ms. Elizabeth Miller
January 23, 2012
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Please feel free to call us to discuss this further if you wish.

Sincerely,

A handwritten signature in black ink that reads 'Patrice Beckham' in a cursive script.

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

A handwritten signature in black ink that reads 'Brent A. Banister' in a cursive script.

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



Exhibit A1

HB 2194 vs Study Commission Plan State/School Group

(1) Fiscal Year	(2) Total Payroll	(3) <u>Employer Contribution Rate</u>		(5) <u>Employer Contribution Amount (\$M)</u>		
		<u>HB 2194</u>	<u>SC Plan</u>	<u>HB 2194</u>	<u>SC Plan</u>	<u>Difference</u>
2012	\$ 4,465.19	8.77%	8.77%	\$ 391.60	\$ 391.60	\$ -
2013	4,609.30	9.37%	9.37%	431.89	431.89	-
2014	4,742.86	10.27%	13.44%	487.09	637.46	150.37
2015	4,889.77	11.27%	13.61%	551.08	665.71	114.63
2016	5,048.36	12.37%	14.82%	624.48	748.18	123.70
2017	5,217.25	13.57%	14.79%	707.98	771.52	63.54
2018	5,396.09	14.46%	14.65%	780.44	790.34	9.90
2019	5,585.80	14.67%	14.74%	819.50	823.56	4.06
2020	5,786.83	14.80%	14.79%	856.63	856.13	(0.49)
2021	5,999.32	14.85%	14.84%	890.84	890.20	(0.64)
2022	6,223.41	14.84%	14.89%	923.50	926.50	3.00
2023	6,458.61	14.81%	14.92%	956.42	963.37	6.95
2024	6,704.71	14.76%	14.93%	989.41	1,001.19	11.78
2025	6,962.16	14.70%	14.93%	1,023.12	1,039.68	16.56
2026	7,231.45	14.62%	14.93%	1,057.31	1,079.54	22.23
2027	7,512.93	14.54%	14.91%	1,092.03	1,119.90	27.87
2028	7,806.93	14.45%	14.88%	1,127.87	1,161.97	34.10
2029	8,113.92	14.34%	14.83%	1,163.67	1,203.48	39.81
2030	8,433.95	14.21%	14.77%	1,198.79	1,245.30	46.51
2031	8,767.29	14.08%	14.67%	1,234.26	1,285.93	51.66
2032	9,114.66	13.90%	14.53%	1,266.68	1,324.29	57.60
2033	9,476.23	5.43%	6.70%	514.43	635.32	120.89
2034	9,852.28	3.95%	5.38%	389.15	529.85	140.69
2035	10,243.64	2.42%	4.00%	248.31	409.87	161.55
2036	10,650.79	1.38%	3.07%	147.01	327.41	180.40
2037	11,073.56	0.90%	2.68%	100.20	296.41	196.21
2038	11,513.15	0.58%	2.43%	67.01	279.86	212.86
2039	11,970.93	0.41%	2.32%	49.01	277.90	228.89
2040	12,448.09	0.33%	2.28%	40.91	284.40	243.49
2041	12,947.04	0.29%	2.30%	37.12	297.30	260.18
2042	13,469.39	0.29%	2.33%	38.50	313.37	274.87
2043	14,014.53	0.29%	2.38%	41.34	332.99	291.65
2044	14,581.39	0.31%	2.43%	45.83	354.78	308.95
2045	15,170.09	0.34%	2.48%	50.94	375.94	325.00
2046	15,780.74	0.37%	2.54%	58.01	400.70	342.69
2047	16,410.26	0.40%	2.58%	65.64	423.35	357.71
2048	17,057.88	0.42%	2.64%	72.21	449.90	377.69
2049	17,727.69	0.46%	2.67%	80.91	474.08	393.17
2050	18,423.67	0.48%	2.73%	88.50	502.67	414.17
2051	19,147.45	0.52%	2.76%	98.70	528.98	430.28
2052	19,899.69	0.54%	2.81%	107.47	558.23	450.76
2053	20,682.16	0.56%	2.85%	116.60	588.83	472.22
2054	21,496.61	0.59%	2.89%	126.16	620.88	494.72
2055	22,344.49	0.61%	2.92%	136.30	652.33	516.03
2056	23,227.14	0.63%	2.95%	146.94	685.08	538.14
2057	24,145.92	0.65%	2.97%	158.06	717.13	559.07
2058	25,102.38	0.68%	2.99%	169.68	750.59	580.91
2059	26,098.07	0.69%	3.02%	179.31	788.21	608.90
2060	27,134.62	0.71%	3.04%	192.09	824.95	632.86
				\$ 22,140.94	\$ 33,039.06	\$ 10,898.12

UAL is reamortized to an open 10 year period in 2030 to limit the impact of the contribution lag.
All assumptions are assumed to be met each year in the future.



