



# Cavanaugh Macdonald

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May 1, 2012

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

**Re: Cost Projections under HB 2194, House Sub SB 259, and Senate Sub HB 2333**

Dear Alan:

As you requested, we have prepared exhibits to compare the estimated employer costs under three proposed plan designs:

- (1) HB 2194,
- (2) House Sub SB 259 (as recommended by the House Committee on Pensions and Benefits) and
- (3) Senate Sub HB 2333 (the Morris/Kelly Cash Balance Plan).

HB 2194 is a traditional final average pay defined benefit plan. Both House Sub SB 259 and Senate Sub HB 2333 are cash balance plans (defined benefit plan) funded by both employer and employee contributions. Comprehensive cost studies have previously been performed for each of these proposed plan designs. Therefore, the cost estimates shown in the attached exhibits are the same as those provided in our prior cost study letters. The cost study letter for House Sub SB 259, which also includes costs for HB 2194, is dated March 20, 2012 and the cost study letter for Senate Sub HB 2333 (Morris/Kelly Cash Balance Plan) is dated March 23, 2012. These letters contain important information about the cost projections including a description of the plan provisions for the proposed plan design, the actuarial assumptions and methods used in preparing the cost projections, and caveats and limitations regarding the modeling results. **The exhibits attached to this letter should only be viewed and relied upon after a full review of the prior cost study letters prepared for each plan design.**

## **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 over a four year period beginning with 0.9% in FY 2014 to an ultimate cap of 1.2% in FY 2017. The increases in the statutory cap on the employer contribution rate contained in Senate Substitute for HB 2194 are also included in House Sub SB 259 and Senate Sub HB 2333.

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## **Senate Substitute for HB 2194**

The cost projections for HB 2194 shown in this study are based on the default elections provided under Senate Substitute for HB 2194 as passed by the 2011 Legislature. The projections for Senate Sub HB 2333 also reflect the default benefit provision changes for KPERS Tier 1 and 2 members included in Senate Substitute for HB 2194. However, the projections for House Sub SB 259 reflect an increase in the benefit multiplier from 1.75% to 1.85% for both Tier 1 and 2 members. In addition, the member contribution rate for Tier 1 is increased from 4% to 6% and the cost of living adjustment for Tier 2 is eliminated.

### **Actuarial Assumptions and Methods**

In general, the same actuarial methods and assumptions that were used in the December 31, 2010 actuarial valuation were used in the cost projections unless otherwise noted. Please refer to the cost study letter prepared for each plan design for a full description of all of the actuarial assumptions and methods, including those unique to that plan design, that were used in preparing the cost projections.

All three of the plan designs are defined benefit plans. Our modeling assumes that the new tier will be combined with the existing KPERS Tiers 1 and 2 in one system with one trust. However, separate employer contribution rates will continue to be determined for the State/School group and the Local group. The actuarial valuation will reflect the future benefit payments for Tier 3 members along with those for Tier 1 and 2 members and one overall employer contribution rate will be developed for each group, which includes 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 is unchanged other than reflecting the new benefit structure for Tier 3 members.

### **Results**

The cost impact of the various proposed plan designs 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 employer costs over a long period of time is necessary in order to see the long term impact of the proposed plan design. The employer cost estimates under HB 2194, House Sub SB 259, and Senate Sub HB 2333 are reflected in the attached exhibits. Exhibits A1 and A2 show the expected employer contribution rate under each plan design by year for the State/School and Local groups and Exhibits B1 and B2 show the estimated dollar amount of employer contributions in each future year. The projections assume that all actuarial assumptions, including the 8% investment return assumption, are met in the future. Please note that the dollar amounts of employer contributions shown 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 at 8% has been included at the bottom of Exhibits B1 and B2. The employer contribution rate also provides a reliable way to compare the cost of various plan designs in the future. Exhibits C1 and C2 show the split of projected employer contributions into normal cost and UAL payments by year and in total for House Sub 259 and Senate Sub HB 2333.



The cost projections attached to this letter are based on one set of actuarial assumptions, which include an 8% assumed rate of investment return. The cost projections for the various plan designs are sensitive to the assumptions used, particularly the investment return assumption. However, the impact of different assumptions varies for each of the three plan designs. Further analysis can be provided upon request if it is deemed to be necessary or helpful.

It should also be noted that the different plan designs studied in this cost comparison do not provide the same amount of retirement benefits. This has an impact on the cost of the plan designs. Therefore, the cost projections should not be evaluated in isolation from the benefit amounts provided by each plan design.

### **Disclaimers, Caveats, and Limitations**

The numerical charts that comprise this study are based primarily upon the December 31, 2010 valuation results, the actuarial assumptions used in the valuation (other than as noted in the cost study letters for each plan design), and the projection model prepared by the System's actuary, Cavanaugh Macdonald Consulting, LLC. Significant items are noted below:

- 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).
- Changes in the plan design and resulting benefit amounts may have an effect on future termination and retirement patterns. Whether, and how, retirement and termination of employment patterns will ultimately be impacted cannot be known at this time. Therefore, no change in the assumptions was reflected in our modeling results.
- 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 as disclosed earlier in this letter. Tier 3 benefits are as provided under HB 2194, House Sub SB 259, and Senate Sub HB 2333 as described in the cost study letters previously prepared by Cavanaugh Macdonald Consulting, LLC on March 20, 2012 and March 23, 2012. 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 or the cost study previously prepared for House Sub SB 259 and Senate Sub HB 2333.
- The projections reflect the statutory caps for the State/School and Local employers under Senate Substitute for HB 2194 for all three plan designs.
- 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. 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 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.

