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March 19, 2013

Mr. Jim Pyle
Executive Director
Police Retirement System of Kansas City, Missouri
9701 Marion Park Drive, B
Kansas City, MO 64137

Re: Cost Impact of 32 Year/80% Maximum Benefit Provision in Senate Bill 215 and House Bill 418

Dear Jim:

We previously prepared a cost study to measure the aggregate cost impact of the revised pension plan design for the Police Retirement System of Kansas City, Missouri (Police Retirement System) under Senate Bill 215 (SB 215) and House Bill 418 (HB 418). The prior cost study, which was based on the most recent actuarial valuation as of April 30, 2012, was dated March 12, 2013. This letter isolates the cost savings of one component of the changes made for current active members: the change that allows members to accrue up to a maximum of 32 years of creditable service, an increase from the current maximum of 30 years of creditable service.

As you requested, we have performed an actuarial study to determine the cost impact of changing only the maximum creditable service from 30 years to 32 years. Based on the benefit multiplier of 2.5%, the current maximum benefit of 75% is reached with 30 years of service and an 80% maximum benefit could be reached with 32 years of service. In addition, the mandatory retirement assumption for police officers will be moved from the current 32 years of service to 35 years of service. The combined impact of these two changes is an expectation that some members will defer their retirement date. The mandatory retirement was extended from 30 to 32 years of service several years ago and actual experience since that time indicates that some members are delaying retirement. A similar trend is expected with this change, particularly because members will earn benefits for an additional two years.

Actuarial Assumptions

The actuarial assumptions used in our analysis are the same as those used in the April 30, 2012 actuarial valuation. Revised retirement rates were developed for use with SB 215/HB 418 due to the increase in creditable service and mandatory retirement. The following table sets out the retirement assumption used in the valuation and the SB 215/HB 418.

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A summary of the actuarial assumptions is shown below:

Retirement Assumption		
Years of Service	April 30, 2012 Valuation	SB 215/HB 418 Study
25	25%	25%
26	25%	25%
27	25%	20%
28	25%	20%
29	25%	20%
30	35%	15%
31	55%	15%
32	100%	35%
33		30%
34		30%
35		100%

Please see the Appendix, attached to this letter, for a detailed listing of all of the assumptions and methods used in the estimated results included in this letter. In our opinion, the assumptions used in the actuarial projections produce results which, in the aggregate, are reasonable. However, because not all of the assumptions will unfold exactly as expected, actual results will differ from the costs shown in this letter. To the extent that actual experience deviates significantly from the assumptions, results could be significantly better or significantly worse than indicated in this study

Actuarial Analysis

In order to determine the cost savings associated with just the increase in maximum creditable service and the mandatory retirement, those provisions were changed along with the revised retirement assumptions and the April 30, 2012 valuation was rerun. The impact on the valuation results reduced both the unfunded actuarial accrued liability (UAAL) and the normal cost rate. The table on the following page summarizes the estimated cost impact of the change in earned creditable service and the resulting benefit coupled with the change in the mandatory retirement.



<u>Police Retirement System of Kansas City, Missouri</u>			
	Current Plan with Original Retirement Assumptions	Maximum 32 Years of Service and Mandatory Retirement at 35 Years	Difference
April 30, 2012 Valuation			
UAAL (\$M)	\$268.7	\$262.5	(\$6.2)
Normal Cost Rate (with expenses)	25.57%	25.34%	(0.23%)
UAAL Contribution Rate	<u>23.83%</u>	<u>23.31%</u>	<u>(0.52%)</u>
Total Contribution Rate	49.40%	48.65%	(0.75%)
Employee Contribution Rate	<u>(10.55%)</u>	<u>(10.55%)</u>	<u>(0.00%)</u>
Employer Contribution Rate	38.85%	38.10%	(0.75%)
Employer Contribution (\$M)	\$35.5	\$34.8	(\$0.7)

Note: Change in UAAL is amortized over 20 years as a level percent of payroll

While the proposed changes in provisions are beneficial to the employees, our expectation is that they will slightly reduce the cost of the system, as indicated in the table. This happens because the provisions are expected to encourage employees to retire at a later date than would have been chosen in the absence of the changes. The delay allows the system more time to accumulate funds and decreases the length of time over which benefits will be paid. The effect on the system funding from the delayed retirements is expected to more than offset the value of the additional earned benefits. Thus, the overall plan cost decreases.

The valuation results shown in the table above reflect only the impact of the increase in creditable service to 32 years and a maximum benefit of 80% of final average salary along with the change to mandatory retirement. SB 215/HB 418 contains other provisions for current members that also reduce the costs of the benefit structure. In addition, the legislation creates a different benefit structure for new hires, called Tier II, which will also reduce employer costs in the future. This letter does not address the cost savings from the other provisions for current members or the cost savings from Tier II that will evolve over time. Other studies have previously been performed that estimate the cost savings associated with these changes.

These results are based on a single set of assumptions out of a range of many reasonable sets of assumptions which could be considered. The projections are sensitive to the assumptions used, particularly the investment return assumption. Further analysis can be provided upon request if it is deemed to be necessary or helpful.



Data, Assumptions and Methodology

The analysis contained in this letter is based on the April 30, 2012 actuarial valuation. To the extent that any of that data is inaccurate, our analysis may need to be revised. Unless otherwise noted, the assumptions and methods used in analyzing this proposal are the same as those used in the April 30, 2012 actuarial valuation and are shown in Appendix C of that report.

The comments and analysis contained in this letter are not intended to give exact calculations of costs. They should be considered to be estimates. The emerging costs will vary from those presented in this letter to the extent that actual experience differs from that projected by the actuarial assumptions. This cost analysis has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board (ASB) and the Code of Professional Conduct and Qualification Standards for Public Statement of Actuarial Opinion of the American Academy of Actuaries.