Exhibit A2

HB 2194 vs Study Commission Plan Local Group

(1) Fiscal Year	(2) Total Payroll	(3) <u>Employer Contribution Rate</u>		(5) <u>Employer Contribution Amount (\$M)</u>			(7) Difference
		<u>HB 2194</u>	<u>SC Plan</u>	<u>HB 2194</u>	<u>SC Plan</u>		
2012	\$ 1,678.75	7.34%	7.34%	\$ 123.22	\$ 123.22	\$ -	
2013	1,726.92	7.94%	7.94%	137.12	137.12	-	
2014	1,777.74	8.65%	8.91%	153.84	158.39	4.55	
2015	1,834.05	9.12%	9.47%	167.26	173.71	6.45	
2016	1,893.42	9.00%	9.45%	170.45	178.89	8.44	
2017	1,955.65	9.00%	9.53%	176.01	186.32	10.32	
2018	2,020.46	9.00%	9.60%	181.84	193.92	12.08	
2019	2,087.94	8.99%	9.67%	187.74	201.89	14.15	
2020	2,158.09	8.98%	9.72%	193.71	209.84	16.12	
2021	2,231.91	8.98%	9.80%	200.50	218.70	18.20	
2022	2,309.17	8.98%	9.87%	207.43	227.86	20.43	
2023	2,389.76	8.98%	9.93%	214.53	237.32	22.79	
2024	2,474.65	8.97%	9.99%	222.08	247.11	25.02	
2025	2,563.71	8.98%	10.04%	230.12	257.51	27.39	
2026	2,656.71	8.97%	10.10%	238.33	268.22	29.89	
2027	2,753.93	8.97%	10.14%	247.00	279.24	32.24	
2028	2,856.33	8.96%	10.16%	255.91	290.34	34.43	
2029	2,963.32	8.94%	10.19%	265.02	302.01	37.00	
2030	3,075.51	8.93%	10.20%	274.64	313.69	39.05	
2031	3,192.38	8.91%	10.18%	284.39	324.92	40.52	
2032	3,313.68	3.65%	5.05%	120.93	167.23	46.30	
2033	3,440.20	2.75%	4.20%	94.68	144.35	49.67	
2034	3,571.81	1.82%	3.32%	64.89	118.44	53.54	
2035	3,709.17	1.49%	3.04%	55.37	112.61	57.24	
2036	3,851.93	1.27%	2.85%	48.93	109.62	60.69	
2037	4,001.21	1.14%	2.77%	45.58	110.65	65.07	
2038	4,157.18	1.06%	2.71%	44.04	112.86	68.82	
2039	4,319.48	0.99%	2.68%	42.82	115.91	73.10	
2040	4,488.52	0.94%	2.67%	42.38	119.90	77.52	
2041	4,663.81	0.90%	2.66%	41.91	123.99	82.08	
2042	4,846.82	0.86%	2.65%	41.89	128.67	86.78	
2043	5,037.31	0.83%	2.65%	41.88	133.48	91.60	
2044	5,235.49	0.81%	2.65%	42.38	138.90	96.52	
2045	5,442.03	0.79%	2.66%	42.93	145.01	102.08	
2046	5,656.91	0.77%	2.67%	43.52	151.28	107.76	
2047	5,879.63	0.76%	2.68%	44.74	157.70	112.96	
2048	6,110.89	0.74%	2.70%	45.44	164.88	119.44	
2049	6,351.53	0.74%	2.70%	46.85	171.65	124.80	
2050	6,602.17	0.73%	2.72%	48.39	179.27	130.87	
2051	6,862.33	0.73%	2.74%	50.05	187.79	137.74	
2052	7,132.79	0.74%	2.75%	52.53	195.90	143.37	
2053	7,414.16	0.73%	2.77%	54.48	205.03	150.55	
2054	7,707.23	0.73%	2.77%	56.57	213.73	157.17	
2055	8,012.19	0.74%	2.79%	59.61	223.55	163.94	
2056	8,329.45	0.74%	2.81%	62.01	233.76	171.76	
2057	8,659.60	0.76%	2.81%	65.41	243.53	178.12	
2058	9,003.17	0.76%	2.83%	68.14	254.59	186.45	
2059	9,360.70	0.76%	2.84%	71.02	266.11	195.09	
2060	9,732.77	0.76%	2.85%	74.05	277.16	203.11	
				\$ 5,744.57	\$ 9,437.77	\$ 3,693.20	

UAL is reamortized to an open 10 year period in 2030 to limit the impact of the contribution lag.
All assumptions are assumed to be met each year in the future.