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,

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

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

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

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



Exhibit A1  
 KPERS Contribution Rate Projections under HB 2194, Sub SB 259, and Sub HB 2333  
 State/School Group

Fiscal Year	Total Payroll (\$M)	HB 2194 vs Sub SB 259		HB 2194 vs Sub HB 2333		Sub SB 259 vs Sub HB 2333	
		Employer Contribution Rate		Employer Contribution Rate		Employer Contribution Rate	
		HB 2194	Sub SB 259	HB 2194	Sub HB 2333	Sub SB 259	Sub HB 2333
2012	\$ 4,465.19	8.77%	8.77%	8.77%	8.77%	8.77%	8.77%
2013	4,609.30	9.37%	9.37%	9.37%	9.37%	9.37%	9.37%
2014	4,742.86	10.27%	10.27%	10.27%	10.27%	10.27%	10.27%
2015	4,889.77	11.27%	11.27%	11.27%	11.27%	11.27%	11.27%
2016	5,048.36	12.37%	12.37%	12.37%	12.37%	12.37%	12.37%
2017	5,217.25	13.57%	13.57%	13.57%	13.57%	13.57%	13.57%
2018	5,396.09	14.46%	14.49%	14.46%	14.65%	14.49%	14.65%
2019	5,585.80	14.67%	14.64%	14.67%	14.94%	14.64%	14.94%
2020	5,786.83	14.80%	14.70%	14.80%	15.15%	14.70%	15.15%
2021	5,999.32	14.85%	14.69%	14.85%	15.28%	14.69%	15.28%
2022	6,223.41	14.84%	14.60%	14.84%	15.35%	14.60%	15.35%
2023	6,458.61	14.81%	14.50%	14.81%	15.40%	14.50%	15.40%
2024	6,704.71	14.76%	14.38%	14.76%	15.41%	14.38%	15.41%
2025	6,962.16	14.70%	14.24%	14.70%	15.42%	14.24%	15.42%
2026	7,231.45	14.62%	14.10%	14.62%	15.42%	14.10%	15.42%
2027	7,512.93	14.54%	13.95%	14.54%	15.41%	13.95%	15.41%
2028	7,806.93	14.45%	13.78%	14.45%	15.40%	13.78%	15.40%
2029	8,113.92	14.34%	13.61%	14.34%	15.39%	13.61%	15.39%
2030	8,433.95	14.21%	13.42%	14.21%	15.36%	13.42%	15.36%
2031	8,767.29	14.08%	13.20%	14.08%	15.33%	13.20%	15.33%
2032	9,114.66	13.90%	12.93%	13.90%	15.30%	12.93%	15.30%
2033	9,476.23	5.43%	4.65%	5.43%	6.56%	4.65%	6.56%
2034	9,852.28	3.95%	3.15%	3.95%	5.11%	3.15%	5.11%
2035	10,243.64	2.42%	1.64%	2.42%	3.60%	1.64%	3.60%
2036	10,650.79	1.38%	0.59%	1.38%	2.59%	0.59%	2.59%
2037	11,073.56	0.90%	0.10%	0.90%	2.15%	0.10%	2.15%
2038	11,513.15	0.58%	0.00%	0.58%	1.89%	0.00%	1.89%
2039	11,970.93	0.41%	0.00%	0.41%	1.76%	0.00%	1.76%
2040	12,448.09	0.33%	0.00%	0.33%	1.73%	0.00%	1.73%
2041	12,947.04	0.29%	0.00%	0.29%	1.74%	0.00%	1.74%
2042	13,469.39	0.29%	0.00%	0.29%	1.78%	0.00%	1.78%
2043	14,014.53	0.29%	0.00%	0.29%	1.82%	0.00%	1.82%
2044	14,581.39	0.31%	0.00%	0.31%	1.87%	0.00%	1.87%
2045	15,170.09	0.34%	0.00%	0.34%	1.92%	0.00%	1.92%
2046	15,780.74	0.37%	0.00%	0.37%	1.98%	0.00%	1.98%
2047	16,410.26	0.40%	0.00%	0.40%	2.03%	0.00%	2.03%
2048	17,057.88	0.42%	0.00%	0.42%	2.07%	0.00%	2.07%
2049	17,727.69	0.46%	0.00%	0.46%	2.11%	0.00%	2.11%
2050	18,423.67	0.48%	0.00%	0.48%	2.15%	0.00%	2.15%
2051	19,147.45	0.52%	0.00%	0.52%	2.17%	0.00%	2.17%
2052	19,899.69	0.54%	0.00%	0.54%	2.18%	0.00%	2.18%
2053	20,682.16	0.56%	0.00%	0.56%	2.20%	0.00%	2.20%
2054	21,496.61	0.59%	0.00%	0.59%	2.20%	0.00%	2.20%
2055	22,344.49	0.61%	0.00%	0.61%	2.20%	0.00%	2.20%
2056	23,227.14	0.63%	0.00%	0.63%	2.21%	0.00%	2.21%
2057	24,145.92	0.65%	0.00%	0.65%	2.20%	0.00%	2.20%
2058	25,102.38	0.68%	0.00%	0.68%	2.18%	0.00%	2.18%
2059	26,098.07	0.69%	0.00%	0.69%	2.17%	0.00%	2.17%
2060	27,134.62	0.71%	0.00%	0.71%	2.15%	0.00%	2.15%

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 May 1, 2012.  
 All assumptions, including the 8% investment return, are assumed to be met each year in the future.



Exhibit A2  
 KPERS Contribution Rate Projections under HB 2194, Sub SB 259, and Sub HB 2333  
 Local Group