If any of the information disclosed in this letter is inaccurate, or in any way incomplete, it may impact the reliability of our results. If you have any concerns, please contact us immediately.

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 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



APPENDIX

Summary of Actuarial Assumptions and Methods

Actuarial Cost Method

The actuarial cost method is a procedure for allocating the actuarial present value of pension benefits and expenses to time periods. The method used for the valuation is known as the Entry Age Normal actuarial cost method, and has the following characteristics.

- (i) The annual normal costs for each individual active member are sufficient to accumulate the value of the member's pension at time of retirement.
- (ii) Each annual normal cost is a constant percentage of the member's year-by-year projected covered compensation.

The Entry Age Normal actuarial cost method allocates the actuarial present value of each member's projected benefits on a level basis over the member's assumed pensionable compensation rates between the entry age of the member and the assumed exit ages. The portion of the actuarial present value allocated to the valuation year is called the normal cost. The portion of the actuarial present value not provided for by the actuarial present value of future normal costs is called actuarial accrued liability. Deducting actuarial assets from the actuarial accrued liability determines the unfunded actuarial accrued liability or (surplus).

Asset Valuation Method

Under the asset valuation method, the difference between the actual and assumed investment return on the market value of assets is recognized evenly over a five year period with no corridor. A change to a new asset smoothing method was implemented by resetting the actuarial value of assets at April 30, 2011 equal to the market value of assets.

Amortization of Unfunded Actuarial Accrued Liability

In the actuarial valuation, the difference in the actual and expected UAAL is set up as a separate base each year, which is amortized over a closed 24 year period. As a result, there are multiple amortization bases each with an amortization payment. The payments are calculated as a level percent of payroll, assuming future increases in covered payroll of 4.0% per year.



Actuarial Assumptions –

Investment return: 7.75% per year, compounded annually

Pay increase assumption: Rates for sample years of service are shown below.

<u>Years of Service</u>	<u>Annual Rate of Pay Increase</u>		
	<u>General Wage Growth</u>	<u>Merit and Longevity</u>	<u>Total</u>
0	4.0%	5.75%	9.75%
1	4.0%	5.50%	9.50%
2	4.0%	4.50%	8.50%
3	4.0%	4.00%	8.00%
4	4.0%	4.00%	8.00%
5	4.0%	4.00%	8.00%
10	4.0%	3.50%	7.50%
15	4.0%	0.00%	4.00%
20	4.0%	0.00%	4.00%
25	4.0%	0.00%	4.00%

Price inflation: 3.0% per year, compounded annually.

Active member payroll growth: 4.0% per year, compounded annually.

Mortality Tables:

Healthy Retirees: RP-2000 Healthy Annuitant Table using Scale AA to model future mortality improvement.

Disabled Retirees: RP-2000 Healthy Annuitant Table set forward 5 years using Scale AA to model future mortality improvement.

Actives: RP-2000 Employee Table using Scale AA to model future mortality improvement.

Rates of termination from active membership:

<u>Sample Ages</u>	<u>% of Active Members Terminating Within Next Year</u>	
	<u>Male</u>	<u>Female</u>
25	5.8%	6.3%
30	3.8%	5.0%
35	2.4%	3.5%
40	1.6%	1.6%
45	1.1%	0.5%
50	0.6%	0.0%

The rates do not apply to members eligible to retire and do not include separation on account of death or disability. All vested members are assumed to leave their contribution with the System and receive a deferred benefit.



Rates of Disability:

<u>Sample Ages</u>	<u>% of Active Members Becoming Disabled Within Next Year</u>	
	<u>Male</u>	<u>Female</u>
30	0.062%	0.134%
35	0.312%	0.672%
40	0.416%	0.896%
45	0.437%	0.941%
50	0.759%	1.635%
55	1.456%	3.136%
60	2.579%	5.555%

55% of disabilities are assumed to be duty related

Rates of Retirement:

<u>Active Members Retiring Within Next Year</u>			
<u>Current Plan</u>		<u>SB 215/HB 418 (current members)</u>	
<u>Years of Service</u>	<u>Percent Retiring</u>	<u>Years of Service</u>	<u>Percent Retiring</u>
25	25%	25	25%
26	25%	26	25%
27	25%	27-29	20%
28	25%	30	15%
29	25%	31	15%
30	35%	32	35%
31	55%	33	30%
32	100%	34	30%
		35	100%

Inactive vested members are assumed to retire at age 55.



Miscellaneous and Technical Assumptions

Marriage Assumption:

85% of males and 55% of females are assumed to be married for purposes of death-in-service benefits and death-after-retirement benefits. Males are assumed to be 3 years older than their spouses. Actual reported data is utilized for retirees and beneficiaries.

Pay Increase Timing:

Assumed to occur at the start of the fiscal year.

Pay Annualization:

Reported pays for members with less than 1 year of service were annualized for valuation purposes.

Decrement Timing:

Decrements of all types are assumed to occur mid-year.

Eligibility Testing:

Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year at the start of the year in which the decrement is assumed to occur.

Benefit Service:

Service calculated to the nearest month, as of the decrement date, is used to determine the amount of benefit payable.

Child Beneficiaries:

None assumed.

Other:

Turnover decrement does not operate during retirement eligibility.

Form of Payment:

The assumed normal form of payment is an 80% joint and survivor annuity, if married. Otherwise, a single life annuity.

Administrative Expense:

0.40% of payroll each year. Administrative expenses beyond this allocation and all investment expenses are assumed to be funded by investment return in excess of the actuarial assumed rate of return.

Cost of Living Adjustment:

It was assumed the Retirement Board will grant the full 3% cost of living adjustment each year.