Exhibit B1

Kansas Public Employee Retirement System
 Comparison of State/School Group Employer Contributions for Retirement Benefits
 HB 2194 versus Study Commission Plan



FYE	Payroll		HB 2194					Study Commission Plan ⁽¹⁾					Difference ⁽²⁾
	Tier 1/2	Tier 3	Employer Rate-DB	Normal Cost Rate	Normal Cost ⁽²⁾	UAL Payment ⁽²⁾	Total Cost ⁽²⁾	Employer Rate-DB	DB Normal Cost Rate	DB Normal Cost ⁽²⁾	UAL Payment ⁽²⁾	Total Cost ⁽²⁾	
	2012	4,465.186	0.000	8.77%	3.31%	147.582	244.014	391.597	8.77%	3.31%	147.582	244.014	
2013	4,609.301	0.000	9.37%	3.31%	152.346	279.546	431.892	9.37%	3.31%	152.346	279.546	431.892	0.000
2014	4,742.859	0.000	10.27%	3.31%	156.760	330.332	487.092	13.44%	3.31%	156.760	480.704	637.464	150.372
2015	4,706.273	183.492	11.27%	2.31%	112.949	438.128	551.077	13.61%	2.57%	125.878	539.830	665.708	114.632
2016	4,507.134	541.224	12.37%	2.22%	111.974	512.508	624.482	14.82%	2.55%	128.749	619.433	748.182	123.701
2017	4,332.724	884.524	13.57%	2.12%	110.810	597.171	707.981	14.79%	2.53%	131.884	639.635	771.518	63.538
2018	4,171.368	1,224.718	14.46%	2.04%	110.248	670.194	780.442	14.65%	2.53%	136.333	654.006	790.338	9.896
2019	4,017.143	1,568.662	14.67%	1.96%	109.544	709.956	819.500	14.74%	2.52%	140.976	682.585	823.561	4.062
2020	3,868.916	1,917.913	14.80%	1.88%	108.967	747.658	856.625	14.79%	2.52%	146.088	710.044	856.132	(0.493)
2021	3,729.151	2,270.169	14.85%	1.81%	108.533	782.311	890.844	14.84%	2.53%	151.688	738.516	890.204	(0.640)
2022	3,597.727	2,625.683	14.84%	1.74%	108.232	815.267	923.499	14.89%	2.54%	157.907	768.591	926.498	2.999
2023	3,469.577	2,989.037	14.81%	1.67%	107.754	848.662	956.416	14.92%	2.55%	164.439	798.931	963.369	6.954
2024	3,343.442	3,361.269	14.76%	1.61%	107.739	881.669	989.409	14.93%	2.56%	171.819	829.373	1,001.191	11.782
2025	3,218.508	3,743.649	14.70%	1.55%	107.601	915.524	1,023.124	14.93%	2.57%	179.161	860.523	1,039.684	16.559
2026	3,095.688	4,135.766	14.62%	1.49%	107.825	949.490	1,057.315	14.93%	2.60%	187.906	891.638	1,079.544	22.230
2027	2,976.817	4,536.108	14.54%	1.44%	107.840	984.193	1,092.033	14.91%	2.62%	196.566	923.338	1,119.904	27.871
2028	2,861.609	4,945.319	14.45%	1.39%	108.283	1,019.585	1,127.868	14.88%	2.64%	206.398	955.568	1,161.966	34.098
2029	2,748.479	5,365.437	14.34%	1.34%	108.856	1,054.809	1,163.666	14.83%	2.67%	216.828	986.652	1,203.481	39.815
2030	2,636.015	5,797.930	14.21%	1.29%	109.127	1,089.666	1,198.793	14.77%	2.70%	227.325	1,017.977	1,245.303	46.510
2031	2,523.441	6,243.849	14.08%	1.26%	110.296	1,123.967	1,234.263	14.67%	2.73%	239.111	1,046.814	1,285.925	51.663
2032	2,410.718	6,703.938	13.90%	1.22%	110.946	1,155.738	1,266.684	14.53%	2.76%	251.492	1,072.795	1,324.287	57.602
2033	2,297.300	7,178.932	5.43%	1.18%	111.686	402.740	514.425	6.70%	2.78%	263.850	371.468	635.319	120.893
2034	2,182.241	7,670.035	3.95%	1.15%	113.289	275.864	389.153	5.38%	2.82%	277.628	252.218	529.846	140.694