Fiscal Year	Total Payroll (\$M)	HB 2194 vs Sub SB 259		HB 2194 vs Sub HB 2333		Sub SB 259 vs Sub HB 2333	
		Employer Contribution Rate		Employer Contribution Rate		Employer Contribution Rate	
		HB 2194	Sub SB 259	HB 2194	Sub HB 2333	Sub SB 259	Sub HB 2333
2012	\$ 1,678.75	7.34%	7.34%	7.34%	7.34%	7.34%	7.34%
2013	1,726.92	7.94%	7.94%	7.94%	7.94%	7.94%	7.94%
2014	1,777.74	8.65%	8.73%	8.65%	8.64%	8.73%	8.64%
2015	1,834.05	9.12%	9.21%	9.12%	9.16%	9.21%	9.16%
2016	1,893.42	9.00%	9.11%	9.00%	9.11%	9.11%	9.11%
2017	1,955.65	9.00%	9.03%	9.00%	9.18%	9.03%	9.18%
2018	2,020.46	9.00%	8.96%	9.00%	9.24%	8.96%	9.24%
2019	2,087.94	8.99%	8.87%	8.99%	9.31%	8.87%	9.31%
2020	2,158.09	8.98%	8.79%	8.98%	9.35%	8.79%	9.35%
2021	2,231.91	8.98%	8.72%	8.98%	9.41%	8.72%	9.41%
2022	2,309.17	8.98%	8.67%	8.98%	9.48%	8.67%	9.48%
2023	2,389.76	8.98%	8.61%	8.98%	9.54%	8.61%	9.54%
2024	2,474.65	8.97%	8.55%	8.97%	9.60%	8.55%	9.60%
2025	2,563.71	8.98%	8.49%	8.98%	9.66%	8.49%	9.66%
2026	2,656.71	8.97%	8.44%	8.97%	9.73%	8.44%	9.73%
2027	2,753.93	8.97%	8.37%	8.97%	9.79%	8.37%	9.79%
2028	2,856.33	8.96%	8.31%	8.96%	9.85%	8.31%	9.85%
2029	2,963.32	8.94%	8.24%	8.94%	9.92%	8.24%	9.92%
2030	3,075.51	8.93%	8.17%	8.93%	10.00%	8.17%	10.00%
2031	3,192.38	8.91%	8.07%	8.91%	10.09%	8.07%	10.09%
2032	3,313.68	3.65%	2.96%	3.65%	4.64%	2.96%	4.64%
2033	3,440.20	2.75%	2.05%	2.75%	3.77%	2.05%	3.77%
2034	3,571.81	1.82%	1.13%	1.82%	2.86%	1.13%	2.86%
2035	3,709.17	1.49%	0.79%	1.49%	2.58%	0.79%	2.58%
2036	3,851.93	1.27%	0.55%	1.27%	2.39%	0.55%	2.39%
2037	4,001.21	1.14%	0.40%	1.14%	2.31%	0.40%	2.31%
2038	4,157.18	1.06%	0.30%	1.06%	2.26%	0.30%	2.26%
2039	4,319.48	0.99%	0.23%	0.99%	2.24%	0.23%	2.24%
2040	4,488.52	0.94%	0.16%	0.94%	2.24%	0.16%	2.24%
2041	4,663.81	0.90%	0.11%	0.90%	2.23%	0.11%	2.23%
2042	4,846.82	0.86%	0.07%	0.86%	2.23%	0.07%	2.23%
2043	5,037.31	0.83%	0.03%	0.83%	2.23%	0.03%	2.23%
2044	5,235.49	0.81%	0.00%	0.81%	2.23%	0.00%	2.23%
2045	5,442.03	0.79%	0.00%	0.79%	2.24%	0.00%	2.24%
2046	5,656.91	0.77%	0.00%	0.77%	2.24%	0.00%	2.24%
2047	5,879.63	0.76%	0.00%	0.76%	2.25%	0.00%	2.25%
2048	6,110.89	0.74%	0.00%	0.74%	2.25%	0.00%	2.25%
2049	6,351.53	0.74%	0.00%	0.74%	2.26%	0.00%	2.26%
2050	6,602.17	0.73%	0.00%	0.73%	2.25%	0.00%	2.25%
2051	6,862.33	0.73%	0.00%	0.73%	2.26%	0.00%	2.26%
2052	7,132.79	0.74%	0.00%	0.74%	2.25%	0.00%	2.25%
2053	7,414.16	0.73%	0.00%	0.73%	2.25%	0.00%	2.25%
2054	7,707.23	0.73%	0.00%	0.73%	2.23%	0.00%	2.23%
2055	8,012.19	0.74%	0.00%	0.74%	2.22%	0.00%	2.22%
2056	8,329.45	0.74%	0.00%	0.74%	2.21%	0.00%	2.21%
2057	8,659.60	0.76%	0.00%	0.76%	2.20%	0.00%	2.20%
2058	9,003.17	0.76%	0.00%	0.76%	2.18%	0.00%	2.18%
2059	9,360.70	0.76%	0.00%	0.76%	2.16%	0.00%	2.16%
2060	9,732.77	0.76%	0.00%	0.76%	2.15%	0.00%	2.15%

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 May 1, 2012.  
 All assumptions, including the 8% investment return, are assumed to be met each year in the future.



Exhibit B1  
 KPERS Cost Projections under HB 2194, Sub SB 259, and Sub HB 2333  
 State/School Group

Fiscal Year	Total Payroll (\$M)	HB 2194 vs Sub SB 259				HB 2194 vs Sub HB 2333				Sub SB 259 vs Sub HB 2333			
		Employer Contribution Amount (\$M)				Employer Contribution Amount (\$M)				Employer Contribution Amount (\$M)			
		HB 2194	Sub SB 259	Difference	Present Value of Difference	HB 2194	Sub HB 2333	Difference	Present Value of Difference	Sub SB 259	Sub HB 2333	Difference	Present Value of Difference
2012	\$ 4,465.19	\$ 391.60	\$ 391.60	\$ -	\$ -	\$ 391.60	\$ 391.60	\$ -	\$ -	\$ 391.60	\$ 391.60	\$ -	\$ -
2013	4,609.30	431.89	431.89	-	-	431.89	431.89	-	-	431.89	431.89	-	-
2014	4,742.86	487.09	487.09	-	-	487.09	487.09	-	-	487.09	487.09	-	-
2015	4,889.77	551.08	551.08	-	-	551.08	551.08	-	-	551.08	551.08	-	-
2016	5,048.36	624.48	624.48	-	-	624.48	624.48	-	-	624.48	624.48	-	-
2017	5,217.25	707.98	707.98	-	-	707.98	707.98	-	-	707.98	707.98	-	-
2018	5,396.09	780.44	782.16	1.72	1.04	780.44	790.73	10.29	6.24	782.16	790.73	8.57	5.20
2019	5,585.80	819.50	817.83	(1.67)	(0.94)	819.50	834.29	14.79	8.31	817.83	834.29	16.46	9.24
2020	5,786.83	856.63	850.66	(5.96)	(3.10)	856.63	876.82	20.20	10.50	850.66	876.82	26.16	13.60
2021	5,999.32	890.84	881.11	(9.73)	(4.68)	890.84	916.87	26.03	12.53	881.11	916.87	35.76	17.21
2022	6,223.41	923.50	908.74	(14.76)	(6.58)	923.50	955.45	31.95	14.24	908.74	955.45	46.71	20.82
2023	6,458.61	956.42	936.24	(20.18)	(8.33)	956.42	994.33	37.92	15.65	936.24	994.33	58.10	23.98
2024	6,704.71	989.41	963.95	(25.46)	(9.73)	989.41	1,033.23	43.82	16.74	963.95	1,033.23	69.28	26.47
2025	6,962.16	1,023.12	991.09	(32.04)	(11.34)	1,023.12	1,073.24	50.11	17.73	991.09	1,073.24	82.15	29.07
2026	7,231.45	1,057.31	1,019.54	(37.77)	(12.37)	1,057.31	1,115.10	57.78	18.93	1,019.54	1,115.10	95.56	31.30
2027	7,512.93	1,092.03	1,047.82	(44.21)	(13.41)	1,092.03	1,157.84	65.81	19.96	1,047.82	1,157.84	110.02	33.37
2028	7,806.93	1,127.87	1,075.89	(51.97)	(14.60)	1,127.87	1,202.60	74.73	20.99	1,075.89	1,202.60	126.70	35.59
2029	8,113.92	1,163.67	1,104.28	(59.38)	(15.44)	1,163.67	1,248.86	85.20	22.16	1,104.28	1,248.86	144.58	37.60
2030	8,433.95	1,198.79	1,132.02	(66.77)	(16.08)	1,198.79	1,295.53	96.73	23.29	1,132.02	1,295.53	163.50	39.37
2031	8,767.29	1,234.26	1,157.00	(77.26)	(17.23)	1,234.26	1,344.30	110.03	24.53	1,157.00	1,344.30	187.30	41.76
2032	9,114.66	1,266.68	1,178.98	(87.70)	(18.11)	1,266.68	1,394.13	127.45	26.31	1,178.98	1,394.13	215.15	44.42
2033	9,476.23	514.43	440.29	(74.13)	(14.17)	514.43	622.11	107.69	20.59	440.29	622.11	181.82	34.76
2034	9,852.28	389.15	310.68	(78.48)	(13.89)	389.15	503.41	114.26	20.22	310.68	503.41	192.74	34.11
2035	10,243.64	248.31	168.10	(80.21)	(13.14)	248.31	369.00	120.69	19.78	168.10	369.00	200.90	32.92
2036	10,650.79	147.01	62.97	(84.04)	(12.75)	147.01	276.17	129.16	19.60	62.97	276.17	213.20	32.35
2037	11,073.56	100.20	10.60	(89.60)	(12.59)	100.20	237.77	137.57	19.33	10.60	237.77	227.17	31.92
2038	11,513.15	67.01	-	(67.01)	(8.72)	67.01	217.48	150.48	19.58	-	217.48	217.48	28.29
2039	11,970.93	49.01	-	(49.01)	(5.90)	49.01	210.90	161.89	19.50	-	210.90	210.90	25.41
2040	12,448.09	40.91	-	(40.91)	(4.56)	40.91	215.81	174.89	19.51	-	215.81	215.81	24.07
2041	12,947.04	37.12	-	(37.12)	(3.83)	37.12	224.99	187.87	19.40	-	224.99	224.99	23.24
2042	13,469.39	38.50	-	(38.50)	(3.68)	38.50	239.64	201.14	19.23	-	239.64	239.64	22.92
2043	14,014.53	41.34	-	(41.34)	(3.66)	41.34	255.27	213.93	18.94	-	255.27	255.27	22.60
2044	14,581.39	45.83	-	(45.83)	(3.76)	45.83	272.97	227.14	18.62	-	272.97	272.97	22.38
2045	15,170.09	50.94	-	(50.94)	(3.87)	50.94	291.72	240.78	18.28	-	291.72	291.72	22.14
2046	15,780.74	58.01	-	(58.01)	(4.08)	58.01	312.63	254.61	17.90	-	312.63	312.63	21.97
2047	16,410.26	65.64	-	(65.64)	(4.27)	65.64	332.88	267.24	17.39	-	332.88	332.88	21.66
2048	17,057.88	72.21	-	(72.21)	(4.35)	72.21	352.35	280.14	16.88	-	352.35	352.35	21.23
2049	17,727.69	80.91	-	(80.91)	(4.51)	80.91	374.19	293.28	16.36	-	374.19	374.19	20.88
2050	18,423.67	88.50	-	(88.50)	(4.57)	88.50	395.51	307.01	15.86	-	395.51	395.51	20.43
2051	19,147.45	98.70	-	(98.70)	(4.72)	98.70	415.87	317.17	15.17	-	415.87	415.87	19.89
2052	19,899.69	107.47	-	(107.47)	(4.76)	107.47	433.18	325.71	14.43	-	433.18	433.18	19.19
2053	20,682.16	116.60	-	(116.60)	(4.78)	116.60	455.01	338.40	13.88	-	455.01	455.01	18.66
2054	21,496.61	126.16	-	(126.16)	(4.79)	126.16	473.50	347.33	13.19	-	473.50	473.50	17.98
2055	22,344.49	136.30	-	(136.30)	(4.79)	136.30	492.62	356.32	12.53	-	492.62	492.62	17.32
2056	23,227.14	146.94	-	(146.94)	(4.78)	146.94	512.45	365.51	11.90	-	512.45	512.45	16.68
2057	24,145.92	158.06	-	(158.06)	(4.76)	158.06	530.56	372.50	11.23	-	530.56	530.56	15.99
2058	25,102.38	169.68	-	(169.68)	(4.74)	169.68	546.76	377.08	10.53	-	546.76	546.76	15.26
2059	26,098.07	179.31	-	(179.31)	(4.63)	179.31	565.98	386.67	9.99	-	565.98	565.98	14.63
2060	27,134.62	192.09	-	(192.09)	(4.60)	192.09	583.14	391.05	9.36	-	583.14	583.14	13.95
<b>Total</b>	<b>\$ 22,140.94</b>	<b>\$ 19,034.09</b>	<b>\$ (3,106.86)</b>	<b>\$ (324.57)</b>	<b>\$ 22,140.94</b>	<b>\$ 30,141.29</b>	<b>\$ 8,000.34</b>	<b>\$ 717.29</b>	<b>\$ 19,034.09</b>	<b>\$ 30,141.29</b>	<b>\$ 11,107.20</b>	<b>\$ 1,041.86</b>	
Present Value at 8% as of July 1, 2011	\$ 8,317.52	\$ 7,992.95	\$ (324.57)	\$ (324.57)	\$ 8,317.52	\$ 9,034.81	\$ 717.29	\$ 717.29	\$ 7,992.95	\$ 9,034.81	\$ 1,041.86	\$ 1,041.86	

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 May 1, 2012. All assumptions, including the 8% investment return, are assumed to be met each year in the future.