2035	2,065.928	8,177.707	2.42%	1.11%	114.119	134.192	248.311	4.00%	2.84%	291.039	118.826	409.865	161.555
2036	1,948.113	8,702.679	1.38%	1.08%	115.059	31.952	147.011	3.07%	2.87%	306.112	21.302	327.414	180.403
2037	1,827.085	9,246.479	0.90%	1.05%	116.807	-16.610	100.196	2.68%	2.91%	321.876	-25.469	296.407	196.210
2038	1,703.396	9,809.757	0.58%	1.02%	117.663	-50.658	67.005	2.43%	2.93%	337.428	-57.566	279.862	212.857
2039	1,578.269	10,392.660	0.41%	1.00%	119.635	-70.628	49.006	2.32%	2.96%	354.514	-76.614	277.900	228.894
2040	1,452.370	10,995.722	0.33%	0.97%	120.583	-79.668	40.915	2.28%	2.98%	371.538	-87.137	284.402	243.487
2041	1,329.445	11,617.595	0.29%	0.95%	122.573	-85.450	37.123	2.30%	3.02%	390.520	-93.219	297.301	260.178
2042	1,213.354	12,256.040	0.29%	0.93%	124.704	-86.204	38.499	2.33%	3.05%	410.352	-96.980	313.372	274.873
2043	1,102.458	12,912.073	0.29%	0.90%	126.828	-85.489	41.340	2.38%	3.07%	429.689	-96.700	332.989	291.649
2044	992.920	13,588.470	0.31%	0.89%	130.404	-84.572	45.832	2.43%	3.09%	451.017	-96.237	354.780	308.948
2045	885.412	14,284.677	0.34%	0.88%	132.859	-81.918	50.941	2.48%	3.11%	471.514	-95.572	375.942	325.002
2046	783.139	14,997.606	0.37%	0.86%	135.338	-77.326	58.012	2.54%	3.13%	493.809	-93.106	400.703	342.691
2047	680.796	15,729.466	0.40%	0.85%	139.484	-73.846	65.638	2.58%	3.14%	515.246	-91.897	423.349	357.711
2048	573.131	16,484.746	0.42%	0.83%	142.147	-69.937	72.210	2.64%	3.16%	538.604	-88.701	449.903	377.694
2049	465.713	17,261.980	0.46%	0.83%	146.504	-65.592	80.912	2.67%	3.16%	560.945	-86.866	474.079	393.168
2050	373.175	18,050.490	0.48%	0.82%	151.141	-62.640	88.501	2.73%	3.18%	585.575	-82.906	502.669	414.168
2051	299.011	18,848.441	0.52%	0.82%	156.139	-57.442	98.696	2.76%	3.18%	609.395	-80.419	528.976	430.279
2052	235.082	19,664.612	0.54%	0.81%	161.199	-53.729	107.469	2.81%	3.20%	635.841	-77.609	558.232	450.762
2053	178.915	20,503.240	0.56%	0.80%	166.240	-49.637	116.603	2.85%	3.20%	661.214	-72.388	588.827	472.224
2054	133.803	21,362.806	0.59%	0.81%	173.457	-47.293	126.164	2.89%	3.21%	689.669	-68.789	620.880	494.716
2055	101.111	22,243.377	0.61%	0.80%	178.755	-42.455	136.300	2.92%	3.21%	717.127	-64.799	652.328	516.027
2056	76.276	23,150.859	0.63%	0.80%	186.424	-39.486	146.938	2.95%	3.22%	747.794	-62.713	685.080	538.142
2057	56.488	24,089.437	0.65%	0.80%	194.278	-36.219	158.059	2.97%	3.22%	777.495	-60.365	717.130	559.071
2058	41.446	25,060.935	0.68%	0.81%	202.313	-32.633	169.680	2.99%	3.22%	808.330	-57.735	750.594	580.914
2059	30.655	26,067.418	0.69%	0.81%	210.629	-31.318	179.311	3.02%	3.23%	843.019	-54.806	788.213	608.901
2060	22.730	27,111.890	0.71%	0.81%	<u>219.227</u>	<u>-27.135</u>	<u>192.092</u>	3.04%	3.23%	<u>876.505</u>	<u>-51.556</u>	<u>824.949</u>	<u>632.857</u>
					6,553.694	15,587.248	22,140.942			18,354.879	14,684.180	33,039.058	10,898.117

⁽¹⁾ Effective 1/1/14

⁽²⁾ In millions.