Exhibit B2  
 KPERS Cost Projections under HB 2194, Sub SB 259, and Sub HB 2333  
 Local Group

Fiscal Year	Total Payroll (\$M)	HB 2194 vs Sub SB 259				HB 2194 vs Sub HB 2333				Sub SB 259 vs Sub HB 2333			
		Employer Contribution Amount (\$M)				Employer Contribution Amount (\$M)				Employer Contribution Amount (\$M)			
		HB 2194	Sub SB 259	Difference	Present Value of Difference	HB 2194	Sub HB 2333	Difference	Present Value of Difference	Sub SB 259	Sub HB 2333	Difference	Present Value of Difference
2012	\$ 1,678.75	\$ 123.22	\$ 123.22	\$ -	\$ -	\$ 123.22	\$ 123.22	\$ -	\$ -	\$ 123.22	\$ 123.22	\$ -	\$ -
2013	1,726.92	137.12	137.12	-	-	137.12	137.12	-	-	137.12	137.12	-	-
2014	1,777.74	153.84	155.11	1.27	1.05	153.84	153.64	(0.19)	(0.16)	155.11	153.64	(1.47)	(1.21)
2015	1,834.05	167.26	168.86	1.60	1.22	167.26	167.92	0.67	0.51	168.86	167.92	(0.93)	(0.71)
2016	1,893.42	170.45	172.56	2.11	1.49	170.45	172.43	1.98	1.40	172.56	172.43	(0.13)	(0.09)
2017	1,955.65	176.01	176.57	0.56	0.37	176.01	179.43	3.43	2.24	176.57	179.43	2.87	1.88
2018	2,020.46	181.84	180.98	(0.86)	(0.52)	181.84	186.72	4.88	2.96	180.98	186.72	5.74	3.48
2019	2,087.94	187.74	185.15	(2.59)	(1.46)	187.74	194.28	6.55	3.68	185.15	194.28	9.14	5.13
2020	2,158.09	193.71	189.63	(4.08)	(2.12)	193.71	201.76	8.05	4.18	189.63	201.76	12.13	6.31
2021	2,231.91	200.50	194.72	(5.78)	(2.78)	200.50	210.08	9.58	4.61	194.72	210.08	15.36	7.39
2022	2,309.17	207.43	200.17	(7.27)	(3.24)	207.43	218.86	11.43	5.09	200.17	218.86	18.70	8.33
2023	2,389.76	214.53	205.77	(8.76)	(3.61)	214.53	227.91	13.38	5.52	205.77	227.91	22.14	9.14
2024	2,474.65	222.08	211.55	(10.53)	(4.02)	222.08	237.50	15.42	5.89	211.55	237.50	25.95	9.92
2025	2,563.71	230.12	217.76	(12.36)	(4.37)	230.12	247.70	17.58	6.22	217.76	247.70	29.94	10.59
2026	2,656.71	238.33	224.11	(14.22)	(4.66)	238.33	258.47	20.13	6.59	224.11	258.47	34.35	11.25
2027	2,753.93	247.00	230.58	(16.42)	(4.98)	247.00	269.55	22.55	6.84	230.58	269.55	38.97	11.82
2028	2,856.33	255.91	237.49	(18.42)	(5.17)	255.91	281.32	25.40	7.13	237.49	281.32	43.82	12.31
2029	2,963.32	265.02	244.25	(20.77)	(5.40)	265.02	294.03	29.01	7.54	244.25	294.03	49.78	12.95
2030	3,075.51	274.64	251.14	(23.50)	(5.66)	274.64	307.46	32.82	7.90	251.14	307.46	56.32	13.56
2031	3,192.38	284.39	257.74	(26.65)	(5.94)	284.39	322.21	37.82	8.43	257.74	322.21	64.47	14.38
2032	3,313.68	120.93	97.94	(22.99)	(4.75)	120.93	153.77	32.84	6.78	97.94	153.77	55.84	11.53
2033	3,440.20	94.68	70.57	(24.11)	(4.61)	94.68	129.66	34.98	6.69	70.57	129.66	59.09	11.30
2034	3,571.81	64.89	40.38	(24.52)	(4.34)	64.89	102.10	37.21	6.59	40.38	102.10	61.72	10.92
2035	3,709.17	55.37	29.40	(25.97)	(4.26)	55.37	95.65	40.28	6.60	29.40	95.65	66.25	10.86
2036	3,851.93	48.93	21.08	(27.85)	(4.23)	48.93	92.04	43.11	6.54	21.08	92.04	70.96	10.77
2037	4,001.21	45.58	16.20	(29.38)	(4.13)	45.58	92.45	46.87	6.59	16.20	92.45	76.25	10.71
2038	4,157.18	44.04	12.67	(31.38)	(4.08)	44.04	94.04	50.00	6.51	12.67	94.04	81.38	10.59
2039	4,319.48	42.82	9.81	(33.01)	(3.98)	42.82	96.92	54.10	6.52	9.81	96.92	87.11	10.49
2040	4,488.52	42.38	7.25	(35.13)	(3.92)	42.38	100.33	57.95	6.46	7.25	100.33	93.08	10.38
2041	4,663.81	41.91	5.04	(36.87)	(3.81)	41.91	103.86	61.95	6.40	5.04	103.86	98.82	10.21
2042	4,846.82	41.89	3.21	(38.68)	(3.70)	41.89	108.02	66.13	6.32	3.21	108.02	104.81	10.02
2043	5,037.31	41.88	1.31	(40.57)	(3.59)	41.88	112.35	70.48	6.24	1.31	112.35	111.05	9.83
2044	5,235.49	42.38	-	(42.38)	(3.47)	42.38	116.85	74.47	6.11	-	116.85	116.85	9.58
2045	5,442.03	42.93	-	(42.93)	(3.26)	42.93	122.05	79.12	6.01	-	122.05	122.05	9.26
2046	5,656.91	43.52	-	(43.52)	(3.06)	43.52	126.86	83.33	5.86	-	126.86	126.86	8.92
2047	5,879.63	44.74	-	(44.74)	(2.91)	44.74	132.37	87.63	5.70	-	132.37	132.37	8.62
2048	6,110.89	45.44	-	(45.44)	(2.74)	45.44	137.46	92.01	5.54	-	137.46	137.46	8.28
2049	6,351.53	46.85	-	(46.85)	(2.61)	46.85	143.34	96.48	5.38	-	143.34	143.34	8.00
2050	6,602.17	48.39	-	(48.39)	(2.50)	48.39	148.76	100.37	5.19	-	148.76	148.76	7.69
2051	6,862.33	50.05	-	(50.05)	(2.39)	50.05	155.01	104.96	5.02	-	155.01	155.01	7.42
2052	7,132.79	52.53	-	(52.53)	(2.33)	52.53	160.75	108.22	4.79	-	160.75	160.75	7.12
2053	7,414.16	54.48	-	(54.48)	(2.23)	54.48	166.67	112.20	4.60	-	166.67	166.67	6.84
2054	7,707.23	56.57	-	(56.57)	(2.15)	56.57	172.00	115.44	4.38	-	172.00	172.00	6.53
2055	8,012.19	59.61	-	(59.61)	(2.10)	59.61	178.26	118.65	4.17	-	178.26	178.26	6.27
2056	8,329.45	62.01	-	(62.01)	(2.02)	62.01	183.87	121.86	3.97	-	183.87	183.87	5.99
2057	8,659.60	65.41	-	(65.41)	(1.97)	65.41	190.49	125.08	3.77	-	190.49	190.49	5.74
2058	9,003.17	68.14	-	(68.14)	(1.90)	68.14	196.44	128.31	3.58	-	196.44	196.44	5.48
2059	9,360.70	71.02	-	(71.02)	(1.84)	71.02	202.56	131.55	3.40	-	202.56	202.56	5.24
2060	9,732.77	74.05	-	(74.05)	(1.77)	74.05	208.86	134.81	3.23	-	208.86	208.86	5.00
<b>Total</b>		\$ 5,744.57	\$ 4,279.32	\$ (1,465.26)	\$ (140.46)	\$ 5,744.57	\$ 8,415.42	\$ 2,670.85	\$ 245.53	\$ 4,279.32	\$ 8,415.42	\$ 4,136.10	\$ 385.99
Present Value at 8% as of July 1, 2011		\$ 2,061.12	\$ 1,920.66	\$ (140.46)		\$ 2,061.12	\$ 2,306.65	\$ 245.53		\$ 1,920.66	\$ 2,306.65	\$ 385.99	

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 May 1, 2012. All assumptions, including the 8% investment return, are assumed to be met each year in the future.





Exhibit C1

Kansas Public Employee Retirement System  
Comparison of State/School Group Employer Contributions for Retirement Benefits  
Sub SB 259 versus Sub HB 2333

FYE	Payroll (\$M)			Sub SB 259 <sup>(1)</sup>					Sub HB 2333 <sup>(1)</sup>					Difference <sup>(2)</sup>	Present Value of Difference
	Tier 1/2	Tier 3	Employer Rate-DB	Normal Cost Rate	Normal Cost <sup>(2)</sup>	UAL Payment <sup>(2)</sup>	Total Cost <sup>(2)</sup>	Employer Rate-DB	DB Normal Cost Rate	DB Normal Cost <sup>(2)</sup>	UAL Payment <sup>(2)</sup>	Total Cost <sup>(2)</sup>			
2012	4,465.186	0.000	8.77%	3.31%	147.582	244.014	391.597	8.77%	3.31%	147.582	244.014	391.597	0.000	0.000	
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	0.000	
2014	4,742.859	0.000	10.27%	3.31%	156.760	330.332	487.092	10.27%	3.31%	156.760	330.332	487.092	0.000	0.000	
2015	4,706.273	183.492	11.27%	2.39%	116.757	434.319	551.077	11.27%	2.35%	114.792	436.285	551.077	0.000	0.000	
2016	4,507.134	541.224	12.37%	2.30%	116.250	508.232	624.482	12.37%	2.29%	115.496	508.986	624.482	0.000	0.000	
2017	4,332.724	884.524	13.57%	2.22%	115.631	592.350	707.981	13.57%	2.25%	117.146	590.835	707.981	0.000	0.000	
2018	4,171.368	1,224.718	14.49%	2.05%	110.886	671.273	782.159	14.65%	2.22%	119.997	670.734	790.731	8.572	5.198	
2019	4,017.143	1,568.662	14.64%	1.90%	106.199	711.631	817.831	14.94%	2.20%	122.662	711.631	834.293	16.462	9.243	
2020	3,868.916	1,917.913	14.70%	1.76%	101.849	748.816	850.665	15.15%	2.17%	125.691	751.130	876.821	26.156	13.598	
2021	3,729.151	2,270.169	14.69%	1.63%	97.601	783.511	881.112	15.28%	2.15%	129.160	787.711	916.870	35.758	17.213	
2022	3,597.727	2,625.683	14.60%	1.50%	93.472	815.267	908.739	15.35%	2.13%	132.712	822.735	955.447	46.708	20.818	
2023	3,469.577	2,989.037	14.50%	1.38%	88.866	847.370	936.237	15.40%	2.12%	136.628	857.704	994.332	58.096	23.976	
2024	3,343.442	3,361.269	14.38%	1.27%	84.965	878.988	963.953	15.41%	2.10%	140.831	892.397	1,033.228	69.276	26.472	
2025	3,218.508	3,743.649	14.24%	1.16%	80.435	910.650	991.085	15.42%	2.09%	145.184	928.056	1,073.239	82.154	29.067	
2026	3,095.688	4,135.766	14.10%	1.06%	76.561	942.982	1,019.542	15.42%	2.08%	150.422	964.676	1,115.098	95.555	31.305	
2027	2,976.817	4,536.108	13.95%	0.97%	72.647	975.178	1,047.825	15.41%	2.07%	155.617	1,002.224	1,157.841	110.016	33.372	
2028	2,861.609	4,945.319	13.78%	0.88%	68.801	1,007.094	1,075.895	15.40%	2.07%	161.933	1,040.664	1,202.597	126.702	35.587	
2029	2,748.479	5,365.437	13.61%	0.80%	64.889	1,039.393	1,104.282	15.39%	2.07%	168.091	1,080.774	1,248.865	144.583	37.601	
2030	2,636.015	5,797.930	13.42%	0.73%	61.755	1,070.268	1,132.023	15.36%	2.07%	174.656	1,120.871	1,295.527	163.504	39.372	
2031	2,523.441	6,243.849	13.20%	0.67%	58.460	1,098.541	1,157.001	15.33%	2.07%	181.754	1,162.543	1,344.297	187.295	41.760	
2032	2,410.718	6,703.938	12.93%	0.60%	55.143	1,123.837	1,178.980	15.30%	2.08%	189.172	1,204.958	1,394.130	215.149	44.417	