UAL is reamortized to an open 10 year period in 2030 to limit the impact of the contribution lag. All assumptions are assumed to be met each year in the future.

Exhibit B2

Kansas Public Employee Retirement System
Comparison of Local Group Employer Contributions for Retirement Benefits
HB 2194 versus Study Commission Plan



FYE	Payroll		HB 2194					Study Commission Plan ⁽¹⁾					Difference ⁽²⁾
	Tier 1/2	Tier 3	Employer Rate-DB	Normal Cost Rate	Normal Cost ⁽²⁾	UAL Payment ⁽²⁾	Total Cost ⁽²⁾	Employer Rate-DB	DB Normal Cost Rate	DB Normal Cost ⁽²⁾	UAL Payment ⁽²⁾	Total Cost ⁽²⁾	
	2012	1,678.751	0.000	7.34%	2.94%	49.355	73.865	123.220	7.34%	2.94%	49.355	73.865	
2013	1,726.922	0.000	7.94%	2.94%	50.772	86.346	137.118	7.94%	2.94%	50.772	86.346	137.118	0.000
2014	1,777.741	0.000	8.65%	1.96%	34.906	118.931	153.837	8.91%	2.23%	39.634	118.753	158.388	4.551
2015	1,682.855	151.199	9.12%	1.86%	34.106	133.152	167.259	9.47%	2.20%	40.370	133.336	173.706	6.447
2016	1,601.267	292.153	9.00%	1.76%	33.371	137.084	170.455	9.45%	2.18%	41.242	137.652	178.894	8.439
2017	1,531.885	423.760	9.00%	1.69%	33.049	142.958	176.006	9.53%	2.18%	42.584	143.740	186.324	10.317
2018	1,468.854	551.608	9.00%	1.62%	32.730	149.110	181.840	9.60%	2.18%	44.002	149.918	193.920	12.080
2019	1,411.513	676.427	8.99%	1.55%	32.396	155.343	187.739	9.67%	2.18%	45.506	156.387	201.893	14.154
2020	1,357.016	801.074	8.98%	1.49%	32.073	161.641	193.714	9.72%	2.18%	47.119	162.720	209.839	16.125
2021	1,306.765	925.141	8.98%	1.42%	31.768	168.732	200.500	9.80%	2.19%	48.854	169.848	218.702	18.202
2022	1,259.029	1,050.142	8.98%	1.36%	31.472	175.959	207.431	9.87%	2.20%	50.747	177.113	227.860	20.429
2023	1,211.644	1,178.114	8.98%	1.31%	31.237	183.294	214.531	9.93%	2.21%	52.828	184.489	237.317	22.786
2024	1,166.580	1,308.070	8.97%	1.25%	31.040	191.043	222.083	9.99%	2.23%	55.072	192.033	247.105	25.022
2025	1,122.814	1,440.897	8.98%	1.21%	30.916	199.200	230.117	10.04%	2.24%	57.541	199.969	257.511	27.394
2026	1,079.538	1,577.175	8.97%	1.16%	30.845	207.489	238.335	10.10%	2.27%	60.204	208.021	268.225	29.890
2027	1,036.739	1,717.192	8.97%	1.12%	30.815	216.184	246.999	10.14%	2.29%	63.055	216.184	279.239	32.240
2028	996.305	1,860.024	8.96%	1.08%	30.834	225.079	255.913	10.16%	2.31%	66.118	224.222	290.340	34.427
2029	956.653	2,006.671	8.94%	1.04%	30.915	234.103	265.017	10.19%	2.34%	69.392	232.621	302.013	36.995
2030	918.258	2,157.256	8.93%	1.01%	31.056	243.581	274.637	10.20%	2.37%	72.872	240.813	313.685	39.048
2031	880.111	2,312.267	8.91%	0.98%	31.239	253.156	284.395	10.18%	2.40%	76.549	248.367	324.916	40.521
2032	841.490	2,472.188	3.65%	0.95%	31.460	89.469	120.929	5.05%	2.43%	80.416	86.818	167.234	46.305
2033	802.890	2,637.309	2.75%	0.92%	31.727	62.956	94.682	4.20%	2.46%	84.495	59.859	144.354	49.672
2034	763.519	2,808.290	1.82%	0.90%	32.032	32.861	64.893	3.32%	2.49%	88.791	29.646	118.437	53.544
2035	724.959	2,984.212	1.49%	0.87%	32.373	22.997	55.370	3.04%	2.52%	93.318	19.288	112.606	57.236
2036	685.180	3,166.753	1.27%	0.85%	32.755	16.178	48.933	2.85%	2.55%	98.065	11.556	109.621	60.688
2037	645.945	3,355.264	1.14%	0.83%	33.176	12.404	45.580	2.77%	2.58%	103.051	7.602	110.653	65.073
2038	606.916	3,550.260	1.06%	0.81%	33.650	10.393	44.043	2.71%	2.60%	108.289	4.573	112.862	68.819
2039	567.903	3,751.578	0.99%	0.79%	34.179	8.639	42.818	2.68%	2.63%	113.755	2.160	115.914	73.096
2040	528.254	3,960.270	0.94%	0.77%	34.753	7.630	42.384	2.67%	2.66%	119.453	0.449	119.901	77.518
2041	486.776	4,177.037	0.90%	0.76%	35.379	6.529	41.909	2.66%	2.69%	125.386	-1.399	123.987	82.078
2042	445.926	4,400.890	0.86%	0.74%	36.073	5.816	41.889	2.65%	2.71%	131.576	-2.908	128.668	86.780
2043	405.937	4,631.369	0.83%	0.73%	36.841	5.037	41.879	2.65%	2.74%	138.010	-4.534	133.476	91.598
2044	365.661	4,869.826	0.81%	0.72%	37.672	4.712	42.384	2.65%	2.76%	144.659	-5.759	138.900	96.516
2045	326.896	5,115.138	0.79%	0.71%	38.575	4.354	42.929	2.66%	2.78%	151.541	-6.530	145.010	102.082
2046	290.352	5,366.555	0.77%	0.70%	39.565	3.960	43.524	2.67%	2.80%	158.635	-7.354	151.281	107.757
2047	254.343	5,625.289	0.76%	0.69%	40.626	4.116	44.742	2.68%	2.82%	165.929	-8.231	157.698	112.956
2048	218.593	5,892.300	0.74%	0.68%	41.776	3.667	45.443	2.70%	2.84%	173.434	-8.555	164.879	119.436
2049	184.549	6,166.985	0.74%	0.68%	43.043	3.811	46.854	2.70%	2.85%	181.178	-9.527	171.651	124.797
2050	155.998	6,446.177	0.73%	0.67%	44.431	3.961	48.393	2.72%	2.87%	189.171	-9.903	179.268	130.875
2051	129.299	6,733.033	0.73%	0.67%	45.934	4.117	50.051	2.74%	2.88%	197.400	-9.607	187.793	137.742
2052	104.361	7,028.427	0.74%	0.67%	47.536	4.993	52.529	2.75%	2.89%	205.888	-9.986	195.902	143.373
2053	81.172	7,332.993	0.73%	0.66%	49.285	5.190	54.475	2.77%	2.90%	214.664	-9.638	205.025	150.550
2054	63.826	7,643.400	0.73%	0.66%	51.171	5.395	56.566	2.77%	2.90%	223.753	-10.019	213.733	157.167
2055	50.205	7,961.988	0.74%	0.66%	53.201	6.410	59.610	2.79%	2.91%	233.169	-9.615	223.554	163.944
2056	38.812	8,290.643	0.74%	0.66%	55.344	6.664	62.007	2.81%	2.92%	242.927	-9.162	233.765	171.757
2057	29.195	8,630.402	0.76%	0.67%	57.619	7.794	65.413	2.81%	2.92%	253.060	-9.526	243.535	178.122
2058	22.087	8,981.087	0.76%	0.67%	60.035	8.103	68.138	2.83%	2.93%	263.589	-9.003	254.585	186.447
2059	16.902	9,343.797	0.76%	0.67%	62.592	8.425	71.016	2.84%	2.93%	274.534	-8.425	266.110	195.093
2060	12.843	9,719.925	0.76%	0.67%	<u>65.286</u>	<u>8.759</u>	<u>74.046</u>	2.85%	2.94%	<u>285.949</u>	<u>-8.790</u>	<u>277.158</u>	<u>203.113</u>
					1,912.986	3,831.587	5,744.574			5,917.900	3,519.874	9,437.774	3,693.200

⁽¹⁾ Effective 1/1/14

⁽²⁾ In millions.

UAL is reamortized to an open 10 year period in 2030 to limit the impact of the contribution lag.
All assumptions are assumed to be met each year in the future.