2033	2,297.300	7,178.932	4.65%	0.55%	51.767	388.526	440.292	6.56%	2.08%	197.578	424.535	622.113	181.821	34.756	
2034	2,182.241	7,670.035	3.15%	0.49%	48.605	262.071	310.675	5.11%	2.09%	205.873	297.539	503.411	192.736	34.114	
2035	2,065.928	8,177.707	1.64%	0.44%	45.180	122.924	168.104	3.60%	2.09%	214.320	154.679	368.999	200.895	32.924	
2036	1,948.113	8,702.679	0.59%	0.40%	42.734	20.237	62.970	2.59%	2.10%	223.981	52.189	276.170	213.200	32.352	
2037	1,827.085	9,246.479	0.10%	0.36%	39.388	(28.791)	10.597	2.15%	2.11%	233.339	4.429	237.768	227.172	31.919	
2038	1,703.396	9,809.757	0.00%	0.31%	35.927	(35.927)	0.000	1.89%	2.12%	243.961	(26.480)	217.481	217.481	28.294	
2039	1,578.269	10,392.660	0.00%	0.28%	33.497	(33.497)	0.000	1.76%	2.12%	253.994	(43.095)	210.899	210.899	25.405	
2040	1,452.370	10,995.722	0.00%	0.24%	29.867	(29.867)	0.000	1.73%	2.13%	265.602	(49.792)	215.810	215.810	24.071	
2041	1,329.445	11,617.595	0.00%	0.21%	27.376	(27.376)	0.000	1.74%	2.14%	276.779	(51.788)	224.991	224.991	23.236	
2042	1,213.354	12,256.040	0.00%	0.18%	23.577	(23.577)	0.000	1.78%	2.15%	289.480	(49.837)	239.643	239.643	22.916	
2043	1,102.458	12,912.073	0.00%	0.15%	20.891	(20.891)	0.000	1.82%	2.15%	301.522	(46.248)	255.274	255.274	22.603	
2044	992.920	13,588.470	0.00%	0.13%	18.332	(18.332)	0.000	1.87%	2.16%	315.258	(42.286)	272.972	272.972	22.379	
2045	885.412	14,284.677	0.00%	0.10%	14.504	(14.504)	0.000	1.92%	2.16%	328.128	(36.408)	291.720	291.720	22.145	
2046	783.139	14,997.606	0.00%	0.08%	11.973	(11.973)	0.000	1.98%	2.17%	342.609	(29.983)	312.626	312.626	21.974	
2047	680.796	15,729.466	0.00%	0.06%	9.430	(9.430)	0.000	2.03%	2.18%	357.493	(24.615)	332.877	332.877	21.664	
2048	573.131	16,484.746	0.00%	0.04%	6.971	(6.971)	0.000	2.07%	2.18%	371.111	(18.764)	352.348	352.348	21.233	
2049	465.713	17,261.980	0.00%	0.03%	4.523	(4.523)	0.000	2.11%	2.18%	386.602	(12.409)	374.193	374.193	20.879	
2050	373.175	18,050.490	0.00%	0.01%	2.094	(2.094)	0.000	2.15%	2.19%	402.876	(7.369)	395.507	395.507	20.433	
2051	299.011	18,848.441	0.00%	0.00%	-0.406	0.406	0.000	2.17%	2.19%	419.696	(3.829)	415.867	415.867	19.894	
2052	235.082	19,664.612	0.00%	0.00%	0.000	0.000	0.000	2.18%	2.19%	435.167	(1.990)	433.177	433.177	19.187	
2053	178.915	20,503.240	0.00%	0.00%	0.000	0.000	0.000	2.20%	2.19%	452.937	0.000	455.006	455.006	18.661	
2054	133.803	21,362.806	0.00%	0.00%	0.000	0.000	0.000	2.20%	2.19%	471.348	2.150	473.498	473.498	17.981	
2055	101.111	22,243.377	0.00%	0.00%	0.000	0.000	0.000	2.20%	2.19%	490.382	2.234	492.617	492.617	17.321	
2056	76.276	23,150.859	0.00%	0.00%	0.000	0.000	0.000	2.21%	2.20%	510.125	2.323	512.448	512.448	16.684	
2057	56.488	24,089.437	0.00%	0.00%	0.000	0.000	0.000	2.20%	2.20%	530.558	0.000	530.558	530.558	15.994	
2058	41.446	25,060.935	0.00%	0.00%	0.000	0.000	0.000	2.18%	2.19%	549.273	(2.510)	546.763	546.763	15.261	
2059	30.655	26,067.418	0.00%	0.00%	0.000	0.000	0.000	2.17%	2.19%	571.198	(5.220)	565.979	565.979	14.628	
2060	22.730	27,111.890	0.00%	0.00%	<u>0.000</u>	<u>0.000</u>	<u>0.000</u>	2.15%	2.19%	<u>593.993</u>	<u>(10.854)</u>	<u>583.140</u>	<u>583.140</u>	<u>13.955</u>	
					2,494.086	16,539.999	19,034.085			13,273.816	16,867.470	30,141.286	11,107.201	1,041.861	