Addendum to Exhibit A1

HB 2194 vs Study Commission Plan State/School Group

(1) Fiscal Year	(2) Total Payroll	(3) <u>Employer Contribution Rate</u>		(5) <u>Employer Contribution Amount (\$M)</u>		
		HB 2194	SC Plan	HB 2194	SC Plan	Difference
2012	\$ 4,465.19	8.77%	8.77%	\$ 391.60	\$ 391.60	\$ -
2013	4,609.30	9.37%	9.37%	431.89	431.89	-
2014	4,742.86	10.27%	13.44%	487.09	637.46	150.37
2015	4,889.77	11.27%	13.61%	551.08	665.71	114.63
2016	5,048.36	12.37%	14.82%	624.48	748.18	123.70
2017	5,217.25	13.57%	14.79%	707.98	771.52	63.54
2018	5,396.09	14.46%	14.65%	780.44	790.34	9.90
2019	5,585.80	14.67%	14.74%	819.50	823.56	4.06
2020	5,786.83	14.80%	14.79%	856.63	856.13	(0.49)
2021	5,999.32	14.85%	14.84%	890.84	890.20	(0.64)
2022	6,223.41	14.84%	14.89%	923.50	926.50	3.00
2023	6,458.61	14.81%	14.92%	956.42	963.37	6.95
2024	6,704.71	14.76%	14.93%	989.41	1,001.19	11.78
2025	6,962.16	14.70%	14.93%	1,023.12	1,039.68	16.56
2026	7,231.45	14.62%	14.93%	1,057.31	1,079.54	22.23
2027	7,512.93	14.54%	14.91%	1,092.03	1,119.90	27.87
2028	7,806.93	14.45%	14.88%	1,127.87	1,161.97	34.10
2029	8,113.92	14.34%	14.83%	1,163.67	1,203.48	39.81
2030	8,433.95	14.21%	14.77%	1,198.79	1,245.30	46.51
2031	8,767.29	14.08%	14.67%	1,234.26	1,285.93	51.66
2032	9,114.66	13.90%	14.53%	1,266.68	1,324.29	57.60
2033	9,476.23	5.43%	6.70%	514.43	635.32	120.89
2034	9,852.28	3.95%	5.38%	389.15	529.85	140.69
2035	10,243.64	2.42%	4.00%	248.31	409.87	161.55
2036	10,650.79	1.38%	3.07%	147.01	327.41	180.40
2037	11,073.56	0.90%	2.68%	100.20	296.41	196.21
2038	11,513.15	0.58%	2.43%	67.01	279.86	212.86
2039	11,970.93	0.41%	2.32%	49.01	277.90	228.89
2040	12,448.09	0.33%	2.28%	40.91	284.40	243.49
2041	12,947.04	0.29%	2.30%	37.12	297.30	260.18
2042	13,469.39	0.29%	2.33%	38.50	313.37	274.87
2043	14,014.53	0.29%	2.38%	41.34	332.99	291.65
2044	14,581.39	0.31%	2.43%	45.83	354.78	308.95
2045	15,170.09	0.34%	2.48%	50.94	375.94	325.00
2046	15,780.74	0.37%	2.54%	58.01	400.70	342.69
2047	16,410.26	0.40%	2.58%	65.64	423.35	357.71
2048	17,057.88	0.42%	2.64%	72.21	449.90	377.69
2049	17,727.69	0.46%	2.67%	80.91	474.08	393.17
2050	18,423.67	0.48%	2.73%	88.50	502.67	414.17
2051	19,147.45	0.52%	2.76%	98.70	528.98	430.28
2052	19,899.69	0.54%	2.81%	107.47	558.23	450.76
2053	20,682.16	0.56%	2.85%	116.60	588.83	472.22
2054	21,496.61	0.59%	2.89%	126.16	620.88	494.72
2055	22,344.49	0.61%	2.92%	136.30	652.33	516.03
2056	23,227.14	0.63%	2.95%	146.94	685.08	538.14
2057	24,145.92	0.65%	2.97%	158.06	717.13	559.07
2058	25,102.38	0.68%	2.99%	169.68	750.59	580.91
2059	26,098.07	0.69%	3.02%	179.31	788.21	608.90
2060	27,134.62	0.71%	3.04%	192.09	824.95	632.86
			Total	\$ 22,140.94	\$ 33,039.06	\$ 10,898.12
			Present Value as of July 1, 2011	\$ 8,317.52	\$ 9,383.42	\$ 1,065.89

UAL is reamortized to an open 10 year period in 2030 to limit the impact of the contribution lag.
All assumptions are assumed to be met each year in the future.