<sup>(1)</sup> Effective 1/1/14

<sup>(2)</sup> In millions.

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Exhibit C2

Kansas Public Employee Retirement System  
 Comparison of Local Group Employer Contributions for Retirement Benefits  
 Sub SB 259 versus Sub HB 2333

EYE	Payroll (\$M)		Sub SB 259 <sup>(1)</sup>					Sub HB 2333 <sup>(1)</sup>					Difference <sup>(2)</sup>	Present Value of Difference
	Tier 1/2	Tier 3	Employer	Normal	Normal	UAL	Total	Employer	DB Normal	DB Normal	UAL	Total		
			Rate-DB	Cost Rate	Cost <sup>(2)</sup>	Payment <sup>(2)</sup>	Cost <sup>(2)</sup>	Rate-DB	Cost Rate	Cost <sup>(2)</sup>	Payment <sup>(2)</sup>	Cost <sup>(2)</sup>		
2012	1,678.751	0.000	7.34%	2.94%	49.355	73.865	123.220	7.34%	2.94%	49.355	73.865	123.220	0.000	0.000
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	0.000
2014	1,777.741	0.000	8.73%	2.03%	36.001	119.109	155.110	8.64%	1.95%	34.713	118.931	153.644	(1.466)	(1.210)
2015	1,682.855	151.199	9.21%	1.94%	35.520	133.336	168.856	9.16%	1.90%	34.773	133.152	167.925	(0.931)	(0.711)
2016	1,601.267	292.153	9.11%	1.85%	35.101	137.462	172.563	9.11%	1.87%	35.347	137.084	172.430	(0.133)	(0.094)
2017	1,531.885	423.760	9.03%	1.70%	33.218	143.349	176.567	9.18%	1.86%	36.281	143.153	179.434	2.867	1.878
2018	1,468.854	551.608	8.96%	1.56%	31.461	149.514	180.975	9.24%	1.84%	37.201	149.514	186.715	5.740	3.481
2019	1,411.513	676.427	8.87%	1.43%	29.804	155.343	185.147	9.31%	1.83%	38.107	156.178	194.285	9.138	5.131
2020	1,357.016	801.074	8.79%	1.31%	28.205	161.425	189.630	9.35%	1.81%	39.042	162.720	201.762	12.132	6.307
2021	1,306.765	925.141	8.72%	1.19%	26.662	168.063	194.724	9.41%	1.79%	40.011	170.071	210.083	15.358	7.393
2022	1,259.029	1,050.142	8.67%	1.09%	25.131	175.035	200.166	9.48%	1.78%	41.055	177.806	218.861	18.695	8.333
2023	1,211.644	1,178.114	8.61%	0.99%	23.674	182.100	205.774	9.54%	1.77%	42.225	185.684	227.909	22.135	9.135
2024	1,166.580	1,308.070	8.55%	0.90%	22.244	189.311	211.555	9.60%	1.76%	43.490	194.013	237.502	25.947	9.915
2025	1,122.814	1,440.897	8.49%	0.81%	20.866	196.893	217.759	9.66%	1.75%	44.906	202.790	247.695	29.936	10.592
2026	1,079.538	1,577.175	8.44%	0.74%	19.544	204.567	224.111	9.73%	1.75%	46.459	212.006	258.465	34.354	11.255
2027	1,036.739	1,717.192	8.37%	0.66%	18.249	212.328	230.577	9.79%	1.75%	48.133	221.416	269.549	38.972	11.822
2028	996.305	1,860.024	8.31%	0.59%	16.985	220.509	237.493	9.85%	1.75%	49.953	231.363	281.316	43.822	12.308
2029	956.653	2,006.671	8.24%	0.53%	15.774	228.472	244.247	9.92%	1.75%	51.922	242.104	294.026	49.779	12.946
2030	918.258	2,157.256	8.17%	0.48%	14.632	236.507	251.139	10.00%	1.76%	54.036	253.422	307.459	56.319	13.562
2031	880.111	2,312.267	8.07%	0.42%	13.523	244.217	257.740	10.09%	1.76%	56.289	265.925	322.214	64.473	14.375
2032	841.490	2,472.188	2.96%	0.38%	12.445	85.493	97.938	4.64%	1.77%	58.672	95.103	153.774	55.837	11.527
2033	802.890	2,637.309	2.05%	0.33%	11.399	59.171	70.571	3.77%	1.78%	61.203	68.460	129.663	59.092	11.296
2034	763.519	2,808.290	1.13%	0.29%	10.374	30.003	40.377	2.86%	1.79%	63.880	38.218	102.098	61.721	10.924
2035	724.959	2,984.212	0.79%	0.25%	9.367	20.030	29.397	2.58%	1.80%	66.713	28.932	95.645	66.248	10.857
2036	685.180	3,166.753	0.55%	0.22%	8.373	12.711	21.084	2.39%	1.81%	69.699	22.341	92.040	70.956	10.767
2037	645.945	3,355.264	0.40%	0.18%	7.398	8.803	16.200	2.31%	1.82%	72.846	19.606	92.452	76.252	10.714
2038	606.916	3,550.260	0.30%	0.15%	6.431	6.236	12.666	2.26%	1.83%	76.168	17.876	94.044	81.378	10.587
2039	567.903	3,751.578	0.23%	0.13%	5.492	4.319	9.811	2.24%	1.84%	79.643	17.278	96.921	87.110	10.493
2040	528.254	3,960.270	0.16%	0.10%	4.558	2.693	7.251	2.24%	1.86%	83.277	17.056	100.333	93.083	10.382
2041	486.776	4,177.037	0.11%	0.08%	3.637	1.399	5.036	2.23%	1.87%	87.069	16.790	103.858	98.822	10.206
2042	445.926	4,400.890	0.07%	0.06%	2.722	0.485	3.207	2.23%	1.88%	91.053	16.964	108.017	104.809	10.022
2043	405.937	4,631.369	0.03%	0.04%	1.811	-0.504	1.307	2.23%	1.89%	95.228	17.127	112.355	111.048	9.832
2044	365.661	4,869.826	0.00%	0.02%	0.905	-0.905	0.000	2.23%	1.90%	99.576	17.277	116.853	116.853	9.580
2045	326.896	5,115.138	0.00%	0.00%	0.008	-0.008	0.000	2.24%	1.91%	104.089	17.959	122.048	122.048	9.265
2046	290.352	5,366.555	0.00%	0.00%	0.000	0.000	0.000	2.24%	1.92%	108.756	18.102	126.858	126.858	8.917
2047	254.343	5,625.289	0.00%	0.00%	0.000	0.000	0.000	2.25%	1.93%	113.559	18.815	132.374	132.374	8.615
2048	218.593	5,892.300	0.00%	0.00%	0.000	0.000	0.000	2.25%	1.94%	118.512	18.944	137.456	137.456	8.283
2049	184.549	6,166.985	0.00%	0.00%	0.000	0.000	0.000	2.26%	1.95%	123.645	19.690	143.335	143.335	7.998
2050	155.998	6,446.177	0.00%	0.00%	0.000	0.000	0.000	2.25%	1.95%	128.954	19.807	148.760	148.760	7.686
2051	129.299	6,733.033	0.00%	0.00%	0.000	0.000	0.000	2.26%	1.96%	134.425	20.587	155.012	155.012	7.415
2052	104.361	7,028.427	0.00%	0.00%	0.000	0.000	0.000	2.25%	1.96%	140.066	20.685	160.751	160.751	7.120
2053	81.172	7,332.993	0.00%	0.00%	0.000	0.000	0.000	2.25%	1.97%	145.912	20.760	166.672	166.672	6.836
2054	63.826	7,643.400	0.00%	0.00%	0.000	0.000	0.000	2.23%	1.97%	151.965	20.039	172.004	172.004	6.532
2055	50.205	7,961.988	0.00%	0.00%	0.000	0.000	0.000	2.22%	1.97%	158.230	20.030	178.260	178.260	6.268
2056	38.812	8,290.643	0.00%	0.00%	0.000	0.000	0.000	2.21%	1.98%	164.712	19.158	183.870	183.870	5.986
2057	29.195	8,630.402	0.00%	0.00%	0.000	0.000	0.000	2.20%	1.98%	171.441	19.051	190.492	190.492	5.742
2058	22.087	8,981.087	0.00%	0.00%	0.000	0.000	0.000	2.18%	1.98%	178.437	18.006	196.443	196.443	5.483
2059	16.902	9,343.797	0.00%	0.00%	0.000	0.000	0.000	2.16%	1.98%	185.713	16.849	202.562	202.562	5.235
2060	12.843	9,719.925	0.00%	0.00%	0.000	0.000	0.000	2.15%	1.99%	193.286	15.572	208.859	208.859	4.998
					631.641	3,647.676	4,279.318			4,200.798	4,214.623	8,415.421	4,136.104	385.985

<sup>(1)</sup> Effective 1/1/14

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