Addendum to Exhibit A2

HB 2194 vs Study Commission Plan Local Group

(1) Fiscal Year	(2) Total Payroll	(3) <u>Employer Contribution Rate</u>		(5) <u>Employer Contribution Amount (\$M)</u>		
		HB 2194	SC Plan	HB 2194	SC Plan	Difference
2012	\$ 1,678.75	7.34%	7.34%	\$ 123.22	\$ 123.22	\$ -
2013	1,726.92	7.94%	7.94%	137.12	137.12	-
2014	1,777.74	8.65%	8.91%	153.84	158.39	4.55
2015	1,834.05	9.12%	9.47%	167.26	173.71	6.45
2016	1,893.42	9.00%	9.45%	170.45	178.89	8.44
2017	1,955.65	9.00%	9.53%	176.01	186.32	10.32
2018	2,020.46	9.00%	9.60%	181.84	193.92	12.08
2019	2,087.94	8.99%	9.67%	187.74	201.89	14.15
2020	2,158.09	8.98%	9.72%	193.71	209.84	16.12
2021	2,231.91	8.98%	9.80%	200.50	218.70	18.20
2022	2,309.17	8.98%	9.87%	207.43	227.86	20.43
2023	2,389.76	8.98%	9.93%	214.53	237.32	22.79
2024	2,474.65	8.97%	9.99%	222.08	247.11	25.02
2025	2,563.71	8.98%	10.04%	230.12	257.51	27.39
2026	2,656.71	8.97%	10.10%	238.33	268.22	29.89
2027	2,753.93	8.97%	10.14%	247.00	279.24	32.24
2028	2,856.33	8.96%	10.16%	255.91	290.34	34.43
2029	2,963.32	8.94%	10.19%	265.02	302.01	37.00
2030	3,075.51	8.93%	10.20%	274.64	313.69	39.05
2031	3,192.38	8.91%	10.18%	284.39	324.92	40.52
2032	3,313.68	3.65%	5.05%	120.93	167.23	46.30
2033	3,440.20	2.75%	4.20%	94.68	144.35	49.67
2034	3,571.81	1.82%	3.32%	64.89	118.44	53.54
2035	3,709.17	1.49%	3.04%	55.37	112.61	57.24
2036	3,851.93	1.27%	2.85%	48.93	109.62	60.69
2037	4,001.21	1.14%	2.77%	45.58	110.65	65.07
2038	4,157.18	1.06%	2.71%	44.04	112.86	68.82
2039	4,319.48	0.99%	2.68%	42.82	115.91	73.10
2040	4,488.52	0.94%	2.67%	42.38	119.90	77.52
2041	4,663.81	0.90%	2.66%	41.91	123.99	82.08
2042	4,846.82	0.86%	2.65%	41.89	128.67	86.78
2043	5,037.31	0.83%	2.65%	41.88	133.48	91.60
2044	5,235.49	0.81%	2.65%	42.38	138.90	96.52
2045	5,442.03	0.79%	2.66%	42.93	145.01	102.08
2046	5,656.91	0.77%	2.67%	43.52	151.28	107.76
2047	5,879.63	0.76%	2.68%	44.74	157.70	112.96
2048	6,110.89	0.74%	2.70%	45.44	164.88	119.44
2049	6,351.53	0.74%	2.70%	46.85	171.65	124.80
2050	6,602.17	0.73%	2.72%	48.39	179.27	130.87
2051	6,862.33	0.73%	2.74%	50.05	187.79	137.74
2052	7,132.79	0.74%	2.75%	52.53	195.90	143.37
2053	7,414.16	0.73%	2.77%	54.48	205.03	150.55
2054	7,707.23	0.73%	2.77%	56.57	213.73	157.17
2055	8,012.19	0.74%	2.79%	59.61	223.55	163.94
2056	8,329.45	0.74%	2.81%	62.01	233.76	171.76
2057	8,659.60	0.76%	2.81%	65.41	243.53	178.12
2058	9,003.17	0.76%	2.83%	68.14	254.59	186.45
2059	9,360.70	0.76%	2.84%	71.02	266.11	195.09
2060	9,732.77	0.76%	2.85%	74.05	277.16	203.11
Total				\$ 5,744.57	\$ 9,437.77	\$ 3,693.20
Present Value as of July 1, 2011				\$ 2,061.12	\$ 2,425.98	\$ 364.86

UAL is reamortized to an open 10 year period in 2030 to limit the impact of the contribution lag.
All assumptions are assumed to be met each year in the future.